

Persuasion and the Structure of Affect

Dual Systems and Discrete Emotions as Complementary Models

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Participants viewed eight PSAs, providing data on their cognitive and emotional responses to each, as well as judgments of the perceived effectiveness of the messages. They also responded to Carver and White's (1994) BIS/BAS scales designed to measure individual differences in the behavioral inhibition and behavioral activation systems. Consistent with dual-systems theories of affect, the BIS scales predicted arousal of negative emotions, while BAS was associated with the elicitation of positive emotions. However, when predicting perceived message effectiveness, the positive affects showed variation in the sign and magnitude of the coefficients, as did the negative affects. This latter finding supports a discrete-emotions perspective. Knowledge that the two affect structures are appropriate to different conceptual domains (i.e., elicitation vs. effect) should enable researchers to formulate more precise questions regarding the role of affect in persuasion.

Writing in the mid-1700s, the philosopher and rhetorician George Campbell (1776/1988) declared that “. . . when persuasion is the end, passion must also be engaged” (p. 77). Though his claim—that persuasion cannot occur in the absence of emotion—is stronger than most contemporary theoretical positions, there is a great deal of evidence that affect plays a significant role in the process of opinion change (for a review see Jorgensen, 1998). However, efforts to illuminate the interplay of affect and persuasion have been hampered by a lack of consensus regarding the structure of the passions themselves. Some contend that affect should be conceptualized on a single continuum characterized as positive versus negative (Green, Salovey, & Truax, 1999). Others prefer slightly more complex two-dimensional characterizations, either pleasure and arousal (Russell & Feldman Barrett, 1999) or positive and negative

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affect (Thayer, 1989; Watson, Wiese, Vaidya, & Tellegen, 1999). Yet another position holds that affect must be viewed in more categorical fashion where individual emotions such as fear, anger, and happiness comprise distinct states (Ekman, 1992; Omdahl, 1995; Nabi, 1999).

The aim of this project was to clarify the relationship between persuasion and two conceptions of affective structure: the dual-systems models, which conceive of affect in terms of a positive dimension and a negative dimension, and the discrete-emotions models, which insist that emotional states are distinctly different from one another. We gravitated to these two structures in particular because both are the products of well-developed theoretical machinery that have, therefore, a correspondingly high potential to inform communication research. Moreover, for reasons elaborated below, we suspected that both structures had merit, but that the utility of each was confined to particular portions of the persuasion process.

The study itself focused on public service announcements (PSAs), those brief, ubiquitous issue advertisements whose purpose is to promote the public welfare (O'Keefe & Reid, 1990). From a research design standpoint, PSAs were attractive because their external validity is noncontroversial; they are naturally-occurring suasive messages. Furthermore, they rate highly in terms of applied significance. PSAs are an essential component of many public information campaigns (Hammond, Freimuth, & Morrison, 1987), and there is evidence that they are capable of influencing individuals along a variety of dimensions ranging from awareness to attitude and, possibly, behavior (Hafstad, Aaro, & Langmark, 1996; Struckman-Johnson, Gilliland, Struckman-Johnson, & North, 1990; Struckman-Johnson, Struckman-Johnson, Gilliland, & Ausman, 1994). Prior to developing hypotheses that relate persuasion to the structure of affect, we review extant literature on the dual systems and discrete-emotions models.

Dual-Systems Models of Affect

Many studies have been carried out in which individuals report their momentary or dispositional affective state on a series of feeling-related words. Their ratings are then submitted to some data reduction algorithm, typically factor analysis, which yields a two-factor solution in the vast majority of investigations. Thayer (1989) concludes that one of these dimensions should be conceived of as energetic arousal, while the other is best thought of as tense arousal. Energetic arousal is subjectively experienced as exuberance and vigor. Terms such as anxious and jittery define tense arousal. Watson and Tellegen (1985) arrive at a conceptually similar interpretation, but they prefer the terms positive and negative affect (see also Carver & Scheier, 1999). Because the latter terminology has become

the more common, we restrict ourselves to the terms positive and negative while intending still to embrace those writers whose work utilizes different phraseology.

Positive and negative affect are thought to be manifestations of two underlying physiological systems whose purpose is to guide behavior (Cacioppo, Gardener, & Berntson, 1999; Thayer, 1989; Watson et al., 1999). The *behavioral approach system* (BAS) is sensitive to cues of reward, nonpunishment, and escape from punishment. Its function is to initiate goal-directed behavior, and it is the activation of this system that is responsible for the experience of positive affect (Davidson, 1993; Gray, 1990). The *behavioral inhibition system* (BIS) provides aversive motivation in response to cues associated with punishment, nonreward, and novelty. Its purpose is to inhibit actions that may lead to undesirable outcomes (Davidson, 1993; Gray, 1990). The inhibition system is the source of negative affect.¹

One important feature of the approach and inhibition systems is their tonic level of activation. In the presence of appropriate situational cues, variations in tonic system activation levels predispose individuals to experience greater or lesser degrees of positive and negative affect. For example, research on the difference between tonic activation levels in the left and right hemispheres, as assessed by electroencephalogram (EEG), shows that the degree of resting asymmetry predicts self-reported affective responses to emotionally charged film clips (Tomarken, Davidson, & Henriques, 1990). More generally, relative right hemisphere activation has been linked to a propensity for negative affect arousal, whereas relative left hemisphere activation is associated with greater ease of activation of positive emotions (Davidson, 1993).

The studies described above generally utilize some form of physiological measurement. However, the development of a self-report index of tonic activation offers another means for researching these two physiological systems. The BIS and BAS scales developed by Carver and White (1994) showed favorable internal consistency and test-retest reliability. In addition, they manifested good convergent and discriminant validity with regard to other individual difference measures. Furthermore, and as predicted by Gray's (1990) theory, the BIS scale predicted negative affective response to a threat, while BAS predicted positive affective response to an incentive.

In terms of connecting self-report to physiological functioning, the most compelling support for the scales derives from Sutton and Davidson's (1997) research that measured subjects on the BIS/BAS scales and their resting EEG. Electrocortical asymmetry that favored the left hemisphere correlated .40 with BAS scores. The corresponding asymmetry favoring the right side showed a coefficient of .41 with BIS scores. In sum, all available data suggest that the two scales are valid indices of the tonic activation levels of the dual affect systems.

TABLE 1
The Signal Values, Functions, and Action Tendencies Associated With Various Affects

<i>Affect</i>	<i>Signal value</i>	<i>Function</i>	<i>Action tendency</i>	<i>Valence</i>
Surprise	Novelty	Orient	Allocate attention	None
Anger	Obstacle	Remove obstacle	Attack/Reject	Negative
Fear	Danger	Protection	Revise existing plan/ Create new plan	Negative
Sadness	Failure	Learning/ Recuperation	Review plan/ Convalesce	Negative
Guilt	Transgression	Self-sanction	Strive to attain standard	Negative
Happiness	Progress toward goal	Self-reward	Bask/Bond	Positive
Contentment	Absence of threat	Conserve resources	Immobility	Positive

Discrete-Emotions Models of Affect

According to appraisal theories, negative emotions arise from the perception that the environment is in an incongruent relationship with the individual's goals (Frijda, 1986; Lazarus, 1991). In contrast, when an individual judges that the current environment is likely to facilitate his or her goals, positive emotions follow (Frijda, 1986; Lazarus, 1991). However, both within and across these broad categories, individual emotions can be discriminated along several lines (Frijda, 1986; Lazarus, 1991; Oatley, 1992; Roseman, Weist, & Swartz, 1994; Scherer, 1984).²

First, emotions vary in terms of their *signal value* (Table 1, column 2). That is, emotions are a source of information regarding the state of the person-environment relationship. For example, surprise follows from the perception of novelty in the environment and registers that perception in conscious awareness (Frijda, 1986; Lazarus, 1991; Oatley, 1992; Roseman et al., 1994; Scherer, 1984). Emotions also signal the mobilization of psychological and physiological resources correspondent to that person-environment relationship. The subjective experience of an emotion also relays this information to consciousness. In this sense, an emotion may be viewed as a summary readout of the changes taking place in the body (Buck, 1997).

Emotions can be understood further in terms of their *function* (see Table 1, column 3). At the most general level, emotions operate as rudimentary information processing systems designed to deal with a certain, limited set of person-environment relationships. Given a particular understand-

ing of the person-environment relationship, an emotion shifts the organism into a state of being designed to address that relationship (Lazarus, 1991; Oatley, 1992). For example, fear instigates efforts at self-protection, whereas anger provides the motivational basis for subduing the offending stimulus.³

One of the central premises of most theories of emotion is that these affects are evolutionarily designed to direct behavior. Thus, each emotion has associated with it an *action tendency* of a specific form that aligns with the function of that emotion (Table 1, column 4). Two points in particular are important to understanding the concept of action tendencies. First, although all action tendencies are forms of engagement and withdrawal, particular emotions produce particular variations on these broad themes. Happiness and anger, for instance, promote quite different types of engagement. Although sadness and fear may both be considered withdrawal emotions, their behavioral manifestations are notably distinct; sadness is characterized by lethargy while tension is typical of fear. Contentment is a special case in that it is an affect that inspires passivity rather than action. Awkwardly but accurately stated, its action tendency is one of non-action.

A second important point bears on the relationship between the emotions and their associated action tendencies. Although statistically significant associations have been reported between particular emotions and the tendency to withdraw or engage (Frijda, Kuipers, & ter Schure, 1989; Roseman et al., 1994), these findings probably are not the result of an identity relationship between affect and action tendency that has been measured with error. Rather, they are associations that result from both regularities in the social environment and limits inherent in the affect programs themselves. In fact, we believe that within the limits defined by social regularities and action possibilities, the relationship between affect and action is highly context dependent. Fear, for example, causes freezing in some instances and flight in others. Guilt may prompt efforts to redress the failure, but only if the transgression can be remedied. Thus, when researching the impact of various emotions on persuasion it is essential to remain cognizant of various contextual factors such as setting, message topic, and response options. It is useful to distinguish emotions in terms of their action tendencies, but equally important to bear in mind that when context is taken into account tendencies may be translated into distinct forms of behavior.

Dual Systems and the Elicitation of Affect

Although we have argued for the discriminability of individual emotions, it is also true that certain emotions are highly similar in at least one respect. Positively-valenced emotions are all the product of goal-congru-

ent circumstances and negatively valenced emotions are uniformly the progeny of goal-incongruent situations (Frijda, 1986; Lazarus, 1991). When defined strictly in terms of valence, the positive emotions are perfectly equivalent as are all of the negative emotions (Table 1, column 5). It is exactly these two broad categories that are foundational to the dual-systems models of affect. To the extent that BIS and BAS are responsible for the production of affect, we might anticipate particular relationships between those systems and self-reports of affect following exposure to PSAs.

But, first, consider surprise. Although not all writers view surprise as an emotion (e.g., Lazarus, 1991), others clearly do (e.g., Scherer, 1984). Presumably, reluctance to classify surprise as an emotion stems from the fact that it is nonvalenced. It cannot be considered goal-congruent or -incongruent because it occurs prior to the assessment of goal relevance (Scherer, 1984). Given that surprise functions to allocate attention to a stimulus, thereby encouraging subsequent analysis of its implications for the individual, we should expect that surprise shows a correspondence with both underlying affect production systems. Thus,

H1: Surprise is positively associated with both BIS and BAS.

By virtue of their valence, the other emotions listed in Table 1 readily map onto one or the other of the two affect production systems. In fact, if the tonic level of activation of each system predisposes individuals to experience a particular class of affects, then we should anticipate associations between each system and its corresponding class of affects, as well as the absence of associations between each system and its noncorresponding class (cf. Carver & White, 1994):

H2: Anger, fear, sadness, and guilt are (a) positively associated with BIS and (b) not associated with BAS.

H3: Happiness and contentment are (a) positively associated with BAS and (b) not associated with BIS.

Dual Systems, Discrete Emotions, and the Effects of Affect

Whereas the previous section concerned itself with the elicitation of affect, we turn our attention next to the effects of affect on persuasion. In line with several previous studies of PSAs, the perceived effectiveness of the message was chosen as the dependent variable. Earlier work has shown perceived effectiveness to be sensitive to the influences of both emotion and cognition (Dillard, Plotnick, Godbold, Freimuth, & Edgar, 1996) and to serve as the proximal precursor to attitude change (Dillard & Peck, 2000). Furthermore, research on the third-person effect—the general ten-

dency for individuals to see themselves as more resistant to persuasion than are others—indicates an elimination or reversal of this effect for PSAs (Gunther & Thorson, 1992; Henriksen & Flora, 1999). Because individuals often act in accordance with their perceptions (Duck, Hogg, & Terry, 2000), perceived effectiveness may form the basis for behavior. Taken together, these points argue for the utility of perceived PSA effectiveness as an indicator of persuasive impact. With this in mind, we turn to the relationship between perceived effectiveness and affect structure.

If the dual-systems models constitute an adequate theoretical structure for the study of affect and persuasion this should manifest itself in two ways. For one, the sign and magnitude of the associations between individual positive and negative affects with perceived effectiveness should be uniform within valence class. In other words, when perceived effectiveness is regressed on the negative affects, they should manifest coefficients of the same sign and roughly the same size. The same stricture applies to the positive affects. Though, as a class these feelings might differ in sign or magnitude from the negative emotions, positive affects should exhibit comparability among themselves. These expectations flow directly from a two-part conception of affect. Because only two classes are offered, we must assume that the elements within each class are theoretically homogeneous and no further discrimination among elements is needed. Elements within classes should behave similarly in terms of their relationships with variables outside their own class.

One attractive feature of the dual-systems approach is its parsimony. Yet, for this parsimony to be justified dual-systems must demonstrate its empirical equivalence or superiority to the theoretical alternatives, in this case, discrete emotions. In line with the above reasoning, we advanced two hypotheses regarding the impact of positive and negative affect on the perceived effectiveness of PSAs. (To distinguish them from competing hypotheses derived from the discrete-emotions position, they are accompanied by a lower case "a").

H4a: The negative affects (anger, fear, sadness, and guilt) are similarly associated with perceived effectiveness in terms of sign and magnitude; the positive affects (happiness and contentment) are similarly associated with perceived effectiveness also in terms of sign and magnitude.

H5a: The predictive power of the dual-systems' structure of affect is equal or superior to the discrete-emotions' structure.

The discrete-emotions perspective contends that emotions alter an organism's mode of operation. That is, emotions recruit and mobilize resources from a variety of subsystems (e.g., motivational, cognitive, perceptual) producing a complex set of changes that are (usually) functionally unified. If these patterns of change are as distinct from one another as

the discrete approach would have us believe, then we should expect to see unique effects on perceived effectiveness for each of the affects. Moreover, affects that are generally identified as either positive or negative need not manifest similarity of impact on persuasion. In fact, consideration of the action tendencies associated with the various emotions would lead us to anticipate a diversity of effects within the general categories of positive and negative (Dillard, 1994). Some existing data already suggest such a pattern (e.g., Dillard et al., 1996; Dillard & Peck, 2000; Huang, 1997). Finally, because the discrete-emotions perspective is less parsimonious than the dual-systems model, it must demonstrate the need for that additional complexity via superior predictive power. Thus, from the discrete-emotions perspective flows two hypotheses that are directly in competition with predictions derived from the dual-systems models.

- H4b: The negative affects (anger, fear, sadness, and guilt) are dissimilarly associated with perceived effectiveness in terms of sign and magnitude; the positive affects (happiness and contentment) are dissimilarly associated with perceived effectiveness also in terms of sign and magnitude.
- H5b: The predictive power of the discrete-emotions' structure of affect is superior to the dual systems' structure.

METHOD

The basic procedure involved showing participants a PSA, then asking them to provide data regarding their affective and cognitive responses and judgments of the perceived effectiveness of the message.

Selection of Messages and Construction of Videotapes

We assessed each message in a larger pool of PSAs against several criteria before settling on the eight to be used in the main study. First, on the premise that an emotion must be evoked before it can influence message processing, we sought to include messages that induced one or more emotions. Second, we wished to develop a set of messages that generated a range of emotions with special attention given to variability within the set of positive feelings. Finally, to protect against carry-over effects, we wanted a set of messages in which no topic/advocacy was repeated. Thus, for instance, only one PSA dealt with AIDS though many were available that met the other criteria. A description of each of the messages appears in Table 2.

Four videotapes were constructed that presented the PSAs in four different orders. For the first tape, the eight PSAs were randomly ordered.

TABLE 2
Descriptions of the Public Service Announcements

1. *Lutheran Ministries* (30 seconds):

The PSA opens with a black and white sequence of parents setting poor examples for their children and the children then emulating the behavior. The voiceover implores the listener to set good examples for their children because they ultimately learn through example. This is followed by a color sequence in which parents and children both exhibit prosocial behavior. ADVOCACY: Set a good example for your children.

2. *Drug Dealer* (30 seconds):

A young African-American male is seen at night in an urban setting. Speaking to kids in the audience, he informs them that he has the ability to obtain and distribute various illegal drugs. What initially appeared to be a sales pitch assumes new meaning as he claims that by doing drugs members of the audience will steal from family and friends to get high. As his monologue continues, his head gradually changes from that of a human to that of a snake. ADVOCACY: Don't do drugs.

3. *Get Off It* (30 seconds):

A young boy is sitting on a bench when the narrator tells him to "Get off it!" People participating in a variety of activities, including baseball, football, cycling, and dancing, are shown next. The camera angle is upward with heavy visual emphasis on actors' glutei maximi. Throughout the PSA, the narrator reminds the audience of the importance of physical exercise. ADVOCACY: Live an active life.

4. *In America* (60 seconds):

Images of members of marginalized groups (the elderly, the poor, the infirm, the homeless) are presented as a series of black and white still photographs intermingled with color video. As the PSA progresses, more positive images appear showing those in need being assisted by others. The voiceover describes the plight of these individuals, then provides statistics on how they have been helped in the past. The message ends by thanking audience members who have donated to charity and posing the question of how many more people could have benefited if others could be more generous in their giving. ADVOCACY: Give to charities.

5. *The Baby and the Bathwater* (30 seconds):

While a mother is bathing her child, a phone rings off-screen and she leaves to answer it. The camera moves to show a portion of the bathtub while the voiceover warns of the dangers of leaving a child alone in even one inch of water. The ominous soundtrack implies that the baby has been left unattended in the tub and that its life is in danger. At the end, the audience sees the back of the mother as she talks on the phone. As she turns, it is revealed that she has taken the baby with her when she went to answer the phone. ADVOCACY: Never leave your child alone in the bathtub.

6. *Get High, Get Stupid, Get AIDS*: (60 seconds):

Janine, a cartoon character, awakens and realizes that someone is in her shower. Barry, the cartoon character in her shower, is in a panic: He doesn't know how he got there. In alternating shots, both characters are shown individually remembering that they got drunk the previous night and did something "really stupid." Simultaneously, they reach the frightening conclusion that they might have contracted AIDS. The PSA ends with the two characters showing much relief as they remember that they are cartoon characters, not real people. ADVOCACY: Maintain control of yourself.

(continued)

TABLE 2 Continued

7. *Steps* (30 seconds):

As a small child crawls up a large, stone staircase, an old man makes his descent. As they meet, they turn to face one another. The toll-free number for the Points of Light Foundation appears on the screen followed by the man and child sitting next to one another. Throughout the PSA, the voiceover informs the audience of the importance of making connections during one's life, especially in the community. ADVOCACY: Get involved in your community.

8. *Man in Wheelchair* (30 seconds):

An inebriated white man sitting at a table in a bar loudly proclaims his ability to control his alcohol intake and asserts that there is no need for drunken driving laws. As the viewer learns that he has been arrested for drunken driving, another man, acting as a caretaker, pulls him back from his table to reveal that he is in a wheelchair. The audience is left with the impression that his disability is the result of drunken driving. ADVOCACY: Don't drink and drive.

For the remaining tapes they were randomly ordered with the constraint that no PSA appear in the same ordinal position in any other sequence. The resulting orders were: 1,2,3,4,5,6,7,8; 7,6,8,5,1,2,4,3; 2,8,3,6,7,4,1,5; 4,7,5,1,3,8,6,2. These numbers correspond to the PSA identification numbers in Table 2.

Participants

One hundred female and 44 male students were recruited from communication classes at a large university and took part in the study ($N = 144$). Occasional missing data reduced the N in some analyses. When asked which racial/ethnic category they most closely identified with, 126 participants indicated White/Caucasian, 3 African descent, 2 Asian descent, 2 Hispanic descent, and 9 chose Other. The average age of the participants was 20 years. Each student received a small amount of extra credit in exchange for his or her participation.

Procedures

When participants arrived at the laboratory they were seated at one of four desks separated by styrofoam partitions and oriented toward a 32-inch monitor. The experimenter explained that the purpose of the study was to gather information on individuals' reactions to televised messages. The experimenter then secured informed consent (none declined) and familiarized participants with the questionnaire and the procedures. Next, the experimenter dimmed the lights, started the videotape, and left the room. In groups of up to four, participants viewed eight PSAs in one of

four different orders and provided open- and close-ended data immediately following each one. The videotapes were constructed with 2.5 minutes of silence between each PSA to allow participants time to give their reactions to the preceding PSA. After viewing the set of PSAs, each respondent completed Carver and White's (1994) BIS/BAS scales and provided general demographic information.

Measurement Analyses

The affects and perceived effectiveness. Data on subjects' affective responses to the PSAs were gathered using a series of close-ended items. For each item the response scale ran from 0 = *none of this feeling* to 4 = *a great deal of this feeling*. Following the criteria specified by Hunter and Gerbing (1982), a confirmatory factor analysis was conducted on each of these measures using LIMSTAT (Lim & Hunter, 1987). The resulting unidimensional affect scales and their corresponding items were: *surprise* (surprised, startled, astonished; $\alpha = .84$), *anger* (irritated, angry, annoyed, aggravated; $\alpha = .88$), *fear* (fearful, afraid, scared; $\alpha = .94$), *sadness* (sad, dreary, dismal; $\alpha = .82$), *guilt* (guilty, ashamed; $\alpha = .83$), *happiness* (happy, elated, cheerful, joyful; $\alpha = .90$), and *contentment* (contented, peaceful, mellow, tranquil; $\alpha = .85$). The valenced emotion measures (i.e., all but surprise) were combined to create two superordinate factors: *positive* and *negative* affect.

The *perceived effectiveness* measure consisted of two 7-point semantic differential scales anchored with *not at all persuasive/very persuasive* and *not at all convincing/very convincing*. Because these items showed unidimensionality they were combined to form a scale ($\alpha = .95$). For this scale, as well as all of those discussed above, each participant's summed score was divided by the number of items in the scale in order to return the value to its original metric.

Open-ended responses. Subjects provided free-response descriptions of the thoughts and feelings they experienced in response to each PSA. These data were evaluated in a four-step sequence. In the first pass through the data, two trained coders segmented the data into psychological thought units. For example, a response such as "The PSA made me angry because it didn't tell me what I could do to protect myself from drunken drivers" would have been broken into two units by breaking the sentence at "because." After examining all of the questionnaires, the coders compared judgments and resolved disagreements by discussion. Reliability for this pass was .99 computed as twice the number of agreements divided by Coder A's total units plus Coder B's total units. After resolving discrepancies there were 4,852 open-ended responses.

Next, because open-ended reports of affective experience were redundant with the close-ended reports of the same, we sought to discriminate affective responses from cognitive responses. To this end, coders were provided with the list of feeling terms compiled by Shaver, Schwartz, Kirson, and O'Connor (1987). Whenever these words appeared on a subject's form the response was classified as affective and it was removed from the data set. In the response "The PSA made me angry (thought unit 1) because it didn't tell me what I could do to protect myself from drunken drivers (thought unit 2)," the first unit would be classified as affective and the second as cognitive. Kappa for this judgment was .95.

In the third pass, two different coders judged whether or not the remaining cognitive responses were relevant or irrelevant to the various PSAs. The purpose was to reduce the level of noise in the data by screening out irrelevant cognitions. Agreement on this task was $\kappa = .95$.

In the fourth and final pass, coders classified the remaining 4,597 cognitive responses as supportive arguments, neutral responses or counter arguments ($\kappa = .96$). On average, subjects generated 4.01 message-relevant thoughts per PSA. Finally, for each participant within each PSA, a dominant cognitive response index was created by subtracting the number of counter arguments from supporting arguments. Therefore, positive values indicated a preponderance of favorable thoughts and negative values indicated that counterarguments were more plentiful than supportive arguments. Although cognitive responses were not the focus of this research, the index served as an important control variable against which the effects of emotion could be contrasted.

BIS/BAS scales. The structure of the 20 BIS/BAS items was assessed using the SPSS 7.5 principle axis routine. The solution was constrained to two factors and followed by varimax rotation. Although a few items exhibited substantial cross loadings, all of the items showed their highest loading on the expected factor. Because our results approximated those of Carver and White (1994), we deferred to their larger sample ($N = 732$) and constructed the two scales as per their instructions. Alpha reliability was .82 for BIS scale and .83 for BAS scale. The items were summed, then divided by the number of items thereby returning them to a 0 to 4 metric. Descriptive statistics for BIS were $M = 2.43$, $SD = .49$; for BAS they were $M = 2.92$, $SD = .52$. Sample items from the BIS scale include "If I think something unpleasant is going to happen I usually get pretty worked up" and "I worry about making mistakes." Sample items from the BAS scale include "When I get something I want, I feel excited and energized" and "When I want something I usually go all-out to get it."

RESULTS

Preliminary Analyses

Descriptive analyses. Table 3 provides a summary of the means and standard deviations for each of the variables broken down by PSA. Consistent with the pretests, the data showed that the PSAs did arouse a variety of emotions to varying degrees. Dominant cognitive response was slightly unfavorable for two PSAs (Lutheran Ministries and Drug Dealer), but slightly favorable for the others. Perceived PSA effectiveness judgments ranged from 2.06 to 4.85 on a 0-6 scale. Overall, the data showed sufficient variability to eliminate any concerns regarding restriction in range.

Testing for order effects. To examine the possibility that the order in which the PSAs were presented exerted some systematic influence over participants' responses, we conducted a multivariate analysis of variance using order as the independent variable (four levels) and dominant cognitive response, the set of affects, and perceived effectiveness as dependent variables. Given the large number of degrees of freedom, it was not surprising that this analysis produced a significant result: Wilks's $\Lambda = .89$, $F(30, 3208) = 4.33$, $p = .0001$. Three dummy variables were created to represent the four orders of presentation, and they were included as covariates in subsequent analyses.

Hypotheses 1, 2, and 3: The Elicitation of Affect

The first three hypotheses predicted patterns of association and nonassociation with the BIS/BAS scales. Tests of these hypotheses were carried out using the BIS and BAS scales as predictors in a series of regression analyses in which each of the affects assumed the role of criterion variables. Although these analyses were initially conducted for each PSA, the cleanest and least complex pattern of results emerged when the data were collapsed across messages. A summary of those findings appears in Table 4. The first row of that table shows the (theoretically uninteresting) $R^2\Delta$ values for the order covariates. The second row displays the $R^2\Delta$ values for the two-variable block containing BIS and BAS. This block is statistically significant for each of the seven emotions under study. The next two rows contain the standardized regression weights used to test the elicitation hypotheses. Reading from top to bottom, the column for surprise shows that this affect was positively associated with both BIS and BAS, a result that supports H1.

The next four columns summarize the results for the negative affects. The data show that each of the negatively valenced emotions was signifi-

TABLE 3
Means (and Standard Deviations) by PSA

PSA	Surprise ^a	Anger ^a	Fear ^a	Sadness ^a	Guilt ^a	Happiness ^a	Contentment ^a	Dominant cognitive response ^b	Perceived effectiveness ^c
Lutheran	.31 (.62)	1.25 (1.12)	.26 (.70)	.47 (.60)	.18 (.45)	.45 (.73)	.82 (.91)	-1.00 (2.44)	2.06 (1.66)
Drug Dealer	1.50 (1.10)	1.39 (1.13)	1.26 (1.24)	.79 (.85)	.35 (.70)	.20 (.57)	.33 (.55)	-.76 (1.89)	2.91 (1.68)
Get Off It	1.34 (1.04)	.27 (.66)	.00 (.24)	.00 (.27)	.40 (.74)	1.98 (1.24)	.85 (.79)	1.32 (2.40)	3.52 (1.76)
In America	.80 (.83)	.83 (.87)	.92 (.99)	2.27 (1.00)	1.78 (1.22)	.28 (.54)	.62 (.77)	1.03 (1.67)	4.42 (1.36)
Baby	1.78 (1.18)	.89 (.94)	2.43 (1.15)	1.04 (.86)	.30 (.62)	.60 (.83)	.40 (.60)	.81 (1.14)	4.85 (1.17)
Get High	1.38 (1.11)	1.00 (1.07)	1.32 (1.27)	.59 (.81)	.62 (.97)	.42 (.68)	.36 (.56)	.29 (2.04)	3.44 (1.77)
Steps	.30 (.57)	.29 (.65)	.59 (.98)	1.36 (1.19)	.57 (.97)	.78 (.89)	1.65 (1.03)	.95 (1.55)	3.33 (1.73)
Wheelchair	1.83 (1.13)	1.74 (1.15)	1.43 (1.21)	1.50 (1.03)	.68 (.99)	.00 (.35)	.18 (.39)	.00 (1.59)	4.10 (1.65)

^aValues could range from 0 = none of this feeling to 4 = a great deal of this feeling.

^bAlthough theoretically unbounded, values for dominant cognitive response ranged from -10 to +10.

^cValues could range from 0 to 6 with higher values representing greater perceived effectiveness.

TABLE 4
Regression Analyses Using BIS and BAS to Predict Seven Affects

<i>Block/ Predictor</i>	<i>Statistic</i>	<i>Dependent Variables</i>						
		<i>Surprise</i>	<i>Anger</i>	<i>Fear</i>	<i>Sadness</i>	<i>Guilt</i>	<i>Happiness</i>	<i>Contentment</i>
1. 3 Order dummies	$R^2\Delta$	.003	.007*	.003	.003	.014**	.005	.001
2. BIS/BAS	$R^2\Delta$	.018**	.013**	.018**	.017**	.022**	.011**	.006*
BIS	β	.10**	.10**	.13**	.12**	.16**	-.01	.02
BAS	β	.08**	.05	.03	.04	-.01	.11**	.07*

NOTE: Final models are based on degrees of freedom equal to 5 and 1,131–1,137 (this latter figure fluctuates due to occasional missing data).

* $p < .05$. ** $p < .01$.

cantly associated with BIS, though none was significantly associated with BAS. The significant coefficients confirm the first portion of H2, which predicted that pattern of associations. Because the second portion of H2 predicted the absence of associations, a power analysis was needed to assess its level of support in the data (Cohen, 1987). Power was estimated assuming $\alpha = .05$ two-tailed, $N = 1,131$ (observations), and four independent variables (three order dummies plus BIS) in addition to BAS. With these parameters, the likelihood of detecting an effect equivalent to $R^2 = .01$, which is half the size of Cohen's "small" effect size, was .89. This power value indicated that we could forward a conclusion of a null relationship with substantial confidence. The latter portion of H2 was supported.⁴

Hypothesis 3 predicted direct associations between positive affects and BAS, but no association between the same affects and BIS. The regression equations predicting happiness and contentment (Table 4) show significant regression weights for BAS in both cases and nonsignificant weights for BIS. Because the power analysis was identical to that described in the preceding paragraph, support can be claimed for both aspects of H3. Overall then, H2 and H3 were fully supported.

Hypotheses 4a and 4b: Variation in the Sign and Magnitude of Affects?

In eight separate regression analyses (one for each PSA), perceived effectiveness was predicted from the three order dummies (block 1), dominant cognitive response (block 2), and the six valenced affects (block 3). Blocks 1 and 2 were forced into the equation, whereas the affects were allowed to enter in stepwise fashion.⁵ Due to the relatively modest sample size, the entry criterion for the stepwise portion of the analysis was set at

TABLE 5
Standardized Regression Weights Predicting the Perceived Persuasiveness of Eight PSAs

Predictor	Lutheran	Drug Dealer	Get Off It	In America	Baby	Get High	Steps	Wheelchair	Collapsed across PSAs
Dominant cognitive response	.54**	.38**	.40**	.24**	.10	.55**	.27**	.38**	.39**
Anger	—	-.19**	—	-.30**	-.13+	—	-.13+	-.13+	-.14**
Fear	.12+	.40**	—	.20*	.51**	.28**	—	.32**	.31**
Sadness	—	—	—	—	—	—	—	—	.14**
Guilt	.12+	—	—	.18*	—	—	.31**	—	.07**
Happiness	.23**	—	.36**	—	—	—	.27**	—	.13**
Contentment	—	—	—	—	—	—	-.22**	-.13+	-.12**

NOTE: Significance tests for the regression weights are based on 131 denominator degrees of freedom in the individual analyses and 1,130 in the collapsed analysis. Regression weights for the order dummies are not shown.
+ $p < .10$. * $p < .05$. ** $p < .01$.

$p < .10$ to increase statistical power. The standardized regression coefficients for the variables of theoretical interest appear in Table 5 (i.e., weights for the dummy variables are not shown). An additional regression analysis was conducted that collapsed across PSAs. These results appear in the rightmost column of Table 5.

The first row of Table 5 reveals that dominant cognitive response was a significant predictor of perceived effectiveness for seven of the eight PSAs. A more favorable dominant cognitive response corresponded with higher ratings of perceived effectiveness ($\beta = .39$ collapsed across PSAs).

The next two rows present the results for anger and fear respectively. They show that when anger was significant, its relationship with perceived effectiveness was consistently negative ($\beta = -.14$ across PSAs). In contrast, when fear was significant, its association with perceived effectiveness was positive ($\beta = .31$ across PSAs).

Standardized regression weights for sadness and guilt are given in rows four and five. Although sadness did not achieve significance in any of the individual analyses, it showed a significant direct association with perceived effectiveness in the collapsed analysis ($\beta = .14$). Guilt showed an effect in three of the individual analyses and a significant direct relationship overall ($\beta = .07$ across PSAs).

The last two rows focus on the positive affects. When happiness was a significant predictor of perceived effectiveness the association was direct ($\beta = .13$ across PSAs). Contentment manifested a negative association with perceived effectiveness in two of the individual analyses ($\beta = -.12$ across PSAs).

In sum, there was notable variation among the regression weights within both general categories of emotion. Anger showed a negative relationship with perceived effectiveness while the remaining negative affects were all positively signed but varied considerably in magnitude. Within the positive category, the coefficients for happiness and contentment were roughly equal in size, but oppositely signed. Overall, the data showed support for the discrete-emotions position (H4b), but not for the dual-systems models (H4a).

Hypotheses 5a and 5b: Predictive Power of Dual Systems Versus Discrete Emotions

Table 6 displays the $R^2\Delta$ values resulting from two series of forced-entry regression analyses all of which treated perceived effectiveness as the criterion variable. Predictors in the first series were as follows: Block 1 contained the three order dummies, block 2 contained dominant cognitive response, and block 3 contained positive affect and negative affect. In the second series of analyses, block 3 contained six individual affects. Surprise was not included in any of these analyses.

TABLE 6
*R*²Δ Values for Positive-Negative Affects Versus Discrete Affects as Predictor of Perceived Persuasiveness

<i>Block/ Predictor</i>	<i>Lutheran</i>	<i>Drug Dealer</i>	<i>Get Off It</i>	<i>In America</i>	<i>Baby</i>	<i>Get High</i>	<i>Steps</i>	<i>Wheelchair</i>	<i>Collapsed across PSAs</i>
1. 3 order dummies	.019	.022	.021	.039	.074*	.017	.092**	.026	.015**
2. Dominant cognitive response	.410**	.274**	.322**	.101**	.040*	.395**	.118**	.223**	.283**
3a. Pos-neg affects	.047**	.041**	.079**	.031	.105**	.047**	.040**	.106**	.078**
3b. 6 discrete affects	.105**	.158**	.125**	.144**	.252**	.085**	.140**	.155**	.161**
Ratio favoring discrete affects	2.2	3.9	1.6	4.6	2.4	1.8	3.5	1.5	2.1

NOTE: Significance tests for the regression weights are based on a minimum of 131 denominator degrees of freedom in the individual analyses and 1,130 in the collapsed analysis.
p* < .05. *p* < .01.

The first row of the table shows that the set of dummy variables produced a significant effect in two individual PSAs (Baby and Steps) and a significant effect in the overall analysis (consistent with the MANOVA results). Dominant cognitive response produced significant effects in every individual case and in the overall analysis.⁶

The rows labeled 3a and 3b present $R^2\Delta$ values for dual systems and discrete emotions respectively. Although all of the entries in both rows are significant, the coefficients in 3b are consistently larger than those appearing in 3a. The final row of the table makes this point explicitly by forming the ratio of 3b to 3a within each column. The ratios show that the predictive power of the discrete-emotions structure was 1.5 to 4.6 times greater than that of the dual-systems structure (or 2.1 times greater in the collapsed analysis). Overall, these findings were more supportive of the discrete-emotions perspective (H5b), than the dual-systems models (H4b).⁷

DISCUSSION

Any generalizations that might be drawn from this study must be qualified by the limitations that arise from the research design. Though we studied eight separate persuasive appeals, the messages were of a type: brief media messages oriented towards improving the public welfare. Furthermore, our sample consisted mostly of white college students born and raised in the Midwestern United States. However, there are strengths to the study as well, with the clarity of the results being the most conspicuous among them. Regarding the effects of affect in particular, it is worth mentioning that the results were obtained after controlling for dominant cognitive response. This speaks to the important role that emotions may play in persuasion above and beyond that of cognition. With all of these factors in mind, we move next to a discussion of the results and how they pertain to persuasion research.

The Structure of Affect

Dual systems. Quite a number of dual-system theories populate the affect literature and there are many differences among them (Cacioppo et al., 1999; Davidson, 1993; Gray, 1990; Thayer, 1989; Watson et al., 1999). Yet, they also exhibit consensus on certain points. In particular, they are univocal in asserting the existence of two distinct systems for the production of affect. Furthermore, as a group they advance the notion that one system is responsible for the production of positive affect while the other is the source of negative affect. Our findings are entirely compatible with these features of the dual-systems models.

As anticipated by H1 to H3, the data showed clear patterns of association between Carver and White's (1994) BIS/BAS measures and seven different indices of affect. These results extend prior work in several ways. For one, whereas the dual-systems models focus exclusively on valenced affects, the current project sheds light on the operation of surprise, a nonvalenced feeling state. In line with the conception of surprise as a precursor to valenced emotions (e.g., Scherer, 1984), the data showed direct relationships between surprise and the tonic activation level of each of the twin affect systems.

The current findings also expand our understanding of the elements within the categories of positive and negative affect. Previous work on the behavioral inhibition system has emphasized its relationship with anxiety and related affects such as fear (e.g., Carver & White, 1994; Freeman, Sawyer, & Behnke, 1997; Marcus & McKuen, 1993). Our data show that other negative emotions including anger, sadness, and, most notably, guilt also correspond with the BIS system. These same emotions show no such correspondence with BAS.

Similarly, where prior research on BAS has often taken a fairly narrow view of the affects associated with this system, our data demonstrate the presence of direct associations between the BAS and a slightly wider range of positive affects (i.e., happiness and contentment). Neither of these positive affects showed statistically reliable relationships with BIS. In total, these findings point to one conclusion: The affect structure suggested by dual-systems models is useful for understanding emotions elicited by persuasive messages.

Discrete emotions. For the purpose of understanding the persuasive effects of affect, two types of evidence indicate that a discrete-emotions perspective is to be preferred over the dual-systems approach. One type can be found in the pattern of associations between the individual affects and perceived effectiveness. Rather than the uniformity of effects forecast by dual systems (H4a), the data showed that considerable variation in the direction and size of the affect coefficients (H4b). In fact, such a pattern is not wholly unique to our data, but can be seen in slightly different ways in several other investigations. For example, Huang (1997) reports a diversity of effects among the negative affects on attitude toward the advertisement. In fact, research on emotion and political judgments (Kinder, 1994), attitudes toward persons with AIDS (Dijker, Kok, & Koomen, 1996), and the perceived effectiveness of AIDS PSAs (Dillard et al., 1996), all exhibit variability in the effects of negative emotions. Although evidence is not quite so abundant with regard to positive affects, neither is it entirely lacking. Batra and Ray (1986) report unique effects for elation, warmth, and "deactivation" (as indexed by items such as "soothing" and

"relaxing") on attitude toward the advertisement. In the political arena, Kinder (1994) finds discriminable effects for hope and pride on the evaluation of presidential candidates.

The second type of evidence favoring discrete emotions follows from a comparison of the predictive power of the two affect structures. In this regard, the alternatives differed markedly in our data, with the discrete-emotions model showing predictive superiority in eight out of eight cases. The degree to which the data favored the discrete-emotions approach varied, but it was slightly better than 2-to-1 in the analysis that collapsed across PSAs (H5a versus H5b).

Although we know of no other studies that have undertaken an analysis exactly like the one reported here, Huang (1997) comes closest. She assessed fear, distress, and attention in response to three Bennetton advertisements, then used these three affects to predict attitude toward the advertisement. Two analyses were carried out. Paralleling our discrete structure analyses, one regression predicted attitude from the three separate affects, estimating a slope for each. Her global analysis combined all three into a single negative affect factor. The discrete model produced an $R^2\Delta$ of .11 while the global model yielded $R^2\Delta$ of .03, a ratio that favors the discrete model by a factor of 3.6.⁸ In short, Huang's data align quite nicely with the results of the current study. When the two types of evidence from the current study and others are considered jointly, they converge on the following conclusion: The affect structure suggested by discrete-emotions theories is necessary to understanding the effects of affect on persuasion.

Reconciling the structures of affect. Questions concerning the structure of affect have provided the motivation for substantial debate (see e.g., Cacioppo et al., 1999; Green et al., 1999; Russell & Feldman Barrett, 1999; Watson et al., 1999). It is typically the case that the relationship among these different conceptions takes on a competitive cast. The results of the current study suggest that a quest for the single correct structure is unlikely to end in success. Obviously, the data we bring to bear on this point are limited. They demonstrate only that dual systems and discrete emotions might be more profitably viewed as complementary approaches than as competitive ones. Yet, the data permit the wider-ranging possibility that other affect structures also may have merit in particular domains. In this vein, it has been suggested that a single positive-versus-negative dimension may be sufficient to understanding the effects of mood on subsequent message processing (Dillard & Meijnders, forthcoming). The general task of matching affect structures to different aspects of the communication process presents itself as an important problem for future research.

Persuasion and Affective Process

As always, structure has implications for process. One such implication follows from the observation that suatory appeals may inspire complex patterns of emotional response (e.g., Dillard, 1994; Dillard et al., 1996; Kinder, 1994). Indeed, as Campbell (1776/1988) noted "Rarely, any passion comes alone" (p. 129). The need to develop a deeper understanding of the mechanisms linking message features to those complex response patterns is surely among the most significant problems facing communication research. Appraisal theorists, who suggest that emotions ensue from a cognitive analysis of the person-environment relationship (Frijda, 1986; Lazarus, 1991; Oatley, 1992; Roseman et al., 1994; Scherer, 1984), offer one means of gaining traction on this problem (Nabi, 1999). Though our study did not measure appraisals, the data suggest that individuals may be more or less prone to particular appraisals as a function of their tonic levels of BIS and BAS activation. But, with the data at hand it is impossible to rule out an alternative possibility. Perhaps the BIS and BAS scales tap noncognitive phenomena such the reactivity of the dual systems. In either case, it is clear from the current data that the twin systems interact with the persuasive message to produce emotional arousal. A thorough understanding of the message-affect link must take into account individuals' emotional proclivities as well as the content, structure, and style of the message itself (cf. Roseman, Abelson, & Ewing, 1986).

The identification and analysis of the mechanism(s) by which emotion exerts its impact presents another fundamental challenge for persuasion research. Our theorizing has depended largely on the role of action tendencies. And, in the main, the results were compatible with what one might anticipate for each of the action tendencies within the context provided by our procedures (see Table 1). Anger corresponds with message rejection, which is one means of achieving the remove-obstacle function. Fear, whose function is self-protection, produces heightened perceptions of message effectiveness probably because individuals who experience fear also judge as consequential the issue addressed by the PSA. To the extent that a PSA arouses fear about some social issue, it signals the importance of that issue and, by implication, the likely effectiveness of the message.

Guilt and sadness were both positively associated with perceived effectiveness, as they have been in other studies (Dillard et al., 1996; Dillard & Peck, 2000; cf. O'Keefe, *in press*). The finding for guilt is readily interpreted as an effort to right a perceived wrong. When individuals fall short of their personal standards they strive to remedy the situation. Our theoretical understanding of the persuasive function of sadness is less developed. Perhaps more finely grained research that closely examines emo-

tional variants within the sadness family, such as pity and sorrow, might help to clarify the operation of sadness in opinion change.

Messages that induced happiness also provoked judgments of effectiveness. This result appears to be an instance of the general finding that happy individuals are more accepting of almost any sort of advocacy (Brentar, Dillard, & Smith, 1997). Such was not the case for contentment, which showed a negative relationship with judgments of perceived effectiveness. This is readily accounted for by the inherent incompatibility between contentment's action tendency and any persuasive message. By definition, a suasive appeal calls for movement in the form of opinion or behavior change, a call that runs counter to an action tendency designed to promote passivity.

Though we find substantial heuristic value in the action tendency account of emotion effects, that account is not fully developed. The most significant gap in that theorizing concerns the process by which action readiness becomes action itself. A simplistic view would hold that these propensities ineluctably translate into judgment or behavior. However, such a view renders action tendencies too similar to reflexes and thereby ignores the true flexibility in the translation process. Data bearing on this issue is given in Figures 1 and 2. Each of these bar charts displays the mean level of the six valenced emotions broken down by PSA. The striped bars represent emotions that were significant predictors of perceived message effectiveness, whereas emotions represented in black showed nonsignificant associations. If a one-to-one view of tendency-to-behavior were accurate, the impact of emotions on PSA judgments should mirror their level of arousal. Clearly, that relationship does not hold.

Whereas surely some threshold level of arousal is required for an emotion to influence persuasion, beyond that, the impact of emotion is not a simple function of affect intensity. This observation echoes the distinction between elicitation and effect upon which much of this paper is built. It also suggests an important extension to appraisal theories of emotion. Though most such theories incorporate the idea that emotions evolved for the purpose of guiding behavior, their theoretical focus is on the cognitive processes that precede and produce emotions. That the effects of emotion show so little correspondence to intensity suggests the operation of additional cognitive activities devoted to determining the applicability of an emotion to the problem at hand. In other words, certain cognitive processes determine emotional arousal whereas others govern the uses to which the emotion may be put. This point is reminiscent of Lazarus's (1991) distinction between primary and secondary appraisal processes. And, it is wholly compatible with our depiction of action tendencies as flexible urges that are adapted to the opportunities and constraints of the context in which the suasive attempts take place. Increas-

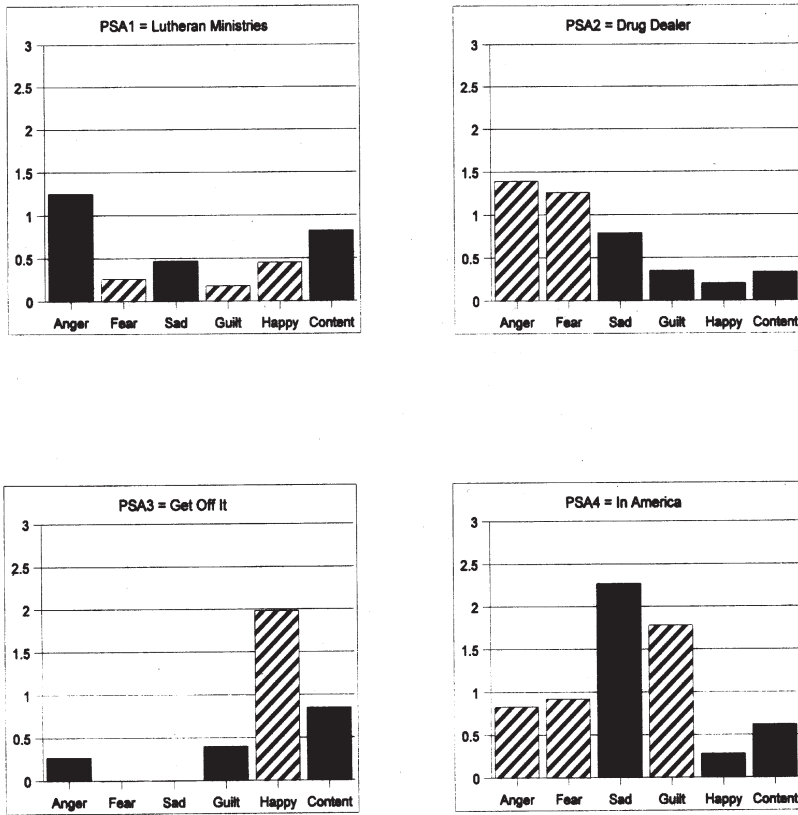


Figure 1: Emotional Responses to PSAs 1-4

NOTE: Striped bars represent emotions that were significant predictors of perceived effectiveness ($p < .10$). Solid bars were nonsignificant ($p > .10$).

ing our knowledge of the means by which affect is translated into judgment and behavior should be one of the most pressing concerns for researchers working at the interface between emotion and persuasion.

Perceived Message Effectiveness

If most any theory of persuasion were causally modeled, the model would show a process that began with message exposure and ended with attitude or behavior. The conceptual material that resides between those endpoints is what differentiates one theory from another. Though we do not advance a full-blown theory of persuasion in this manuscript, it is

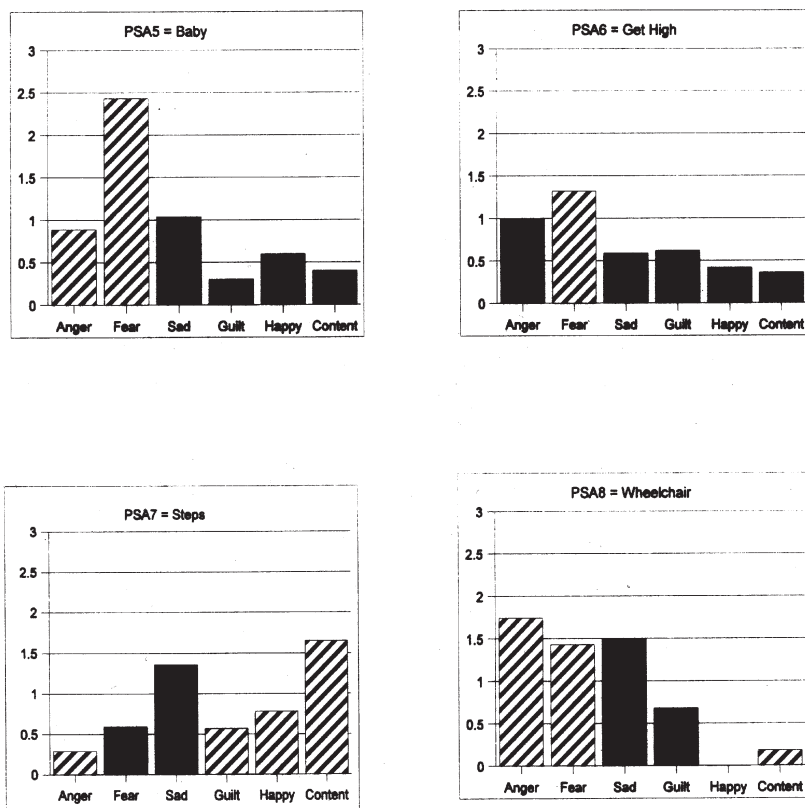


Figure 2: Emotional Responses to PSAs 5-8

NOTE: Striped bars represent emotions that were significant predictors of perceived effectiveness ($p < .10$). Solid bars were nonsignificant ($p > .10$).

apparent that we believe the cognitions and emotions are causal antecedents of effectiveness judgments. Moreover, we suggest that these linkages capture some meaningful portion of the persuasion process. As noted earlier, the decision to assess perceived effectiveness was justified on the grounds that it rendered our study comparable to previous efforts in this research stream, it was sensitive to changes in cognition and emotion, and it has been shown to exert a proximal causal influence on issue attitude (Dillard et al., 1996; Dillard & Peck, 2000). Still, one cannot argue with the assertion that perceived effectiveness is not synonymous with actual effectiveness (though this latter phrase can mean many things) (O'Keefe, 1993).

In fact, some investigations seem to show the absence of an association between perceived persuasiveness and either attitude (Collins, Taylor, Wood, & Thompson, 1988) or behavior (Thornton, Kirchner, & Jacobs, 1991). We give little weight to those studies for two reasons. First, neither used PSAs as persuasive messages. For reasons elaborated elsewhere (Dillard & Peck, 2000), we believe that effectiveness judgments are especially well suited to assessing PSAs. Though we take no stance, it is possible that such judgments are less appropriate for other message forms. Second, in both studies cited above, the statistical tests were low in power and the authors made the logical error of asserting the absence of a relationship when, in fact, they could only plausibly claim lack of support for an anticipated relationship. The difference is akin to declaring a criminal defendant innocent versus not guilty—the burden of proof being substantially higher for the former than the latter. But, these issues aside, we acknowledge the potential value in examining a larger portion of the persuasion process. This concern poses yet another task for future research.

One line along which subsequent inquiry could be refined would be to ask, more explicitly, “Perceived to be effective for whom?” Although our procedures requested that participants make a generalized effectiveness judgment, research suggests that we might have encountered variation in the results had we called for a more focused judgment. The perception that the negative effects of media or persuasive appeals are stronger for people other than ourselves is known as the third-person effect (Davidson, 1983). Whereas most research in this vein has oriented toward demonstrating and explaining the disparity in perceived effectiveness between self and others (e.g., Gunther & Thorson, 1992; Henrikson & Flora, 1999), our interests suggest a different turn. For instance, the current discussion directs us toward questions of (a) the relative impact of perceptions of message effectiveness (for self versus other) on attitude or behavior and (b) the criteria upon which effectiveness judgments are made. Knowledge of the nature of effectiveness judgments and their downstream effects would enrich our understanding of the vast terrain that lies between message exposure and attitude/behavior.

Implications for the Practice of Persuasion

Parrott, Egbert, Anderton, and Sefcovic (forthcoming) urge the producers of health campaigns to “. . . examine the role of receiver affect, including initial states and traits, as related to cognitive, affective, and behavioral outcomes in health campaigns” (p. 42). Clearly, the work reported here is responsive to their call. We see several ramifications for the conduct of persuasion campaigns and research on campaign theory:

1. Message designers should recognize that for social issues of any consequence, it may be impossible to create persuasive messages that do not evoke emotions. In all likelihood, those messages will arouse not one emotion, but several. Formative research should attend to both cognitive and emotional responses.

2. Though emotions may have their origins in positive and negative affect systems, audience segmentation in terms of BIS/BAS may prove difficult because these general emotional proclivities are not strong predictors of emotional response in specific instances. (Recall that the clear pattern in Table 4 represents aggregation across eight PSAs.) This point does not diminish the theoretical importance of our findings, but it does imply that campaign research on affect might proceed more successfully by identifying event-related affect such as the depression that often follows major surgery.

3. Conceptualizing a campaign strategy or message design in terms of broad positive or negative categories is nonoptimal. They may serve as a useful starting point; however, these classifications are too gross to capture the subtle, but significant, variations in emotional arousal and effect that are likely to characterize audience reactions to particular messages or campaigns.

4. Emotional arousal is insufficient to guarantee impact. Until we have greater knowledge of the mechanisms that govern the arousal-impact relationship, extensive formative research may be the only means by which the role of emotion in any particular campaign can be anticipated.

Summary

Questions regarding the relationship between persuasion and affect cannot be addressed without first adopting some position on the structure of affect. Though many attractive alternatives exist, a search for the one true structure is likely to prove fruitless. In fact, the central point of this project is to assert the suitability of different affect structures for different portions of the persuasion process. Our results indicate that the dual-systems models have the potential to shed light on emotions elicited by brief persuasive messages, but that the discrete-emotions position shows greater promise for understanding the effects of emotion. Focused as they are on structure, these findings should enable researchers to formulate more precise questions concerning the role of affect in the theory and practice of persuasion.

NOTES

1. A third system, the *fight/flight system*, is assumed to relate to extreme negative emotions such as terror and rage (Gray, 1990). Because public service announcements are unlikely to arouse emotions of such intensity, we disregard this system in the work reported here.

2. The idea that emotions are categorically distinct from one another is embraced by different researchers to varying degrees. Some contend that the differences are of a qualitative nature (e.g., Ekman, 1992; Roseman et al., 1994), while others see blends, mixtures, and fuzzy categories (e.g., Plutchik, 1984; Scherer, 1984; Shaver, Schwartz, Kirson, & O'Connor, 1987). For present purposes, however, this issue does not require resolution. We use the term "discrete emotions" to reference affective states that differ more or less in terms of changes in the following systems: facial expression, cognitive and perceptual activity, subjective experience, action tendency, and physiological response.

3. Of course, emotions are not perfect solutions to problems posed by the environment, nor are they are invariably successful. Emotions may become dysfunctional when their intensity is so extreme that they disrupt other, ongoing behavior sequences. In addition, emotions are dysfunctional when individuals seek immediate emotional gratification without regard for the long-term consequences of an action (e.g., drug addiction and compulsive gambling).

4. One of the assumptions of the significance tests employed in these analyses is independence of observations. Because we conducted analyses across PSAs, individual participants contributed multiple data points thereby violating the independence assumption. Normally, this could be rectified by including a dummy code for each participant that would have the effect of controlling for correlations among observations due to subject. That solution was not available to us in this study because those dummies would be perfectly collinear with each participant's BIS and BAS scores (as well as assignment to order condition). Consequently, we proceeded with the recognition that the data did not meet the independence assumption. Violation of this assumption would most likely increase the probability of a significant result. However, it is important to appreciate that a bias in the data, if present, cuts both ways. Our claims concerning the absence of relationships between BIS and the positive emotions, in addition to BAS and the negative emotions, are that much stronger. On balance, however, we believe that the violation of the assumption is of little practical consequence in these data because the pattern of associations and nonassociations is so clear.

5. Analyses that forced entry of the affects were also conducted and produced very similar results. We elected to present the stepwise results because the overall pattern was more readily discernable.

6. The careful reader may note what appears to be a discrepancy in the results regarding the effects of dominant cognitive response for the Baby PSA. In Table 5 the β weight for this variable was not significant, but in Table 6 the $R^2\Delta$ value for the block containing only dominant cognitive response was significant. The explanation lies in the fact that Table 5 contains parameter estimates derived from the full equation (i.e., after all variables were entered), whereas Table 6 reflects estimates at each step in the analysis.

7. For exploratory purposes, we also conducted a series of forced-entry regression analyses (one for each PSA) in which the BIS/BAS scales constituted a fourth block. When positive and negative affect were forced into the equation as the third block, the BIS/BAS block produced $R^2\Delta$ change values that ranged from .019 to .001, all of which were nonsignificant. When the set of valenced discrete emotions was forced into the equation as the third block, the BIS/BAS block yielded coefficients between .010 and .001, all nonsignificant.

8. In the present theoretical framework, Huang's (1997) findings also present some interpretational ambiguities that arise from the use of Watson, Clark, and Tellegen's (1988) PANAS scales (Positive and Negative Affect Schedule). Although the PANAS scales are intended to assess positive and negative affect, several items are included, such as "attentive" and "alert"

that represent nonvalenced states. Typically, these items load on the positive affect scale. However, in Huang's data, "attentive," "strong," and "alert" loaded on the negative affect factor. Then, in a subsequent factor analysis of the 12 negative items, these three items formed a factor that Huang labeled Attention. If we take Attention to mean something roughly equivalent to surprise in our study, then the result is unremarkable. Surprise is a nonvalenced state that influences the allocation of attention. In this respect, we might conclude that her findings are consistent with the emotional elicitation aspects of the present study. On this basis, it could be argued that she should not have included the Attention factor in any of the analyses of the effects of affect. However, the fact that Attention was included in both the global negative analysis and the discrete-emotions analysis leveled the playing field. Neither structure was advantaged because Attention was included in both analyses.

REFERENCES

- Batra, R., & Ray, M. L. (1986). Affective responses mediating the acceptance of advertising. *Journal of Consumer Research*, 13, 234-249.
- Brentar, J. E., Dillard, J. P., & Smith, B. A. (1997, May). *Message-irrelevant affect and persuasion: A meta-analysis*. Paper presented at the annual meeting of the International Communication Association, Montreal.
- Buck, R. (1997). From DNA to MTV: The spontaneous communication of emotional messages. In J. O. Greene (Ed.), *Message production: Advances in communication theory* (pp. 313-339). Mahwah, NJ: Erlbaum.
- Cacioppo, J. T., Gardener, W. L., & Bernston, G. G. (1999). The affect system has parallel and integrative processing components: Form follows function. *Journal of Personality and Social Psychology*, 76, 839-855.
- Campbell, G. (1776/1988). *The philosophy of rhetoric*. L. Bitzer (Ed.). Carbondale: Southern Illinois University Press.
- Carver, S., & Scheier, M. F. (1999). Themes and issues in the self-regulation of behavior. In R. S. Wyer, Jr. (Ed.), *Perspectives on behavioral self-regulation: Advances in social cognition*, (Vol. 12, pp. 1-107). Mahwah, NJ: Erlbaum.
- Carver, S., & White, T. L. (1994). Behavioral inhibition, behavioral activation, and affective responses to impending reward and punishment: The BIS/BAS scales. *Journal of Personality and Social Psychology*, 67, 319-333.
- Cohen, J. (1987). *Statistical power for the behavioral sciences* (Rev. ed.). Hillsdale, NJ: Erlbaum.
- Collins, R. L., Taylor, S. E., Wood, J. V., & Thompson, S. C. (1988). The vividness effect: Elusive or illusory? *Journal of Experimental Social Psychology*, 24, 1-18.
- Davidson, R. J. (1993). Parsing affective space: Perspectives from neuropsychology and psychophysiology. *Neuropsychology*, 7, 464-475.
- Davison, W. P. (1983). The third-person effect in communication. *Public Opinion Quarterly*, 47, 1-15.
- Dijker, A., Kok, G., & Koomen, W. (1997). Emotional reactions to people with AIDS. *Journal of Applied Social Psychology*, 26, 731-748.
- Dillard, J. P. (1994). Rethinking the study of fear appeals: An emotional perspective. *Communication Theory*, 4, 295-323.
- Dillard, J. P., & Meijnders, A. (in press). Persuasion and the structure of affect. In J. P. Dillard & M. Pfau (Eds.), *The persuasion handbook: Developments in theory and practice*. Thousand Oaks, CA: Sage.
- Dillard, J. P., & Peck, E. (2000). Affect and persuasion: Emotional responses to public service announcements. *Communication Research*, 27, 461-495.

- Dillard, J. P., Plotnick, C. A., Godbold, L. C., Freimuth, V. S., & Edgar, T. (1996). The multiple affective consequences of AIDS PSAs: Fear appeals do more than scare people. *Communication Research*, 23, 44-72.
- Duck, J. M., Hogg, M. A., & Terry, D. J. (2000). The perceived impact of persuasive messages on "us" and "them." In D. J. Terry & M. A. Hogg (Eds.), *Attitudes, behavior, and social context: The role of norms and group membership* (pp. 265-291). Mahwah, NJ: Erlbaum.
- Ekman, P. (1992). An argument for basic emotions. *Cognition and Emotion*, 6, 169-200.
- Freeman, T., Sawyer, C. R., & Behnke, R. R. (1997). Behavioral inhibition and the attribution of public speaking state anxiety. *Communication Education*, 46, 175-187.
- Frijda, N. (1986). *The emotions*. Cambridge, UK: Cambridge University Press.
- Frijda, N., Kuipers, P., & ter Schure, E. (1989). Relations among emotion, appraisal, and emotional action readiness. *Journal of Personality and Social Psychology*, 57, 212-228.
- Gray, J. A. (1990). Brain systems that mediate both emotion and cognition. *Cognition and Emotion*, 4, 269-288.
- Green, D. P., Salovey, P., & Truax, K. M. (1999). Static, dynamic, and causative bipolarity of affect. *Journal of Personality and Social Psychology*, 76, 856-867.
- Gunther, A. C., & Thorson, E. (1992). Perceived persuasiveness effects of product commercials and public service announcements. *Communication Research*, 19, 574-596.
- Hafstad, A., Aaro, L. E., & Langmark, F. (1996). Evaluation of an anti-smoking mass media campaign targeting adolescents: The role of affective responses and interpersonal communication. *Health Education Research*, 11, 29-38.
- Hammond, S. L., Freimuth, V. S., & Morrison, W. (1987). Tracking a major PSA campaign from distribution through gatekeepers to target audience. *Health Education Quarterly*, 14, 153-166.
- Henriksen, L., & Flora, J. A. (1999). Third-person perception and children: Perceived impact of pro- and anti-smoking ads. *Communication Research*, 26, 643-665.
- Huang, M. -H. (1997). Is negative affect in advertising general or specific? A comparison of three functional forms. *Psychology & Marketing*, 14, 223-240.
- Hunter, J. E., & Gerbing, D. (1982). Unidimensional measurement, second order factor analysis, and causal models. In B. Staw & L. L. Cummings (Eds.), *Research in organizational behavior* (Vol. 4, pp. 267-320). Greenwich, CT: JAI Press.
- Jorgensen, P. F. (1998). Affect, persuasion, and communication processes. In P. A. Andersen & L. K. Guerrero (Eds.), *Handbook of communication and emotion: Research, theory, applications, and contexts* (pp. 404-423). San Diego: Academic Press.
- Kinder, D. (1994). Reason and emotion in American political life. In R. C. Schank & E. Langer (Eds.), *Beliefs, reasoning, & decision-making* (pp. 272-314). Hillsdale, NJ: Erlbaum.
- Lazarus, R. S. (1991). *Emotion & adaptation*. New York: Oxford University Press.
- Lim, T.-S., & Hunter, J. E. (1987). LIMSTAT [Computer software]. East Lansing, MI: Authors.
- Marcus, G. E., & Mackuen, M. B. (1993). Anxiety, enthusiasm, and the vote: The emotional underpinnings of learning and involvement during presidential campaigns. *American Political Science Review*, 87, 672-685.
- Nabi, R. L. (1999). A cognitive-functional model for the effects of discrete negative emotions on information processing, attitude change, and recall. *Communication Theory*, 9, 292-320.
- O'Keefe, D. J. (1992). Understanding social influence: Relations between lay and technical perspectives. *Communication Studies*, 44, 228-238.
- O'Keefe, D. J. (in press). Guilt and social influence. In M. E. Roloff (Ed.), *Communication Yearbook*, 23. Thousand Oaks, CA: Sage.
- O'Keefe, G. J., & Reid, K. (1990). The uses and effects of public service advertising. In L. A. Grunig & J. E. Grunig (Eds.), *Public relations research annual* (Vol. 2, pp. 67-91). Hillsdale, NJ: Erlbaum.
- Oatley, K. (1992). *Best laid schemes: The psychology of emotions*. Paris: Cambridge University Press.

- Omdahl, B. L. (1995). *Cognitive appraisal, emotion, and empathy*. Mahwah, NJ: Erlbaum.
- Parrott, R., Egbert, N., Anderton, J., & Sefcovic, E. (in press). Enlarging the role of environment as a social influence construct in health campaigns. In J. P. Dillard & M. Pfau (Eds.), *The persuasion handbook: Developments in theory and practice*. Thousand Oaks, CA: Sage.
- Roseman, I., Abelson, R. P., & Ewing, M. F. (1986). Emotion and political cognition: Emotional appeals in political communication. In R. R. Lau & D. O. Sears (Eds.), *Political cognition* (pp. 270–294). Hillsdale, NJ: Erlbaum.
- Roseman, I. J., Wiest, C., & Swartz, T. S. (1994). Phenomenology, behaviors, and goals differentiate discrete emotions. *Journal of Personality and Social Psychology*, 67, 206–221.
- Russell, J. A., & Feldman Barrett, L. (1999). Core affect, prototypical emotional episodes, and other things called *emotion*: Dissecting the elephant. *Journal of Personality and Social Psychology*, 76, 805–819.
- Scherer, K. (1984). On the nature and function of emotion: A component process approach. In K. Scherer & P. Ekman (Eds.), *Approaches to emotion* (pp. 293–318). Hillsdale, NJ: Erlbaum.
- Shaver, P., Schwartz, J., Kirson, D., & O'Connor, C. (1987). Emotion knowledge: Further explorations of a prototype approach. *Journal of Personality and Social Psychology*, 52, 1061–1086.
- Struckman-Johnson, C., Gilliland, R. C., Struckman-Johnson, D., & North, T. C. (1990). The effects of fear of AIDS and gender on responses to fear-arousing condom advertisements. *Journal of Applied Social Psychology*, 20, 1396–1410.
- Struckman-Johnson, C., Struckman-Johnson, D., Gilliland, R. C., & Ausman, A. (1994). Effect of persuasive appeals in AIDS PSAs and condom commercial on intentions to use condoms. *Journal of Applied Social Psychology*, 24, 2223–2244.
- Sutton, S. K., & Davidson, R. J. (1997). Prefrontal brain asymmetry: A biological substrate of the behavioral approach and avoidance systems. *Psychological Science*, 8, 204–210.
- Thayer, R. E. (1989). *The biopsychology of mood and arousal*. New York: Oxford University Press.
- Thornton, B., Kirchner, G., & Jacobs, J. (1991). Influence of a photograph on a charitable appeal: A picture may be worth a thousand words when it has to speak for itself. *Journal of Applied Social Psychology*, 21, 433–445.
- Tomarken, A., Davidson, R. J., & Henriques, J. B. (1990). Resting frontal brain asymmetry predicts affective responses to films. *Journal of Personality and Social Psychology*, 59, 791–801.
- Veenhoven, R. (1991). Is happiness relative? *Social Indicators Research*, 24, 1–34.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54, 1063–1070.
- Watson, D., & Tellegen, A. (1985). Toward a consensual structure of mood. *Psychological Bulletin*, 98, 219–235.
- Watson, D., Wiese, D., Vaidya, J., & Tellegen, A. (1999). The two general activation systems of affect: Structural findings, evolutionary considerations, and psychobiological evidence. *Journal of Personality and Social Psychology*, 76, 820–838.