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The Moderating Role of Mindfulness in New Product Evaluation

Mary E. Schramm
Quinnipiac University, mary.schramm@quinnipiac.edu

Michael Y. Hu
Kent State University, mhu@kent.edu

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Mary E. Schramm, Quinnipiac University

mary.schramm@quinnipiac.edu

Michael Y. Hu, Kent State University

Abstract **-** Mindfulness has the potential to affect new product evaluation since consumers with a higher propensity for mindfulness are more likely to notice and accept differences between existing and new products. This research references piecemeal/category-based processing theory to study the moderating effect of individual mindfulness on information processing in the presence of product category knowledge. We find that mindfulness does not have a direct effect on processing style. However, mindfulness does moderate the relationship between product category knowledge and processing style. Understanding underlying factors during information processing provides important insights for marketers as they implement marketing strategies.

Keywords – mindfulness, piecemeal processing, category-based processing

Relevance to Marketing Educators, Researchers and/or Practioners – This research adds to the knowledge of how consumers process information during new product evaluation. Understanding the underlying factors that influence how information is processed has the potential to support the development of more effective marketing materials.

Introduction

Firms depend on the success of their new products to maintain growth, financial performance, and competitiveness (Hauser et al., 2006; Sood and Tellis, 2005). Positive evaluation of new products by consumers is a key factor that leads to success in these key firm performance areas. Information processing, which occurs during product evaluation, is influenced by individual differences (Petty et al., 1991). Understanding these differences, and applying them to elements of

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marketing strategy, increases the likelihood of positive product evaluations by consumers (Moreau et al., 2001). The present study explores how mindfulness affects consumer information processing during new product evaluation. In particular this study examines the moderating role of mindfulness in the presence of product knowledge. Bodner and Langer (2001: 1) describe a mindful person as one who is "open to novelty, alert to distinctions, sensitive to context, aware of multiple perspectives, and oriented in the present" (Bodner and Langer, 2001: 1). The mindfulness construct is well-suited for extending understanding of the evaluation of new products since it parallels factors affecting consumers' responses during new product evaluation.

Acceptance of new products requires consumers to be open to new ideas and to create new categories by classifying these products differently than incumbent products. Doing so increases the likelihood that the new product's relative advantages are perceived by the consumer (Anderson and Ortinau, 1988; Gregan-Paxton et al., 2002; Moreau et al., 2001; Olshavsky and Spreng, 1996). As a factor underlying product evaluation, the mindfulness construct suggests that those who are mindful are more likely to perceive new products differently from those who are not. Those who have a greater propensity for mindfulness may be more likely to embrace new products since they are more open to new information, create new categories, and are more likely to actively process available information about them (Langer, 1989b, Langer and Moldoveanu, 2000; Bodner and Langer, 2001).

Piecemeal and category-based processing are two processing styles activated as individuals evaluate new products (Pavelchak, 1989; Sujan, 1985). The influence of product category knowledge on the processing style activated is well-established in the extant literature (e.g., Bettman et al.,1991; Sujan, 1985; Moreau et al., 2001). In this research, mindfulness, along with product-category knowledge, is incorporated into the piecemeal/category-based processing framework. First, we study the effect of individual mindfulness on the type of processing used during evaluation of a new health supplement. Second, the interaction between individual mindfulness and product category knowledge on consumer information processing is explored. We contribute to the consumer decision-making literature by studying the underlying role of mindfulness in consumer product evaluation and its affect on processing styles.

Mindfulness

Mindfulness, which originates from Buddhist philosophy, is "a receptive attention to awareness of present events and experience" (Brown et al., 2007: 212, italics in original). We often use the words "mindful" and "mindless" to describe our attention – or inattention – to daily tasks. In conversation and the media, we hear references to mindful practices. Mindful meditation, for instance, is a popular form of meditation practice where one focuses on the present moment in a nonjudgmental manner (Kabat-Zinn, 2005). Mindful eating describes the practice of eating slowly

and savoring each morsel not only to enjoy the food but also to improve dietary habits (Gordiner, 2012). Physicians attend conferences to learn mindful communication in order to better relate to patients by being present in the moment (Chen, 2011). Scientific research exploring the health benefits of mindful practices is growing in response to evidence of positive outcomes (Glomb et al., 2011).

A second stream of mindfulness research, and the focus of the present study, originates from Langer's (1989a, 1989b) work in social psychology which applies mindfulness to information processing. Drawing from mindfulness' Buddhist roots where attention is focused on the present, a mindful individual actively processes information within the present context (Langer 1989b). Mindful processing leads to four key outcomes for the individual: "(1) a greater sensitivity to one's environment, (2) more openness to new information, (3) the creation of new categories for structuring perception, and (4) enhanced awareness of multiple perspectives in problem-solving" (Langer and Moldoveanu, 2000: 2). In contrast to the flexible thinking implied by mindful processing, processing that is not mindful is rigid and constrained by rules in one's schema (Langer, 1989b).

Although all individuals spend time in both mindless and mindful states, some individuals spend more time in a mindful state than others. Mindfulness is induced in response to situational factors such as an unfamiliar situation, a change in external factors that affects a task, or the inability to perform a task automatically (Langer, 1989a; Bodner and Langer, 2001). A new product design, for example, may present unfamiliar features that activate a mindful state as an individual finds that he or she can no longer "mindlessly" operate the device. Bodner and Langer (2001: 2) label an individual's tendency to spend more time in a mindful state as one's "propensity to be mindful" and describe this tendency as a "relatively stable individual difference construct." Although there is some debate in the literature about whether mindfulness is actually a cognitive ability, personality trait, or cognitive style, for this study, mindfulness is considered a cognitive style or a person's "typical" mode of "perceiving, remembering, thinking, and problem solving" (Messick, 1970: 188 as quoted by Carroll, 1993: 554; Sternberg, 2000; Langer and Moldoveanu, 2000).

Applications of Mindfulness

Studies of mindfulness span several disciplines including healthcare, education, and business. In healthcare, mindfulness is related to a perception of control, a factor shown to have a positive effect on treatment outcomes. In education, mindfulness research explores the role of mindfulness in instructional effectiveness, attention, and creativity (Langer and Moldoveanu, 2000). The mindfulness construct is applied to several areas in the management literature. Fiol and O'Connor (2003) model mindfulness as a moderator during the decision-making process. Others have shown the effect of mindfulness on employee creativity and productivity (Glomb et al., 2011; Langer and Moldoveanu, 2000) and one's ability to develop behavior skills

that support awareness in situations such as cross-cultural interactions (Thomas and Inkson, 2004). Swanson and Ramiller (2004) discuss the role of mindfulness and mindlessness in organizational adoption of informational technology. Butler and Gray (2006) consider the role of collective mindfulness in information systems reliability.

Rosenberg (2004: 107) proposed that mindfulness may be the "antidote to consumerism" by enabling consumers to overcome the persuasive forces that drive automatic or impulsive decisions to consume products. She contends that mindfulness promotes active information processing which results in conscious choices. Further, Rosenberg notes that one's need for self-fulfillment drives consumption. She suggests that mindfulness may lead individuals to rely less on acquisition of material goods to satiate their need for self-fulfillment since greater awareness (associated with mindfulness) leads to a greater appreciation of the present and fills the void previously occupied by material goods.

In the marketing literature, Dong and Brunel (2006) study the role of mindfulness in dual process models of attitude formation and change, such as the Elaboration Likelihood Model. Dong and Brunel (2006) also compare mindfulness to the "need for cognition" which operates as a moderator in persuasion routes. They find that individual differences in mindfulness do influence how consumers respond to persuasive messages in terms of their reliance on central/systematic or peripheral/heuristic processing. Citing the dearth of mindfulness research in the marketing literature, and noting its demonstrated potential to add to knowledge about consumer behavior, Dong and Brunel (2006) call for additional mindfulness research to further explore its potential to inform areas such as market segmentation, consumption behavior, consumer cognition, consumer judgment, and decision making. In the present study, we explore the role of mindfulness in consumer information processing to deepen our understanding of processing styles and the relationship between mindfulness and the processing style used by the consumer.

Information Processing

The information processing literature, which originates in psychology, describes many competing models that predict how individuals process information. Models differ across several dimensions including model structure and factors affecting processing within the models. In single process models, individuals follow steps along one route as they process information. In multiple process models, the information processing route followed by the individual is influenced by certain factors (Sternthal and Craig, 1982). Krugman (1965), for instance proposed that differences in level of involvement between those exposed to print and broadcast media drive individuals to different processing routes. Another perspective, consumer construction choice processes, describes the processing route in terms of a process whereby the consumer forms preferences in the moment resulting in the

development of "highly context dependent" preferences (Bettman et al., 1998: 188). Models are also distinguished in terms of mental imagery and the information processing approaches (Gould, 1990). Mental imagery approaches consider individual information processing differences using approaches such as visual, auditory, and olfactory modes while the information processing approach focuses on the effects of individual cognitive and motivational factors (Petty et al.,1991; Gould, 1990).

In the present study, we draw on the piecemeal/category-based processing approach because of its established application in understanding the evaluation of products by consumers (Pavelchak, 1989; Sujan, 1985). When the piecemeal/category-based processing style is utilized, the individual attempts to place the stimulus in an established category. If there is a match, category-based processing occurs; in the case of no match, piecemeal-based processing is pursued (Pavelchak, 1989). Piecemeal processing approaches imply that considerable cognitive effort is expended as every stimulus is perceived as new and an affective response will be constructed each time the stimulus is encountered. When engaged in piecemeal-based processing, individuals evaluate products on an "attribute-by-attribute" basis (Sujan, 1985). When using category-based processing, individuals expend less processing effort as they access "structured prior knowledge", or schemata, to form an affective response. In this case, the individual's response will be derived from experience with the category generating a category-based response (Fiske, 1982).

Consumers' processing style has significant implications for marketers as consumers evaluate new products. Ross and Robertson (1991) contrasted the information processing of consumers who choose innovative versus non-innovative product choices. Those who sought a greater amount of detailed information (implying piecemeal-based processing) along with impersonal, marketer-controlled information, choose more innovative products. Moreau et al. (2001) found that expert consumers were less successful than novice consumers in comprehending a discontinuous innovation's benefits because they were constrained by their existing category knowledge. Gregan-Paxton et al. (2002) showed consumers who are able to relate a new product to an existing knowledge structure recalled fewer new product features (i.e., were engaged in category-based rather than piecemeal-based processing) than those who were not able to relate to an existing category. These findings infer that consumers who rely on existing categories when evaluating products may not perceive relative advantages or fully assess compatibility. Category-based processing also may transfer negative attitudes about an existing product to a new product preventing adoption (Olshavsky and Spreng, 1996).

Individual Differences Affecting Processing Styles

Across information processing models, research suggests that individual differences have the potential to affect the amount of cognitive effort that the individual

devotes to processing information about a product. Individual differences include involvement, need for cognition, and knowledge (Petty et al.,1991). Dong and Brunel (2006) proposed that mindfulness is another individual factor that affects information processing. Mindfulness may be compared to "need for cognition" since both are individual factors that describe how individuals processes information. Individuals exhibiting a need for cognition like to think and to compile information in order to support understanding (Cacioppo and Petty, 1982). Mindfulness, on the other hand, is quite different than "need for cognition" since is describes an individual's ability to sense and embrace new information and to create new categories (Dong and Brunel, 2006; Langer, 1989a). In their study, Dong and Brunel (2006) confirmed that need for cognition and mindfulness are distinct constructs. Involvement, another key motivational factor, differs from both need for cognition and mindfulness since it addresses why an individual is, or is not, motivated to process information rather than how they process the information.

The Role of Mindfulness in Information Processing

Piecemeal and category-based processing styles are distinguished by high and low levels of mental effort expended during product evaluation. As mentioned earlier, the amount of mental effort devoted to a given situation by the individual varies depending on individual motivational and ability factors (Petty et al., 1991). Individuals with a greater propensity for mindfulness have a need to actively process information in response to their sensitivity to factors in their environment, their willingness to consider and create new categories, and their interest in assimilating multiple perspectives (Langer, 1989a; Langer and Moldoveanu, 2000). We suggest that the way in which mindful individuals process information makes them more likely to utilize piecemeal processing since consideration of the product presently being considered results in development of a new response to each encounter. In comparison, processing by individuals who are not mindful is quite similar to category-based processing since these individuals tend to apply information already in their schemas. Thus, we hypothesize that:

H1. As the level of individual mindfulness increases (decreases), the probability of category-based (piecemeal-based) processing decreases (increases).

The Role of Knowledge in Information Processing

The effect of individual knowledge on the use of piecemeal or category-based processing during product evaluation is well established in the marketing literature (Bettman and Park, 1980; Chaiken, 1980; Sujan, 1985; Sujan and Tybout, 1988). Sujan (1985) studied the relationship between a consumer's product category knowledge and his/her processing style. She found that knowledge level affects the use of piecemeal and category-based processing when evaluating products. Sujan (1985) defined category knowledge as the "organized set of expectations" individuals

have about products in a category in terms of expected attributes, typical attribute configurations, and performance. Sujan (1985) found that, when the stimulus matches an expert consumer's category-based knowledge, category-based processing is used. These consumers generate more thoughts about the product category and fewer about product attributes. When the product information does not match the individual's category knowledge, he/she processes for a longer period of time and use a piecemeal-based process for his/her evaluation.

The Moderating Role of Mindfulness in Information Processing

Although the extant literature suggests that consumers who are knowledgeable about a product are more likely to process within an existing schema or category (Sujan, 1985), we ask next if one's propensity for mindfulness moderates the relationship between knowledge and processing style. Since Sujan (1985) describes one's likelihood to utilize piecemeal or category-based processing along a continuum (e.g., generate more vs. fewer specific thoughts) rather than in absolute terms, we propose that mindfulness moderates the likelihood that piecemeal (or category-based) processing is used.

Langer and Moldoveanu (2000) suggest that those with a greater propensity for mindfulness will enter a mindful state more frequently than others. Further, Langer and Moldoveanu's (2000: 2) definition of mindfulness as "the process of drawing novel distinctions" implies that a mindful individual is more likely to use piecemeal processing rather than category-based processing – even when category-based processing, as suggested in the information-processing literature, is expected. Mindful individuals process actively while those who are not mindful depend on categories which include "distinctions and associations learned in the past" (Bodner and Langer, 2001: 1). Therefore, the question is whether a mindful individual, who is knowledgeable about the product, is more likely to use piecemeal rather than category-based processing. If so, the likelihood of category-based processing within the knowledgeable, mindful group will decrease. When mindfulness is added to the model, the probability of category-based processing for knowledgeable consumers with low mindfulness levels increases further. Among those who are neither knowledgeable nor mindful, it is expected that little information processing will take place. The following hypothesis emerges from the argument being set forth:

H2. The individual's mindfulness level has a moderating effect on the relationship between knowledge and the type of processing.

Method

Study Design and Procedure

Evaluation of a fictitious new supplement for stress and weight control is the setting for this study. Consumers' interest in health and wellness has grown as the explosion in consumer health information urges them to live healthier lives through diet, exercise, and stress reduction (Huber and Gillaspy, 2011; Mintel, 2011a). Greater knowledge and economic factors have spurred consumers to address their healthcare needs not only through encounters with healthcare professionals but also by treating themselves (Mintel, 2011a). More self-treatment has driven greater demand for over-the-counter (OTC) remedies including supplements (Mintel, 2011b). Since these products are obtained without a prescription from a physician, the purchase decision is driven by the consumer.

The supplement being evaluated was described as a new patch that is designed to deliver nutritional supplements through the skin continuously for 30 days. Since supplements are available to treat many conditions, a pretest was conducted to determine supplement treatment categories that correspond to low and high knowledge in the sample population. Pretest participants (N = 65) were a convenience sample of undergraduate students at a large Midwestern university; they did not participate in the main study. Each participant's responses to the four 7-point rating scale measures used were totaled to create a knowledge score for each category. Stress and weight control supplements, respectively, represented the lowest and highest knowledge levels among the five categories tested [Stress: Mean = 10.7 (SD = 4.50); Weight: Mean = 14.0 (SD = 6.16); 64 df (degrees of freedom); t-stat. = -5.554, $p < 0.001$].

The main study was conducted in two parts. In Part I, respondents were asked to complete the pencil-paper "Langer Mindfulness Scale" (IDS Publishing Corporation, 2004). For Part II, participants were directed to an on-line survey site where one of two versions of the questionnaire was accessed. The two versions of the questionnaire were identical except for switching the order of sections containing questions related to stress control and weight control to balance order bias. During Part II, participants were asked to respond to a series of questions designed to assess their knowledge about supplements for stress and weight control. Next, participants were exposed to a description of the patch. The description included general information about the patch as well as information specific to stress and weight varieties (e.g., active ingredients). After reading information about the patch, four questions unrelated to the study were asked as a diversion task. In the next phase, participants were asked questions about the patch to assess processing style and their perception of the patch. Participants were not able to return to the previous product description. Part II ended with a series of demographic questions.

Sample Description

The convenience sample for this study consisted of 469 undergraduate students, drawn from seven classes at a large, Midwestern university. Students received extra credit points for participating in the study. Fifty participants, who did not complete Part II of the study, were removed from the respondent pool. Incomplete responses on the Langer Mindfulness Scale resulted in elimination of another 58 participants for a final sample size of 361. The age of participants is distributed as follows: 18-20 years of age: 18%; 20-25: 77%; 26 and older: 5%). The final sample consisted of 171 females and 190 males.

Measures

Mindfulness

The propensity for mindfulness was measured with the Langer Mindfulness Scale, a 21-item, self-report instrument. Each item utilizes a 7-point Likert-type scale bounded by "Strongly Disagree" (1) to "Strongly Agree" (7) response choices. Responses to the scale's items are summed to obtain an individual's mindfulness scores. High scores represent a greater propensity to be mindful (Bodner and Langer 2001). The Langer Mindfulness Scale was validated by Bodner and Langer (2001) who reported that the scale's Cronbach's alpha internal consistency measure is 0.83 representing an adequate level of reliability.

Knowledge

Part II of the study included two identical sets of four questions, using 7-point rating scales, asking participants to rate their knowledge of stress and weight control supplements. Knowledge measures were similar to those used by Johnson and Russo (1984). For each product category, the four knowledge responses were summed to create two knowledge scores for each participant. In the present study, the knowledge measure is used in two ways. First, the measure is used to indicate the sample's relative knowledge of stress and weight control supplements. Then, the knowledge measure is used to indicate each participant's knowledge of stress and weight control supplements.

Processing

A 7-point rating scale was used to establish a processing variable by asking participants to indicate if the patch offers a significant advantage over pills and drinks [strongly agree (1)/strongly disagree (7)]. In the survey, the question was asked twice: once for the stress control product and once for the weight control product. Sujan (1985) suggested that responses around the midpoint (4) of the key processing variable indicate piecemeal processing while responses to either side of

the midpoint indicate category-based processing. To create the processing variable, responses at the scale's midpoint (4) are coded "0" for piecemeal-based processing. Other responses (i.e., 1-3 and 5-7) are coded "1" for category-based processing. For the stress product, 176 participants utilized piecemeal processing and 185 utilized category-based processing. For the weight product, 169 participants utilized piecemeal processing and 192 participants utilized category-based processing.

Results

Knowledge

The means (M) and standard deviations (SD) for the four knowledge items for stress and weight control products are 9.14 (SD = 5.25) and 12.27 (SD = 6.48), respectively. The difference between the means is significant (t-stat. = -10.27, 360 df, $p < 0.000$) indicating that, as a group, the sample's knowledge of weight control supplements is greater than its knowledge of stress control supplements. This result mirrors that of the pretest.

Mindfulness

The mean mindfulness score (i.e., the total of the 21 mindfulness item responses) for the sample is 109.47 (SD 12.73) corresponding to an average score of 5.21 on a 7-point scale. The Cronbach's alpha internal consistency measure for the mindfulness scale is 0.82. These results are comparable to those reported earlier by Bodner and Langer (2001) [M = 102.8 (SD 15.5), average score 4.9, Cronbach's alpha 0.83].

Processing

Given that the maximum total scores of two independent variables in the model (knowledge and mindfulness) are quite different (i.e., mindfulness = 147 and knowledge = 28), mindfulness and knowledge scores are standardized using the following equation: (individual's total score – minimum score)/(maximum score – minimum score) in order to equalize the measures' weights as they are applied in the following regression models.

Since our dependent variable is coded 1 or 0 (corresponding to category-based or piecemeal processing), and our independent variables are continuous, logistic regression is the appropriate statistical approach for our analysis (Kutner et al., 2005). Our first regression model is: $Y = \beta 0 + \beta 1 \text{Mindfulness}$, where Y indicates processing-style.

Complete results for our first model, run for stress and weight control supplements, appear in Table 1. The logistic model coefficient value in the case of the stress product is -0.21 (Wald's statistic = 0.04, $p = 0.838$) and for weight -0.48

(Wald's statistic = 0.21, p = 0.648). Thus, even though the signs of the coefficients are the same, neither coefficient is statistically significant. Mindfulness does not have an impact on information processing and H1 is not supported.

Table 1: Logistic Regression Results with Mindfulness

A. Stress Control Product

Predictor	***β***	***S.E.***	***Wald***	***Sig.***
Constant	0.20	0.74	0.07	0.788
Mindfulness	-0.21	1.04	0.04	0.838

	Chi-square	***df***	***Sig.***
Hosmer-Lemeshow Goodness-of-Fit	7.77	8	0.456
Likelihood Ratio Test	0.042	1	0.838

B. Weight Control Product

Predictor	***β***	***S.E.***	***Wald***	***Sig.***
Constant	0.46	0.74	0.39	0.533
Mindfulness	-0.48	1.05	0.21	0.648

	Chi-square	***df***	***Sig.***
Hosmer-Lemeshow Goodness-of-Fit	13.122	8	0.108
Likelihood Ratio Test	0.208	1	0.648

The next part of the analysis explores the potential role of mindfulness as a moderator in the knowledge → piecemeal/category-based processing framework proposed by Sujan (1985). Our second model is: Y = ß0 + ß1Mindfulness + ß2Knowledge + ß3(Mindfulness x Knowledge). Complete results for our second model, run for stress and weight control supplements, appear in Table 2. Surprisingly, for the stress product (results shown in Table 2, Panel A), the coefficients of all three independent variables are highly significant. The value of the coefficient for mindfulness is -9.15 (Wald stat. = 4.51, p = 0.034); for knowledge, 9.32 (Wald stat. = 6.14, p = 0.013); and for the interaction, -10.89 (Wald stat. = 4.41, p = 0.036). As shown previously in Table 1, mindfulness is found to be unrelated to the probability of category-based processing. Yet, when knowledge is added to the model, mindfulness becomes statistically related to processing. This effect appears only when knowledge is in the model. These results support H1. The significance of the interaction term in the model indicates the presence of the moderating effect of mindfulness on the relationship between knowledge and processing. Thus, H2 (and the relationships defined in H2a, b, c, and d) is supported. This interaction term will be further explored below and in Table 3.

For the weight control product, shown in Table 2, Panel B, all three independent variables are statistically unrelated to processing. The difference in findings for weight and stress control products is attributed to the difference in knowledge between the two products as discussed previously.

Table 2: Logistic Regression Results with Mindfulness, Knowledge, and Interaction

A. Stress Control Product

Predictor	***β***	***S.E.***	***Wald***	***Sig.***
Constant	7.84	3.14	6.22	0.013
Mindfulness	-9.15	4.31	4.51	0.034
Knowledge	9.32	3.76	6.14	0.013
Mindfulness x Knowledge	-10.89	5.19	4.41	0.036

	Chi-square	***df***	***Sig.***
Hosmer-Lemeshow Goodness-of-Fit	5.411	8	0.713
Likelihood Ratio Test	13.494	3	0.004

B. Weight Control Product

Predictor	***β***	***S.E.***	***Wald***	***Sig.***
Constant	3.22	2.08	2.39	0.122
Mindfulness	-3.36	2.88	1.36	0.244
Knowledge	3.92	2.85	1.89	0.109
Mindfulness x Knowledge	-4.07	3.96	1.06	0.304

	Chi-square	***df***	***Sig.***
Hosmer-Lemeshow Goodness-of-Fit	7.423	8	0.492
Likelihood Ratio Test	7.209	3	0.066

Next we further explore the results of our second logistic regression model by further investigation of the interaction term (Mindfulness x Knowledge). Tables 3 and 4 show the effect of knowledge and mindfulness, both operationalized as high/low factors, on the probability of category-based processing for stress and weight-control products, respectively. To create high/low groups for knowledge and mindfulness, total scores corresponding to knowledge of weight and stress products and mindfulness are split at the median and coded 0 (low) and 1 (high) to create low and high groups. The positive relationship between knowledge and likelihood of category-based processing is captured in Tables 3 and 4. Overall, 51.3% of the participants were engaged in category-based processing for the stress product as compared to 53.3% for the weight product. As previously mentioned, the participants were more knowledgeable about weight than stress products.

In Table 3 for the stress control product, 50.6% (90/178) of the high mindfulness subjects and 51.9% (95/183) of the low mindfulness subjects utilized category-based processing. The chi-square test of equal proportions indicates an insignificant

difference between the high and low mindfulness groups for the stress control product ($\chi^2 = 0.07$, 1 df, $p = 0.797$). Examining the effect of knowledge on processing for the stress control product reveals that among the high knowledge group, 59.5% (97/163) were engaged in category-based processing for the stress control product compared to 44.0% (88/198) for the low knowledge group. The chi-square test for equal proportions between the low and high knowledge groups (for the stress control product) yields $\chi^2 = 8.12$ (1 df, $p = 0.004$) indicating a significant difference between the groups. These results mirror a previous finding (Sujan, 1985) that as knowledge increases, the likelihood of category-based processing also increases. The moderating role of mindfulness is detected by examining the difference between high and low knowledge groups among the high and low mindfulness groups. Among the participants with a high level of mindfulness, the difference between high and low knowledge is reduced to 11.3% (56.2% - 44.9%) compared with the difference between the overall group (high and low knowledge is not distinguished by level of mindfulness) of 15.5% (59.5% - 44.0%), while the difference in the low mindfulness group increases to 23.5% (63.5% - 44.0%). This result clearly captures the moderating effect of mindfulness on the relationship between knowledge and processing. On the whole, results in Table 3 confirm what is reported in Table 2, Panel A. H2 is supported.

Table 3. Effect of knowledge (high/low) and mindfulness (high/low) on the probability of category-based processing – stress control product.

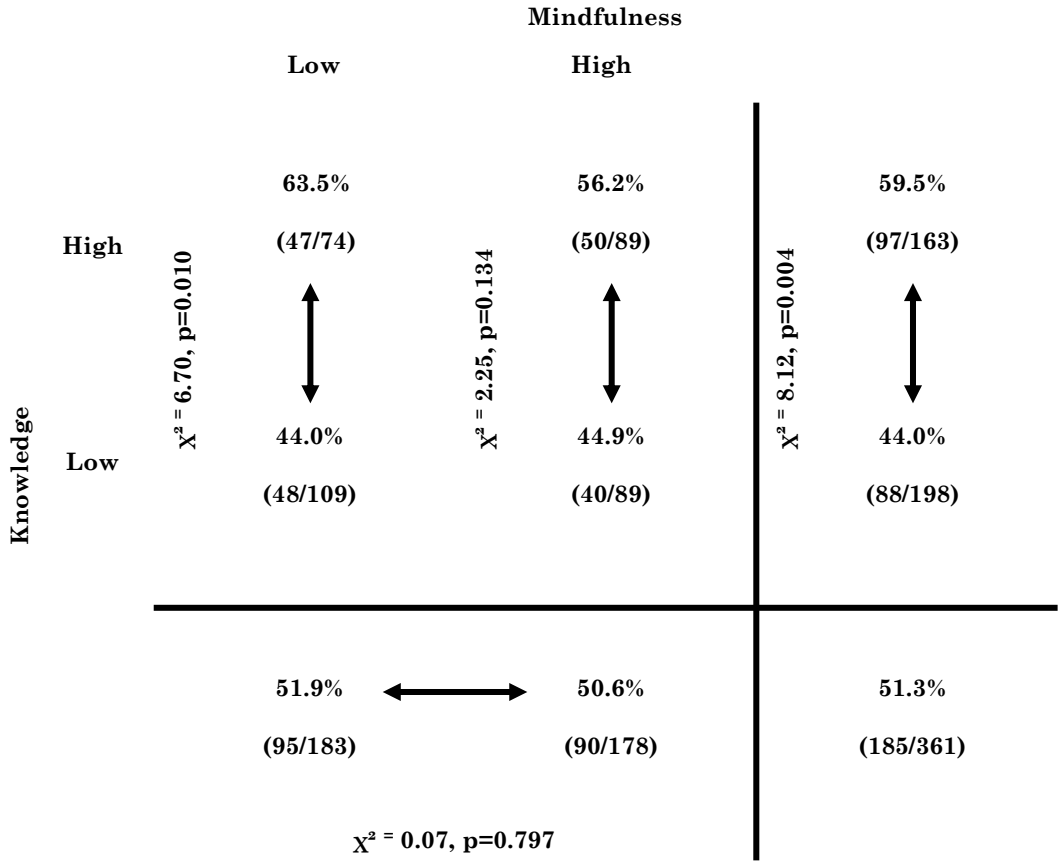
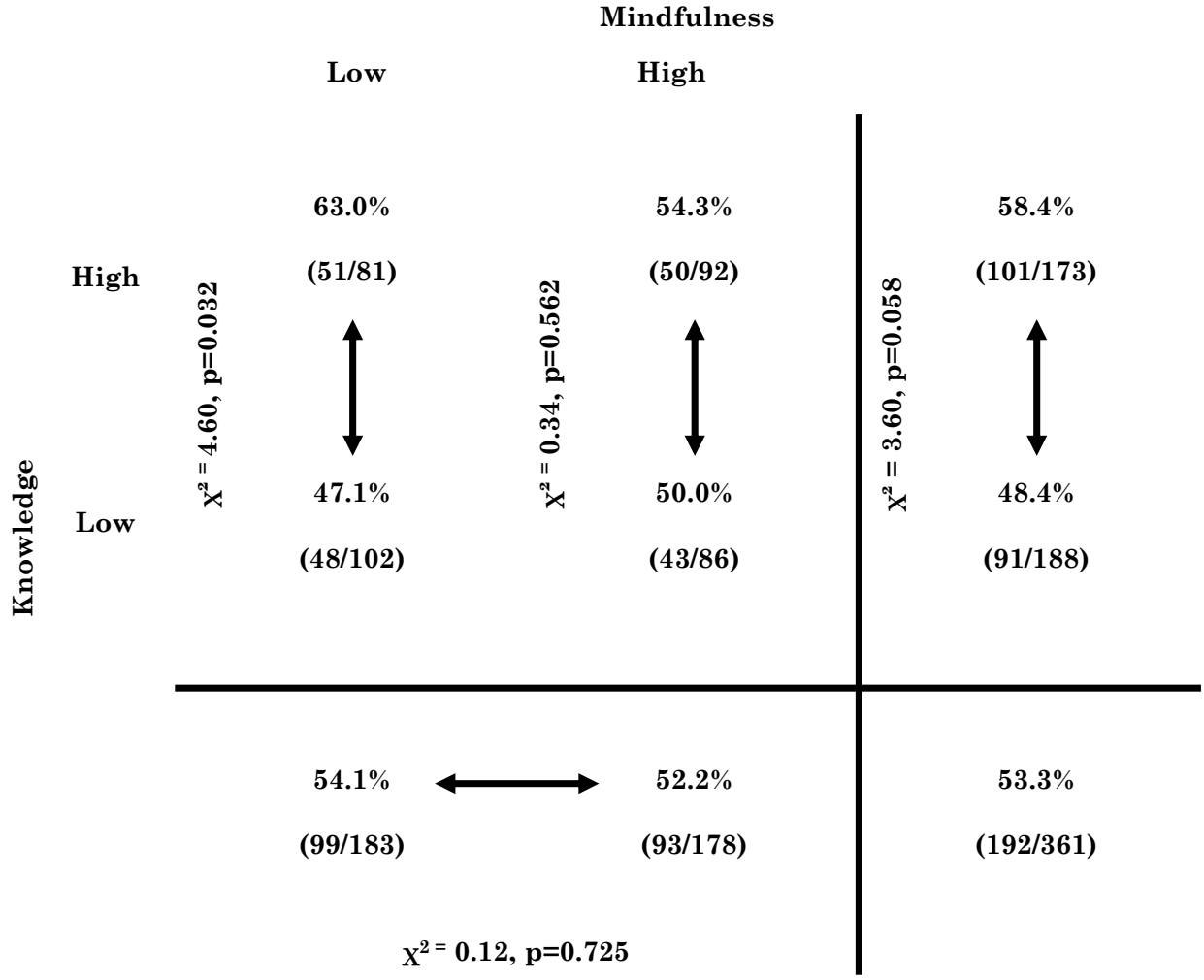


Table 4 presents the results for the weight control product. 52.2% (93/178) of the high mindfulness subjects and 54.1% (99/183) of the low mindfulness subjects engaged in category-based processing. No difference is seen between participants with low and high levels of mindfulness ($\chi^2 = 0.12$, 1 df, $p = 0.725$). The difference between the two knowledge groups is quite marginal [(58.4% (101/173) vs. 48.4% (91/188); $\chi^2 = 3.60$, 1 df, $p = 0.058$)]. Even though some evidence of a moderating effect for mindfulness is evident, the results are less convincing.

Table 4. Effect of knowledge (high/low) and mindfulness (high/low) on the probability of category-based processing – weight control product.



Discussion

In this study, we explore the role of mindfulness as an underlying factor in information processing for new supplements for weight and stress control. The mindfulness construct (Bodner and Langer, 2001) is of interest for this problem setting since mindful individuals have broader perspectives and are open to new information – two factors quite relevant to processing information about new products. Piecemeal and category-based processing theory (Fiske, 1982; Sujan, 1985; Pavelchak, 1989) is referenced to explore the role of the mindfulness construct in information processing. The mindfulness construct establishes that individuals who have a high propensity for mindfulness actively process new information (Langer and Moldoveanu, 2000; Bodner and Langer, 2001). Our first hypothesis addresses this implication by predicting an inverse relationship between the level of mindfulness and the probability of category-based processing; it is not supported. Next, we explore the interaction between knowledge and mindfulness.

Information-processing theory has established the relationship between knowledge and processing style (Sujan, 1985). Within this framework, we consider the interaction between individual knowledge and the degree of mindfulness. For the stress control product, mindfulness does have a moderating effect on the relationship between knowledge and the type of processing by the participants in the study. For results related to the weight control product, there is some indication of a moderation effect; however, the results are not statistically significant. We suspect that this result is related to the sample's high knowledge of weight control products. When consumers know little about a product, such as the stress control product in this study, mindfulness plays a larger role in information processing. Among better known products, the effect of mindfulness is subordinated by the effect of knowledge level.

We can conclude that when activated, mindfulness alone does not have a direct effect on an individual's processing style in terms of the probability of engaging in category-based processing. However, when the interaction between knowledge and mindfulness is considered, we support the prediction that those high in knowledge and mindfulness have a high probability of utilizing piecemeal rather than category-based processing. Most significantly, this interaction yields results that differ from those we would expect considering the relationship between knowledge and processing style alone. If only knowledge is considered, it is expected that those with a high level of knowledge will have a high probability of utilizing category-based processing (Sujan, 1985). This study, by incorporating the mindfulness construct, adds another dimension to our knowledge of the factors that affect processing style during new product evaluation.

Managerial Implications

Our results show that mindful individuals are more likely to use piecemeal processing regardless of their product category knowledge. As they process information, mindful individuals are more likely to perceive the innovation's benefits (Ross and Robertson, 1991; Moreau et al., 2001). Further, mindful consumers are less prone to influences that hinder acceptance of new products since they are more open to new information, create new categories, and address new information in a non-judgmental manner (Langer, 1989b; Langer and Moldoveanu, 2000; Bodner and Langer, 2001). Understanding the roles that mindfulness and product knowledge play in consumers' product evaluations provides insight into how marketers can leverage consumers' processing styles in order to develop more effective marketing materials such as advertisements and brochures. If piecemeal processing by mindful individuals is not supported, they may be forced to rely on categorical processing which may reduce the likelihood that the product is accepted (Ross and Robertson, 1991). The marketer may support piecemeal processing by providing options for obtaining detailed product information, to address mindful consumers, while also providing less detailed information for others. By not taking advantage of the tendency of knowledgeable, mindful individuals to utilize piecemeal processing through the design of their marketing materials, marketers may reduce the effectiveness of their marketing strategies. In addition, activating mindfulness by placing the product in a category that is new to the consumer, the probability of piecemeal-based processing by individuals is increased again yielding the benefits of this processing style.

Limitations and Future Research

The limitations of the present study offer opportunities for future research. The stress and weight-control products used as prompts in this study asked participants to consider a product category that could affect them personally. Future work presents the opportunity to assess if consideration of impersonal products affects the relationship between processing, mindfulness, and knowledge differently. It is possible that other individual characteristics, such as self-esteem, efficacy, or involvement affect the information processing-mindfulness relationship across different product category settings; future studies should consider the effect of additional individual factors. Extant research shows that individual characteristics, such as involvement, affect information processing across different media [e.g., Krugman (1965)]. Studying how one's propensity for mindfulness varies across media is an opportunity for future research. Further, mindfulness may contribute toward the understanding of newer, less-understood constructs in marketing such as engagement. Engagement research, when applied to consumer's online experience with a brand, studies factors which lead to the marketer's desired outcomes (Mollen and Wilson, 2010). Applying mindfulness to engagement research

may help further explain the cognitive factors which drive consumer engagement during the online experience. Finally, the focus of this research was limited to evaluation during the adoption decision process; the adoption decision was not measured. A future study considering information processing during evaluation and the adoption decision will broaden knowledge of the role of mindfulness during the adoption decision process.

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Author Information

Mary E. Schramm, PhD is an Assistant Professor of Marketing & Advertising at Quinnipiac University. Her prior experience includes biomedical marketing roles at several companies including Johnson & Johnson's Ethicon Division where she led teams responsible for product innovation and marketing. Dr. Schramm's research interests include new product development, legal and regulatory issues, and marketing strategy in the biomedical industry. Her work has been published in *Decision Support Systems* and the *Journal of Product Innovation Management*.

Michael Y. Hu, PhD is the Emeritus Bridgestone Chair in International Business at Kent State University. Prior to his tenure at Kent State, Dr. Hu was a manager in the marketing science division at AT&T Long Lines. He has published more than 150 journal articles in the areas of marketing, marketing research, international business, artificial neural networks, statistical process control, and financial management. His articles have appeared in the *Journal of Marketing Research,*

Marketing Letters, Journal of Business Research, Journal of International Business Studies, International Business Review, Financial Management, Annals of Operations Research, European Journal of Operational Research, Decision Sciences and other leading journals.