THE POWER OF AFFECTIVE RESPONSE AND COGNITIVE STRUCTURE IN PRODUCT-TRIAL ATTITUDE FORMATION

Jooyoung Kim and Jon D. Morris

ABSTRACT: Consumers' affective responses to and cognitive structures in thinking about a product, and the influence of these processes on the trial experience evaluation, are examined in experiments where product types (hedonic and functional) and involvements (low and high) are simultaneously manipulated. The results show that affective response overrode cognitive structure under all experimental conditions in forming product-trial attitudes (A_t), whereas the roles of affective response and cognitive structure were similar in product trial–based product attitude (A_p) formation. The implications of the varied roles of affective responses and cognitive structure in overarching models, and their roles in each experimental condition, are discussed.

"The joy of driving isn't something you can get from a catalog. . . . Quality and versatility can't be experienced through TV commercials," said Alain Visser, head of European marketing at Opel (a European subsidiary of General Motors Corp.), when General Motors launched a sales promotion campaign in 2005, for which about 35,000 test cars were made available for 3-day tests in approximately 40 European countries (Bulman 2005). In the United States, about 56% of marketing dollars were spent on consumer and trade sales promotion as opposed to advertising (37%) in 2002 (Duncan 2004). Sales promotions, such as 30-day free trial offers from many software companies, are intended to intensify consumers' behavioral responses.

One of the key objectives of sales promotion is to provide product trials: If consumers have a chance to use products before purchasing them, they can form more accurate attitudes toward them. Research has shown that attitudes formed from direct experiences are more closely related to brand belief than those formed from indirect experiences such as advertising (e.g., Fazio and Zanna 1978; Smith 1993; Smith and Swinyard 1988). Recent studies (e.g., Kempf and Laczniak 2001) have discovered how the interaction of advertising and product trial affects the formation of product attitude.

How do consumers form their attitudes from product trials? Traditional views of attitude (e.g., Zajonc and Markus 1982) indicate that a product-trial attitude may be formed via three evaluative bases: cognitive, behavioral, and affective. The literature suggests that although attitudes can be based on all three elements, the combinatory mechanism of the three components can vary (Petty, DeSteno, and Rucker 2001). Thus, investigating how differently affective and cognitive paths contribute to the formation of overall product-trial attitudes under various purchasing conditions is essential in light of the wide practice of product trial–related sales promotion in marketing. By knowing precisely how consumers process information on their product-trial experience, marketers would be able to refine their strategy by adjustiug the cognitive or affective messages of the sales promotion. Although a considerable number of studies have examined product-trial attitude formation, researchers are still uncertain about the combinatory mechanism of affect and cognition in product-trial attitude formation, especially when various product types and consumer situations are under consideration.

The purpose of this study is to better understand how a product trial influences product-attitude formation, focusing on individuals' affective responses to and cognitive structures in their thinking about the products tried under various conditions of product type and consumer involvement. Manipulating both product and consumer conditions enables us to understand the processing phenomena more rigorously and precisely, which in turn can help marketers fine-tune their sales promotion messages.

Several valuable studies have examined the product-trial attitude formation process (e.g., Kempf 1999; Kempf and Laczniak 2001; Kempf and Smith 1998; Park and Kim 2003). The present study is primarily inspired by Kempf's (1999) work and is a significant extension of Park and Kim's (2003) study. Following the basic approach of Kempf's study, we added important moderating conditions that have not been actively investigated in previous product-trial studies.

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THEORIES AND HYPOTHESES

One of the marketing tactics that offers consumers a practical a priori experience that closely resembles actual product usage, whether the product is intended for the consumer himself or for someone else, is the product trial. Product trials can provide information that cannot usually be obtained from other types of marketing efforts. During product trials, consumers can use all five senses to touch, smell, listen, taste, and directly see how well a product suits them. Such information might be unique as well as influential. Consumer economics literature suggests that the information acquired through a product trial can have significant effects on the formation of consumer expectations and demand (Goering 1985). More generally, the nature of a person's first experience with a new domain has been found to influence how subsequent information is processed and integrated into existing information (Anderson, Kline, and Beasley 1979). Therefore, finding the underlying mechanism of the product-trial evaluation process should help marketers strategically fine-tune the experiential components of product-trial sales promotions.

Scholars have investigated the different roles of affective responses or cognitive structure in the evaluation process. One set of studies shows that affective responses are important outcomes of consumption that relate strongly to other postconsumption states, such as satisfaction (Havlena and Holbrook 1986; Mano and Oliver 1993; Richins 1997). A second set of studies argues that cognitive structure formed from product trials is important to the brand attitude formation (Marks and Kamins 1988; Smith 1993). Some research has combined the roles of both affect and cognition in the product-trial evaluation process (Kempf 1999; Kempf and Smith 1998). Kempf (1999) conducted an experiment that measured affective response and cognitive structure immediately following a trial experience. The research compared both kinds of responses and the product evaluation processes across two types of products, one hedonic and one functional. Research into these two types of products has often been conducted because marketing information for different types of products (especially comparing hedonic and functional products) can be processed differently by consumers (Batra and Ahtola 1990; Hoch and Ha 1986; Kempf and Smith 1998). Hedonic products are those consumed primarily for affective or sensory gratification purposes, whereas functional products deliver more cognitively oriented benefits (Woods 1960). Kempf (1999) originally hypothesized that trial evaluations of hedonic products are largely driven by affect, whereas those of functional products are more influenced by cognition. Kempf's study, however, showed that trial evaluations of functional products are influenced by both affective responses and cognitive structure processes, while hedonic product evaluation is influenced exclusively by the affective responses. We propose that this somewhat unpredicted result of Kempf's study might be due to the much stronger role of affect in product trial situations. Several recent studies have shown that, when compared to cognition, affect is more predictive of the number and valence of people's thoughts toward objects under most conditions (Pham et al. 2001), and affect has a more direct, independent, strong, and significant influence on attitude than cognition (e.g., Bodur, Brinberg, and Coupey 2000; Edell and Burke 1987; Morris et al. 2002). This might account for the significant role of affect in both hedonic and functional product evaluation.

Consumer involvement can also significantly moderate the formation of product-trial attitude. Batra and Stephens (1994) suggested that the role of affective response and cognitive structure in shaping brand attitudes changes under different conditions. They argued that affective responses will be more important as determinants of brand attitudes in low-involvement situations than in high-involvement situations. In the same vein, Greenwald and Leavitt (1984) argued that cognitive response–based persuasion effects will dominate affective response–based persuasion effects in high-involvement situations.

Some interesting situations that arise are (1) when a consumer tries to evaluate a hedonic product in a high-involvement situation, or (2) when a consumer evaluates a functional product in a low-involvement situation. Although these two questions are vital for marketers, we did not find any previous literature that provides satisfactory insights into the way consumers would process their product-trial information under those circumstances. Some of the studies we mentioned previously provide some insight, but not enough to predict consumer behavior in the conditions in which we are interested. For instance, Kempf (1999) only examined the moderating effect of product types (i.e., hedonic versus functional) without involvement manipulation. Batra and Stephens (1994) neither directly studied product trial nor controlled for different product types. The study by Pham et al. (2001) was useful, but did not investigate the product-trial evaluation process. One might suggest that some predictions are still possible based on past findings in the literature; however, such predictions would be either indirect or theoretically incomplete and, therefore, inconsistent. For example, in a situation when a consumer tries a hedonic product in a high-involvement situation, Kempf's (1999) limited prediction would be that affect would be the main influencer, but Batra and Stephens (1994) might also predict in the opposite direction—that cognition would dominate the evaluation process because it is a high-involvement purchase situation. Pham et al.'s (2001) overall prediction, however, would be that the affective response might be a dominant predictor

TABLE 1
Dominant Influencers Inferred from Different Studies

	Dominant influencers		
Conditions	**Pham et al. (2001)**	**Kempf (1999)**	**Batra and Stephens (1994)**
Hedonic–low involvement	Affect	Affect (Hedonic product)	Affect (Low involvement)
Functional–low involvement	Affect	Cognition (Functional product)	Affect (Low involvement)
Hedonic–high involvement	Affect	Affect (Hedonic product)	Cognition (High involvement)
Functional–high involvement	Affect	Cognition (Functional product)	Cognition (High involvement)

in any condition. Table 1 shows the various predictions that each study might suggest for each combination of product type and involvement level.

Based on the findings shown in Table 1, one can predict that the hedonic–low involvement (HL) condition will be exclusively influenced by affective responses because most past literature supports such a prediction. On the other hand, one could also cautiously anticipate that the functional–high involvement (FH) condition may be dominated more by cognition than affect because many past studies predict cognition as a dominant influencer for functional product evaluations and under highly involved situations. Accordingly, we put forth four hypotheses to suggest that whereas affective responses are a stronger predictor than cognitive structure in most involvement conditions (based on Pham et al. 2001), the relative importance of cognition can vary, depending on the involvement (based on Batra and Stephens 1994; Greenwald and Leavitt 1984) and product-type conditions.

H1: For the evaluation of a hedonic product in a low-involvement condition (HL condition), the effect of affective responses on trial evaluations will be greater than cognitive structures.

H2: For the evaluation of a functional product in a low-involvement condition (FL condition), the effect of affective responses on trial evaluations will be greater than cognitive structures.

H3: For the evaluation of a hedonic product in a high-involvement condition (HH condition), the effect of affective responses on trial evaluations will be greater than cognitive structures.

H4: For the evaluation of a functional product in a high-involvement condition (FH condition), the effect of cognitive structure on trial evaluations will be greater than affective responses.

OVERVIEW OF STUDY METHODS

Two pretests and one main experiment were conducted. The purpose of the first pretest was to determine the attributes that consumers would look for when evaluating the software products used in this study. The second pretest was a manipulation precheck of involvement. Details about the specific prodnct selections and the involvement manipulations are discussed later. Samples for the pretests and the main experiment were college students in a large U.S. university. Although our sampling criteria might limit the generalization of the results to other populations, as Kempf (1999) also argued, students may indeed be an appropriate sample for the products (i.e., computer software programs) used in our study because they are a frequent target market for software companies.

In the main experiment, participants were randomly assigned to four experiment cells: hedonic–low involvement, hedonic–high involvement, functional–low involvement, and functional–high involvement. The functional product selected for the experiments was a grammar-checking program, and the hedonic product was a computer game program. These product types were also used in Kempf's 1999 study after extensive pretests that showed that they were different in terms of their hedonic and functional nature, but that they would be similar in all other aspects that might have affected trial processing. In the present study, the experimental procedure was identical across the conditions. All participants were given a self-directed trial of one of the two software products, after which they answered a series of questions. Detailed written instructions on how to run the software were included in the questionnaire packet. The constructs measured after the trials included affective responses to the product tried, cognitive structure about the product tried, overall trial evaluation (i.e., product-trial attitude), and overall product attitude (i.e., product trial–based product attitude). To check for possible confounding, perceived trial diagnosticity and the time spent on the trial experiences were measured. Furthermore, involvement and a question regarding the participants' perceptions of the hedonic or functional nature of the product were measured for the manipulation check.

Analysis of the main experiment consisted of two steps. First, using structural equation modeling (SEM), we analyzed the pooled data of all manipulation conditions to test an overarching model that compared the overall influence of affective responses (to the product tried) and cognitive structure (about the product tried) on product-trial attitude and their (direct and indirect) influences on the formation of product attitude. Second, multiple regression analyses were conducted to find the specific roles and strengths of the affective responses and cognitive structure for every experimental condition.

MEASUREMENT INSTRUMENTS

Perceived Diagnosticity

As a confound check, overall product-level trial diagnosticity was assessed by asking participants, "Overall, how helpful would you rate the trial experience you just had in judging the quality and performance of the ___ software?" Participants answered on a 1 to 9 scale ranging from "not helpful at all" to "extremely helpful."

Affective Responses to Product After Trial

Affective responses to the products tried were measured using AdSAM, a nonverbal measurement of affective response that uses the Self-Assessment Manikin known as SAM (Lang 1980). SAM measures pleasure, arousal, and dominance, the three dimensions of the affective responses to one's environment (Mehrabian and Russell 1974), which has been adopted for analyzing marketing, attributes, brand names, and communication styles across cultures (Morris et al. 2002). Although Kempf's study used only the pleasure and arousal dimensions (based on Mano and Oliver's 1993 consumption experience study), we used all three dimensions of affective response because they are all considered to be distinct and reliable affective dimensions (Havlena and Holbrook 1986; Holbrook et al. 1984; Mehrabian and Russell 1974).

Cognitive Structure About the Product After Trial

As in past studies (Kempf 1999; Marks and Kamins 1988; Smith 1993; Smith and Swinyard 1983, 1988), Fishbein and Ajzen's (1975), expectancy value measures ($\Sigma B_i E_i$), which include attribute-level brand beliefs (B_i) and attribute evaluations (E_i), were used to measure cognitive structure about the product tried. Although this operational definition may not completely capture the whole concept of cognitive structure, its theoretical and practical efficacy in capturing cognitive structure has been reported in many past studies (e.g., Kempf and Smith 1998). The salient attributes for each product were determined by a free-elicitation technique, as recommended by Fishbein and Ajzen (1975). Product-related attribute beliefs (B_i's) were measured by asking participants, using a nine-point scale ranging from "zero likelihood" to "completely certain," "How likely do you believe it is that ____ software has attribute __?" (Fishbein and Ajzen 1975). The evaluative component of the Fishbein model (E_i) was measured by asking participants how they evaluate the importance of each salient attribute. Although Fishbein's evaluative component scale typically ranges from bad (–4) to good (+4), we used the adequacy-importance scale (e.g., Antonides 1996; Sheth and Talarzyk 1972) ranging from "very unimportant" (1) to "very important" (9) because the attributes that the participants evaluated on our questionnaire were prestudied positive attributes that the participants might look for when evaluating the products. Accordingly, using an evaluative scale with a negative range (e.g., –4) for positively perceived attributes would be inappropriate. For example, the importance of the "ease of use" attribute of a software program should not be evaluated negatively but could be evaluated as low as 1 (i.e., very little importance).

Overall Product-Trial Attitude (A_p)

The participants' evaluation of the trial was measured using a three-item semantic differential scale. The question was, "Overall, how would you rate this trial experience?" The endpoints were labeled bad/good, unfavorable/favorable, and dislike/like.

Product Trial–Based Product Attitude (A_p)

Similar to many studies (e.g., Kempf 1999; MacKenzie and Lutz 1989; Smith 1993), product attitude (A_p) in the main experiment was measured by a three-item semantic differential scale: bad/good, unpleasant/pleasant, unfavorable/favorable. Although using the similar scale for the product-trial attitude (A_t) and product trial–based product attitude (A_p) measure might seem to diminish the discriminant validity between the measures of the two constructs, the literature shows that, as intended, they measure product-trial attitude and product attitude as separate constructs while correlating them, indicating the importance of the A_t construct in A_p formation (Kempf 1999).

Involvement Manipulation: Purchase-Decision Involvement (PDI)

Although there are several involvement objects (e.g., message, product, situation; see Bearden and Netemeyer 1999 for a detailed review) studied in the literature, the behavioral or situational involvement such as purchase decision or purchasing involvement (Laurent and Kapferer 1985; Mittal 1989; Slama and Tashchian 1985) can explain the relationship between consumer involvements and actual behaviors. For the manipulation of the involvement conditions, we chose one of the most widely used situational purchase involvement measures: purchase-decision involvement (PDI), defined as the amount of interest and concern that a consumer brings to bear on a purchase-decision task (Mittal 1989). In this study, manipulation of PDI was conducted by giving participants different hypothetical purchase situations. The different PDI situations for the four experimental conditions are listed in Appendix 1. The PDI scale items are listed in Appendix 2.

PRETEST RESULTS

Pretest 1

Forty-three college students participated in Pretest 1, from which we determined and collected salient attributes for each product. Participants were asked to write down the attributes that would be important to them if they were buying (1) a grammar-checking program or (2) a computer game. Table 2 shows the five most frequently mentioned salient attributes that the participants considered important.

TABLE 2
Salient Attributes of Software

	Percent*
Grammar checker	
Accurate correction	27.91
Ease of use	23.26
Wide options of correction	20.93
Dictionary/thesaurus	18.60
Speed	13.95
Computer game	
Graphics	32.56
Easy to play	18.60
Compatibility	16.28
Skill levels	11.63
Speed	11.63

* Percentage of respondents (n = 43).

Pretest 2

The second pretest was conducted using a small number of participants ($n = 17$) and was used to precheck the PDI manipulation before the main experiment. Analysis of variance (ANOVA) showed significant differences between the PDI conditions for each product: mean difference of high and low PDI for the computer game = −2.5208, $F(1, 30) = 23.627$, $p < .001$; for the grammar checker = −1.895, $F(1, 30) = 9.954$, $p = .004$. This manipulation check was repeated with a larger sample size in the main study.

PROCEDURES AND RESULTS OF MAIN STUDY

One hundred twenty-five college students participated in the computer lab experiments employing a 2 × 2 design (two products and two PDI conditions). Randomly selected from them, 32 participants were assigned to the computer game in the low PDI experiment cell (HL condition), 30 participants to the grammar checker in the low PDI cell (FL condition), 31 participants to the computer game in the high PDI cell (HH condition), and 32 participants to the grammar checker in the high PDI cell (FH condition). For our SEM purposes, this sample size satisfies the minimum sample size of 100 to 150 for the maximum likelihood estimation method (Ding and Harlow 1995). In addition, for the multiple regressions for each cell, our sample size allowed eight observations for each independent variable per experiment cell, which is acceptable given the common minimum ratio of 5 to 1 (Hair et al. 1998). All experiments were conducted in a computer lab, where participants individually tried their assigned software for a maximum of 20 minutes. The computer game and the grammar-checker program were obtained from a demo-software download Web site (www.cnet.com). Both programs had been released less than one month before the time of the experiment. The newness of both pieces of software excluded any possible confounding effect due to prior attitude or outdated software technology.

Manipulation Checks

To verify the significant difference in perception of the products' functional versus hedonic nature, participants were asked the following question: "Would you characterize this software as primarily a functional product or an entertainment/enjoyable product?" Using a nine-point scale, 1 was "primarily for functional use" and 9 was "primarily for entertainment use." As expected, a significant difference was found, $F(1, 123) = 380.97$, $p < .001$. Participants perceived the grammar checker as a functional product ($M = 2.14$, $SD = 1.52$) and the game as a hedonic product ($M = 7.68$, $SD = 1.64$).

As expected from Pretest 2, the main experiment also showed that the participants perceived the two PDI situations (low versus high) in a significantly different way: For the computer game, high PDI mean = 7.016, low PDI mean = 5.349, mean difference = 1.667, $F(1, 61) = 12.525$, $p = .001$; for the grammar checker, high PDI mean = 7.229, low PDI mean = 5.444, mean difference = 1.784, $F(1, 60) = 21.767$, $p < .001$.

Confound Checks

Participants perceived the trials of both the computer game and the grammar checker to be relatively diagnostic. The confound check on the perceived diagnosticity was important to ensure that the trials of the two products did not differ considerably with respect to the participants' acquired information value from the trials, given that past research has indicated that the level of diagnosticity influences trial processing (Hoch and Ha 1986; Kempf and Smith 1998).

The mean difference of perceived diagnosticity levels (on a 1 to 9 scale) for the computer game and the grammar checker in the low PDI were .5917: mean for the game = 6.62, mean for the grammar checker = 6.03; $F(1, 60)$ 2.383, p = .128. The mean difference of perceived diagnosticity levels (on a 1 to 9 scale) for the computer game and the grammar checker in the high PDI were .4516: mean for the game = 6.61, mean for the grammar checker = 5.99; $F(1, 61) = 1.86, p = .177$.

The time spent on the trial experience was also measured to assure that participants in one product or involvement group did not spend significantly more time on the trial than the other, again to prevent any possible confound effect from time difference. An ANOVA showed no significant difference between each group—$F(3, 121) = 1.646, p = .182$; mean time for the computer game in the low PDI = 10.875 minutes, mean time for the computer game in the high PDI = 12.645 minutes; mean time for the grammar checker in the low PDI = 11.066 minutes, mean time for the grammar checker in the high PDI = 12.343 minutes—indicating that the participants in each group spent a fairly equal amount of time on the trials.

In addition, although the software programs were very new on the market, participants were asked about any possible prior exposure to the products used in the experiment. All participants responded that they had not heard of the products before this experiment.

Overall Relationships Between Constructs

To determine the overall relationship structure of the four latent variables (i.e., affective responses, cognitive structure, product-trial attitude [A_t], and product attitude [A_p]), SEM was conducted. For the purpose of SEM analysis, the expectancy value, representing cognitive structure for a product tried, was treated as a latent variable consisting of each attribute's $B \times E$ for each item.

Assumption Check

Prior to the analysis, several underlying assumptions for SEM were checked. The underlying assumptions for SEM analysis are similar to those for factor analysis: There should be an adequate variable-to-sample ratio, normality, linearity, no extreme multicollinearity, and sampling adequacy (Hair et al. 1998). The variable-to-sample ratio was 1 to 10, which satisfies the minimum (Hair et al. 1998). Kaiser-Meyer-Olkin's measure of sampling adequacy was .91, and Bartlett's test of sphericity index also showed a significant p value at the .01 significance level, indicating substantial evidence for the planned factoring of the 13 items used in the study (Kaiser 1974). The normality assumption was satisfied because all skewness and kurtosis values associated with each item were within the range of ± 1.96 ($-.84 <$ all skewness values $< -.12$, $-.90 <$ all kurtosis values $< .52$).

Reliability and Validity

Reliability and validity were evaluated using the combined data from all four cells. Results show that all the scales were reliable (Cronbach's α for affective responses = .83, cognitive structure = .85, product-trial attitude = .97, product attitude = .94). Discriminant validity was evaluated using an approach suggested by Joreskog (1971). The test compared two estimated constructs by performing a χ^2 difference test on the values obtained for the constrained (correlation between the two is 1) and unconstrained models (correlation is freed to be estimated). Bagozzi and Phillips (1982) asserted that a significantly different χ^2 value between the unconstrained and constrained correlation models indicates that discriminant validity has been achieved. The significance of the χ^2 statistic was assessed by comparison with a critical χ^2 value of 3.84 ($df = 1$). The results indicate that all pairs had significant discriminant validity (χ^2 differences ranged from 6.2 to 42.2 at $df = 1$). In addition, all factor loadings between items and their constructs were from .72 to .98 and significant, indicating convergent validity.

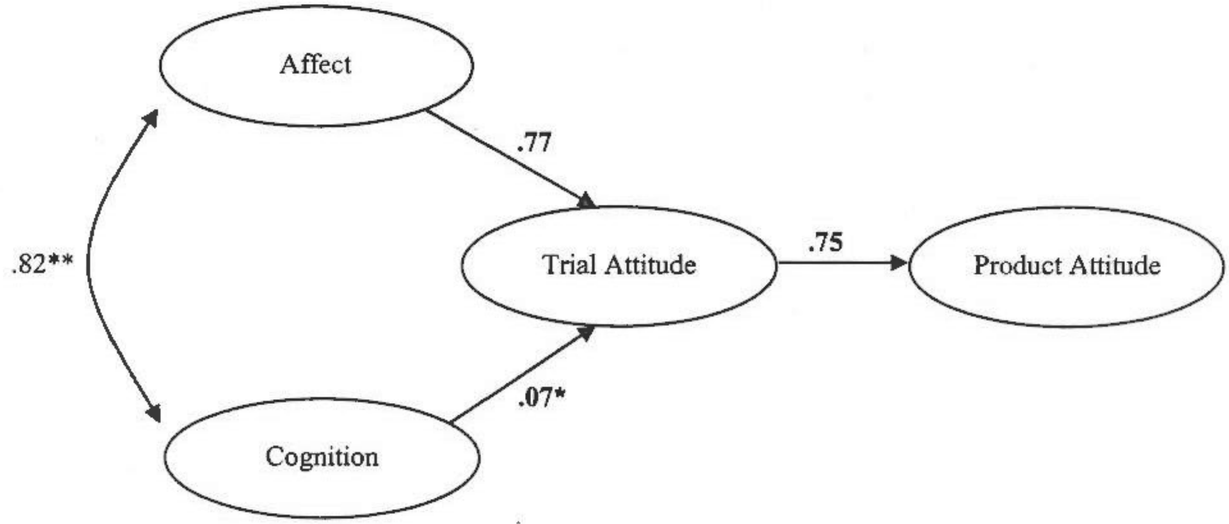
Confirmatory Factor Analysis (CFA)

A confirmatory factor analysis was conducted on all the items for all the constructs with all the combined data. Since our sample size was not large enough for all traditional goodness-of-fit indices, Hu and Bentler's (1998) recommended fit indices, which are less sensitive to sample size (i.e., SRMR [standardized root mean square residual], TLI [Tucker-Lewis index], CFI [comparative fit index], IFI [incremental fit index], and RMSEA [root mean square residual]), were used as criteria for model-fit determination. All examined goodness-of-fit indices were satisfactory ($\chi^2 = 126.0$, SRMR = .04, TLI = .95; CFI = .96; IFI = .96; RMSEA = .09), demonstrating that the model was statistically plausible and stable.

Structural Equation Modeling (SEM)

SEM was performed to find overall relationships among the constructs. We tested two models. The first model analyzed

FIGURE 1
Overall Relationships Among Constructs



* Not significant at .05 level.
** Residual covariance.

all four latent variables (affective response, cognitive structure, product-trial attitude [A_t], and product attitude [A_p]). Because A_t is modeled as a direct consequence of affective response and cognitive structure in the first model, our second model excluded A_t and tested the direct roles of affective response and cognitive structure in the formation of product attitude (A_p). This two-model approach enabled us to compare the roles of affective response and cognitive structure in A_t and A_p formation, respectively.

The first model included three paths (affective response → product-trial attitude, cognitive structure → product-trial attitude, and product-trial attitude → product attitude). All paths showed significant path coefficients (at .a 05 level) but poor model fits (χ^2 = 260.0, SRMR = .29, TLI = .85; CFI = .88; IFI = .88; RMSEA = .16). Examination of the modification index suggested that the two exogenous constructs, affective response and cognitive structure, might require a residual covariance. Accordingly, our respecified final model (see Figure 1) showed significantly increased and acceptable model fits (χ^2 = 167.5, SRMR = .10, TLI = .92; CFI = .93; IFI = .94; RMSEA = .10). As shown in Figure 1, the model indicates that affective response dominantly influences product-trial attitude, and cognitive structure has no significant (p = .61) influence on product-trial attitude. In addition, standardized indirect effects of affective response and cognitive structure on product attitude were .58 and .06, respectively.

Our second model with two paths (affective response → product attitude, cognitive structure → product attitude) yielded an interesting result. While the first model (Figure 1) showed a stronger effect for affective response and a null effect for cognitive structure on A_t formation, the second model (χ^2 = 85.77, SRMR = .05, TLI = .93; CFI = .95; IFI = .95; RMSEA = .11) indicated that two exogenous constructs have very comparable influences on A_p formation when no A_t is considered. The path coefficient of affect–A_p was .38 (p < .001), and the path coefficient of cognition–A_p was .49 (p = .005).

Our findings from the two models imply that while consumers may rely on their affective response and cognitive structure comparably in the formation of final product attitude, affective response has a much stronger influence on the formation of product-trial attitude, as we had hypothesized.

Hypothesis Testing

In addition to our SEM models with the pooled data (which clearly demonstrated a much stronger influence of affective response on product-trial attitude formation), individual hypothesis tests were conducted for each experiment cell to find any differences across conditions. Using multiple regression analyses, the product-trial attitude measure was regressed on its independent variables: arousal, pleasure, dominance, and expectancy value from product attributes (ΣB_iE_i). Separate regression equations were estimated for all four experimental conditions.

Regression equations with standardized coefficients (shown in Table 3) show that, for the most part, the hypotheses were supported. H1 was supported, because for the hedonic product in a low-involvement situation, the only significant predictor of trial evaluation was "pleasure," not the cognitive structure for the product attributes (ΣB_iE_i, the cognitive structure about the product resulting from the trial). As expected, compared with

TABLE 3
Multiple Regression Results of Product-Trial Attitude (A_t) Formation

Conditions	Dependent variable	β coefficients of independent variables				R^2, F
		Arousal	Pleasure	Dominance	$\Sigma B_i E_i$	
HL	A_t	.23	.42**	0	.27	.53, 7.56***
FL	A_t	.23	.10	.32**	.39**	.65, 11.46***
HH	A_t	.26*	.58**	−.13	.24	.73, 17.85***
FH	A_t	−.03	.41	.10	.19	.39, 4.24***

Notes: HL = hedonic product in a low-involvement condition; FL = functional product in a low-involvement condition; HH = hedonic product in a high-involvement condition; FH = functional product in a high-involvement condition.

* $p < .1$.

** $p < .05$.

*** $p < .01$.

cognition, the affective response was significantly more effectual in driving the participants' trial process when the product was hedonic in nature and the situation was low involvement.

For H2, we found that participants experiencing a trial of a functional product under a low-involvement situation tended to focus on both affective responses and cognitive structure toward the product. The difference in coefficient size between the two significant variables was very minimal (.07), however. An interesting point is that along with the cognitive structure, "dominance" was the only affective dimension that significantly influenced the participants' trial evaluation, indicating that when consumers form a product-trial attitude in this situation, they may focus on their feelings of "being in control" rather than on a feeling of pleasure or arousal associated with the experience. This finding is consistent with Mehrabian and Russell's (1974) description of dominance as an individual's feeling of being unrestricted or of having freedom to act in a variety of ways. They also argued that the more intense, ordered, and powerful stimuli are associated with a submissive feeling (i.e., negative extreme of dominance) (Mehrabian and Russell 1974). Because the experimental environment of this cell was a low-involvement functional product purchase (less intense, less ordered, and less powerful in nature), participants might have felt more freedom of action, possibly causing dominance to be a major part of their product-trial attitude formation.

H3 was supported, because for the hedonic product in a high-involvement situation, the only significant predictors of trial evaluation were affective responses. For the computer game, the cognitive structure ($\Sigma B_i E_i$) did not significantly influence the trial evaluation ($p > .10$); however, pleasure (at $p < .01$) and arousal (at $p = .06$) significantly influenced the trial evaluations for the hedonic products. This result shows that consumer decisions could be affect-driven even in high-involvement situations, which may conflict with Greenwald and Leavitt's (1984) findings.

H4 was not supported, because all the coefficients were not significant. A sequential search method (i.e., the stepwise method) was then used to examine the contribution of each independent variable to the regression model (Hair et al. 1998). The stepwise method showed that pleasure was added first to the regression model ($R^2 = .356$, $\beta = .59$, $t = 4.07$, $p < .001$), but that the other variables were excluded due to the lack of further contributions to the model. Since the product was functional in nature and the involvement was high, this result inversely shows that affect (in this case, pleasure) drove the trial evaluation process more than cognition, even in a situation that seemed so highly cognition-oriented.

When processed differently, our results imply that involvement can moderate the trial experience, as shown in the regression equations of the hypothesis tests. For example, the grammar checker in the low PDI showed "dominance" and the "cognitive structure" as influential variables, but showed only "pleasure" in high PDI.

In addition to the hypothesis tests, we performed another set of multiple regression analyses in which the four independent variables were regressed on product attitude (A_p). This test was done to compare the contribution of each variable on the prediction of product attitude. The results (shown in Table 4) enabled us to compare the size/significance of variable contributions across A_t and A_p regressions. Overall, as found in our SEM analysis, product-attitude formation was comparably influenced by affective response and cognitive structure. For the low-involvement conditions (HL and FL), the effects of affective response and cognitive structure were well balanced. On the other hand, affective response was the only significant influencer of A_p under the hedonic high-involvement (HH)

TABLE 4
Multiple Regression Results of Product-Attitude (A_p) Formation

Conditions	Dependent variable	β coefficients of independent variables: Arousal	Pleasure	Dominance	ΣB_iE_i	R^2, F
HL	A_p	.17	.32*	.09	.37**	.54, 7.76***
FL	A_p	.05	.37*	.07	.45**	.64, 11.17***
HH	A_p	.14	.35*	.33*	.14	.68, 14.09***
FH	A_p	.16	.31	–.02	.47**	.67, 13.49***

Notes: HL = hedonic product in a low-involvement condition; FL = functional product in a low-involvement condition; HH = hedonic product in a high-involvement condition; FH = functional product in a high-involvement condition.

* $p < .1$.

** $p < .05$.

*** $p < .01$.

condition, and cognitive structure was the only effective predictor of A_p for the FH condition.

IMPLICATIONS

We synthesized past findings in the literature regarding cognitive structure and affective responses to products tried across product types and different involvement situations. We showed that affective responses play significant roles in the formation of product-trial attitudes under all circumstances studied in this research (HL: hedonic–low involvement; FL: functional–low involvement; HH: hedonic–high involvement; FH: functional–high involvement). In addition, compared with past literature, we did not find any considerably distinctive role of affect or cognition in the product-trial attitude (A_t) formation across the different product types (i.e., functional and hedonic) when the involvement was manipulated. This result supports Pham et al.'s (2001) study that showed that affects are more stable and consistent across individuals and more predictive of the number and valence of people's thoughts. In addition, although Kempf's study supported Mano and Oliver's (1993) study (which suggests that arousal is significantly related to hedonic evaluations of a product), our results indicate that arousal played a less significant and distinctive role in product-trial attitude formation. Rather, our results suggest that "pleasure" plays a more important role in both product-trial (A_t) and product-attitude (A_p) formation across all conditions. This finding is significant for marketers of all types of products, especially functional products, which have normally been regarded as being much more cognitively oriented.

On the other hand (compared with the results of A_t formation conditions), we found more balanced roles of affective response and cognitive structure in A_p formation under low-involvement conditions. Under the high-involvement conditions, however, hedonic products were only influenced by affective response (i.e., pleasure), whereas cognitive structure was the only influencer for functional products.

Taken together, our results suggest that marketers should emphasize the affective dimension of product-trial sales promotion more than the cognition-related dimension (in HL, FL, HH, and FH conditions) to generate a good product-trial attitude (A_t). When a consumer tries out a product before purchasing, the overall feeling from the product-trial experience (whether the product is functional or hedonic, and whether the situation is highly involving or less involving) might be more important in product-trial attitude (A_t) formation (see Figure 1 and Table 3). Our study also suggests that it is important to provide a balance of affective and cognitive brand benefits in low-involvement conditions (i.e., HL and FL) to facilitate the formation of a good product attitude (A_p). Under high-involvement conditions (i.e., HH and FH), however, as shown in Table 4, affective benefits should be highlighted more for hedonic products, and cognitive benefits are more important for functional products. For example, in purchasing a perfume for one's fiancée (HH: a highly involving hedonic purchase), the consumer might be better persuaded by emotional messages that emphasize emotional benefits (e.g., pleasant scent, aesthetic package, etc.). When one tries to purchase a black-and-white laser printer for his office (FH: a highly involving functional purchase), he might be better convinced by cognitive messages that focus on functional benefits (e.g., price, warranty, functions, mechanical reliability, etc.) throughout his purchase-decision process, although emotional experiences (e.g., pleasant feelings from a nice design, tactile impression of exterior, quietness of printing noise, etc.) might be equally or more important during the product-trial experience.

Some limitations should be noted. First, the results might not generalize to product types other than computer software or the particular type of software used in this study. Future studies could benefit from examining more product categories. For example, some "more hedonic" product categories such as perfume or an amusement park ride might generate much clearer results. Second, sampling only college students quite obviously limits the ability to generalize to other populations, although college students are a major segment of the software market. Third, although the within-cell sample size of 30 to 32 offered acceptable power to test the hypotheses, the overall sample size in the experiment was nonetheless not large enough for SEM analysis, even if appropriate fit indices sensitive to sample size were examined for the modeling. In addition, the sample size may not have been sufficient for the stepwise regression analysis we used in the H4 test. Fourth, although our manipulations were checked and confirmed as intended, the low-involvement condition might not have been clearly manipulated because even if the condition allowed for maximum freedom in product returns, the price ($25) of the product might still be high for our sample group (i.e., college students). Last, although we were interested in the cognition and affect that occurred and formed during the trial procedures, the actual survey was conducted after the trial was complete; thus, it might have produced some confounding effects of post hoc assessment in the results.

In spite of these limitations, our study helps advance our understanding of information processing of product trials and has some managerial implications. The overall implications of our study for marketing communication researchers and practitioners are that when creating marketing communication messages (i.e., indirect product experience to consumers), it would be useful to consider the key role of affect in most product types and involvement situations. Perhaps most important, when creating sales promotion campaigns (i.e., inducing more direct experiences such as "trial"), marketers need to understand the major role of affect, as well as the different roles of affect and cognition, under different situations to make the promotion more effective and precise in persuading consumers.

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APPENDIX 1

Purchase-Decision Involvement (PDI) Situations

Hedonic product/low PDI

You just saw a small computer game software program running on a display monitor while you were shopping for other products. The price of the software is $25. The store provides the 30-day no-question-asked return policy for this product only. Let's assume you became interested in this game software.

Hedonic product/high PDI

You came to a store to buy a small computer game software program—a birthday present for your lovely niece! You have been searching for a software program that best matches your niece's interest, and you have finally found one that she would like. Let's assume this product is your final choice among others in the local stores and on the Internet shopping sites. Because the birthday party is tomorrow, you would have to buy this one, if it seems to be a good fit. The price of the product is $25. Unfortunately, the store provides no return policy for this product.

Functional product/low PDI

You just saw a grammar-checking software program running on a display monitor while you were shopping for other products. The price of the software is $25. The store provides the 30-day no-questions-asked return policy for this product only. Let's assume you became interested in this grammar-checking software.

Functional product/high PDI

You came to a store to buy a grammar-checking software program—a birthday present for your lovely niece! Because she just came to the United States from a foreign country, she has been asking you to find her a good English grammar-checking software program as a birthday present this year. Thus, you have been searching for a software program that best matches your niece's needs, and you have finally found one that she would like. Let's assume this product is your final choice among others in the local stores and on the Internet shopping sites. Because the birthday party is tomorrow, you would have to buy this one, if it seems to be a good fit. The price of the product is $25. Unfortunately, the store provides no return policy for this product.

APPENDIX 2

The Purchase-Decision Involvement (PDI) Scale

- Based on the situation you were given, in selecting this product from many other choices available in the market, would you say: "I would not care at all/I would care a great deal." (1 to 9 scale)
- Based on the situation you were given, how important would it be for you to make a right choice for this product? Not at all important/Extremely important. (1 to 9 scale)
- Based on the situation you were given, how concerned would you be about the outcome of your choice in making your selection of this product? Not at all concerned/Very much concerned. (1 to 9 scale)