

## Emotion and reason in persuasion Applying the ARI model and the CASC Scale<sup>☆</sup>

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### Abstract

Whereas practitioners in advertising and marketing clearly appreciate the importance of affect and emotion, traditional academic approaches to the analysis of persuasion tend to stress rational “central route” or “systematic” processing. However, the notion of two sorts of cognitive process—one rational, the other affective—has gained increasing support. This paper presents a view of the conceptualization and operationalization of the interaction of affect and reason based upon MacLeans’s triune theory of the brain, distinguishing reptilian, individualist and prosocial biological emotions, as well as “higher level” social, cognitive and moral emotions. The interactive role of affect and reason in involvement is described by the affect–reason–involvement (ARI) model, and emotions are operationalized by versions of the Communication via Analytic and Syncretic Cognition Scale (CASC Scale) tuned to the requirements of a given area of investigation. Examples of studies analyzing emotional factors in response to common consumer products and condom use/nonuse are presented.

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### 1. Introduction

Traditional academic models of attitude change and persuasion typically approach their subject matter from “cold,” rational, analytic–cognitive points of view. Even those specifically attempting to deal with the role of emotion in persuasion tend to view the “central route” involving analytic cognition as the subject of ultimate interest and emotion as a “peripheral” factor at best. However, inspection of a few television commercials is enough to convince an objective observer that advertising and marketing professionals are well aware of the importance of emotion in the practical realm of persuasion. Arguably, the global village associated with new electronic media has greatly increased the importance of emotion in persuasion. At the same time, in the academic realm, advances in the neurosciences and in the study of nonverbal–emotional commun-

ication have made possible a new level of specificity in the definition of emotion.

This paper seeks to apply the newfound academic understanding of emotion and nonverbal communication to the practical realm of marketing communication and persuasion. It addresses the persuasion process in general, and marketing communication in particular, from the viewpoint of the affect–reason–involvement model (ARI model), which defines and describes the relationships between affect, reason and involvement, arguing that both emotional and rational involvement are important in attitude change and persuasion. “Affect” (also termed Emotion III) is defined as the subjective aspect of “emotion” in Developmental Interactionist Theory (Buck, 1985, 1999). That is, emotion is seen to have three aspects, arousal (Emotion I), expression (Emotion II) and subjective experience (Emotion III or affect).

Emotional involvement is based upon holistic *syncretic* cognition, while rational involvement is based upon linear and sequential *analytic* cognition. Affect is operationalized using the Communication via Analytic and Syncretic Cognition Scale (CASC), developed to capture both analytic rational knowledge and a large number of varieties of *syncretic–affective* knowledge. That is, the CASC Scale

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is designed with the potential to assess a wide variety (potentially hundreds) of emotions, including biological emotions and many “higher-level” social, cognitive and moral emotions distinguished in recent theoretical analyses (see Buck, 1999).

*Biological emotions* include *reptilian emotions* (eroticism and power), *fearful individualistic emotions* (fear, nervous, uncomfortable and unsure), *angry Individualistic emotions* (angry, insulted and selfish), *positive individualistic emotions* (confident, secure and satisfied), *negative prosocial emotions* (guilty, ashamed and embarrassed) and *positive prosocial emotions* (intimate, loving/loved and caring). *Social emotions* (e.g., pride, guilt, shame, pity, jealousy) are conceptualized as being based biologically upon prosocial attachment needs and *cognitive emotions* as being based biologically upon curiosity and interest. *Moral emotions* are seen as being based upon both cognitive and social emotions, involving the understanding of rules and the judgment that they *should* be followed. In the research described in this paper, the ARI conceptualization and CASC Scale were applied to studying the beliefs and emotions associated with common consumer products, and with safe sex and condom use. In this research, the CASC Scale was developed into the *Brief-CASC*, an efficient form applicable to consumer research, and the *Safe Sex Communication Scale* (SAFE-COM) centered on emotions involved in sexual behavior. More recently, a version of CASC termed the *Competence–Credibility–Compassion–Charisma Scale* (C4 Scale) has been developed to focus upon emotional involvement in the perception of leadership, in a study of the 2000 Presidential election campaign in the US (Buck and Vieira, 2001).

This introductory section considers (a) the treatment of emotion and reason in persuasion theory and research, (b) the conceptualization and operationalization of involvement and (c) specific definitions of affect, reason and involvement. It concludes with a description of an application of the ARI model using the Brief-CASC Scale to analyze emotion and reason associated with familiar consumer products.

## 2. Emotional and rational cognition

### 2.1. Hot, cold and indifferent: emotion and persuasion research

Emotion is a “hot topic” in the social and behavioral sciences, due in part to new capabilities to observe and measure emotional phenomena. These developments have greatly increased the ability to measure emotion in its various manifestations. In particular, the study of “subjective” affective phenomena has long been eschewed by many behavioral scientists because of the apparent impossibility of objective measurement. The new developments in measuring activities of central neurochemical systems put the study of such events on a newly objective basis (Buck, 1993, 2000). Indeed, affect can be defined explicitly in

terms of potentially observable neurochemical systems, leading to the possibility of an affective neuroscience (Buck, 1985, 1999; Panksepp, 1993, 1998).

#### 2.1.1. Two-factor theories and persuasion

“Two factor” models of persuasion have recognized that emotion plays a role of in attitude change. The present model suggests instead that there are in effect two persuasion processes that take place simultaneously and interactively: a rational influence process involving analytic cognition that works much as conventional theories in attitude change envision, and an emotional influence process involving a qualitatively different sort of cognition. Emotional cognition involves memory and processing systems that are separate from those of analytic cognitive processing, are organized differently and obey different rules. Moreover, emotional and rational persuasion are associated with two qualitatively different but simultaneous and interacting “streams” of communication: *spontaneous* and *symbolic communication*, respectively (Buck, 1984).

#### 2.1.2. Affect as syncretic cognition

Based upon neuropsychological theory and research, Tucker (1981) distinguished two sorts of cognition. *Syncretic cognition* is “hot,” direct and immediate, while *analytic cognition* involves “cold,” sequential and linear information processing. He related the distinction between analytic and syncretic cognition to processing modes characteristic of the left and right cerebral hemispheres, respectively. Tucker’s distinction is similar in many respects to that made by Le Doux (1994) between cortico-cognitive processes based on the hippocampus and neocortex vs. emotional processing involving the amygdala. Le Doux (1996) distinguished a “high road” and “low road” to cognition, showing that emotion-related structures associated with the amygdala receive input about events that is earlier than and potentially independent of input to relevant neocortical sensory systems. Furthermore, Le Doux outlined two central memory networks that operate simultaneously and in parallel: explicit or declarative memory, which involves the hippocampus, and implicit or emotional memory which involves the amygdala (1994, p. 312).

The differentiation of analytic and syncretic cognition blurs the usual distinction between emotion and cognition: the subjective experience of emotion, or “affect,” becomes a *type of cognition*: a type of knowledge. In the present view, *affect* is defined as *the direct knowledge of feelings and desires, based upon readouts of specifiable neurochemical systems evolved by natural selection as phylogenetic adaptations functioning to inform the organism of bodily events important in self-regulation* (Buck, 1985, 1994, 1999). Human beings experience affects immediately and directly, the phenomenological subjective reality of affect is self-evident. Among the strongest and most fundamental of affects is, of course, sex.

2.1.3. Prosocial affects

Theories of emotion emphasize “individualistic” emotions associated with individual survival, and often ignore sex and other “prosocial” emotions associated with species survival posited in MacLean’s (1993) Triune Theory of the brain. Recent studies have supported MacLean’s approach, in that they have focused upon neurobiological systems that regulate social organization involving attachment and bonding (see Buck, 1999; Carter et al., 1997; Panksepp, 1993). The subjectively experienced affects associated with these systems appear to involve specific neurochemicals including serotonin, oxytocin, gonadotropin releasing hormone and the endorphins. These participate in the regulation of a vast array of positive social behaviors involving feelings of erotic arousal, intimacy, caring, playfulness and love.

2.2. Conceptualizing affect, reason and involvement: the ARI model

The notion that persuasion involves parallel and interactive processes of affective and rational influence is at the heart of the ARI model of persuasion. The ARI model describes the relationship of affect and reason with one another and with involvement (Buck and Chaudhuri, 1994; Chaudhuri and Buck 1995a,b, 1998).

2.2.1. The A/R continuum

The relationship between affect and reason is expressed by Fig. 1. Affective persuasion is associated with spontaneous communication and rational persuasion with symbolic communication (Buck, 1984). The continuum at the base of Fig. 1 is the affect/reason continuum (A/R continuum). It describes the mix of affective and rational persuasion, and therefore also the mix of spontaneous and symbolic communication. At the left of the continuum, the influence of affect is total: reason has no influence. This is the case of pure spontaneous communication. As one goes to the right, reason exerts an increasing influence relative to affect, but affective influence never falls to zero. Attitude objects and messages can be placed on the A/R continuum, reflecting the ratio of affect to reason in the possession and use of that object, or in the message advocating such possession and use (Chaudhuri and Buck, 1993).

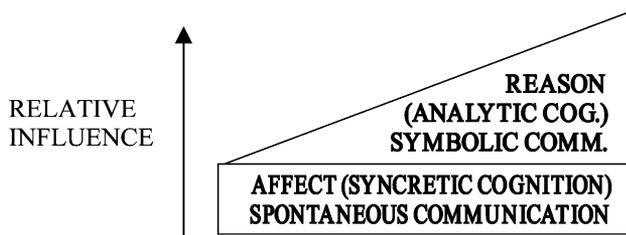


Fig. 1. The A/R continuum.

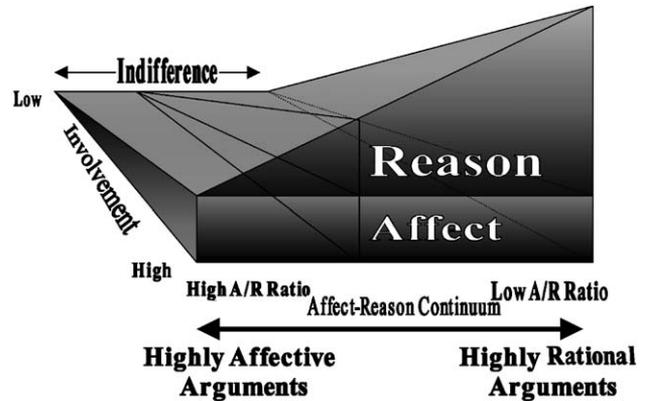


Fig. 2. The ARI (affect–reason–involvement) solid.

2.2.2. Level of involvement

Chaudhuri and Buck (1993) define *involvement* conceptually following Batra and Ray (1983) as the “depth and quality of cognitive response” (p. 309), but suggest that both affective and rational involvement are possible, constituting the depth and quality of syncretic and analytic cognitive responding, respectively. This can refer to a temporary state, to a general disposition to respond, and/or to the tendency of an attitude object or message to “pull out” affective or rational responses in people. Given this definition, we suggest that the *level of involvement* (LI) can be defined operationally as the average of affective and rational involvement: that is,  $LI = (A + R) / 2$ . In this way, involvement is defined both conceptually and operationally as a combination of affective and rational cognitive processing: if cognitive processing is measured, involvement is measured by definition. This suggests that one can be “hot, cold or indifferent” in response to attitude objects and messages. “Hot processing” is high in affect (high A/R ratio) and high in involvement, “cold processing” is high in reason (low A/R ratio) and high in involvement, “indifference” is low in affect and reason, and low in involvement.

2.2.3. The ARI solid

The *ARI solid* models the relationships between affect, reason and involvement. The ARI solid is a three-dimensional figure bounded on one side by a low-high LI dimension and on the other by the A/R continuum (see Fig. 2). An *ARI slice*, in which the relative influence of affect and reason remains constant as involvement varies, represents the relative influence of affect and reason at any point on the A/R continuum. The “floor” of the ARI solid is a two-dimensional space with an involvement dimension on the y-axis and the A/R continuum on the x-axis (Fig. 3A). LI and the A/R ratio represent the position of an object on this floor. The floor of the ARI solid is similar in form to the Foot, Cone and Belding grid (FCB grid; Fig. 3B), which contrasts high and low involvement with “feel” and “think” categories (Vaughn, 1980, 1986).

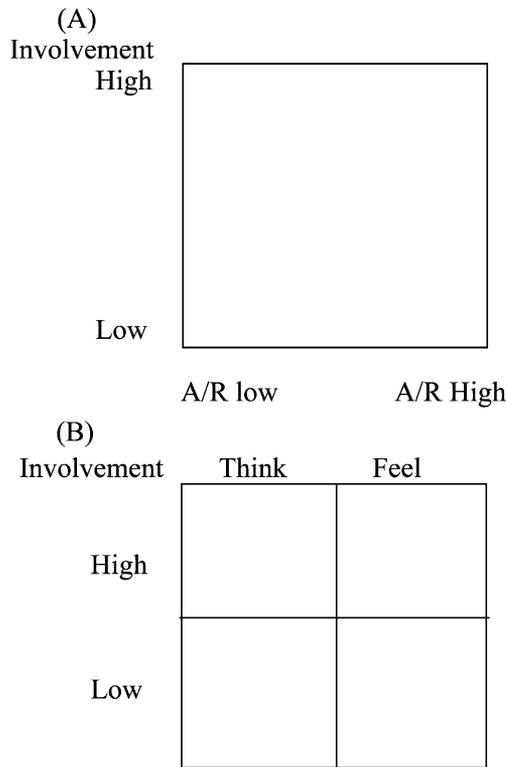


Fig. 3. The floor of the ARI solid (A) and the FCB grid (B).

2.2.4. Affective and rational responses to consumer objects: the Brief-CASC Scale

Chaudhuri (1993) tested the usefulness of this conceptualization to the analysis of the processing of consumer products. He developed three-item scales from the McQuarrie and Munson (1987) modification of the Zaichkowsky Personal Involvement Inventory: three “risk” items comprised the measure of analytic cognition and three “hedonic” items comprised the measure of syncretic cognition. The analytic items were: “Not risky vs. risky,” “Easy to go wrong vs. hard to go wrong” and “Hard to pick vs. easy to choose.” The syncretic items were: “Appealing vs. unappealing,” “Unexciting vs. exciting” and “Fun vs. not fun.” This “Brief-CASC Scale” was used to assess affective and rational responses to 30 consumer objects ranging from cars and computers, to candy and paper products, to insurance policies (Buck et al., 1995).

As expected, affectively loaded objects had high A/R ratios, while objects to be dealt with “mindfully” had low A/R ratios. For example, candy and snack foods had high A/R ratios (1.36 and 1.43, respectively), automobiles, airline services and paper products had and relatively balanced in A/R scores (1.18, 1.00 and 0.90), and appliances, insurance policies and laundry products had low A/R ratios (0.59, 0.44 and 0.77). At the same time, candy and insurance had relatively high LI scores (3.99 and 4.00), suggesting hot and cold processing, respectively, while paper products had a low LI score (2.60), suggesting indifference.

2.2.5. Evaluation and the ARI model

The ARI model aims to conceptualize and measure how attitude objects and messages are cognitively processed, and the level of involvement as defined by the depth and quality of this processing. It provides a representation of the depth of thought and feeling about an object or message. Again, this can be conceptualized in several ways: as a temporary state affected by the situation, an enduring tendency of a person to respond carried across situations and/or the tendency of an object or message to “pull out” a mix of rational and emotional responding in people. The Brief-CASC Scale was designed with the latter in mind: assessing attitude objects. However, the ARI model does not in itself represent evaluation: whether the object or message is liked or disliked, approached or avoided, loved or loathed. The position of an object or message at any point in time may thus be described in three dimensions: LI, A/R ratio and evaluation. This paper concentrates on the former two dimensions.

2.3. Measuring affect and reason: the CASC Scale

Affect is usually thought of as undifferentiated relative to reason, but the measurement of affect can be highly specific, involving for example, happiness, anger, eroticism and shame (Buck, 1999). MacLean’s (1993) Triune Theory of the brain suggests that there are reptilian emotions involving “raw” sex and aggression (eroticism, power) based upon subcortical parts of the brain. Paleocortical (limbic system) areas are associated with more complex motivational–emotional systems: individualistic emotions involving self-preservation (anger, fear) and prosocial emotions involving species preservation (love, caring, intimacy). The prosocial emotions serve as the biological basis of a range of higher-order social emotions, including embarrassment, guilt and shame. The individualistic emotions serve as the biological basis for higher-order cognitive emotions involved in the structuring of the cognitive system (curiosity, surprise, interest, boredom), including emotions such as confidence, security and satisfaction (see Buck, 1988, 1999). These specific emotions can be assessed by the CASC Scale, which can be modified to fit those emotions relevant to a specific area of study.

3. The SAFECOM Scale: application to the study of condom use/nonuse

3.1. Persuasion and HIV/AIDS prevention

Conventional persuasion campaigns have succeeded in convincing many if not most in the target audience about the importance of condom use in preventing AIDS and other STDs. However, these messages have often been unsuccessful in altering behavior (Baldwin et al., 1990; DeBro et al., 1994), and there is little evidence that knowledge about HIV/AIDS and its prevention increases condom use

(DiClemente, 1991; Valdiserri et al., 1989; Rikert et al., 1989). In a meta-analysis of 26 cross sectional studies, Gerrard et al. (1996) concluded that there is “virtually no support for the hypothesis that perceptions of vulnerability to HIV/AIDS motivate subsequent precautionary sexual behavior” (p. 398).

We suggest that the consideration of emotional factors may be useful in the promotion of safe sex behavior. Conventional methods of public service communication-based as they are upon assumptions of rational judgment—may not be adequate in meeting the hazard of the pandemic of HIV/AIDS and other STDs. Sex is hot: it is rarely cold and never indifferent. To explore this, the CASC Scales were applied to the analysis of the emotions and perceptions involved in the purchase and use or nonuse of condoms in specific personal relationships varying in exclusivity.

### 3.2. Emotions, condom use/nonuse and relationship exclusivity

As noted, the CASC Scale can be modified to fit a specific area of study, and the SAFECOM Scale was developed from the CASC Scale to assess emotions particularly relevant to safe sex. Based upon MacLean’s (1993) theory, we used 18 emotion items expecting six emotion clusters to emerge (Buck, 1999). *Reptilian emotions* included erotic and power; *fearful individualistic emotions* included fear, nervous, uncomfortable and unsure; *angry individualistic emotions* included angry, insulted and selfish; *positive individualistic emotions* included confident, secure and satisfied; *negative prosocial emotions* included guilty, ashamed and embarrassed, and *positive prosocial emotions* included intimate, loving/loved and caring. Each of the 18 emotions was measured by a seven-point scale anchored on the left by *Not at all* and on the right by *Very*. Also, the questionnaire explicitly included relational exclusivity in questioning Ss about condom use or nonuse.

### 3.3. Hypotheses

#### 3.3.1. Relational exclusivity

We expected that the exclusivity of the relationship would have a major impact upon feelings about condom use, with fears of HIV/AIDS and other STDs being mitigated to the extent that the relationship is perceived as being exclusive. We operationally defined levels of increasing exclusivity by the three sorts of relational context: from a “one-night-stand” to a “person you know” and are considering dating exclusively, to a partner in a long-term “monogamous” relationship.

#### 3.3.2. Reptilian rewards

The SAFECOM Scale explicitly asked participants about the reptilian emotions: feelings of eroticism and power. We expected that these feelings play an important role in the motivation for condom use/nonuse, and specifically that

condom nonuse would be associated with higher feelings of both eroticism and power.

#### 3.3.3. The ASP hypothesis

Based upon research and theory regarding gender differences in evolutionary sexual strategies as well as cultural gender roles, we expected reported feelings of anger, selfishness and power to differ for women and men. Specifically, we expected that condom use would elicit feelings of higher anger and lower selfishness and power among men than women, and that nonuse of condoms would elicit the opposite patterns. This was the *anger–selfishness–power* (ASP) hypothesis.

### 3.4. Participants, materials and design

Participants were 188 undergraduates from three universities in the northeastern United States, including 95 males, 86 females and 7 unknown/missing data. The anonymous questionnaire was administered in classroom settings. The questionnaire initially asked about knowledge about HIV/AIDS and condoms, and related beliefs, attitudes, perceived risks, behavior intentions and behaviors. The SAFECOM Scale then asked how “a person would feel” (1) discussing condoms with a new sexual partner, (2) purchasing a condom and (3) using or not using a condom within sexual relationships of three levels of exclusivity: a “one-night-stand,” an “acquaintance” and a “long-term partner.” A total of 18 emotions were assessed for each of these situations, with one situation per page for a total of eight pages. These latter, SAFECOM data are the subject of the present analysis.

### 3.5. Results: feelings about condom use or nonuse across relationships

#### 3.5.1. Structure of emotions

Exploratory factor analysis was used in a confirmatory manner to analyze emotion structure. Results indicated that ratings of how “a person would feel” discussing condom use with a new sexual partner produced a factor structure consistent with MacLean’s (1993) theory. Results from a replication study conducted at the University of Hyderabad to the same question produced a factor structure closely comparable to that produced with American participants (Kowta, 1996). The combined factor structure is presented in Table 1.

For each of the emotions, data on feelings about condom use/nonuse were examined by  $2(2 \times 3)$  mixed model analyses of variance, with gender of participant crossed with repeated measures on condom use/nonuse and relationship. Results indicated many significant effects with effect sizes ranging from small to quite large. The meanings of significant main effects were often tempered by strong interactions. In the following, main effects are discussed first, followed by the interaction effects, organized by emotion type. Effect sizes

Table 1  
Affect structure associated with how a person would feel discussing condom use with a new sexual partner (SAFECOM version of CASC)

| Affect        | Positive prosocial | Negative prosocial | Positive individualist | Negative individualist | Reptilian |
|---------------|--------------------|--------------------|------------------------|------------------------|-----------|
| Loving/loved  | .89                |                    |                        |                        |           |
| Caring        | .74                |                    |                        |                        |           |
| Intimate      | .71                |                    |                        |                        |           |
| Afraid        |                    | .86                |                        |                        |           |
| Nervous       |                    | .83                |                        |                        |           |
| Ashamed       |                    | .72                |                        |                        |           |
| Embarrassed   |                    | .67                |                        |                        |           |
| Guilty        |                    | .65                |                        |                        |           |
| Uncomfortable |                    | .57                |                        | .51                    |           |
| Satisfied     |                    |                    | .75                    |                        |           |
| Confident     |                    |                    | .74                    |                        |           |
| Secure        |                    |                    | .65                    |                        |           |
| Selfish       |                    |                    |                        | .78                    |           |
| Insulted      |                    |                    |                        | .68                    |           |
| Angry         |                    |                    |                        | .66                    |           |
| Unsure        |                    |                    |                        | .64                    |           |
| Powerful      |                    |                    |                        |                        | .78       |
| Erotic        |                    |                    |                        |                        | .71       |

Only factor loadings above .50 are illustrated.

( $\eta$ 's) are given to illustrate the strength of the different effects and to convey something of their relative importance.

### 3.5.2. Relationships and emotions

Main effects indicated that, overall, the increasing exclusivity of relationships was strongly associated with increased positive and decreased negative emotion ratings. Effect sizes were generally high (median  $\eta=.68$ ).

### 3.5.3. Condom use and emotions

Main effects indicated that, overall, condom nonuse compared to use was associated with higher ratings of all of the angry and fearful individualistic emotions and the negative prosocial emotions, with high effect sizes (median  $\eta=.72$ ). Regarding positive individualistic emotions, condom nonuse was associated with lower ratings of secure and confident ( $\eta$ 's=.73 and .56, respectively). For positive prosocial emotions, condom nonuse was associated with lower ratings of caring (.26), but higher intimacy (.39). As expected from the "reptilian rewards" hypothesis, condom nonuse was associated with higher ratings on reptilian emotions, weakly with power ( $\eta=.15$ ,  $P=.042$ ) and strongly with erotic ( $\eta=.54$ ,  $P<.001$ ).

### 3.5.4. Negative prosocial emotions

Negative prosocial emotions (feeling ashamed, embarrassed and guilty) showed the following pattern, illustrated for "ashamed" in Fig. 4A. When condoms were used, these emotions were low levels across relationships, but when condoms were not used these emotions were high levels in "one night stands" decreasing, as the relationship became more exclusive. The linear components of interactions between condom use and relationship were highly significant in all cases ( $\eta=.69$  for shame,  $\eta=.52$  for embarrassment,

$\eta=.67$  for guilt; all  $P$ 's < .001). Women reported generally higher levels of the negative prosocial emotions. These emotions also showed significant interactions between gender and condom use. Women reported higher levels of shame, embarrassment and guilt relative to men when condoms were not used ( $\eta=.23$  for shame,  $\eta=.17$  for embarrassment,  $\eta=.17$  for guilt; all  $P$ 's < .03). Moreover, for less exclusive relationships, women reported relatively higher levels of shame and embarrassment than did men ( $\eta=.21$  for shame,  $\eta=.20$  for embarrassment;  $P$ 's < .02).

### 3.5.5. Fearful individualistic emotions

Fearful individualistic emotions (feeling afraid, nervous and uncomfortable) showed a pattern similar to those of the negative prosocial emotions. Significant main effects indicated that, overall, these emotions were stronger when condoms were not used.

When condoms were used, these emotions were at relatively low levels across relationships. However, when condoms were not used, these emotions showed high levels in "one night stands," which decreased dramatically as the relationship became more exclusive. The linear components of interactions between condom use and relationship were highly significant in all cases ( $\eta$ 's for fear=.61, for nervous=.58, for uncomfortable=.46; all  $P$ 's < .001). Women reported higher overall feelings of nervousness and discomfort, but not of fear. Unlike nervousness and discomfort, fear showed a significant interaction between gender and condom use. Women reported higher levels of fear than men did when condoms were not used, but less when they were used ( $\eta=.21$ ,  $P=.007$ ).

### 3.5.6. Angry individualistic emotions

The angry individualistic emotions (feeling angry, unsure, insulted and selfish) showed a pattern generally similar to that of the negative prosocial emotions, illustrated for anger in Fig. 4B. Again, as noted significant main effects indicated that all of these emotions were stronger when condoms were not used, but there were highly significant interactions with relationship exclusivity. When condoms were used, these emotions were at relatively low levels, but when condoms were not used, they showed high levels in "one night stands" that decreased, as the relationship became more exclusive. Again, the linear components of interactions between condom use and relationship were highly significant ( $\eta=.61$  for anger,  $\eta=.50$  for unsure,  $\eta=.48$  for insulted,  $\eta=.35$  for selfish; all  $P$ 's < .001). Again as noted, main effects indicated women to report feeling more insulted and unsure than men. These emotions and anger also showed significant interactions between gender and condom use. When condoms were not used, women relative to men reported higher levels of anger, being unsure and insulted ( $\eta=.26$  for anger,  $\eta=.16$  for unsure,  $\eta=.18$  for insult; all  $P$ 's < .04). Also, for the less exclusive relationships, women reported relatively higher levels of anger and being unsure ( $\eta=.16$  for anger,  $\eta=.16$  for unsure;  $P$ 's < .04).

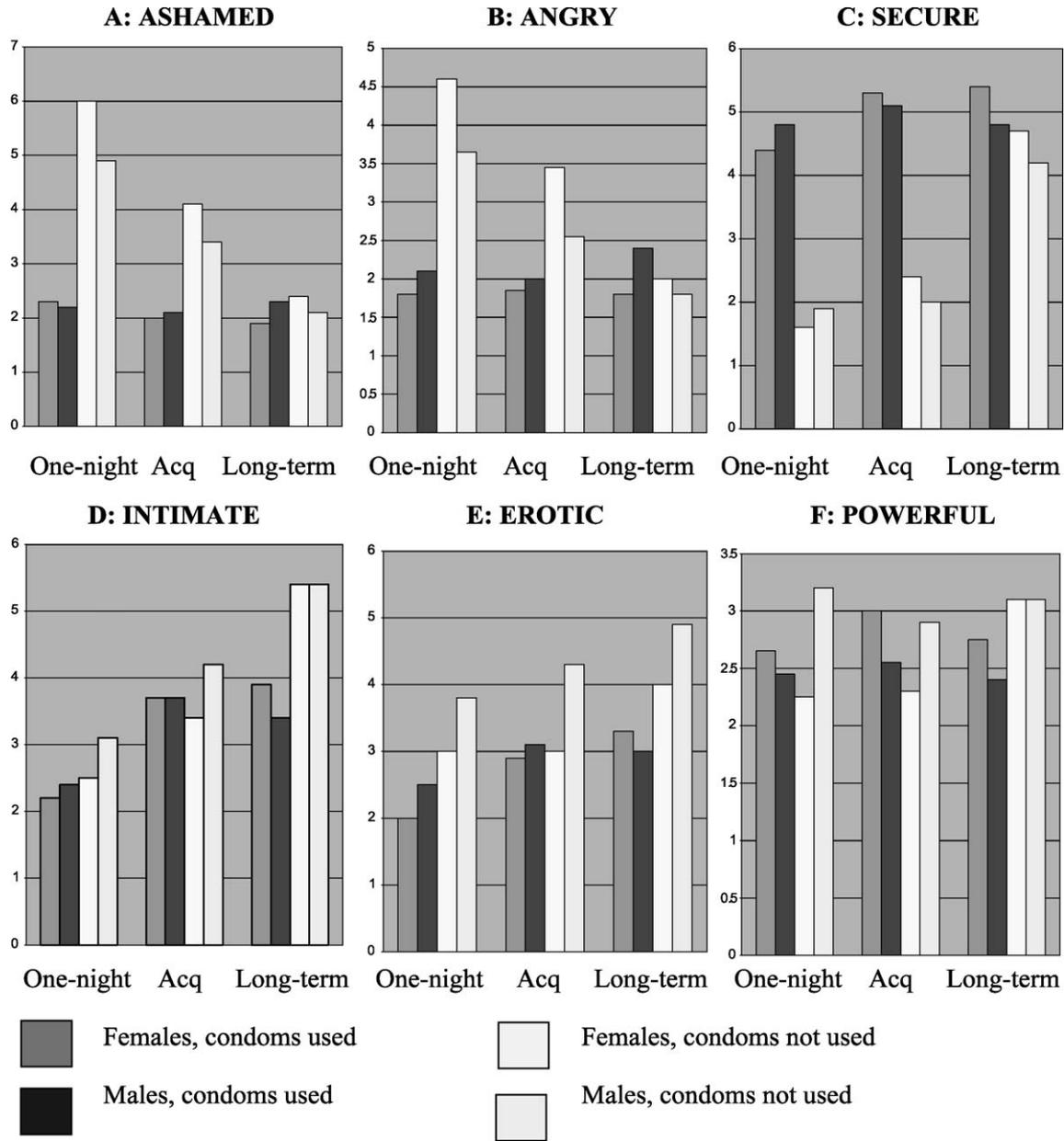


Fig. 4. Emotional responses to using or not using condoms in one-night-stand, acquaintance and long-term relationships.

3.5.7. Positive individualistic emotions

Reports of feeling secure, confident and satisfied generally showed a “mirror image” of the pattern shown with the fearful, angry and negative prosocial emotions, illustrated for secure in Fig. 4C. As noted, significant main effects indicated that security and confidence were stronger when condoms were used, but the main effect for satisfaction was not significant, and indeed the tendency was in the opposite direction. Inspection of the data revealed that this was primarily due to males’ greater reported satisfaction associated with condom nonuse. Highly significant interactions indicated that, when condoms were used, these emotions were at relatively high levels, but when condoms

were not used, they showed low levels in “one night stands” that increased, as the relationship became more exclusive. The linear components of interactions between condom use and relationship were again highly significant in all cases ( $\eta=.54$  for secure,  $\eta=.49$  for confident,  $\eta=.44$  for satisfied; all  $P$ 's < .001). Similarly, the positive individualistic emotions showed significant interactions with gender. When condoms were not used, women reported relatively lower levels of confidence and satisfaction relative to men ( $\eta=.22$  for confidence,  $\eta=.19$  for satisfaction;  $P$ 's < .02). Also, for the less exclusive relationships, women reported relatively lower levels of security and satisfaction ( $\eta=.18$  for security,  $\eta=.24$  for satisfaction;  $P$ 's < .02).

### 3.5.8. Positive prosocial emotions

The positive prosocial emotions (feeling loving/loved, caring and intimate) increased as relationships became more exclusive, illustrated for intimacy in Fig. 4D. As noted, main effects indicated that rated caring was stronger when condoms were used, but rated intimacy was stronger when condoms were *not* used, and the main effect for feeling loving/loved was not significant. In the less exclusive relationships, these emotions were at roughly equivalent levels whether condoms were used or not used, but in the long-term relationship these emotions were consistently higher, for both females and males, when condoms were *not* used. Again, the linear components of interactions between condom use and relationship were highly significant in all cases ( $\eta=.33$  for loving/loved,  $\eta=.40$  for caring,  $\eta=.44$  for intimate; all  $P$ 's < .001). Positive prosocial emotions showed no significant interactions between gender and condom use: both for females and males, loving, caring and intimacy tended to be higher in the long-term relationship when condoms were *not* used. For the less exclusive relationships, women reported relatively lower levels of loving/loved and caring relative to men ( $\eta=.18$  for loving/loved,  $\eta=.24$  for caring;  $P$ 's < .02).

### 3.5.9. Reptilian emotions: eroticism

Results for erotic emotions are illustrated in Fig. 4E. As noted, these increased as relationships became more exclusive, erotic feelings were stronger when condoms were not used, and males reported generally higher erotic feelings. Both the linear and quadratic components of the interactions between condom use and relationship were significant in eroticism ( $\eta=.26$ ,  $P=.001$  for linear;  $\eta=.42$ ,  $P<.001$  for quadratic), indicating that erotic feelings were relatively higher with condom nonuse in the one-night-stand and long-term relationships, particularly the latter. The ratings of erotic feelings showed no significant interactions between gender and condom use or gender and relationship exclusivity.

### 3.5.10. Reptilian emotions: power

Results for power are illustrated in Fig. 4F. As noted, ratings of power increased slightly as relationships became more exclusive, and feelings of power were marginally stronger when condoms were not used. As with eroticism, both the linear and quadratic components of the interactions between condom use and relationship were significant in power ( $\eta=.17$ ,  $P=.031$  for linear;  $\eta=.29$ ,  $P<.001$  for quadratic), indicating that feelings of power were relatively higher with condom nonuse in the one-night-stand and long-term relationships, particularly the latter. As expected, power ratings showed a significant interaction between gender and condom use/nonuse: females indicated relatively greater power when condoms were used and males indicated relatively greater power when condoms were not used ( $\eta=.26$ ,  $P=.001$ ). This finding is relevant to the ASP hypothesis.

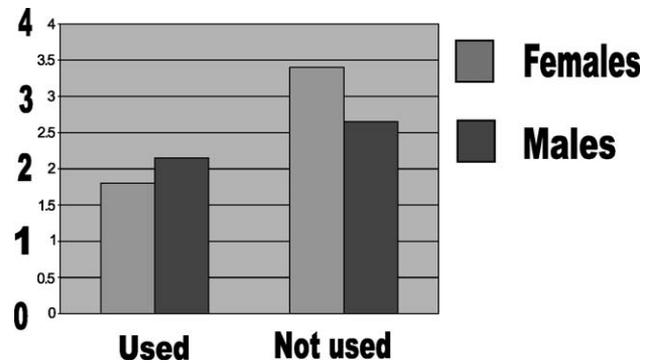


Fig. 5. Gender differences in anger ratings related to condom use/nonuse.

### 3.5.11. The ASP hypothesis

The finding that power was higher for men when condoms were not used and higher for women when condoms were used was consistent with the ASP hypothesis. Examination of the data revealed that ratings of anger were also consistent with expectations: men reported more anger than women when a condom was used and women reported being more angry when it was not used (see Fig. 5). Ratings of selfishness did not however show the expected pattern.

## 4. Discussion

### 4.1. Summary

To summarize the major findings, results using the SAFECOM scale indicate that positive emotions are high and negative emotions low when condoms are used; when condoms are not used these emotions vary widely with the exclusivity of the relationship. Also, feeling erotic, powerful and intimate are higher when condoms are not used. Finally, when condoms are not used feelings of power are higher for men than women and feelings of anger are higher for women than men.

The pattern of results was noteworthy in several respects. First, as a general point, the very strong relationships between reported emotions, relationship exclusivity and condom use/nonuse reflected in the high effect sizes are consistent with the notion that emotional variables exert important influences on the decision to use or not use condoms.

A second noteworthy result concerns the intricacy and subtlety of the influence of *specific* emotions, including reptilian and prosocial emotions not often recognized in many contemporary emotion theories. As expected, both men and women perceived condom nonuse to be associated with higher reptilian emotions of eroticism and power, but the complex results concerning positive prosocial emotions was not expected. That is, condom use as opposed to nonuse was seen to be associated positively with caring feelings but negatively with intimacy, and loving feelings were not significantly associated with condom use/nonuse. Clearly,

although condom use is associated with feelings of confidence and security, and lower negative emotions, condom use is also associated with significant emotional penalties as well. It is easy to see how condom nonuse could occur when negative emotions are reduced by, for example, the effects of alcohol or other drugs.

A related point concerns how the negative emotions associated with condom nonuse are almost entirely mitigated by perceptions that a relationship is exclusive. In this regard the finding of significant quadratic components in the Condom Use  $\times$  Relationship interactions—indicating that erotic and powerful feelings were relatively higher with condom nonuse in the one-night-stand and long-term relationships—is particularly noteworthy. The “reptilian rewards” appear to be higher in precisely those relationships where the emotional costs of condom nonuse are likely to be mitigated: by the use of drugs/alcohol in the case of the one-night-stand and by the perception of exclusivity in the long-term relationship. This is a case in which specific messages might be targeted to warn of these situations of particular peril.

A fourth point concerns gender differences in reported emotion. Overall, women reported feeling more insulted, unsure, nervous, uncomfortable, ashamed, guilty and embarrassed than men, and men reported feeling more satisfied, confident, loving, caring and erotic than women in responding to these questions. These results are generally consistent with expectations from both evolutionary and cultural approaches to gender differences, although as noted the effect sizes in these cases were low to moderate at best. More revealing were the interactions between gender and condom use, with women relative to men reporting greater feelings of shame, embarrassment, guilt, fear, anger, uncertainty and insult, and lower feelings of confidence, satisfaction and power when condoms were not used. The interactions with anger and power were consistent with the ASP hypothesis, but it is clear that many other emotions evoked by condom use–nonuse are different in women and men. For example, it is noteworthy that men’s perceptions of high erotic feelings when condoms were not used were particularly strong in the less exclusive relationships. Again, this suggests a need for special messages directed to women and men to help facilitate accurate understanding and communication between women and men.

A fifth point is that the positive prosocial emotions and erotic feelings did not show interactions with gender and condom use. Women and men agreed that, not only the “reptilian reward” of erotic feelings, but also the prosocial emotions of intimacy, loving and caring, are higher when condoms are not used in long-term relationships. These perceived emotional rewards associated with condom nonuse, and corresponding perceived emotional penalties associated with condom use, must be recognized and addressed. A specific implication is that there is a need for messages associating condom use with emotional rewards, including eroticism and intimacy as well as loving and caring.

## 4.2. Implications

One of the major conclusions of the present studies is that an emotion typology based upon brain theory and research worked successfully in an application to human persuasion (Chaudhuri and Buck, 1994). These basic emotion control systems are organized to respond rapidly and coherently, reflecting primal survival needs: thus, as noted, Le Doux (1994) found evidence that the amygdala is “involved in processing the emotional significance of simple sensory events” (p. 220), even in the absence of cortico-cognitive processing. The present studies demonstrate that these highly conserved neurochemical systems are intimately involved in the persuasion process in a way and to an extent that has not heretofore been appreciated.

The neurological approach used here led us to emphasize the importance of emotions that are not widely recognized in contemporary emotion theory, but are arguably crucial in understanding human behavior, particularly behavior relevant to STDs and to political persuasion. Foremost among these are the reptilian emotions: “raw” sex and aggression. The importance of sex is assumed in many psychological theories and is palpable in much commercial advertising: its relative absence in contemporary emotion *or* persuasion theories is difficult to account for.

It is useful to compare the ARI/CASC approach with other attempts to conceptualize and measure emotional and rational involvement, such as the FCB grid (Ratchford, 1997; Vaughn, 1980, 1986) and the Laurent and Kapferer (1985) consumer involvement profile (CIP). The FCB grid classifies purchase decisions into four quadrants: high involvement/thinking, low involvement/thinking, high involvement/feeling and low involvement/feeling. The CIP distinguishes five antecedent conditions producing involvement: personal interest, sign value, pleasure value, risk importance and risk probability (Kapferer and Laurent, 1993). These approaches tend to contrast “emotional” vs. “cognitive” factors, as with the FCB grid contrast of “feeling” vs. “thinking” and the CIP’s distinction between “pleasure” and other variables. The implication is that emotion and cognition are distinct, an assumption with deep roots in Western thought (Buck, 1988, 2000). In contrast, the ARI approach explicitly considers emotion/affect to be a type of cognition (syncretic cognition), and does not consider syncretic cognition to be in any way incompatible with analytic cognition. Indeed, empirically the two are highly correlated: Chaudhuri (1993) found that if participants report making rational distinctions about a product they also report gaining pleasure from it ( $r=.72$ ). Moreover, the ARI approach does not conceptualize “involvement” as constituting a variable distinct from analytic and syncretic cognition: instead, involvement is defined as the combination of analytic and syncretic cognition: “involvement is composed of feeling and thinking” (Chaudhuri, 1993, p. 154; italics in the original). As noted, this definition is compatible with Batra and Ray’s (1983) definition of in-

involvement as the quality and depth of cognitive processing: in the view of the ARI model such cognitive processing can be both emotional/affective and rational.

In conclusion, the ARI/CASC conception is quite unlike traditional cognitive models of persuasion. However, it is compatible with the new evidence of the importance of emotion in persuasion, and may serve to aid in its conceptualization and measurement in research on health information campaigns that have had uneven success in the past. We submit that the ARI model has the potential to serve as an integrative viewpoint, which will clarify the role of emotion and reason in persuasion, that the CASC Scale represents a new way to conceptualize and operationalize emotion in the context of persuasion research, and that the ARI model and CASC Scale can have a significant theoretical and empirical impact upon the field of persuasion in general. The studies presented here are primarily exploratory. We know too little—and perhaps have not thought sufficiently—about emotional dynamics to make specific predictions or even to explain the difference in patterns obtained in the present studies. The beginning of wisdom is to accept the reality that highly differentiated systems of emotion have profound consequences for attitude formation, maintenance and change.

## References

- Baldwin JD, Whitely S, Baldwin JI. Changing AIDS and fertility related behaviors: the effectiveness of sexual education. *Journal of Sex Research* 1990;27:245–62.
- Batra R, Ray ML. Conceptualizing involvement as depth and quality of cognitive response. In: Bagozzi RP, Tybout AM, editors. *Advances in consumer research*, vol. 10. Ann Arbor, MI: Association for Consumer Research, 1983. p. 309–13.
- Buck R. *The communication of emotion*. New York: Guilford Press, 1984.
- Buck R. Prime theory: an integrated view of motivation and emotion. *Psychol Rev* 1985;92:389–413.
- Buck R. *Human motivation and emotion*. New York: Wiley, 1988.
- Buck R. What is this thing called subjective experience? Reflections on the neuropsychology of qualia. *Neuropsychology* 1993;7(4):490–9.
- Buck R. Social and emotional functions in facial expression and communication: the readout hypothesis. *Biol Psychol* 1994;38:95–115.
- Buck R. The biological affects: a typology. *Psychol Rev* 1999;106:301–36.
- Buck R. The epistemology of reason and affect. In: Borod JC, editor. *The neuropsychology of emotion*. New York: Oxford Univ. Press, 2000. p. 31–55.
- Buck R, Chaudhuri A. Affect, reason, and involvement in persuasion: the ARI model. *Konsumentenforschung*. Munchen: Franz Vahlen, 1994. p. 107–17 (Forschungsgruppe Konsum und Verhalten (Hrsg.)).
- Buck R, Vieira E. Competence, credibility, compassion, and charisma: a study of the emotional bases of leadership. Paper submitted for publication, 2001.
- Buck R, Chaudhuri A, Georgson M, Kowta S. Conceptualizing and operationalizing affect, reason, and involvement in persuasion: the ARI model and the CASC Scale. *Adv Consum Res* 1995;22:440–7.
- Carter CS, Lederhendler II, Kirkpatrick B, editors. *The integrative neurobiology of affiliation*. Annals of the New York Academy of Sciences, vol. 807. New York: New York Academy of Sciences, 1997. p. 260–72.
- Chaudhuri A. Advertising implications of the pleasure principle in the classification of products. In: van Raay WF, Bamossy GJ, editors. *European advances in consumer research*, vol. 1. Provo, UT: Association for Consumer Research, 1993. p. 154–9.
- Chaudhuri A, Buck R. The relationship of advertising variables to analytic and synthetic cognitions. In: Varadarajan R, Jaworski B, editors. *Marketing theory and applications*, vol. 4. Chicago, IL: American Marketing Association, 1993. p. 193–8.
- Chaudhuri A, Buck R. Are advertisers using brain theory? Introducing the CASC Scale. In: Park CW, Smith D, editors. *Marketing theory and applications*, vol. 5. Chicago, IL: American Marketing Association, 1994. p. 161–2.
- Chaudhuri A, Buck R. Affect, reason, and persuasion: advertising variables that predict affective and analytic–cognitive responses. *Hum Commun Res* 1995a;21(3):422–41.
- Chaudhuri A, Buck R. Media differences in rational and emotional responses to advertising. *J Broadcast Electron Media* 1995b;39(1):109–25.
- Chaudhuri A, Buck R. CASC—Eine Skala zur Messung emotionaler und rationaler Reaktionen auf Werbebotschaften (CASC—a scale for measuring emotional and rational responses to advertising). *Sozialpsychologie* 1998;29(2):194–206.
- DeBro SC, Cambell SM, Peplau LA. Influencing a partner to use a condom. *Psychol Women Q* 1994;18:165–82.
- DiClemente RJ. Predictors of AIDS—preventive sexual behavior in a high-risk adolescent population: the influence of perceived peer norms and sexual communication on incarcerated adolescents' consistent use of condoms. *J Adolesc Health* 1991;12:385–90.
- Gerrard M, Gibbons FX, Bushman BJ. Relation between perceived vulnerability to HIV and precautionary sexual behavior. *Psychol Bull* 1996;119(3):390–409.
- Kapferer J-N, Laurent G. Further evidence on the consumer involvement profile: five antecedents of involvement. *Psychol Mark* 1993;10(4):347–55.
- Kowta S. Structure of emotions: evidence for biologically-based and categorical affects and implications for construction of safe sex messages. Presented at the symposium “Condom use, emotion, and health communication.” Meeting of the Eastern Communication Association, New York, NY, April, 1996.
- Laurent G, Kapferer J-N. Measuring consumer involvement profiles. *J Mark Res* 1985;22(1):41–53.
- Le Doux J. Memory versus emotional memory in the brain. In: Ekman P, Davidson R, editors. *The nature of emotion*. New York: Oxford, 1994. p. 311–2.
- Le Doux JE. *The emotional brain: the mysterious underpinnings of emotional life*. New York: Simon and Schuster, 1996.
- MacLean PD. The cerebral evolution of emotion. In: Lewis M, Haviland J, editors. *Handbook of emotions*. New York: Guilford, 1993. p. 67–83.
- McQuarrie EF, Munson JM. The Zaichkowsky personal involvement inventory: modification and extension. In: *Advances in consumer research*, vol. 14. Ann Arbor: Association for Consumer, 1987. p. 36–40.
- Panksepp J. Neurochemical control of moods and emotions: amino acids to neuropeptides. In: Lewis M, Haviland J, editors. *Handbook of emotions*. New York: Guilford, 1993. p. 87–107.
- Panksepp J. *Affective neuroscience: the foundations of human and animal emotions*. New York: Oxford Univ. Press, 1998.
- Ratchford B. New insights about the FCB grid. *J Advertising Res* 1997;27(4):24–38.
- Rikert VI, Jay MS, Gottlieb A, Bridges C. Adolescents and AIDS: females' attitudes and behaviors toward condom purchase and use. *J Adolesc Health Care* 1989;10:313–6.
- Tucker D. Lateral brain function, emotion, and conceptualization. *Psychol Bull* 1981;89:19–46.
- Valdiserri RO, Arena VC, Proctor D, Bonati FA. The relationship between women's attitudes about condoms and their use: implications for condom promotion programs. *Am J Public Health* 1989;79:499–501.
- Vaughn R. How advertising works: a planning model. *J Advertising Res* 1980;20(5):27–33.
- Vaughn R. How advertising works: a planning model revised. *J Advertising Res* 1986;26(1):57–66.