AD AFFECT SENSITIVITY: INFLUENCES ON CONSUMERS' AFFECT TRACES AND THEIR RELATIONSHIP WITH RETROSPECTIVE AD EVALUATIONS

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Researchers have long studied the relationship between consumers' emotional reactions to advertising stimuli and how these reactions shape consumers' overall ad attitudes. However, the extent to which consumers' emotions predict their overall ad attitudes is likely to vary based on consumer characteristics – a concept that we call ad affect sensitivity. The present study examines the extent to which consumers' prior brand attitude, product category involvement and prior purchase behavior increase the extent of positive emotion consumers experience while watching an ad. This phenomenon is illustrated through examining consumers' moment-to-moment emotional responses to advertisements. The current study also illustrates how emotion can be used to create stronger ad attitudes among those with negative prior brand attitudes, low category involvement and little to no experience with a particular product. The managerial implications of influencing people who are most likely not very loyal to a brand are discussed.

INTRODUCTION

Every year, ad executives and consumers alike discuss the merits of the best ads of the year that come out around the Super Bowl. Budweiser and Doritos are always among consumers' favorites. Budweiser because of heart-felt storylines involving Clydesdale horses and cute firehouse or barnyard puppies. Doritos for the ability to use slapstick comedy to garner a hearty laugh. However, to what extent are these ads simply generating positive attitudes in people who already like the product, use the product and think it is important? Are these ads effective at changing attitudes of those who do not currently like or use the product? What about people who think the product category is unimportant?

Examining consumers' moment-to-moment emotional responses to advertisements can offer important insights to these questions. The relationship between consumers' moment-to-moment affective responses to advertisements and consumers' retrospective ad evaluations is garnering increasing research attention (Burton et al., 2019; Carnevale et al., 2018). Recent research has shown that consumers exhibit much variability in their moment-to-moment evaluations of advertising stimuli (Burton et al., 2015). Understanding the drivers of this variability, as well as potential moderators that change their impact on retrospective ad evaluations, are therefore very important research initiatives.

Affect traces are used by researchers to better understand consumers' moment-to-moment emotional responses to advertisements. Affect traces are graphs of the amount of positive or negative affect consumers experience during each second of an advertisement. Affect traces are valuable from multiple perspectives. In terms of practical value, affect traces reveal moments of ads that have the strongest affective impact on viewers. Clearly, such information may provide guidance on development of advertising nuances that result in the most desirable responses the advertiser seeks. From the theory development perspective, affect traces have allowed researchers to explore the relationships between unique affect trace aspects and retrospective ad evaluations (e.g., Baumgartner et al., 1997). Other theoretically interesting applications have been to study the links between affective trace elements and feelings of humor (Woltman Elpers et al., 2004) and the likelihood of continuing to watch an ad (Woltman Elpers et al., 2003).

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Research has highlighted three key aspects of affect traces that are salient predictors of retrospective ad evaluations: the peak affect level, the affect experienced at the final moment of the ad and the overall linear affect trend (Baumgartner et al., 1997). The peak affect is the highest level of positive affect consumers experience while watching the ad. The final moment is the affect level experienced by consumers at the last second of the ad. The linear trend of the affect trace is the slope of the regression line representing consumers' emotions through the entire ad. More current work in this area studied affect traces from the individual consumer perspective rather than the aggregate (Burton et al., 2015). This research finds that individual affect traces vary widely. Given this wide variance, our research aims to explore antecedent and moderator variables that shed light on these differences in affect traces.

In particular, this research examines the key consumer characteristics of prior brand attitude, prior product usage and product category involvement in terms of their impact on consumers' affect traces and the resulting change in retrospective ad evaluations. This is the concept of ad affect sensitivity, or the theory that the amount of affect consumers experience while watching an advertisement will have different levels of influence on attitude formation, based on consumers' individual characteristics, such as prior brand attitude, prior brand experience and product category involvement. To the best of our knowledge, there has been no empirical investigation of individual difference variables impacting variation in consumers' moment-to-moment affect traces. This work examines whether consumers with a prior positive attitude, product experience and high product involvement will have a positive bias that results in higher moment-to-moment affect traces. Similarly, this work examines whether consumers with prior negative attitudes, no product experience and low product involvement will experience a negative bias in the form of lower affect traces.

Further, this work also examines the moderating impact of prior brand attitude, product experience and involvement on the relationship between consumers' moment-to-moment affect traces and their ultimate ad attitudes. This exploration will help to shed light on the interesting question of whether advertisers are merely reinforcing prior positive attitudes or generating impactful positive attitude change amongst consumers who may not currently like a product, use a product, or think it is important. Thus, another contribution of this research is the notion of ad affect sensitivity, or the theory that the relationship between the amount of affect consumers experience while watching an advertisement and their retrospective ad evaluations differs based on personal characteristics, such as prior brand attitude, prior product experience and product category involvement.

In summary, there are many important contributions of this research. First, it is the only piece of research that examines the constructs of prior brand attitude, product usage and category involvement as predictors of the level of affect consumers experience while watching an advertisement. This research also examines these three variables as moderators of the relationship between affect traces and retrospective evaluations. This examination finds that emotional content has the strongest impact on attitudes of those that have negative prior brand attitudes, little product usage and do not think the product is particularly important. This is a substantial discovery because advertisers experience a greater return on investment when their ad dollars attract new customers to the product, as opposed to current customers who would have bought the product anyway. Finally, the data collection mechanism and usage of moment-to-moment ratings of advertising content is an important contribution that allows advertisers to examine the different paths that consumers take in forming their retrospective evaluations of advertisements that may ultimately translate into brand attitudes and purchase intentions.

THEORETICAL DEVELOPMENT

A priori product attitudes are well established as a significant antecedent of the evaluations that consumers have of product ads. Consistently, this research shows that the more consumers like a product, the more they tend to like advertisements for that product and vice versa (Cacioppo & Petty, 1979; Machleit &

Wilson, 1988; Messmer, 1979). This relationship can be explained by a few different streams of research. First, assimilation research shows that the valence of feelings associated with one stimulus will transfer to other stimuli seen as related to the initial stimulus (e.g., Bower, 1981; Isen et al., 1978). This same stream of research shows that these feelings can also be used as information in evaluating a related stimulus (e.g., Gorn et al., 1993; Schwarz & Clore, 1983; 1988). Research on the "halo effect" also suggests that positive evaluations of one stimulus will extend to and influence evaluations of other related stimuli (Beckwith & Lehmann, 1975; Beckwith & Lehmann, 1976; Thorndike, 1920). Also dubbed the affect transfer hypothesis, prior research shows that the relationship between brand and ad attitudes can go both ways with each one influencing the other (Brown & Stayman, 1996; Machleit & Wilson, 1988; MacKenzie et al., 1986). In the context of advertising, it seems likely that consumers' positive or negative brand attitudes will likely lead to similarly valanced assessments of ads featuring a particular product.

Consumers have a propensity to emphasise the positive (or negative) features of an advertisement in a way that is consistent with their prior attitudes and experiences, resulting in a positive relationship between these variables and subsequent ad evaluations (e.g., Cacioppo & Petty 1979). The confirmation bias literature (e.g., Deighton, 1984; Hoch & Deighton, 1989; Snyder & Swann, 1978) corroborates this argument with the theory that consumers seek and interpret new information in a way that matches their prior evaluations, beliefs and experiences, while ignoring or discounting other information. Our research extends this stream by studying confirmation bias in ad processing in the context of moment-to-moment affect traces.

Reed II et al. (2002) show that prior experience with a product can serve as an anchor that consumers use in evaluating subsequent ads for the products they use. Consumers with positive product experiences will have high expectations of an advertisement and then adjust their ad evaluations from that high level of positive affect. On the other hand, consumers with poor product experiences will have low expectations of an advertisement and then adjust their ad evaluations from that low level of affect. This effect was also found in Chang's (2004) examination of product experience and ad attitudes. Of course, it is possible that individuals with no product experience do not have an anchor from which to evaluate the advertisements. But in that case, we expect ad evaluations to be more ambivalent, as shown in Chang's (2004) study. It is also possible that negative product experiences could bias ad evaluations in a negative direction. However, we believe that most product users use the product because they find the product beneficial and would cease to be a product user to the extent that they have encountered negative prior experiences.

Overall, we expect a similar transfer of affect to occur from consumers' prior brand attitudes and usage experiences to their ultimate assessments of a product advertisement. Consistent with extant work (e.g., Baumgartner et al., 1997; Woltman Elpers et al., 2004), we expect this bias to be most pronounced during the peak, final moment and overall linear trend. Thus,

- **H_1:** Consumers that have positive brand attitudes prior to viewing the advertisement will have affect traces characterized by a higher peak, final moment and linear trend.
- **H_2**: Consumers that have purchased the product prior to viewing the advertisement will have affect traces characterized by a higher peak, final moment and linear trend.

Evidence also suggests that product category involvement may also impact affect traces. For the purposes of this work, we use Zaichkowsky's (1985, p. 342) definition of product involvement, which is "a person's perceived relevance of the object based on inherent needs, values and interests." Involvement, therefore, is a good indicator of the relevance of a product category to consumers for the purpose of satisfying their needs, values and/or interests. Prior research suggests that involvement has a positive influence on consumers' emotional responses to advertising (Park & Young, 1986; Putrevu & Lord, 1994; Kim & Lord, 1991). For instance, Yoon et al. (1999) expected involvement to

have a positive influence on attitude toward the ad in arousing ads as opposed to calm ads, but instead found a positive influence of involvement in both types of ads. Additionally, McKay-Nesbitt et al. (2011) found a positive relationship between involvement and affective ad processing, meaning that higher involvement individuals experienced higher levels of both positive and negative emotions in response to ad stimuli.

Product involvement typically leads to greater attention and deeper processing of ads (Celsi & Olson, 1988; Greenwald & Leavitt, 1984; MacInnis & Jaworski, 1998; Petty & Cacioppo, 1980; 1981; 1986). Generally, this research shows that a higher level of involvement results in more attention being paid to an advertisement and stronger emotional reactions to the content being displayed in the ad. This is expected, since highly involved consumers feel more strongly about ads that are personally relevant to them (Zaichkowsky, 1985). This perspective is corroborated by eye-tracking research that shows that consumers pay more attention to ad content that is personally relevant to them and less attention to content that is less relevant (Raymond et al., 2003). Similarly, consumers have more positive evaluations of stimuli they spend time looking at and more negative evaluations of stimuli they actively ignore (Raymond et al., 2003).

Thus, as the needs, values and interest in a product rise, the level of both affective processing and attention towards ads is likely to rise, as well. We expect, therefore, that higher levels of product category involvement will lead to higher levels of affect compared to lower levels of involvement. This effect should be more pronounced during the peak, final moment and linear trend of consumers' affective traces. Formally,

H_3: Consumers that have high product category involvement prior to viewing the advertisement will have affect traces characterized by a higher peak, final moment and linear trend.

Next, we explore the moderating impact of prior attitudes, experience and involvement on the positive relationship between positive affective traces and overall affective evaluations of the ad. The fundamental theory is that generated affect will have a stronger impact on ad attitudes in conditions where people have more negative (versus positive) brand attitudes and lower (versus higher) product involvement levels. Literature on anchoring and adjustment supports this premise. Lingle and Ostrom (1979) demonstrate how prior judgements of a target will subsequently serve as an anchor that influences future judgements of that target. Their research shows that first assessments made on one dimension serve as an anchor for assessments of that same target on other dimensions. In forming those subsequent evaluations, subjects will look for evidence that disconfirms their initial impression rather than look for new information to form a different judgement. For instance, internal reference prices determine how much value customers see in a given promotion and form an anchor in determining how much they are willing to pay for products (Wansink et al., 1998). Ralph and Delbosc (2017) find that experts' estimates of their own travel desires serve as anchors in forming their expert predictions of other people's travel patterns. Even in the realm of advertising, Reed II et al. (2002) find that consumers' direct experience with products and knowledge obtained from others serve as anchors in determining their own attitudes toward certain advertisements.

Given that advertising will typically be positive, consumers with prior positive attitudes are not likely to find disconfirming evidence and their high anchor will have a stronger influence on their attitudes than their emotional reactions to an advertisement. On the other hand, consumers with prior negative attitudes are more likely to encounter disconfirming positive ad elements, so more attitudinal adjustments are expected. When consumers encounter emotions in advertising that are in opposition to their prior feelings toward a brand, they will experience imbalance or ambiguity in forming their overall judgements. Such ambiguity is also more likely if consumers have less product experience. Lambert and Wedell (1991) demonstrate that consumers facing ambiguity will form their overall judgement of an object based on the emotions they experience, rather than any previous attitudes toward that target object.

Congruity theory also predicts the same – the extent of attitude change resulting from a communication will be a function of the divergence of the communication message to the consumer's prior attitudes (Osgood & Tannenbaum, 1955). This effect is due to receivers of the communication wanting to reduce the discrepancy between their own opinion and that of the source. This effect was found in a study of online reviews and was accentuated to the extent that both the review and the reviewer were rated as helpful by other people (Walther et al., 2012). Congruity theory has also been recently used to explain the effectiveness of online influencers at convincing people to attend an event (Sun et al., 2021). In the realm of this study, both of these theories suggest that a person who both likes M&Ms and thinks candy is important will use these judgements as a positive anchor from which to form their subsequent attitudes toward the ad, which will likely remain positive. It also means that a person who does not like M&Ms and thinks candy is unimportant will experience greater attitude change while watching an emotional advertisement about the product. Their initial anchor will be negative, but the resulting attitude change will be greater and more positive. Thus,

- **H_4**: The level of affect consumers experience at the peak, final moment and linear trend of the affect trace will have a greater impact on retrospective ad evaluations for consumers that have weak (as opposed to strong) brand attitudes prior to viewing the advertisement.
- **H_5**: The level of affect consumers experience at the peak, final moment and linear trend of the affect trace will have a greater impact on retrospective ad evaluations for consumers that have not purchased (as opposed to have purchased) the product prior to viewing the advertisement.

Similarly, we predict that consumers having low (versus high) product category involvement will have attitudes that are much more strongly influenced by their affect traces. The advertising literature has long acknowledged product category involvement as a key predictor of the level and intensity of cognitive processing of advertisements (e.g., MacInnis & Jaworski, 1989; Zaichkowsky, 1985). Petty and Cacioppo (1980; 1981; 1986) introduced the notion of peripheral route processing to describe the mental processes that occur when consumers process advertisements at low levels of intensity. This level of processing is characterized by consumers using peripheral cues in the advertisement, such as attractive imagery (Mitchell & Olson, 1981), character likability (Priester & Petty, 2003), relatable situations (Batra & Ray, 1986), pleasant scenery (MacInnis & Price, 1987), and good music (Park & Young, 1986), to determine the overall likeability of the ad. In this model, affect toward the peripheral cues in advertisements is transferred to the advertisement itself and ultimately to the brand. Super Bowl ads are generally trying to stimulate peripheral route processing when they use tactics, such as surprise, warmth and humor, to generate visibility and word-of-mouth marketing.

Additional evidence to support this type of heuristic processing and associative learning is provided by the information processing model proposed by MacInnis and Jaworski (1989). Their research shows that emotional reactions to salient cues in the advertisement have a stronger influence on ad attitudes than cognitive thoughts at lower levels of ad processing. In this model, affect transfers from salient cues in the advertisement to attitude toward the ad and ultimately product attitudes.

On the other hand, these theoretical frameworks predict that persuasion is less likely to happen through simple transfer of affect when consumers process advertisements with the higher levels of processing associated with high product category involvement. In conditions of higher involvement, MacInnis and Jaworski (1989) find that consumers have higher levels of motivation to process information that is relevant to that consumer's needs, values and interests. This notion is central to Zaichkowsky's (1985) definition of product category involvement, which prior research shows leads to greater focus on message arguments and thus more cognitive than affective processing of advertising content (Celsi & Olson, 1988; Greenwald & Leavitt, 1984; MacInnis & Jaworski, 1998; Petty &

Cacioppo, 1980; 1981; 1986). Therefore, we predict:

H_6: The level of affect consumers experience at the peak, final moment and linear trend of the affect trace will have a greater impact on retrospective ad evaluations for consumers that have low (as opposed to high) product category involvement prior to viewing the advertisement.

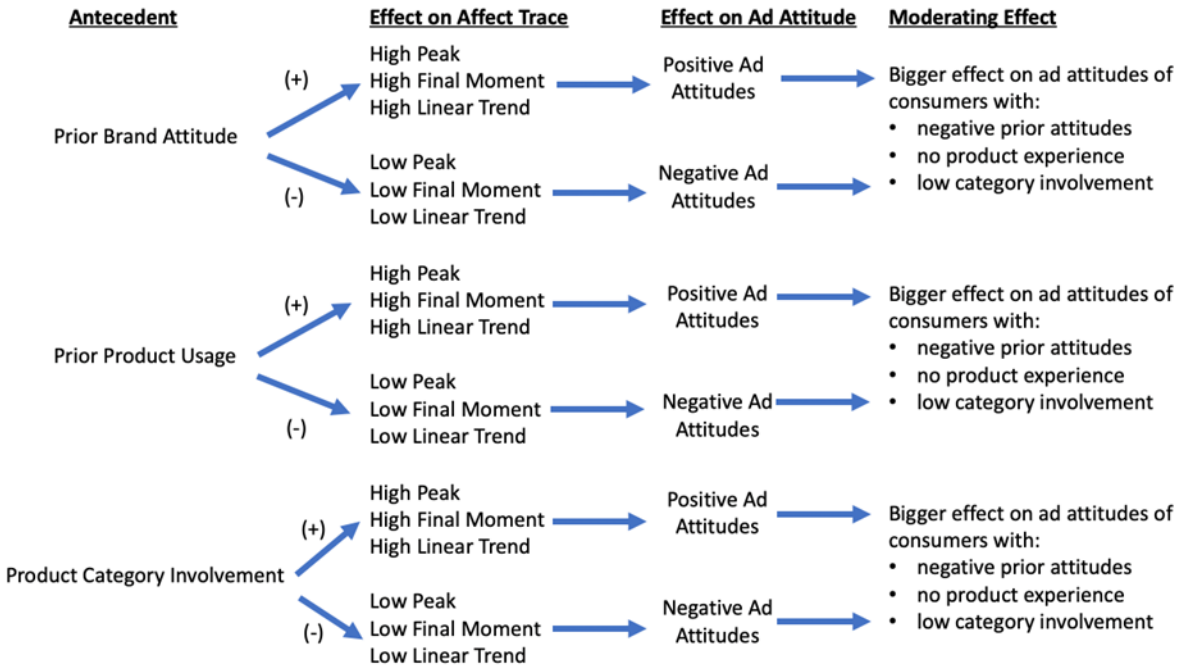
A conceptual framework showing the relationship between all of the hypotheses is provided in Figure 1.

METHOD

The authors worked with BDJ Solutions in Medford, Massachusetts to recruit 651 consumers to watch and provide their opinions on 25 advertisements from Super Bowl XLVII. Recruiting participants for this study was relatively easy, as tens of millions of consumers use search engines to find opportunities to watch and rate Super Bowl ads, both during the big game and the weeks after (Think with Google, 2016). The study was conducted on an internet site that was optimized to attract visitors from search engines who searched for keywords such as "Super Bowl advertisements," "Super Bowl commercials," or even particular ads being tested, such as the "Dodge RAM Super Bowl ad" or the "Budweiser Super Bowl ad." Paid ads were not needed, due to the volume of searches on these popular keywords.

The data was collected in the month following Super Bowl XLVII from February 28th to March 26th. Subjects were screened with demographic questions to ensure a representative sample. At the completion of the survey, participants were paid virtual currency that can be used on various e-commerce sites, such as Zenga.com, as compensation for their time and effort. The nationwide sample was drawn from 46 states and was fairly representative of the U.S. population with 49% of the population being male and 51% of the population being female. The majority of the sample population made between $40,000 and $75,000 per year and the ethnic makeup of the sample was 83% Caucasian, 7% African-American, 7% Asian-American and 4% other. Most of the subjects (81%) were between the ages of 20 and 59 and had a variety of educational backgrounds.

FIGURE 1:
Conceptual Framework



Prior to starting the moment-to-moment evaluations, subjects watched a training video explaining the study and how their moment-to-moment evaluations would be collected. Subjects also analyzed a practice advertisement before they officially started the study. During the main study, subjects watched each advertisement on their full computer screen and concurrently used a slider tool at the bottom on the screen that contained a scale from 0 to 10 to continuously indicate the level of positive or negative emotion they experienced while watching every second of the advertisement (See Figure 2 for a screenshot). Subjects were told to begin their evaluations at level 5 on this scale, representing a neutral level of affect and pressed a button when they were ready to record their moment-to-moment evaluations. The computer recorded the position of this slider tool at every second of the advertisement, resulting in a graph, known as that consumer's affect trace, that reflects how appealing or unappealing each subject thought the advertisement was during each second of the commercial.

As part of this study, 25 advertisements were tested, representing a variety of product categories, including beer, soft drinks, milk, sweets, cleaning supplies, salty snacks, real estate, fast food, web services, financial services and automobiles. Ads were selected to build a database that contained a variety of different product categories and advertising appeals. We also made sure to pick some of the best-performing, medium-performing and worst -performing ads according to the USA Today Ad Meter. A summary of ads examined, as well as their product category, ad appeal and peak, final moment and linear trend, is contained in Table 1.

To prevent survey fatigue, consumers only provided assessments of 5 advertisements and answered survey questions before and after providing moment-to-moment evaluations. To ease programming efforts (i.e., to make sure that the correct product category involvement, product experience and prior brand attitude questions appeared with the correct advertisements), the advertisements were separated into 5 pods consisting of 5 advertisements each. The questions and ad stimuli were placed into an online survey using software that is proprietary to BDJ Solutions, but the final appearance resembles how an online survey would appear using a more common application, such as Qualtrics.

Prior to advertising exposure, consumers answered demographic questions and were then asked about their current attitudes toward the

FIGURE 2:
Screenshot of Moment-to-Moment Data Collection Mechanism

TABLE 1:
Summary of Ads Studied

Pod Number	Ad Name	Brand	Length	Product/Industry	Appeal	Peak	Final Moment	Linear Trend
1	Jocks Love Jared	Subway	30	Fast Food	Celebrity	7.80	6.75	0.07
	Miracle Stain	Tide	60	CPG	Humor	8.36	7.34	0.03
	Goat 4 Sale	Doritos	30	Salty Snack	Humor	8.21	7.38	0.06
	Love Ballad	M&Ms	30	Sweet snack	Warmth	8.21	7.32	0.06
	Fashionista Dad	Doritos	30	Salty Snack	Humor	8.25	7.21	0.08
2	Viva Young	Taco Bell	60	Fast Food	Humor	8.15	7.16	0.03
	Black Crown Coronation	Anheuser Busch	30	Beer	Image	7.21	5.74	0.01
	Wedding Faints	Century 21	30	Real Estate	Slice of Life	7.44	5.96	0.03
	Deal with the Devil/Soul	Mercedes-Benz	60	Automotive	Image	7.98	6.81	0.02
	Bar Rafaelli Make Out	GoDaddy	30	Internet Service	Sexual	6.53	3.55	-0.08
3	Security Camera	Coke	30	Beverage	Warmth	7.48	6.95	0.07
	Farmers	RAM	120	Automotive	Nostalgia	8.37	6.86	0.01
	Parents Like to Party	PepsiNext	30	Beverage	Image	7.58	6.49	0.06
	Prom	Audi	60	Automotive	Image	8.00	7.14	0.04
	Clydesdale	Anheuser-Busch	60	Beer	Warmth	8.94	8.43	0.04
4	The Rock Running	Milk	30	Beverage	Celebrity	8.07	7.56	0.07
	Whispering in the Library	Oreo	30	Sweet snack	Drama	7.80	6.39	0.03
	Mirage	Coke	60	Beverage	Drama	7.38	6.45	0.05
	Baby Getting Wealthy	E*Trade	30	Financial Product/ Insurance	Humor	8.14	7.12	0.07
	Jocks Can't Say February	Subway	30	Fast Food	Celebrity	7.46	6.37	0.06
5	Puppy is a Wolf	Cars.com	30	Internet Service	Drama	7.07	5.99	0.06
	Bud Light Lucky Chair	Anheuser-Busch	60	Beer	Humor	7.53	6.35	0.03
	Forbidden Fruit	Allstate	30	Financial Product/ Insurance	Drama	7.78	6.32	0.01
	Families Waiting	Jeep	120	Automotive	Serious	8.56	7.12	0.02
	Mayhem	Allstate	30	Financial Product/ Insurance	Humor	7.45	6.21	0.03

advertised brands ("How do you currently feel about the following brands?"), level of involvement with each of the advertised product categories ("How important are the following product or service categories to you?") and whether or not they have ever purchased any of the advertised brands ("Have you purchased any of the following products or services advertised during the Super Bowl?"). Prior brand attitude (derived from MacKenzie et al., 1986) and product category involvement (derived from Zaichkowsky, 1985) were measured using 5-point Likert scales and prior purchase was recorded as a binary variable by the response "yes" or "no". Consumers finally provided retrospective evaluations of each advertisement after doing the moment-to-moment evaluations by answering the question, "How appealing is this ad on a scale of 1 to 5, where 1 = Not at all appealing and 5 = Extremely appealing?" It is important to note that the moment-to-moment measure of affect is normally a single scale measure and the corresponding retrospective evaluation is typically designed to correspond with whatever is being measured during the advertisement, per Baumgartner et al. (1997). This research uses the same measures as Baumgartner et al.

RESULTS

Hypothesis 1, stating that consumers with positive prior brand attitudes would have affect traces with a higher peak, final moment and linear trend, was supported. The regressions between prior brand attitude and the peak ($F_{1,3201} = 61.41$, $p < 0.001$), final moment ($F_{1,3201} = 156.16$, $p < 0.001$) and linear trend ($F_{1,3201} = 115.82$, $p < 0.001$) of the affect trace were all significant. Consumers with positive prior brand attitudes had a peak level of affect of 8.09 on a 10-point scale, compared to consumers with negative prior brand attitudes with a peak level of affect at 7.21 ($t = 6.45$, $p < 0.001$). Similarly, consumers with positive brand attitudes also had a higher final moment (M = 7.17) and linear trend (M = 0.05) than consumers with negative prior brand attitudes ($M_{FINALMOMENT} = 5.14$) ($M_{LINEAR\ TREND} = 0.00$) ($t_{FINALMOMENT} = 11.61$, $p < 0.001$; $t_{LINEARTREND} = 8.95$, $p < 0.001$) (See Table 2).

Hypothesis 2 was also supported. Consumers with prior product experience experienced affect traces characterized by a higher peak ($F_{1,3201} = 24.59$, $p < 0.001$), final moment ($F_{1,3201} = 61.14$, $p < 0.001$), and linear trend ($F_{1,3201} = 84.23$, $p < 0.001$). Once again, consumers with prior product experience (M = 7.99) experienced a higher peak than consumers who had never purchased the product before (M = 7.59) ($t = -4.96$, $p < 0.001$). The same could be said for consumers

TABLE 2:
Relationship Between Individual Difference Variables and the Peak, Final Moment and Linear Trend of Affect Trace

Individual Difference Variable = Prior Brand Attitude

DV	IV	N	Mean	Standard Deviation	Mean Difference	t	df	Significance
Peak	Prior Attitude > 3.00	2044	8.09	2.20	0.88	6.45	2343	p < 0.001
	Prior Attitude < 3.00	301	7.21	2.31				
Final Moment	Prior Attitude > 3.00	2044	7.17	2.75	2.03	11.67	2343	p < 0.001
	Prior Attitude < 3.00	301	5.14	3.29				
Linear Trend	Prior Attitude > 3.00	2044	0.05	0.09	0.05	8.95	2343	p < 0.001
	Prior Attitude < 3.00	301	0.00	0.10				

Individual Difference Variable = Product Category Involvement

DV	IV	N	Mean	Standard Deviation	Mean Difference	t	df	Significance
Peak	Involvement > 3.00	1476	8.11	2.27	0.64	6.40	2213	p < 0.001
	Involvement < 3.00	739	7.47	2.10				
Final Moment	Involvement > 3.00	1476	7.06	2.88	0.92	6.98	2213	p < 0.001
	Involvement < 3.00	739	6.14	3.00				
Linear Trend	Involvement > 3.00	1476	0.05	0.09	0.02	4.92	2213	p < 0.001
	Involvement < 3.00	739	0.03	0.10				

Individual Difference Variable = Prior Product Experience

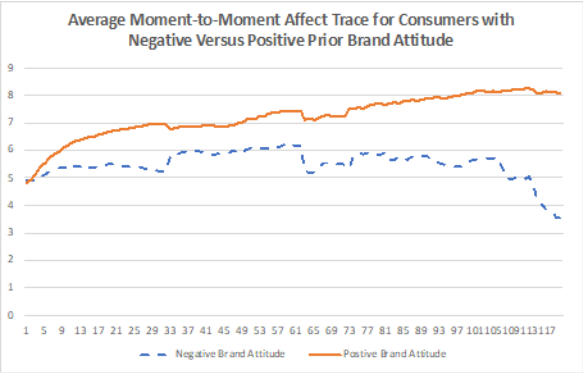
DV	IV	N	Mean	Standard Deviation	Mean Difference	t	df	Significance
Peak	Prior Purchase = 0	1216	7.59	2.24	-0.40	-4.96	3201	p < 0.001
	Prior Purchase = 1	1987	7.99	2.19				
Final Moment	Prior Purchase = 0	1216	6.19	2.98	-0.82	-7.82	3201	p < 0.001
	Prior Purchase = 1	1987	7.01	2.81				
Linear Trend	Prior Purchase = 0	1216	0.02	0.08	-0.03	-9.18	3201	p < 0.001
	Prior Purchase = 1	1987	0.05	0.09				

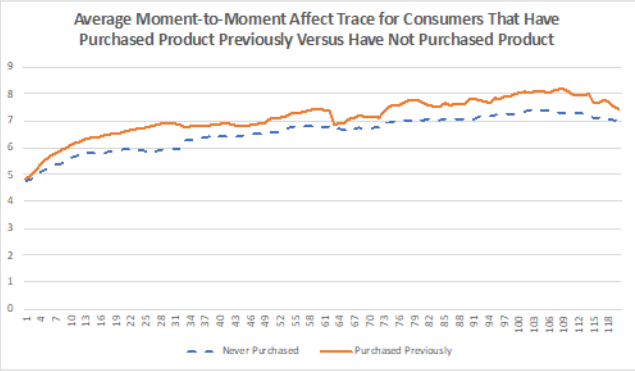
with prior product experience about the final moment ($M_{PriorExperience}$ = 7.01 vs. $M_{NoPriorExperience}$ = 6.14, t = 6.98, p < 0.001) and linear trend ($M_{PriorExperience}$ = 0.05 vs. $M_{NoPriorExperience}$ = 0.03, t = 4.92, p < 0.001) of their affect traces (See Table 2).

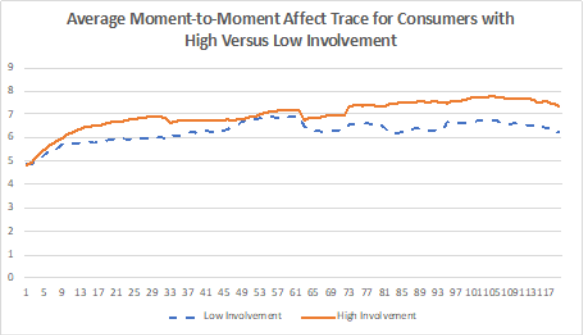
Hypothesis 3 stated that consumers with higher levels of product category involvement would have affect traces characterized by a higher peak, final moment and linear trend and was supported, as well. The regression between product category involvement and the peak was significant ($F_{1,3201}$ = 49.79, p < 0.001), with those having high involvement averaging a peak of 8.11 and those having low involvement averaging a peak of 7.47 (t = 6.40, p < 0.001) on a 10-point scale. The regression between product category involvement and final moment was also significant ($F_{1,3201}$ = 60.95, p < 0.001), with high involvement consumers experiencing a final moment of 7.06, whereas low involvement customers experienced a final moment of 6.14 (t = 6.98, p < 0.001). Additionally, there was a significant regression between product category involvement and the linear trend of consumers' affect traces ($F_{1,3201}$ = 29.91, p < 0.001), whereas the linear trend was 0.05 for high involvement consumers, but 0.03 for low involvement consumers (t = 4.92, p < 0.001) (See Table 2). Figure 3 shows the average affect traces for consumers in the top and bottom deciles of prior brand attitude, category involvement and product experience to illustrate the difference between the affect traces for those that measured low and high on these variables.

Now that we have illustrated a positive bias on the affect trace for consumers with positive brand attitudes, high product category involvement and prior product experience, we next test the relationship between the level of affect consumers experience while watching the advertisement and their retrospective evaluations of that advertisement. We used regression analysis to examine the differential impact of the peak, final moment and linear trend of consumers' affect traces on post-viewing brand attitudes for consumers with both positive and negative brand attitudes prior to viewing the ad. The regression equations

FIGURE 3:
Average Moment-to-Moment Graphs for Consumers Who Measured High and Low on Prior Brand Attitude, Involvement and Prior Purchase Intention

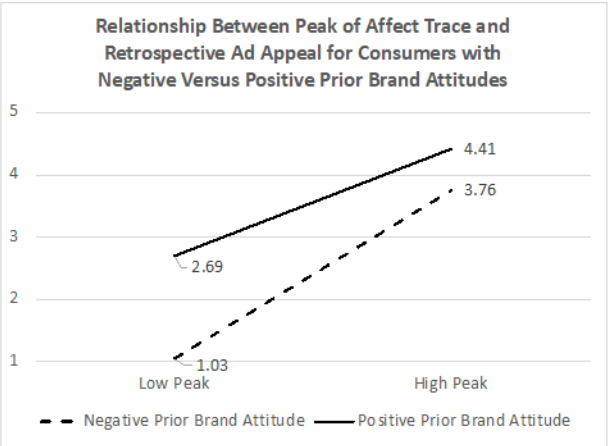


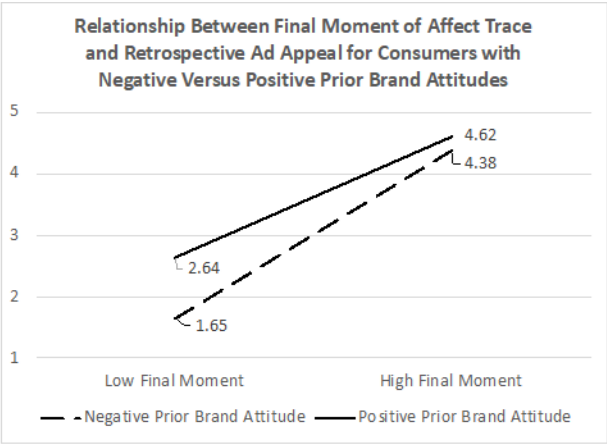


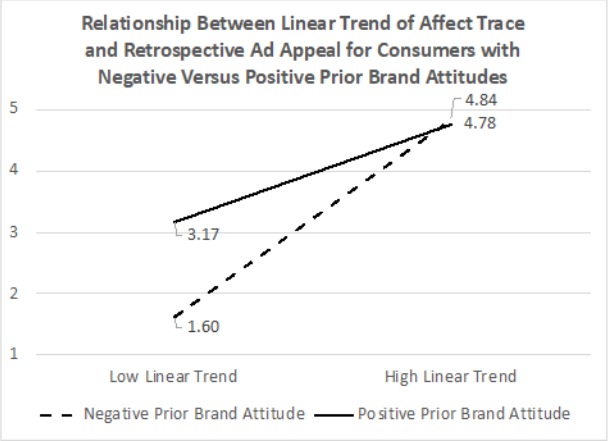


were significant (Peak: $F_{3,3047} = 292.15$, $p < 0.001$; Final Moment: $F_{3,3047} = 611.40$, $p < 0.001$; Linear Trend: $F_{3,3047} = 337.10$, $p < 0.001$) and negative interaction terms for prior brand attitude and the peak ($t = -3.37$, $p < 0.001$), final moment ($t = -3.96$, $p < 0.001$), and linear trend ($t = -5.90$, $p < 0.001$) of the affect trace support H4. Spotlight analysis (Aiken et al., 1991; Irwin & McClelland, 2001) was used to examine this relationship for consumers with negative versus positive prior brand attitudes at the highest and lowest levels of affect for the peak, final moment and linear trend of the affect trace. The slope of the function describing the positive relationship between the peak ($\beta_{NegPriorAttitude} = 0.34$, $t = 5.95$, $p < 0.001$; $\beta_{PosPriorAttitude} = 0.20$, $t = 13.67$, $p < 0.001$), final moment ($\beta_{NegPriorAttitude} = 0.28$, $t = 8.97$, $p < 0.001$; $\beta_{PosPriorAttitude} = 0.21$, $t = 19.27$, $p < 0.001$), and linear trend ($\beta_{NegPriorAttitude} = 8.20$, $t = 7.69$, $p < 0.001$; $\beta_{PosPriorAttitude} = 4.34$, $t = 11.78$, $p < 0.001$) and retrospective affective ad evaluations was much steeper for consumers with negative brand attitudes as opposed to positive prior brand attitudes. Results indicate that there was very little difference in affective evaluations for consumers who experienced a high peak ($M_{NegPriorAttitude} = 3.76$; $M_{PosPriorAttitude} = 4.41$), final moment ($M_{NegPriorAttitude} = 4.38$; $M_{PosPriorAttitude} = 4.62$) and linear trend ($M_{NegPriorAttitude} = 4.84$; $M_{PosPriorAttitude} = 4.78$) (See Figure 1). On the other hand, there was a much larger difference in affective evaluations for consumers that experienced a low peak ($M_{NegPriorAttitude} = 1.03$; $M_{PosPriorAttitude} = 2.69$), final moment ($M_{NegPriorAttitude} = 1.65$; $M_{PosPriorAttitude} = 2.64$) and linear trend ($M_{NegPriorAttitude} = 1.61$; $M_{PosPriorAttitude} = 3.17$) (See Figure 4).

FIGURE 4:
The Relationship Between the Peak, Final Moment and Linear Trend of Consumers' Affect Traces and Ad Appeal for Consumers with Positive Versus Negative Prior Brand Attitudes.

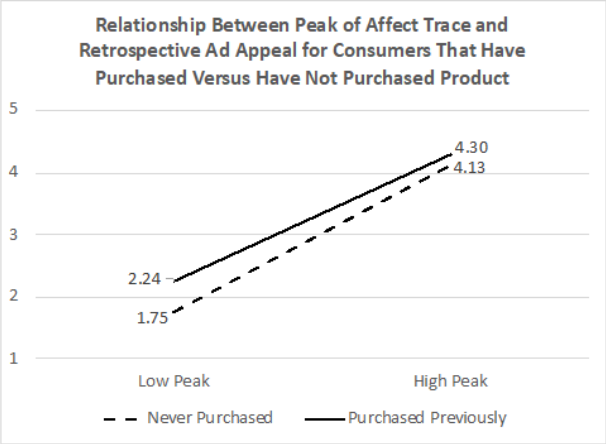


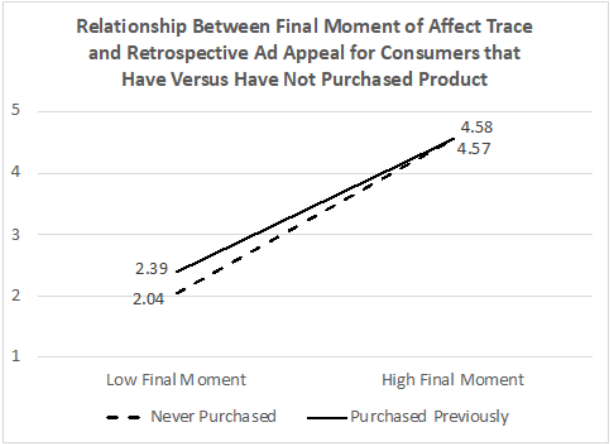


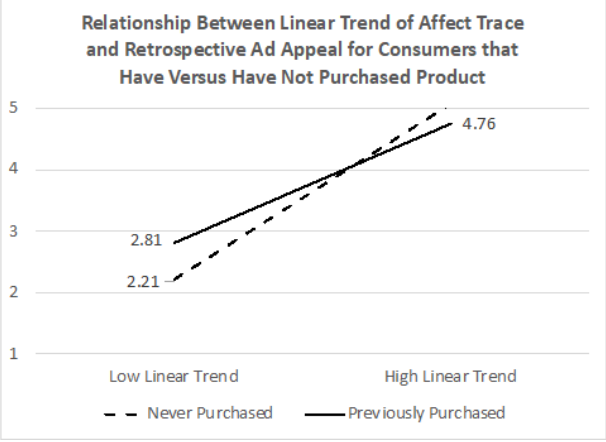


Similarly, Hypothesis 5 predicted that the relationship between the peak, final moment and linear trend and consumers' retrospective ad evaluations is stronger for consumers without any product experience, as opposed to consumers that have used the product before. Regressions examining the relationship between the three key aspects of the affect trace, product experience and the interactions between these variables on ad attitudes was significant for the peak ($F_{3,3199} = 268.93$, $p < 0.001$, adj. $R^2 = 0.20$), final moment ($F_{3,3199} = 628.07$, $p < 0.001$, adj. $R^2 = 0.37$), and linear trend ($F_{3,3199} = 317.05$, $p < 0.001$, adj. $R^2 = 0.23$). Similarly, negative interaction terms for product experience and the peak ($t = -2.01$, $p < 0.05$), final moment ($t = -3.16$, $p < 0.002$), and linear trend ($t = -5.64$, $p < 0.001$) support H5. Just like the other individual difference variables, the slope of the relationship between the peak ($\beta_{NoPriorExperience} = 0.26$, $t = 17.74$, $p < 0.001$; $\beta_{PriorExpoerience} = 0.23$, $t = 20.38$, $p < 0.001$), final moment ($\beta_{NoPriorExperience} = 0.28$, $t = 19.13$, $p < 0.001$; $\beta_{PriorExpoerience} = 0.24$, $t = 30.65$, $p < 0.001$), and linear trend ($\beta_{NoPriorExperience} = 8.00$, $t = 20.94$, $p < 0.001$; $\beta_{PriorExpoerience} = 5.41$, $t = 20.77$, $p < 0.001$) and consumers retrospective ad evaluations was stronger for consumers that have never purchased the product than for consumers that have purchased the product. This relationship is underscored in the larger difference that consumers experience when experiencing a low peak ($M_{NoPriorExperience} = 1.75$, $M_{PriorExperience} = 2.25$), final moment ($M_{NoPriorExperience} = 2.04$, $M_{PriorExperience} = 2.39$) and linear trend ($M_{NoPriorExperience} = 2.21$, $M_{PriorExperience} = 2.81$) versus a high peak ($M_{NoPriorExperience} = 4.13$, $M_{PriorExperience} = 4.30$), final moment ($M_{NoPriorExperience} = 4.57$, $M_{PriorExperience} = 4.58$) and linear trend ($M_{NoPriorExperience} = 5.09$, $M_{PriorExperience} = 4.76$) (See Figure 5).

FIGURE 5:
The Relationship Between the Peak, Final Moment and Linear Trend of Consumers' Affect Traces and Ad Appeal for Consumers with and Without Prior Product Experience







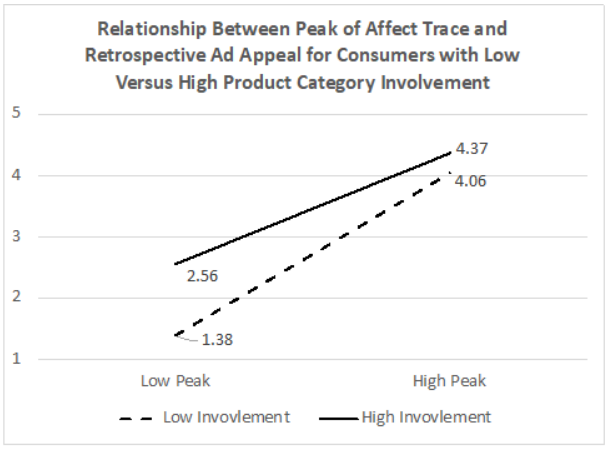
Finally, Hypothesis 6 predicted that the relationship between the peak, final moment and linear trend of consumers' affect traces and retrospective ad attitudes would be stronger for consumers with low, as opposed to high, product category involvement. Regression equations with advertising appeal as the dependent variable and each characteristic of the affect trace, product category involvement and the respective interaction terms as independent variables was significant for the peak ($F_{3,3199} = 279.59$, $p < 0.001$, adj. $R^2 = 0.21$), final moment ($F_{3,3199} = 646.53$, $p < 0.001$, adj. $R^2 = 0.38$), and linear trend of the affect trace ($F_{3,3199} = 333.42$, $p < 0.001$, adj. $R^2 = 0.24$). The regression analysis yielded significant negative interactions between product category involvement and the peak ($t = -3.08$, $p < 0.002$), final moment ($t = -4.05$, $p < 0.001$), and linear trend ($t = -4.02$, $p < 0.001$) of the affect trace. These negative interactions indicate that the level of affect consumers experienced during these key moments had a stronger impact on consumers with low, as opposed to high, product category involvement, supporting H6. The spotlight analysis shows that the slope of the function describing the relationship between the peak ($\beta_{LowInvolvement} = 0.39$, $t = 10.37$, $p < 0.001$; $\beta_{HighInvolvement} = 0.24$, $t = 12.40$, $p < 0.001$), final moment ($\beta_{LowInvolvement} = 0.32$, $t = 17.57$, $p < 0.001$; $\beta_{HighInvolvement} = 0.23$, $t = 16.54$, $p < 0.001$) and linear trend ($\beta_{LowInvolvement} = 7.78$, $t = 11.67$, $p < 0.001$; $\beta_{HighInvolvement} = 4.70$, $t = 9.00$, $p < 0.001$) is indeed steeper for low involvement than high involvement consumers. The difference in affective evaluations for consumers experiencing a high peak ($M_{LowInvolvement} = 4.06$; $M_{HighInvolvement} = 4.37$), final moment ($M_{LowInvolvement} = 4.49$; $M_{HighInvolvement} = 4.61$) and linear trend ($M_{LowInvolvement} = 4.85$; $M_{HighInvolvement} = 4.80$) is much smaller than for consumers experiencing a low peak ($M_{LowInvolvement} = 1.38$; $M_{HighInvolvement} = 2.56$), final moment ($M_{LowInvolvement} = 1.38$; $M_{HighInvolvement} = 2.56$) and linear trend ($M_{LowInvolvement} = 2.01$; $M_{HighInvolvement} = 3.05$) (See Figure 6).

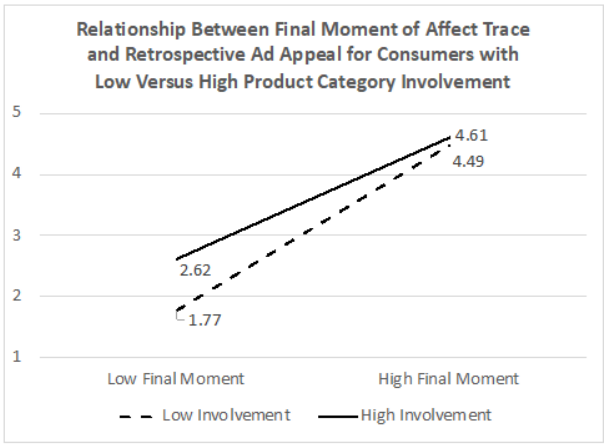
DISCUSSION

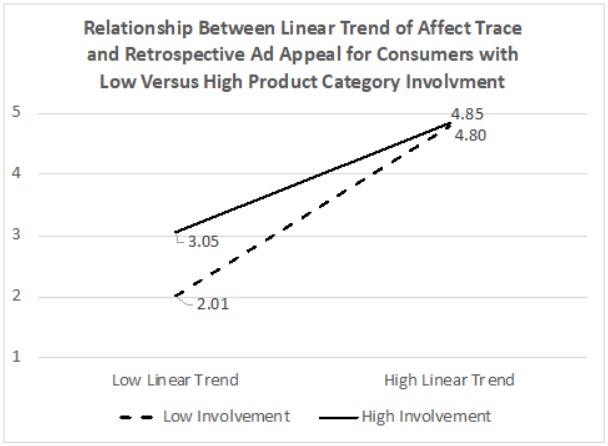
This research builds on other work that establishes the importance and impact of affective responses of consumers to ads that they watch (e.g., Baumgartner et al., 1997) by exploring several antecedent variables that further our understanding of which variables drive affect. Specifically, we demonstrate that strong prior product attitudes, higher product involvement and experience with the product all lead to more positive affective reactions in the consumers who watch these ads. It is important to note that although the impact of each of these key individual difference variables on affective responses are similar, the theoretical underpinnings of each these relationships is subtly different. With prior product attitude and experience, the increase in affect is likely driven by affect transfer from prior product evaluations to new advertising stimuli (Brown & Stayman, 1996; Machleit & Wilson, 1988; MacKenzie et al., 1986) and anchoring and adjustment where past evaluations serve as an anchor in the evaluation of new stimuli (Chang, 2004; Reed II et al., 2002). For product category involvement, the increase in affect is likely driven by the higher levels of processing that accompany involvement, as suggested by the Information Processing Model (MacInnis & Jaworski, 1998) and the Elaboration Likelihood Model (Petty & Cacioppo, 1980; 1981; 1986).

Next, we explored retrospective attitudes as a key consequence of affect traces that consumers experience after watching product ads and examined three variables that moderate the fundamental relationship between felt affect and retrospective attitudes. We were able to demonstrate that the impact of affective ad reactions is stronger on retrospective protocols for consumers with weaker prior attitudes, weaker involvement or no prior experience with the product. Broadly, a key theoretical contribution of this research is that consumers who have strongly held attitudes or are very involved or experienced with the product tend to not be influenced as much by their affective reactions. Interestingly, although their affective reactions may be stronger in some cases, the eventual impact of those affective reactions is less on retrospective attitudes, compared to what we observed for consumers with weaker prior attitudes, involvement or product experience levels.

FIGURE 6:
The Relationship Between the Peak, Final Moment and Linear Trend of Consumers' Affect Traces and Ad Appeal for Consumers with Low versus High Levels of Product Category Involvement







Theoretical Implications

There are several meaningful theoretical implications of our work. First, this research introduces the concept of ad affect sensitivity, which is the idea that the relationship between felt affect and consumers' retrospective evaluations of advertisements varies based on individual difference variables, such as product category involvement, prior brand attitude and product experience. The present research builds on prior affect trace literature that shows the relationship between felt affect and retrospective evaluations (e.g., Baumgartner et al., 1989; Woltman Elpers et al., 2004) and recognizes that there is considerable variation in consumers' moment-to-moment affect traces (Burton et al., 2015). It extends this research by being the first piece of research to discover individual characteristics that influence moment -to-moment affect traces and the first piece of research to illustrate that these individual characteristics moderate the relationship between affect traces and retrospective evaluations. The results show that consumers with higher levels of positive brand attitude, product experience and product category involvement likely pay greater attention to the advertisements resulting in higher levels of felt affect while watching the advertisement.

Second, this study extends prior research on confirmation bias (e.g., Hoch & Deighton, 1989; Snyder & Swann, 1978) and anchoring and adjustment (e.g., Chang, 2004; Reed II et al., 2002) to illustrate how we use our prior evaluations of products (based on either direct experience or what we hear from others) to influence evaluations of related stimuli, such as advertisements. While the confirmation bias and anchoring and adjustment literatures have typically viewed this process from the lens of

cognitive psychology (see Murray et al., 1996 and Naylor, 2007 for notable exceptions), this research shows that these biases not only happen when making rational judgements, but also happen when forming emotional evaluations of advertisements people encounter.

Third, this research extends the well-established stream of research on involvement (Petty & Cacioppo 1980; 1981; 1986) and levels of cognitive processing (MacInnis & Jaworski, 1989) and illustrates how these theories impact consumers' moment-to-moment affect traces. These research streams have typically examined cognitive message processing by examining the number and content of thoughts generated by an advertisement (Celsi & Olson, 1998; Petty & Cacioppo, 1980; 1981; 1986). Prior research also suggests that low involvement customers are experiencing simple affect transfer from peripheral items that pleased them in the advertisement to the product itself, while high involvement customers are experiencing more cognitive elaboration on message-related arguments (Petty & Cacioppo, 1980; 1981; 1986). However, the fact that high involvement seems to lead to increased levels of emotional processing of advertisements provides support for the Heuristic Systematic Model (Chaiken, 1980; Chaiken & Maheswaran, 1994), which acknowledges that higher levels of emotional processing can occur in situations of high involvement.

Practical Implications

This research has many implications for practitioners. The first implication is for advertisers to see the potential of using moment-to-moment emotional responses to advertisements to better understand the paths that consumers take in forming their overall ad evaluations. The technique shows what elements of the ad are driving emotional reactions and also allows advertisers to see how these emotional reactions lead to consumers' overall ad evaluations. It is an important tool to use in the pre-testing phase of advertising development to make sure all aspects of the advertising execution are resonating well with the target audience. This measurement technique will identify aspects of the advertisement that need to be changed before launching it to a larger audience and paying for those expensive media placements.

The findings that prior brand attitude, prior product usage and product category involvement result in higher overall moment-to-moment ad ratings, but have less overall impact on their ad attitudes, are also important. First, these findings suggest that these might be good variables to collect in any pre-testing efforts of advertising effectiveness. The current research provides some simple questions you can ask along with the demographic information that is normally collected at this stage. To the extent that consumers have positive brand attitudes, prior product usage or high product category involvement, ad testing results might appear better than they would in a population of consumers that have negative brand attitudes, no product experience or low category involvement. In the end, advertisers would have a stronger return on investment by creating advertisements that appeal to people who are less likely to be current customers of the brand – customers with negative brand attitudes, no product experience and low category involvement.

The final implication for advertisers is some good news. Generating positive affect in advertisements through humor, warmth, celebrities or imagery should increase return on investment by having a stronger emotional impact on consumers with negative brand attitudes, no product experience and low category involvement. This is important because these people are less likely to be current customers of the advertised brand. In other words, emotion is a great way to reach new potential customers and convince them to change their mind and, hopefully, give the advertised brand a try!

Limitations and Future Research

As with any research, the limitations of this project open up the doors for future research opportunities. One limitation is that this research looks at the relationship between moment-to-moment affect traces and retrospective brand evaluations. However, it would be even more powerful to demonstrate these forces at work when it comes to the formation of brand attitudes or even purchase

intentions. Future research should certainly address this possibility. Another limitation is the fact that we used single scale measures for many of the variables. While single scale measures are fairly typical of moment-to-moment data collection (e.g., Baumgartner et al., 1997; Woltman Elpers et al., 2004), multiscale measures for involvement, prior brand attitude and overall ad attitude would improve the reliability and validity of these findings. Future research can look to replicate these findings with multiscale measures. One final limitation is that these effects were shown over a sample of 25 advertisements that vary in product category, overall appeal and communication approach. As researchers, we did this intentionally to increase the generalizability of our findings, but the variance between ad executions certainly adds some noise to the results. A very interesting avenue of future research would be to explore the extent to which these relationships differ among product categories (e.g., hedonic versus utilitarian products) or overall ad appeals (e.g., humor versus informational).

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