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The Threshold Model of Ambivalence: An examination of the bases of attitudinal ambivalence through tests of competing models

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The Ohio State University, 1994
THE THRESHOLD MODEL OF AMBIVALENCE:
AN EXAMINATION OF THE BASES OF ATTITUDINAL AMBIVALENCE
THROUGH TESTS OF COMPETING MODELS

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By

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* * * *

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The present research investigated the bases of the psychological experience of attitudinal ambivalence by comparing the ability of several previously proposed models to predict subjective ambivalence. In Experiments 1 and 2, subjects provided their positive and negative reactions toward a variety of attitude objects. Subjects also answered questions designed to assess the amount of subjective ambivalence elicited by the attitude objects. The positive and negative reactions were transformed to reflect their relative magnitude. Whichever of the reactions was greater in number was considered the dominant reaction. Whichever of the reactions was less in number was considered the conflicting reaction. The results of Experiments 1 and 2 revealed that the conflicting and dominant reactions
influenced subjective ambivalence differently, depending upon the magnitude of conflicting reactions. When conflicting reactions were minimal, subjective ambivalence was a joint function of the conflicting and dominant reactions. When conflicting reactions were above a minimal level, however, subjective ambivalence was solely a function of the conflicting reactions. None of the previously proposed ambivalence models offered predictions that reflected both of these results. Based upon the results of Experiments 1 and 2, the Threshold Model of Ambivalence was advanced. This model proposes that 1) when the number of conflicting reactions is greater than a minimal threshold, subjective ambivalence is a function of 5 times the conflicting reactions minus the dominant reactions, and 2) when the number of conflicting reactions is greater than a minimal threshold, subjective ambivalence is a negatively accelerating function of the conflicting reactions, irrespective of the dominant reactions. In Experiments 3 and 4, the conflicting and dominant reactions were experimentally manipulated by means of an impression formation task. After reading positive and/or negative traits ascribed to fictitious individuals, subjects answered questions designed to assess the subjective ambivalence elicited by these fictitious individuals. The results of Experiments 3 and 4 replicated Experiments 1 and 2. Importantly, the Threshold Model of Ambivalence was the most accurate predictor of subjective ambivalence both above and below the critical threshold. The importance of understanding and incorporating the construct of ambivalence into current theories of attitudes and persuasion, as well as other areas of social inquiry (e.g., interpersonal relationships, the self) is discussed.
To my friends and family.
Acknowledgments

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CHAPTER I

INTRODUCTION

*To be, or not to be, that is the question:*
...To die, to sleep-
*No more, and by a sleep to say we end*
The heart-ache and the thousand natural shocks
*That flesh is hier to; 'tis a consummation*
Devoutly to be wish'd. To die, to sleep-
*To sleep, perchance to dream-ay, there's the rub,*
For in that sleep of death what dreams may come,
*When we have shuffled off this mortal coil,*
Must give us pause...
*But that the dread of something after death,*
The undiscover'd country, from whose bourn
*No traveller returns, puzzles the will,*
And makes us rather bear those ills we have,
*Than fly to others that we know not of.*

Since the seminal work of Thurstone (1928; Thurstone & Chave, 1929),
attitudes have been conceptualized and measured as lying along a bipolar continuum
ranging from negative to positive, with neutral located in-between. This perspective
allows one to assess the degree to which an attitude is relatively more or less
favorable toward an attitude object. As the above passage suggests, however,
attitudes can sometimes possess both positive and negative features: Hamlet both
longs for and at the same time fears his own death. One potential disadvantage of the
traditional bipolar-attitude perspective is its inability to assess this potentially
important dimension. Clearly, a "neutral" or "slightly positive" response from Hamlet toward suicide on a traditional bi-polar attitude scale would lose a great deal of information concerning the conflict and tension associated with his attitude.

At surprisingly regular intervals, researchers have argued for and presented data supporting the existence of an indifference-ambivalence attitudinal dimension that assumes that attitudes are based upon separate positive and negative components (e.g., Cacioppo & Berntson, 1994; Chein, 1951; Edwards, 1946; Green & Goldfried, 1965; Kaplan, 1972; Katz, Wackenhut, & Hass, 1986; Klopfer & Madden, 1980; Scott, 1966, 1969; Thompson, Zanna, & Griffin, in press). Investigators have also provided data supporting differential consequences as a function of ambivalence. For example, ambivalent attitudes are related to attenuated attitude-behavioral intention consistency (Moore, 1973) and decreased attitude accessibility (Bargh, Chaiken, Govender, & Pratto, 1992) compared to non-ambivalent attitudes (see also Costello, Rice, & Schoenfeld, 1974; Gilmore, 1982; Komorita & Bass, 1967; Tourangeau, Rasinski, Bradburn, & D’Andrade, 1989).

Yet to a large extent, researchers have continued to use bipolar measures of attitude, ignoring the ambivalence dimension. Additionally, when researchers have used the concept of attitudinal ambivalence, they have generally adopted one of two approaches to the inference of subjective ambivalence. One approach is to assess the subjective perception of ambivalence by asking individuals, for example, whether their attitudes are one-sided or mixed toward an attitude object (e.g., Tourangeau et al., 1989). Another approach is to measure the positive and negative reactions that an
individual holds toward some attitude objects, and then use a previously proposed model to combine the positive and negative reactions into an ambivalence index (e.g., Hass, Katz, Rizzo, Bailey, & Eisenstadt., 1991). Often the first approach is used without examining whether the subjectively reported ambivalence is associated with actual conflict among the positive and negative components of attitudes. Similarly, the second approach is typically adopted without examining that particular model's accuracy in assessing the subjective experience of ambivalence.

The present research is designed to examine the relationships between the positive and negative reactions and the subjective feelings of ambivalence. Experiments 1 and 2 examine this relationship in a correlational design. Experiments 3 and 4 examine this relationship in an experimental design.
Previously Proposed Models of Ambivalence

At least five models of ambivalence have been offered by various researchers. Each of the models assumes that subjective ambivalence is a psychological state of subjective tension associated with an attitude object. Each model also assumes that a person's positive and negative reactions combine in some particular manner to create the psychological experience of ambivalence. After describing each of these models, studies are presented that allow comparison of the ability of the various models to predict the subjective experience of ambivalence based on the relative magnitude of positive and negative reactions upon which the attitude is based.

The goal of all of the previously proposed models of ambivalence is to make an inference about the level of the psychological state of ambivalence associated with a specific attitude by assessing antecedent feelings of positivity and negativity associated with the attitude object. Five models have been proposed that utilize some measure of positive and negative thoughts and feelings (henceforth referred to as reactions) toward an object in order to arrive at an index or measure of ambivalence. For reasons of parsimony, these reactions can be (and have been, see Brown & Farber, 1951; French, 1944; Scott, 1969) alternatively conceptualized in terms of their relative magnitude in relation to each other, without respect to valence. For example, a person with 5 positive and 2 negative reactions to an object can
alternatively be viewed as possessing 5 dominant and 2 conflicting reactions. The
present research adopts this terminology: whichever of the positive or negative
reactions is greater in number will be referred to as the dominant reaction and
whichever is less in number will be referred to as the conflicting reaction.²

Below are described the five previously proposed models of ambivalence. The
intent of this presentation is to provide 1) a clear statement of the mathematical
properties of each of the models and 2) the underlying rationale and justification, as
offered by the models' authors.³ After presenting the five models, previous tests of
the models and an examination of the differences among the models is presented.

Conflicting Reactions Model (CRM)

Kaplan (1972) proposed that the degree of ambivalence is a function of the
"total affect" toward an object (the sum of positive and negative reactions) minus the
"polarity" toward the object (the absolute value of the positive minus negative
reactions). Conceptually, this ambivalence measure is designed to assess the
ambivalence component minus any non-neutral (polarity) component. One can
replace the positive and negative reactions in this model with equivalent dominant and
conflicting reactions.

With the suggested replacement, Kaplan's ambivalence model (i.e., [dominant
+ conflicting] - [dominant - conflicting]) reduces to the quantity 2 times the number
of conflicting reactions. More simply, Kaplan's ambivalence index reduces to:

Equation 1 (CRM): \[ A = F(C) \]

in which A represents the amount of ambivalence elicited by an attitude object and C
the number of conflicting reactions to that attitude object. This conflicting reactions model (CRM) is graphed in figure 1 and panel A of figure 6. Inspection of the figure reinforces the two properties important to the model. First, the number of dominant reactions has no influence on the amount of ambivalence elicited by an object. For example, ambivalence is equal to 3 when the number of conflicting reactions is equal to 3, regardless of whether the dominant reactions are equal to 3, 4, or 5 (note however, that the number of dominant reactions, by definition, must always equal or exceed the number of conflicting reactions). Second, ambivalence increases at a constant (i.e. linear) rate as the number of conflicting reactions increases.

**Positive Accelerating Model**

Brown and Farber utilized Hull's (1943) theory to connect the hypothetical construct of frustration to its antecedent conditions and consequent behaviors. Brown and Farber took as their fundamental assumption that "frustration is a joint function of the absolute and relative strengths of the thwarted and competing tendencies" (p. 483). Then, they attempted to integrate two common assumptions about the behavior of frustration. The two assumptions are that "(1) frustration increases as the difference between the strengths of the tendencies is reduced, being maximal at the point of equality, and (2) that if the two tendencies are equally strong, then the greater their absolute strengths, the more intense the frustration" (p. 484).

The incorporation of these two assumptions led to the following general model of frustration:

\[ F = F\left(\frac{E_w^n}{E_\gamma^{-1}}\right) \]
Figure 1. The Conflicting Reactions Model (CRM)
in which $F$ represents the amount of frustration, $E_w^n$ the weaker of the two tendencies raised to the $n^{th}$ power, and $E_s^{n-1}$ the stronger tendency raised to the $(n-1)^{th}$ power. As Brown and Farber point out, when $n$ is set at the value 1, frustration is a function of the weaker of the two tendencies. That is, the model reduces to the C.R.M. Brown and Farber point out that one feature of this instantiation of the equation is that neither the absolute strength of the stronger tendency nor the relative strengths of the two tendencies can enter into the determination of frustration. Assuming that such factors as these are important, it is necessary to set $n$ at some value greater than 1 so that $F$ will decrease with departures from equality produced by either increasing $E_s$ or decreasing $E_w$ (p. 484).

That is, although the general equation yields a function equivalent to the Conflicting Reactions Model when $n$ is set at 1, the equation departs from this model when $n$ is set at values greater than 1, and it is the characteristics resulting from this departure that are considered most desirable by Brown and Farber.

Scott (1966, 1969) later utilized Brown and Farber's model with $n$ set at the value 2 as one possible model for attitudinal ambivalence. That is, Scott utilized Brown and Farber's basic equation, substituting ambivalence for frustration and considering positive and negative reactions as competing tendencies. Thus, the model predicts that ambivalence ($A$) is a function of the square of the conflicting reactions ($C$) divided by the number of dominant reactions ($D$):

\[
A = F\left(\frac{C^2}{D}\right)
\]

This Positive Acceleration Model (PAM) is graphed in figure 2 and panel B of figure 6. Inspection of the figure reinforces the two properties desired by Scott, as well as Brown and Farber. First, the amount of ambivalence increases as the absolute
Figure 2. The Positive Acceleration Model (PAM)
number of dominant reactions decreases (holding the number of conflicting reactions constant). For example, when the number of conflicting reactions is 3, ambivalence is equal to 1.80 when $D$ (i.e., number of dominant reactions) = 5, 2.25 when $D = 4$, and 3 when $D = 3$. Second, the amount of ambivalence increases as the number of conflicting reactions increases (holding the number of dominant reactions constant). For example, when the number of dominant reactions is 3, ambivalence is equal to .3 when $C$ (i.e., number of conflicting reactions) = 1, 1.3 when $C = 2$, and 3 when $C = 3$. Although not commented upon by Scott, the Positive Acceleration Model possesses yet a third distinguishing characteristic. Namely, the association between the number of conflicting reactions and ambivalence is a positively accelerating, rather than linear, relationship. That is, for those levels of dominant reactions at which there are more than two levels of conflicting reactions, the relationship between the dominant reactions and ambivalence is positively accelerating with a power function greater than 1: Later incremental increases (e.g., 4 to 5) in the number of conflicting reactions lead to larger increases in ambivalence than earlier ones (e.g., 1 to 2). For this reason, we refer to the model as the Positive Acceleration Model.

Negative Acceleration Model

Inspection of Panel B also reveals a characteristic of the Positive Acceleration Model that Scott (1966) found undesirable. Namely, the model "does not distinguish among degrees of univalence" (p. 394). In other words, when conflicting reactions are equal to zero, the resulting level of ambivalence is always equal to 0, regardless of the level of dominant reactions. In order to overcome this "inadequacy," Scott
proposed an alternative model for ambivalence that maintained the desirable characteristics of the Positive Acceleration Model, and additionally, allowed for differing levels of ambivalence given conflicting reactions equal to zero (i.e., "degrees of univalence"). This model is:

\[ A = F\left\{\frac{(2C + 1)}{(C + D + 2)}\right\} \]

This Negative Acceleration Model (NAM) is graphed in figure 3 and panel C of figure 6. Inspection of the figure reinforces that the two properties of the Positive Acceleration Model found desirable by Scott are retained in the Negative Acceleration Model. First, the amount of ambivalence increases as the absolute number of dominant reactions decreases (holding the number of conflicting reactions constant). Second, the amount of ambivalence increases as the number of conflicting reactions increases (holding the number of dominant reactions constant). In addition, the Negative Acceleration Model possesses the desired property (not found in the Positive Acceleration Model) of discriminating across levels of univalence. That is, when the conflicting reactions are equal to zero, the amount of ambivalence increases as the number of dominant responses decreases. For example, ambivalence = .25 when \( D = 2 \), ambivalence = .3 when \( DR = 1 \), ambivalence = .5 when \( DR = 0 \). The Negative Acceleration Model also differs from the Positive Acceleration Model, however, in that there is a negatively accelerating relationship between the number of conflicting reactions and ambivalence (i.e., the power function is less than 1). That is, later incremental increases in the amount of conflicting reactions add less to ambivalence than earlier ones. Though not commented upon by Scott, this
Figure 3. The Negative Accelerating Model (NAM)
relationship is potentially important in differentiating the predictions of the two models. It is for this characteristic that we refer to the model as the Negative Acceleration Model.

**Similarity - Intensity Model**

Recently, Thompson, Zanna, & Griffin (in press, see also Thompson & Zanna, in press) have hypothesized the existence of two necessary and sufficient conditions for ambivalence. First, they hypothesize that increased similarity between positive and negative reactions leads to increased ambivalence. Second, they hypothesize that (holding similarity constant) increased intensity (i.e., greater dominant and/or conflicting reactions) leads to increased ambivalence. Thompson et al. provide an equation that translates these hypotheses into a mathematical model. That model is:

*Equation 5:* \[ A = F\left\{\frac{(C + D)}{2} - (D - C)\right\} \]

Conceptually, the first component of the equation, \(\frac{(C + D)}{2}\), represents the second hypothesis. That is, the hypothesis that increased intensity leads to increased ambivalence is reflected in the average of the conflicting and dominant reactions. As the average of these two components (i.e., the intensity) increases, so does the corresponding level of ambivalence. The second component of the equation, \([- (D - C)]\), represents the first hypothesis. When similarity is increased (e.g., equivalent numbers of positive and negative reactions), a smaller quantity is subtracted from the amount of ambivalence than when the similarity is less. Thus, increased similarity is associated with greater ambivalence scores.
It should be noted that one can simplify the S.I.M. to yield the equation:

Equation 6 (SIM): \[ A = F(3C - D) \]

From this simplified representation of the S.I.M., it is clear that ambivalence is predicted to be a linear function of three times the conflicting reactions minus the dominant reactions. The Similarity - Intensity Model (SIM) is graphed in figure 4 and panel D of figure 6. Inspection of the figure reveals that the characteristics desired by Thompson et al. are indeed embodied by the model, and that the model does yield the linear relationship between conflicting and dominant reactions.\(^6\)

**Cross-Product Model**

Katz, Hass, and their colleagues have conducted a program of research investigating the nature of racial attitudes and behavior (e.g., Hass, Katz, Rizzo, Bailey, & Moore, 1992; Katz, Glass, & Cohen, 1973; Katz, Glass, Lucido, & Farber, 1977; Katz & Hass, 1988). An important moderating, individual difference within this research is the construct of racial ambivalence. Katz et al. (1986) have defined ambivalence as "the product of the subject’s pro and anti scores" (p. 52, see also Hass & et al., 1992, pp. 794-795). Conceptually, this model is designed such that it "takes account of both the level, and the similarity, of the subject’s pro and anti scores, so that subjects who are relatively high on both tend to have higher ambivalence scores than subjects who are high on only one, and subjects who are low on both have the lowest ambivalent scores" (pp. 52-53). Thus, the model is:

Equation 7 (CPM): \[ A = F(C \times D) \]

This cross-product model (CPM) is graphed in figure 5 and panel E figure 6.
Figure 4. The Similarity-Intensity Model (SIM)
Figure 5. The Cross-Product Model (CPM)
Inspection of the figure reinforces the properties important to the model. Namely, increasing either the number of conflicting or the dominant reactions leads to an increase in the amount of ambivalence (see Dollard, Miller, Doob, Mowrer, & Sears, 1939, for a conceptually similar model).

It should be noted that this model differs markedly from the previous models. The C.R.M. predicts that ambivalence is unaffected as the number of dominant reactions increase. The P.A.M., N.A.M., and S.I.M. predict that ambivalence decreases as the number of dominant reactions increase. In sharp contrast, the cross-product model predicts that ambivalence increases as the number of dominant reactions increase. This point will be elaborated below.

**French's Threshold Model of Frustration**

To some extent, the systematic analysis of ambivalence can be traced to the work of French. French (1944) sought to understand frustration in terms of field theory. One aspect of field theory concerns the effect of forces upon behavior. Often, forces act in opposition to one another. For example, one could be both motivated to approach an object (e.g., fudge brownies) and at the same time be motivated to withdraw (e.g., dietary considerations) from that same object (see Lewin, 1935, especially pp. 88-94). French sought to understand the development and expression of frustration and fear in small groups as a function of differentially powered fields.
Most important for the present analysis is the model of frustration that French proposed that introduced the concept of a threshold in order to predict the effects of conflicting forces on behavior. Because of this threshold, the model can be thought of as a Threshold Model of Frustration. French's model postulates that "the strength of frustration is a function of the strength of the weaker of these two forces when the weaker is greater than a certain minimum" (emphasis added, p. 283). That is, given opposing fields, whichever of the two fields is weaker in power is the consequent determinant of frustration, when that weaker force is above a certain threshold. A translation from the domain of frustration to ambivalence is possible by considering positive and negative reactions as opposing "fields" and by replacing frustration with attitudinal ambivalence. Given this translation, ambivalence is a function of the magnitude of conflicting reactions when the number of conflicting reactions is greater than a certain minimum.

It is worth noting the similarity between French's Threshold Model of Frustration and the Conflicting Reactions Model. Namely, the two are equivalent, save for the question of how ambivalence -- to the extent that it exists -- is determined below the minimal threshold. The Conflicting Reactions Model predicts that ambivalence is a function of the magnitude of conflicting reactions regardless of the level of conflicting reactions. French's Model predicts that ambivalence is a function of the magnitude of conflicting reactions above a minimal level of conflicting reactions. Unspecified by French's Model, of course, is the determinant of ambivalence below the threshold.
Given this under-specification of the Threshold Model of Frustration proposed by French, it is not used in further correlations comparing the ability of the models to predict ambivalence. Rather, the model is presented here for its implicit conceptual suggestion that the level of conflicting reactions might moderate the influence of the dominant reactions on subjective ambivalence. That is, above a minimal level of conflicting reactions, ambivalence could be a function solely of the amount of conflicting reactions. Below this threshold, ambivalence might be determined in part by the magnitude of dominant reactions. Since there is no clear specification of where the hypothesized minimal level is, the Threshold Model of Frustration is not graphed.

The Plausibility of the Ambivalence Models

One approach for assessing the adequacy of the models could be to examine the plausibility of their predictions. For example, the P.A.M. predicts a positively accelerating function of conflicting reactions on subjective ambivalence. This relationship could obtain if, in general, individuals expected attitude objects (e.g., individuals, food) to possess one or two conflicting attributes. That is, people might realize that no object is perfectly negative or positive. Given such an expectation, the introduction of the first few conflicting attributes would not result in a great deal of subjective ambivalence. However, given more and more conflicting reactions, the subjective ambivalence might rise dramatically. Although people might expect for there to be a few conflicting reactions associated with any attitude object, above a certain point the introduction of even more conflicting reactions might lead to even
greater incremental increases. This process would lead to the relationship predicted by the P.A.M.

In contrast, the N.A.M. predicts a negatively accelerating relationship between conflicting reactions and subjective ambivalence. This relationship is the one that might be espoused by various consistency theories (e.g., Festinger, 1957; Heider, 1946, 1958; Osgoode & Tannenbaum, 1955). According to these theories, people would feel most comfortable when attitude objects evaluated as positive possess only positive attributes and attitude objects evaluated as negative possess only negative attributes. Given such an expectation, the introduction of the first few conflicting reactions might result in the greatest distress. However, the introduction of additional conflicting reactions would lead to less and less incremental increases in subjective ambivalence. This process would lead to the relationship predicted by the N.A.M.

Similar analyses can be provided for all of the models. It is simply worth noting that all of the these models have been advanced by reputable researchers and have at least seemed plausible to the various proponents of the models. In the present research, the a priori plausibility of the models is not the discriminating argument for the inclusion of the models in this research. Instead, it is sufficient to note that the models were taken as plausible by their proponents. The present research seeks to examine empirically how well the models' predictions correspond to the relationships of conflicting and dominant reactions on subjective ambivalence.
Assessing the Adequacy of the Models to Predict Subjective Ambivalence

Given that the six models yield different predictions regarding the bases of ambivalence and the subjective experience of that ambivalence, a natural question arises as to which of the models most closely estimates the subjective experience of ambivalence. The responses of past researchers to this issue can be categorized as adopting one of two approaches. First, some researchers have provided theoretical justification in the absence of empirical support for the favored model. This approach requires researchers, in part, to speculate as to which assumptions concerning subjective ambivalence are cogent. Second, some researchers have provided at least some empirical justification.

**Theoretical justification.** Often researchers have selected an approach to combining conflicting and dominant reactions based upon *a priori* theoretical assumptions as to how ambivalence "should" behave. That is, models have been justified as being adequate based primarily upon theoretical justification. For example, Kaplan presented the C.R.M. and other investigators have simply used it without inspecting the ability of the model to accurately predict the subjective experience of ambivalence (e.g., see Bargh et al., 1992).
Empirical justification. Only one study has attempted to compare models of ambivalence as to their ability to predict subjective ambivalence. Thompson, Zanna, and Griffin (in press) utilized this second approach in providing a validation test of the S.I.M. versus alternative models. This approach consisted of comparing the abilities of several models to predict the psychological experience of ambivalence. Specifically, the positive and negative affective and cognitive reactions to two attitude objects (euthanasia and mandatory AIDS testing) were measured, as well as 10 questions designed to assess the psychological experience of ambivalence. The positive and negative reactions were then combined in order to yield the ambivalence measures predicted by the various ambivalence models, and the resulting scores were correlated with the indicator of ambivalence derived from the measures of subjective ambivalence. It should be pointed out that Thompson and Zanna collapsed the responses across both attitude objects, yielding an individual difference approach to ambivalence. Their results revealed that the correlation coefficient associated with S.I.M. was greater than the correlation coefficients associated with the other models. The specific ordering of the correlation coefficients was S.I.M. ($r = .40$), P.A.M. ($r = .37$), C.R.M. ($r = .32$), and C.P.M. ($r = .21$). Thus, support for the S.I.M. was provided by its ability to predict subjective ambivalence to a greater extent than the other models.\(^7\)
Issues with Previous Validation Tests

Inadequate empirical justification. Although the approach outlined above provides information about the predictive ability of the models, it is problematic. Specifically, one general prediction made by all of the models when considering all of the possible responses is that subjective ambivalence increases with the introduction of additional conflicting reactions. The differences in the predictions offered by the six models evidence themselves most strongly when examining specific questions concerning, for example, the influence of dominant reactions on the subjective experience of ambivalence and the nature of the relationship (linear, positively, or negatively accelerating) between the subjective experience of ambivalence and the conflicting reactions. Thus, although the S.I.M. predicts better than the other models for the data collected by Thompson et al., the properties hypothesized by the S.I.M., as well as the other models, were not tested. In order to overcome this difficulty, the different properties predicted by the six models are outlined below.

In addition, it is important to note that there are difficulties associated with testing the differences in the ability of the models to predict subjective ambivalence. Namely, since each of the models is a different function of the same independent variables (i.e., conflicting and dominant reactions), they do not represent independent tests. Consequently, the use of statistical parameters to test between the correlation coefficients is problematic. An alternative approach, used in the present research, is to examine the ability of the conflicting and dominant reactions to predict the psychological experience of ambivalence under specified conditions, and determine
how well the predictions of the models correspond to these relationships.

**Correlational relationships.** A second problem common to all of the previous empirical investigations concerns the nature of the data collection. Namely, past investigations have relied upon correlational relationships when investigating the ability of a model to predict subjective ambivalence. A typical manner of data collection consists of having subjects complete unipolar measures of their positive and negative reactions toward a number of attitude objects, and also assessing the amount of subjective ambivalence elicited by the same objects (e.g., Scott, 1969; Thompson, Zanna, & Griffin, in press). Although informative as to the relationships among the models and subjective ambivalence, this correlational approach cannot allow for inferences of causality. In order to make such inferences, the number of positive and negative reactions to an attitude object would have to be manipulated. The present research adopts this experimental, as well as correlational, approach.
Comparison of the Models

There have been several research investigations that utilize the concept of attitudinal ambivalence as a moderator of other processes and/or effects (e.g., Bargh et al., 1992; Costello et al., 1974; Hass et al., 1992; Komorita & Bass, 1967; Moore, 1973). For example, Bargh et al. hypothesized that because ambivalent attitudes are the result of both positive and negative evaluative associations, greater attitudinal ambivalence should lead to reduced attitude accessibility. Utilizing the model of ambivalence suggested by Kaplan (i.e., the C.R.M.), Bargh et al. had one group of subjects provide their positive and negative reactions toward a variety of attitude objects. From these ratings, ambivalence scores for the attitude objects were calculated by means of Kaplan's formula. A second group of subjects then responded to attitudinal probes for both ambivalent and non-ambivalent stimuli. As predicted, stimulus words rated high in ambivalence were less accessible, as measured by response latency, than stimulus words rated low in ambivalence.

As pointed out above, however, the models make different predictions about the level of ambivalence as a function of conflicting and dominant reactions. For example, imagine that two of the stimuli used by Bargh et al. were rated as both being associated with 2 conflicting reactions. In addition, suppose one stimulus was associated with 5 dominant reactions (stimulus A) whereas the other stimulus was
associated with 2 dominant reactions (stimulus B). In order to determine whether ambivalence moderates accessibility, it is first necessary to determine the amount of subjective ambivalence associated with the stimuli. Since Bargh et al. utilized the C.R.M., the two stimuli would have been rated as equally ambivalent. Had Bargh et al. utilized the S.I.M., however, the stimulus associated with 2 dominant reactions (stimulus B) would have been rated as being associated with greater ambivalence (ambivalence=4) than the stimulus associated with the 5 dominant reactions (stimulus A; ambivalence=1). And, had Bargh et al. utilized the C.P.M., the stimulus associated with the 5 dominant reactions (stimulus A) would have been rated as being associated with greater ambivalence (ambivalence=10) than the stimulus associated with the 2 dominant reactions (stimulus B; ambivalence=4). To state the issue more succinctly, one's choice of a particular ambivalence model can lead to vastly different predictions as to the ambivalence associated with specific stimuli. Whether Bargh et al. had found 1) no differences in accessibility between stimulus A and stimulus B, 2) stimulus A to be more accessible than stimulus B, or 3) stimulus B to be more accessible than stimulus A, some model of ambivalence would have been supported. That is, a researcher's prediction as to the level of subjective ambivalence depends, in part, upon the model that the researcher chooses to represent ambivalence.

Even a cursory comparison of the panels in figure 6 yields a curious conclusion: The level of ambivalence predicted by these 5 models varies, sometimes considerably. Of particular note are two properties that differ across models. These properties, and their relationship to the proposed models, are examined below.
Figure 6. Previously Proposed Models of Ambivalence
Does the magnitude of dominant reactions matter? Both the C.R.M. and French's Threshold Model of Ambivalence predict that subjective ambivalence is a function of the conflicting reactions, and that the number of dominant reactions does not influence subjective ambivalence. Additionally, French's Threshold Model of Frustration predicts that this relationship should obtain only above a certain minimal number of conflicting reactions. The P.A.M., N.A.M., and S.I.M. all predict that subjective ambivalence is negatively related to dominant reactions, such that as the number of dominant reactions increase, subjective ambivalence decreases. The C.P.M. predicts that subjective ambivalence is positively related to dominant reactions, such that as the number of dominant reactions increase, subjective ambivalence also increases.

These different predictions as to the influence of dominant reactions on subjective ambivalence are particularly pronounced when the number of conflicting reactions approach zero. Three of the models (C.R.M., P.A.M., and C.P.M.) do not predict a relationship between dominant reactions and subjective ambivalence when the conflicting reactions are equal to zero. That is, given no conflicting reactions, subjective ambivalence does not vary as the dominant reactions increase. In contrast, two of the models (N.A.M. and S.I.M.) predict a negative relationship between dominant reactions and subjective ambivalence: When there are no conflicting reactions, subjective ambivalence decreases as the dominant reactions increase.
Relationship of conflicting reactions to subjective ambivalence. The models also yield conflicting predictions concerning the influence of the conflicting reactions on subjective ambivalence. As the number of conflicting reactions increase, the corresponding level of subjective ambivalence can increase in a linear, positively accelerating, or negatively accelerating function. The P.A.M. predicts a positively accelerating relationship: Later incremental increases in the number of conflicting reactions are predicted to have a greater impact on subjective ambivalence than earlier ones. The N.A.M. predicts a negatively accelerating relationship: Earlier incremental increases in the number of conflicting reactions are predicted to have a greater impact on subjective ambivalence than later ones. The other three models (C.R.M., C.P.M., and the S.I.M.) all predict a linear influence of conflicting reactions on subjective ambivalence: Subjective ambivalence increases at a constant rate with the introduction of each conflicting reaction.
CHAPTER II

EXPERIMENTS 1 AND 2

A comparison of the ability of each of the models to predict subjective ambivalence relative to one another is a fundamental question. In order to accomplish this goal, the present research adopts the following strategy: First, the correlational relationships between the dominant reactions and the subjective experience of ambivalence are examined at each level of conflicting reactions. This analysis allows for a comparison of the different predictions made by the models about the relationships between dominant reactions and subjective ambivalence, and also allows a test of French’s prediction that above a certain level of conflicting reactions, dominant reactions no longer matter. Then, more specific subsets of the data are analyzed in order to assess the relationships among the conflicting and dominant reactions and the subjective experience of ambivalence. These more focused analyses will allow for further differentiation among the abilities of the models to predict the subjective experience of ambivalence. Finally, the specific relationship of conflicting reactions to subjective ambivalence is examined by calculating the power function associated with the conflicting reactions.
Methods

In Experiment 1, 100 subjects were randomly assigned to one of four cells in a 2 (Questionnaire Order: Valenced Reactions first versus Ambivalence first) x 2 (Valenced Reactions Questionnaire Order: assessment of positive reactions versus negative reactions first) factorial experiment. Five subjects' data were dropped prior to data analysis because of failure to complete all measures. In Experiment 2, 228 subjects were randomly assigned to the same 4 cells. The administration of the valenced reactions and subjective ambivalence questionnaires was conducted such that subjects completed each questionnaire approximately 30 minutes apart, in-between which they participated in an unrelated experiment. The valenced reactions questionnaire (VRQ) was designed to assess the psychological magnitude of positive and negative reactions associated with the attitude objects. The subjective ambivalence questionnaire (AQ) was designed to assess the amount of subjective attitudinal ambivalence elicited by the attitude objects. The attitude objects were picked because of their prima facie propensity to vary along the dimension of indifference and ambivalence. In Experiment 1, the objects included; legalized abortion, White Castle hamburgers, neutral toned wall paint, your mother, raising tuition at the students' own institution, and the National Enquirer newspaper. In Experiment 2, the same six attitude objects were used, with the addition of a seventh;
Valenced Reactions Questionnaire (VRO)

Half of the subjects completed booklets that first assessed the magnitude of their positive reactions, followed by the assessment of the magnitude of their negative reactions. The other half of the subjects completed the booklets in reverse order. Those subjects who completed the negative followed by positive reaction booklet were instructed that:

On the next few pages we will ask for your opinions on a variety of topics. First, we will ask for you to give an indication of all of your NEGATIVE thoughts and feelings on the issue -- that is, for all of the negative things that you personally think and feel about the issue. Later, we will ask for you to give an indication of all of your positive thoughts and feelings on the issue.

For some issues or objects, you may not have very many personal negative or positive thoughts and feelings. For other issues you may have some negative thoughts and feelings, but very few positive ones (or vice-versa). For still other issues and objects, you may have many negative AND positive thoughts and feelings.

For each of the issues, we will ask you to first rate the extent to which you have NEGATIVE thoughts and feelings about it. In doing this, you should ignore any positive thoughts and feelings that you might have.

Following these instructions, subjects were given further instructions on how to complete the scales, as well as an example using a popular beverage as an attitude object. On a separate page following the instructions, subjects indicated the magnitude of their negative thoughts and feelings toward the attitude objects on 11 point unipolar scales, anchored with 0 equal to "no negative thoughts or feelings" and 10 equal to "maximum negative thoughts or feelings." After completing a thought-
listing task, subjects completed scales assessing the magnitude of their positive reactions to the attitude objects. Those subjects who completed the positive followed by the negative reaction booklets read the same instructions, except that "positive" replaced "negative" (and vice versa) and completed the same scales, albeit in reverse order.

**Subjective Ambivalence Questionnaire (AQ)**

Subjects completed a series of 3 scales designed to assess the amount of subjective attitudinal ambivalence elicited by the six attitude objects. All subjects were instructed first that

On the next few pages we will ask for your ratings on a variety of topics. First, we are interested in the extent to which you have mixed reactions to various people and issues or whether those reactions are one-sided.

Following the instructions subjects were told to indicate the extent to which their reactions were mixed on 11-point scales anchored with 0 equal to "completely ONE-SIDED reactions" and 10 equal to "completely MIXED reactions". On a separate page following the above instructions, subjects were presented with the attitude objects, each paired with an 11-point scale. Subjects completed similar scales to assess the extent to which their reactions were conflicted and indecisive to the attitude objects.

A new ambivalence measure was created by averaging each subject's responses to the three measures. Thus, the subjective ambivalence measure scores could vary from 0 to 10. The alpha coefficient for the subjective ambivalence measure was .57. Refer to Appendix A for the complete materials used in Experiments 1 and 2.
Results

Data Reduction

The numbers of positive and negative reactions provided on the VRQ were transformed to equivalent measures of conflicting (C) and dominant (D) reactions. For example, a subject who responded to an attitude issue with 10 positive reactions and 5 negative reactions would be categorized as having 10 dominant and 5 conflicting reactions. When the numbers of positive and negative reactions were equivalent (e.g., 5 positive and negative reactions), that number was used as both the dominant and conflicting measure (i.e., 5 dominant and 5 conflicting reactions). Following these transformations, the numbers of dominant and conflicting reactions were combined in order to arrive at the ambivalence predicted by each of the 5 ambivalence models outlined above.

Due to the similar methods and results between Experiments 1 and 2, the two experiments are combined into one data-set. All analyses are conducted using both experiments considered as one data set. Refer to Appendix B for separate analyses of Experiments 1 and 2.
Tests of the Ability of Models to Predict Subjective Ambivalence

In order to assess how well the models predict the subjective experience of ambivalence, the following strategy is utilized. All 570 observations (95 subjects x 6 topics) in Experiment 1 and 1596 observations (228 subjects x 7 topics) in Experiment 2 are used in an analysis correlating subjective ambivalence with the ambivalence predicted by each of the models. In order to correct for the amount of variance accounted for due to individual subject response tendencies, correlational matrices use subjects as a partial variable. This strategy allows for the examination of the partial correlations of each of the models with ambivalence (as well as each other) while correcting for over-estimation due to individual subject response tendencies.

Table 1 presents the partial correlational coefficient matrix for Experiments 1 and 2. Of greatest interest is that all models significantly predict the amount of subjective attitudinal ambivalence (all p's < .0001). Also of interest is the high inter-model correlation. Inspection of the table reveals that the correlations among the five models range from .98 (N.A.M. and S.I.M.) to .72 (C.P.M. and N.A.M.). It is also interesting to note that the pattern of correlations is remarkably similar to those reported by Thompson, Zanna, and Griffin (in press) despite the differences in attitude objects used and the fact that Thompson et al. collapsed across attitude objects, treating ambivalence as an individual difference. First, the magnitude of the correlations are quite similar for both Experiments 1 and 2 and the Thompson et al. results. Second, the S.I.M. correlates most highly with subjective ambivalence for both Experiments 1 and 2 and the Thompson et al. results.

\[\text{Table 1}\]
Table 1. Partial Correlation Matrix, Experiments 1 & 2.

<table>
<thead>
<tr>
<th></th>
<th>AMB</th>
<th>CRM</th>
<th>SIM</th>
<th>NAM</th>
<th>PAM</th>
<th>CPM</th>
<th>TMA</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRM</td>
<td>.40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIM</td>
<td>.43</td>
<td>.89</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NAM</td>
<td>.41</td>
<td>.87</td>
<td>.98</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAM</td>
<td>.36</td>
<td>.93</td>
<td>.89</td>
<td>.86</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPM</td>
<td>.36</td>
<td>.94</td>
<td>.77</td>
<td>.72</td>
<td>.82</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TMA</td>
<td>.43</td>
<td>.85</td>
<td>.92</td>
<td>.92</td>
<td>.80</td>
<td>.77</td>
<td></td>
</tr>
</tbody>
</table>

Note: The n for all correlations except those associated with the PAM is 2,166. The n associated with the correlations with the PAM (2,045) is smaller due to the exclusion of all responses in which the number of dominant and conflicting reactions are both equal to zero.
Examination of the Different Predictions Derivable from the Models

Our analyses of the ways in which the various models of ambivalence differ suggest several tests to determine the ability of the models' hypothesized properties to predict subjective ambivalence. First, what is the relationship between dominant reactions and subjective ambivalence? Second, how do the dominant and conflicting reactions combine in order to produce the subjective experience of ambivalence. Third, is the subjective experience of ambivalence a linear, positively accelerating, or negatively accelerating function of the number of conflicting reactions?

The Influence of Dominant Reactions on Subjective Ambivalence

In order to examine the relationship between dominant reactions and the subjective experience of ambivalence, the correlation between dominant reactions and subjective ambivalence was calculated for each level of conflicting reaction. Table 2 presents these correlations. As can be seen in Table 2, the relationship between subjective ambivalence and the number of dominant reactions varies such that 1) when the number of conflicting reactions are zero or one there are significant negative correlations between subjective ambivalence and dominant reactions, whereas 2) when the number of conflicting reactions is greater than one there are no significant correlations between subjective ambivalence and dominant reactions.

An inspection of the n's associated with each level of the conflicting reactions yields a possible alternative explanation for this finding. Namely, when the n associated with the correlation is larger than 400 the correlation between dominant reactions and subjective ambivalence is negative and significant, whereas when the n's
Table 2. Correlations between Ambivalence and Dominant Reactions as a Function of Conflicting Reactions, Experiments 1 and 2.

<table>
<thead>
<tr>
<th>Conflicting Reactions</th>
<th>Correlation between Ambivalence and Dominant Reactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>$r = -.22$, $n = 883$, $p &lt; .0001$</td>
</tr>
<tr>
<td>1</td>
<td>$r = -.11$, $n = 406$, $p &lt; .05$</td>
</tr>
<tr>
<td>2</td>
<td>$r = -.05$, $n = 321$, $p &gt; .03$</td>
</tr>
<tr>
<td>3</td>
<td>$r = -.03$, $n = 217$, $p &gt; .06$</td>
</tr>
<tr>
<td>4</td>
<td>$r = -.08$, $n = 123$, $p &gt; .03$</td>
</tr>
<tr>
<td>5</td>
<td>$r = -.05$, $n = 166$, $p &gt; .05$</td>
</tr>
<tr>
<td>6-10*</td>
<td>$r = -.11$, $n = 50$, $p &gt; .04$</td>
</tr>
</tbody>
</table>

* the cells for conflicting reactions equal to 6, 7, 8, 9, and 10 are collapsed due to small cell size.
fall below 400 the correlations are negative and not significant. Thus, the lack of
significance for the correlations with conflicting reactions greater than 1 might be due
to their relative lack of statistical power compared to the correlations with conflicting
reactions equal to zero or one. In order to overcome this issue, a correlation was
calculated for the relationship between dominant reactions and subjective ambivalence
for all of the conflicting reactions equal from 2 to 10. Collapsing the data thus yields
an n of 877. And even given the increased power associated with this analysis, the
correlation between dominant reactions and the subjective experience of ambivalence
remains insignificant, \( r = -0.05, p > .10 \).

Two findings are immediately apparent from this preliminary analysis. First,
the subjective experience of ambivalence is, at least, a function of the dominant
reactions given zero or one conflicting reaction. Second, the subjective experience of
ambivalence is solely a function of the conflicting reactions given more than one
conflicting reaction. That is, it appears that the influence of conflicting and dominant
reactions on subjective ambivalence may be different depending upon whether the
conflicting reactions are equal to zero and one (i.e., below a critical threshold) or are
greater than one (i.e., above a critical threshold).

The Influence of Conflicting and Dominant Reactions as a Function of Threshold

The results presented in Table 2 suggest that the influence of conflicting and
dominant reactions on subjective ambivalence should be moderated by a critical
threshold. That is, there should emerge a reactions X threshold interaction such that
the influence of dominant reactions are different depending upon whether the
relationship is examined above or below the critical threshold. In order to test this prediction, a multiple regression analysis was performed using conflicting reactions (CR) and dominant reactions (DR), as well as threshold (T) as independent variables and subjective ambivalence as the dependent variable. Threshold was dummy coded such that observations with greater than 1 conflicting reaction were coded as "above" and conflicting reactions equal to zero or one were coded as "below." In all multiple regression analyses reported herein, subjects was used as a regressor. Dummy coding was used in order to treat subjects as a categorical variable in these models. This approach allows for the investigation of the relationships among ambivalence and the conflicting and dominant reactions as a within-subjects analysis. Rather than collapsing across the responses to the attitude objects for each subject then, all responses were able to be used in the analyses. The specific analysis was:

*Equation 8:*

$$\text{Amb} = b(\text{SUBJECT}) + b(\text{CR}) + b(\text{DR}) + b(\text{DR}^*T) + b(\text{CR}^*T) + b(\text{CR}^*\text{DR}) + b(\text{CR}^*\text{DR}^*T)$$

The results of this analysis are presented in Table 3. Inspection of the table reveals four significant results. First, there were main effects for subject, conflicting, and dominant reactions. These main effects reveal that for all observations, subjective ambivalence is positively associated with conflicting reactions ($b = .50$) and negatively associated with dominant reactions ($b = -.13$). More important, these main effects were qualified by the predicted dominant reaction $X$ threshold interaction. This interaction reveals that the influence of dominant reactions on subjective ambivalence is statistically different, depending upon whether the influence
Table 3. Results of Multiple Regression Analysis (Equation 8), Experiments 1 and 2.

<table>
<thead>
<tr>
<th>Predictor</th>
<th>degrees of freedom</th>
<th>$F$</th>
<th>probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUBJECT</td>
<td>(322, 1837)</td>
<td>1.5</td>
<td>$p &lt; .0001$</td>
</tr>
<tr>
<td>CR</td>
<td>(1, 1837)</td>
<td>4.7</td>
<td>$p &lt; .03$</td>
</tr>
<tr>
<td>DR</td>
<td>(1, 1837)</td>
<td>12.4</td>
<td>$p &lt; .0001$</td>
</tr>
<tr>
<td>CR*T</td>
<td>(1, 1837)</td>
<td>0.1</td>
<td>n.s.</td>
</tr>
<tr>
<td>DR*T</td>
<td>(1, 1837)</td>
<td>11.6</td>
<td>$p &lt; .0007$</td>
</tr>
<tr>
<td>DR*CR</td>
<td>(1, 1837)</td>
<td>0.4</td>
<td>n.s.</td>
</tr>
<tr>
<td>CR<em>DR</em>T</td>
<td>(1, 1837)</td>
<td>0.8</td>
<td>n.s.</td>
</tr>
</tbody>
</table>
occurs below or above the threshold. This interaction is interpreted further by examining the influence of conflicting and dominant reactions on subjective ambivalence at each level of threshold.

**Observations below the threshold.** The influence of conflicting and dominant reactions on subjective ambivalence was examined by a multiple regression analysis using only those observations with zero or one conflicting reaction. In this analysis, subjective ambivalence was regressed on the dummy coded subject factor, the conflicting reactions, the dominant reactions, and the conflicting X dominant reactions interaction. This analysis yielded two significant main effects. Subjective ambivalence was significantly predicted by conflicting reactions, $b = .68$, $F(1,971) = 20.7$, $p < .0001$. In addition, subjective ambivalence was also significantly predicted by the dominant reactions, $b = -.14$, $F(1,971) = 56.5$, $p < .0001$. The conflicting X dominant reaction interaction was not significant.

From these results it is possible to infer a specific formula for the influence of conflicting and dominant reactions on subjective ambivalence given zero or one conflicting reaction. Namely, given the lack of a conflicting X dominant reactions interaction, coupled with the positive conflicting reaction $b$ in combination with the negative dominant $b$, it is deducible that given zero or one conflicting reactions, subjective ambivalence is equal to .68 times the conflicting reactions minus .14 times the dominant reactions, or more simply, subjective ambivalence is approximately 5 times the conflicting reactions minus the dominant reactions (i.e., $5C-D$). It is worth noting the similarity between this relationship, derived from the results of
Experiments 1 and 2, and the relationship hypothesized by the S.I.M. (i.e., 3C-D).

**Observations above the threshold.** The influence of conflicting and dominant reactions on subjective ambivalence was examined by a similar analysis using only those observations with more than one conflicting reaction. This analysis yielded one main effect. Ambivalence was significantly predicted by conflicting reactions, $b = .39$, $F(1,576) = 38.0$, $p < .0001$. In contrast, subjective ambivalence was not significantly predicted by the dominant reactions, $b = -.03$, $F(1,576) = 0.3$, $p > .5$. The conflicting X dominant reaction interaction was not significant.

**Summary.** The multiple regression analyses suggest that above a critical threshold (viz., conflicting reactions greater than one) subjective ambivalence is solely a function of the conflicting reactions and that below that critical value subjective ambivalence is a joint function of the conflicting and dominant reactions. One point remains unaddressed, however. Namely, is the relationship between subjective ambivalence and conflicting reactions linear, positively accelerating, or negatively accelerating?

**The nature of the influence between conflicting reactions and subjective ambivalence.** In order to examine the nature of the relationship between conflicting reactions and subjective ambivalence, a power analysis was conducted for the relationship between conflicting reactions and subjective ambivalence. In order to determine this power function, log-log transformations were conducted on the dependent and independent variables. By transforming the variables thus, the resulting slope is equivalent to the power function associated with the independent
variable on the dependent variable (see Stevens, 1957). The transformed subjective ambivalence and conflicting reactions scores were entered into a multiple regression analysis for all observations. The slope associated with the conflicting reactions was equal to .42. Thus, this analysis suggests that the relationship between conflicting reactions and subjective ambivalence is a positive and negatively accelerating relationship with a power function of .42.

The means and standard deviations of Experiments 1 and 2 are presented in Table 4.
Table 4. Subjective Ambivalence as a Function of Conflicting and Dominant Reactions, Experiments 1 and 2.

<table>
<thead>
<tr>
<th>Dominant Reactions</th>
<th>6-10</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( x = 2.0 )</td>
<td>2.8</td>
<td>3.6</td>
<td>4.2</td>
<td>4.7</td>
<td>4.9</td>
<td>5.2</td>
</tr>
<tr>
<td></td>
<td>( sd = 2.2 )</td>
<td>2.0</td>
<td>2.2</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
<td>2.4</td>
</tr>
<tr>
<td></td>
<td>( n = 604 )</td>
<td>303</td>
<td>213</td>
<td>138</td>
<td>85</td>
<td>63</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>( r_{-ri} )</td>
<td>3.0</td>
<td>4.3</td>
<td>5.1</td>
<td>4.9</td>
<td>4.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>( sd = 2.1 )</td>
<td>1.8</td>
<td>1.8</td>
<td>1.3</td>
<td>1.9</td>
<td>1.9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>( n = 63 )</td>
<td>31</td>
<td>39</td>
<td>34</td>
<td>28</td>
<td>103</td>
<td></td>
</tr>
<tr>
<td></td>
<td>( x = 2.3 )</td>
<td>3.7</td>
<td>4.1</td>
<td>3.8</td>
<td>5.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>( sd = 1.5 )</td>
<td>1.8</td>
<td>2.2</td>
<td>1.6</td>
<td>1.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>( n = 22 )</td>
<td>14</td>
<td>30</td>
<td>30</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>( x = 3.5 )</td>
<td>3.7</td>
<td>3.3</td>
<td>3.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>( sd = 1.8 )</td>
<td>2.6</td>
<td>2.0</td>
<td>1.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>( n = 21 )</td>
<td>15</td>
<td>26</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>( x = 3.6 )</td>
<td>2.8</td>
<td>2.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>( sd = 2.5 )</td>
<td>1.7</td>
<td>1.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>( n = 22 )</td>
<td>19</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>( x = 3.1 )</td>
<td>3.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>( sd = 2.0 )</td>
<td>1.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>( n = 30 )</td>
<td>24</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>( x = 2.9 )</td>
<td>3.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>( sd = 2.1 )</td>
<td>1.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>( n = 121 )</td>
<td>24</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Conflicting Reactions
Discussion

It should be recalled that the purpose of Experiments 1 and 2 was to examine the predictions derived from the previously proposed models of ambivalence. The analyses of Experiments 1 and 2 revealed that, 1) when conflicting reactions are equal to zero or one, subjective ambivalence is a joint function of conflicting minus dominant reactions and 2) when conflicting reactions are greater than one, subjective ambivalence is a positive and negatively accelerating function solely of the conflicting reactions. Inspection of figure 6 reveals that none of the previously proposed ambivalence models adequately predicts both of these findings. Both the N.A.M. and the S.I.M. provide cogent predictions given conflicting reactions equal to zero or one in that both of these models predict univalence differentiation, whereas the other models do not. Also, the C.R.M. and the N.A.M. provide some cogent predictions given conflicting reactions greater than one. The C.R.M. correctly predicts that subjective ambivalence is solely a function of conflicting reactions but fails to predict the negative power function. The N.A.M. predicts that subjective ambivalence is a positive and negatively accelerating function of conflicting reactions, although the N.A.M. also incorrectly predicts that subjective ambivalence is attenuated by dominant reactions.
The results of Experiments 1 and 2 provide an understanding of how the previously proposed models are able to predict subjective ambivalence. When the number of conflicting reactions is greater than a certain minimum, the P.A.M., the N.A.M., the C.P.M., and the S.I.M. are able to accurately predict subjective ambivalence to the extent that they are highly correlated with the C.R.M., which predicts that subjective ambivalence is a positive function of the number of conflicting reactions. When the number of conflicting reactions is minimal, however, the S.I.M. and the N.A.M. are able to predict subjective ambivalence based upon their similar predictions of univalent ambivalence differentiation.

One insight into these relationships is that a model's appropriateness (i.e., ability to accurately predict subjective ambivalence) will be a function of the distribution of conflicting and dominant reactions. Given attitude objects low in conflicting reactions, the S.I.M. and N.A.M. are the most appropriate models with which to infer subjective ambivalence. Given attitude objects potentially high in conflicting reactions, however, the C.R.M. and the N.A.M. are the most appropriate models with which to infer subjective ambivalence. Since it is not always known, a priori, what the distribution of conflicting and dominant reactions for any set of attitude objects will be, it would be clearly advantageous to develop a model that is able to predict subjective ambivalence according to the results of Experiments 1 and 2.
The Threshold Model of Ambivalence

We propose a model that adopts French's Threshold Model of Frustration, with the important addition of specifying the hypothesized relationship among subjective ambivalence and conflicting and dominant reactions when the number of conflicting reactions is below the minimal threshold.

From the results of Experiments 1 and 2 it is possible to infer the characteristics most desirable for such a model. First, the model should predict that subjective ambivalence is a weighted joint function of the conflicting and dominant reactions below the threshold. Second, the model should predict that subjective ambivalence is a positive and negatively accelerating function of conflicting reactions above that threshold. Using these desiranda, we propose the Threshold Model of Ambivalence. Based upon the results of Experiments 1 and 2, it is proposed that, 1) when conflicting reactions are below a minimal level, subjective ambivalence is predicted best by a modification of the S.I.M. and 2) when conflicting reactions are above a minimal level, subjective ambivalence is predicted best by a modification of the C.R.M. More specifically, the Threshold Model of Ambivalence predicts that: 1) subjective ambivalence is a function of 5 times the conflicting reactions minus the dominant reactions when the number of conflicting reactions is below some minimal threshold and 2) subjective ambivalence is a positive and negatively accelerating function of the conflicting reactions when the number of conflicting reactions is above a minimal threshold. When the conflicting and dominant reactions are assessed on eleven point thoughts and feelings scales, as in the current research, the threshold
appears to be just 1 conflicting reaction. Expressed mathematically, the Threshold Model of Ambivalence is:

*Equation 9 (TMA):*  
If CR ≤ t, \( A = F(5C - D) \);

If CR > t, \( A = F(5C^p) \)

where \( t \) = threshold and \( p < 1 \)

The Threshold Model of Ambivalence, with \( t = 1 \) and \( p = .4 \), is graphed in figure 7. Inspection of figure 7 reveals that the properties desired for the Threshold Model are embodied by the formula. First, below the threshold, subjective ambivalence is a joint function the conflicting and dominant reactions. Second, above the threshold, subjective ambivalence is a positive and negatively accelerating function of the conflicting reactions. The correlation of the Threshold Model of Ambivalence (T.M.A.) with subjective ambivalence, as well as the other models of ambivalence, are presented in Table 1.

The Threshold Model of Ambivalence was developed specifically in order to be able to predict subjective ambivalence based upon the properties of subjective ambivalence both below and above the threshold. In order to examine the correlations as a function of the threshold, the correlations among the models and subjective ambivalence were calculated for those responses below and above the threshold. Table 5 presents the partial correlation matrix for those responses that fall below the threshold. Inspection of the table reveals that the Threshold Model of Ambivalence and the S.I.M. both correlate most highly with subjective ambivalence below the threshold. This result is not surprising since below the threshold, the
Figure 7. The Threshold Model of Ambivalence (TMA)
Table 5. Partial Correlation Matrix, Observations Below the Threshold, Experiments 1 & 2.

<table>
<thead>
<tr>
<th></th>
<th>AMB</th>
<th>CRM</th>
<th>SIM</th>
<th>NAM</th>
<th>PAM</th>
<th>CPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRM</td>
<td></td>
<td>.13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIM</td>
<td></td>
<td>.23</td>
<td>.37</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NAM</td>
<td></td>
<td>.19</td>
<td>.48</td>
<td>.93</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAM</td>
<td></td>
<td>.12</td>
<td>.61</td>
<td>.67</td>
<td>.89</td>
<td></td>
</tr>
<tr>
<td>CPM</td>
<td></td>
<td>.10</td>
<td>.91</td>
<td>.18</td>
<td>.25</td>
<td>.28</td>
</tr>
<tr>
<td>TMA</td>
<td>.23</td>
<td>.56</td>
<td>.98</td>
<td>.94</td>
<td>.71</td>
<td>.51</td>
</tr>
</tbody>
</table>
Threshold Model of Ambivalence provides a formula that is very similar in prediction to the S.I.M. (i.e., 5C-D versus 3C-D).

Table 6 presents the partial correlation matrix for those responses that lie above the threshold. Inspection of the table reveals that the Threshold Model of Ambivalence correlates most highly with subjective ambivalence above the threshold.

**Issues Concerning the Threshold Model of Ambivalence**

Although the Threshold Model of Ambivalence does predict the subjective experience of ambivalence better overall than the previously proposed models of ambivalence (i.e., above and below the threshold), this result should not be surprising given that the model was constructed explicitly upon the results of Experiments 1 and 2. Thus, a crucial issue is whether the relative superiority of the Threshold Model of Ambivalence over the previously proposed models in accounting for the results replicates to an independent sample. That is, it is critical to provide a cross-sample validation of the results of our initial research to show the superiority of the Threshold Model of Ambivalence over the competing models.

In addition to the necessity of a cross-sample validation, two other issues arise from the results of Experiments 1 and 2. First, it is possible that the relationships uncovered are connected to the specific attitude objects used in the experiments. That is, given that the same attitude objects were used across Experiments 1 and 2, the results might be specific to those attitude objects and might not generalize beyond these objects. Second, the very nature of the data collection raises an important question. Given the correlational nature of the data, it is not possible to make
Table 6. Partial Correlation Matrix, Observations Above the Threshold, Experiments 1 & 2.

<table>
<thead>
<tr>
<th></th>
<th>AMB</th>
<th>CRM</th>
<th>SIM</th>
<th>NAM</th>
<th>PAM</th>
<th>CPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRM</td>
<td>.23</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIM</td>
<td>.23</td>
<td>.92</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NAM</td>
<td>.21</td>
<td>.79</td>
<td>.96</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAM</td>
<td>.21</td>
<td>.95</td>
<td>.97</td>
<td>.90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPM</td>
<td>.16</td>
<td>.86</td>
<td>.61</td>
<td>.38</td>
<td>.68</td>
<td></td>
</tr>
<tr>
<td>TMA</td>
<td>.25</td>
<td>.99</td>
<td>.92</td>
<td>.81</td>
<td>.93</td>
<td>.82</td>
</tr>
</tbody>
</table>
inferences concerning the causal nature of conflicting and dominant reactions on
subjective ambivalence. Although the relationship proposed seems cogent (namely,
that the reactions cause the subjective ambivalence), other explanations cannot be
ruled out.
CHAPTER III

EXPERIMENTS 3 AND 4

Experiments 3 and 4 were conducted in order to test the predictions of the Threshold Model of Ambivalence while simultaneously addressing the issues raised by Experiments 1 and 2. In Experiments 3 and 4, the conflicting and dominant information about fictitious target persons was manipulated and the resulting subjective ambivalence was measured. By manipulating the information about the attitude objects (fictitious target individuals) in this fashion, the generality of the results of Experiments 1 and 2 can be addressed. First, if the relationships discovered in Experiments 1 and 2 are the result of the specific attitude objects used in those experiments, it is unlikely that the relationships will replicate to the attitude object used in Experiments 3 and 4. Second, the experimental manipulation of the conflicting and dominant reactions allows for the inference of causality.
Methods

Design and Cover Story

In both Experiments 3 and 4, subjects were instructed to read a list of traits for, and answer questions about, each of 16 different target persons. In Experiment 3, 87 subjects were randomly assigned to the cells of a 4 (Number of Positive Traits: 0, 1, 3, or 5) x 4 (Number of Negative Traits: 0, 1, 3, or 5) factorial experiment. In Experiment 4, 64 subjects were randomly assigned to the cells of a 4 (Number of Positive Traits: 0, 1, 4, or 7) x 4 (Number of Negative Traits: 0, 1, 4, or 7) factorial experiment.13

Subjects were instructed that

On each of the next pages you will find a set of words that describe a person. Your task is to read the set of words and form an impression about the person being described and decide how much you would like that particular person.

Subjects were additionally informed that each page described a different person, the descriptive words were listed alphabetically, each word was equally important, and each word came from a different acquaintance of the person.

Independent Variables

The top half of each page contained the positive and negative traits purportedly describing the target individual. Positive and negative traits were taken from Anderson (1968). Thirty two (16 positive and 16 negative) traits were used in
Experiment 3, and 40 (20 positive and 20 negative) traits were used in Experiment 4. The traits used in Experiments 3 and 4 are presented in Table 7. Traits were randomly selected from the positive and negative trait pool for each of the sixteen trait lists (i.e., target person descriptions). Each trait was used twice across all sixteen descriptions. For each description, the traits were arranged in alphabetical order. The 16 different descriptions were ordered randomly on a subject by subject basis.

Dependent Measures

The bottom half of each page contained four questions about the target person. The first question was designed to assess subjects’ attitudes toward the target person and the other three questions were designed to assess subjects’ subjective ambivalence toward the target person. The first question read, "People can feel very unfriendly or very friendly to other people. How friendly do you find this person?" Subjects responded to this question on a nine point scale anchored with -4 equal to "very unfriendly" and +4 equal to "very friendly." The second question read, "Thoughts and feelings can be very consistent or very conflicted. How conflicted are your thoughts and feelings about this person?" Subjects responded to this question on an 11 point scale anchored with 0 equal to "no conflict" and 10 equal to "maximum conflict." The third question read, "Thoughts and feelings can be all one-sided or very mixed. How mixed are your thoughts and feelings about this person?" Subjects responded to this question on an 11 point scale anchored with 0 equal to "not at all mixed" and 10 equal to "maximum mixed." The fourth question read, "People can be
Table 7. Positive and Negative Traits, Experiments 3 & 4.

<table>
<thead>
<tr>
<th>Negative Traits</th>
<th>Positive Traits</th>
</tr>
</thead>
<tbody>
<tr>
<td>boring*</td>
<td>broad-minded*</td>
</tr>
<tr>
<td>conceited</td>
<td>cheerful*</td>
</tr>
<tr>
<td>cruel</td>
<td>clever*</td>
</tr>
<tr>
<td>dishonest</td>
<td>considerate</td>
</tr>
<tr>
<td>distrustful*</td>
<td>courteous*</td>
</tr>
<tr>
<td>greedy</td>
<td>dependable</td>
</tr>
<tr>
<td>hostile</td>
<td>friendly</td>
</tr>
<tr>
<td>ill-mannered*</td>
<td>happy</td>
</tr>
<tr>
<td>insincere</td>
<td>honest</td>
</tr>
<tr>
<td>liar</td>
<td>humorous</td>
</tr>
<tr>
<td>loud-mouthed</td>
<td>intelligent</td>
</tr>
<tr>
<td>malicious</td>
<td>kind</td>
</tr>
<tr>
<td>mean</td>
<td>loyal</td>
</tr>
<tr>
<td>narrow-minded</td>
<td>pleasant*</td>
</tr>
<tr>
<td>obnoxious</td>
<td>reliable</td>
</tr>
<tr>
<td>phony</td>
<td>responsible</td>
</tr>
<tr>
<td>quarrelsome*</td>
<td>sincere</td>
</tr>
<tr>
<td>rude</td>
<td>thoughtful</td>
</tr>
<tr>
<td>self-centered*</td>
<td>trustworthy</td>
</tr>
<tr>
<td>selfish</td>
<td>trustful*</td>
</tr>
<tr>
<td>unfriendly*</td>
<td>truthful</td>
</tr>
<tr>
<td>unkind</td>
<td>understanding</td>
</tr>
<tr>
<td>untrustworthy</td>
<td>unselfish</td>
</tr>
<tr>
<td>untruthful</td>
<td>warm</td>
</tr>
</tbody>
</table>

* signifies additional traits used in experiment 4.
very decisive or very indecisive in their thoughts and feelings toward others. How indecisive are your thoughts and feelings about this person?" Subjects responded to this question on an 11 point scale anchored with 0 equal to "not at all indecisive" and 10 equal to "maximum indecision."

A subjective ambivalence measure was created by averaging each subject's responses to the three ambivalence questions. Thus, the subjective ambivalence measure scores could vary from 0 to 10. The alpha coefficient for the subjective ambivalence measure was .92. Refer to Appendix C for complete experimental materials.
Results

Data Reduction

As in Experiments 1 and 2, the numbers of positive and negative traits were transformed to equivalent measures of conflicting \((C)\) and dominant \((D)\) reactions. Due to the similar methods and results between Experiments 3 and 4, the two experiments are combined into one data-set. All analyses are conducted using both experiments considered as one data set. Refer to Appendix E for separate analyses of Experiments 3 and 4.

Attitude Formation as a Function of Traits

In order to replicate past research on the influence of positive and negative attributes on subsequent attitude formation (e.g., Anderson, 1971), a multiple regression analysis was conducted in which the attitude toward the target individuals was regressed on the number of positive traits, number of negative traits, and the positive X negative traits interaction. In agreement with past research, this analysis yielded two significant main effects. The number of positive traits was significant, \(F(1, 2262) = 689.2, p < .0001\), and the number of negative traits was significant, \(F(1, 2262) = 820.0, p < .0001\). The positive traits X negative traits interaction was not significant, \(F(1, 2262) = 1.8, p > .1\). The means for the various levels of positive and negative traits for this analysis are presented in Table 8.
Table 8. Attitude Formation as a Function of Positive and Negative Traits, Experiments 3 and 4.

<table>
<thead>
<tr>
<th>Level of Trait</th>
<th>Positive Traits</th>
<th>Negative Traits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>x  sd</td>
<td>x  sd</td>
</tr>
<tr>
<td>0</td>
<td>-1.9 1.9</td>
<td>2.0 1.9</td>
</tr>
<tr>
<td>1</td>
<td>-1.1 2.3</td>
<td>0.4 2.3</td>
</tr>
<tr>
<td>3</td>
<td>1.0 2.4</td>
<td>-1.0 2.1</td>
</tr>
<tr>
<td>4</td>
<td>0.8 2.5</td>
<td>-1.4 2.2</td>
</tr>
<tr>
<td>5</td>
<td>1.2 2.2</td>
<td>-1.9 1.9</td>
</tr>
<tr>
<td>7</td>
<td>1.4 2.2</td>
<td>-2.2 1.8</td>
</tr>
</tbody>
</table>
Empirically Establishing a Threshold

The results of Experiments 1 and 2 suggest that there should exist a minimal value of conflicting reactions that serves as a threshold above which subjective ambivalence is differentially influenced than below. In order to establish this threshold value, the correlation between dominant reactions and subjective ambivalence was examined for each level of conflicting reactions. Table 9 presents these analyses. Inspection of Table 9 reveals that, as in Experiments 1 and 2, conflicting reactions equal to 1 provides this threshold: At and below this threshold the relationship between dominant reactions and subjective ambivalence is negative and significant, whereas above this threshold the relationship between dominant reactions and subjective ambivalence is positive and non-significant. As with Experiments 1 and 2, the observations greater than one were collapsed in order to test the significance of the correlation of dominant reactions and subjective ambivalence above the threshold. Even with the observations collapsed, the correlation between dominant reactions and subjective ambivalence was not significant, $r = .03, n=877$. Thus, the threshold for Experiments 3 and 4 will be set at conflicting reactions equal to 1.

The Influence of Conflicting and Dominant Reactions as a Function of Threshold

The results of Experiments 1 and 2, as well as the results presented in Table 9, suggest that there should emerge a reaction X threshold interaction such that the influence of dominant reactions is different depending upon whether the relationship is examined above or below the threshold. As in Experiments 1 and 2, in order to test
Table 9. Correlations between Ambivalence and Dominant Information as a Function of Conflicting Information.

<table>
<thead>
<tr>
<th>Conflicting Reactions</th>
<th>Correlation between Ambivalence and Dominant Reactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>$r = -.27$, $n = 1050$, $p &lt; .0001$</td>
</tr>
<tr>
<td>1</td>
<td>$r = -.10$, $n = 762$, $p &lt; .01$</td>
</tr>
<tr>
<td>3</td>
<td>$r = .03$, $n = 261$, $p &gt; .60$</td>
</tr>
<tr>
<td>4</td>
<td>$r = .05$, $n = 192$, $p &gt; .50$</td>
</tr>
<tr>
<td>5</td>
<td>not applicable</td>
</tr>
<tr>
<td>7</td>
<td>not applicable</td>
</tr>
</tbody>
</table>
this prediction, a multiple regression analysis was performed using conflicting reactions (CR) and dominant reactions (DR), as well as threshold (T) as independent variables and subjective ambivalence as the dependent variable. The specific analysis was:

\[ \text{Equation 10: } \text{Amb} = b(\text{SUBJECT}) + b(\text{CR}) + b(\text{DR}) + b(\text{DR}\times T) + b(\text{CR}\times T) + b(\text{CR}\times DR) + b(\text{CR}\times DR\times T) \]

The results of this analysis are presented in Table 10. Inspection of the table reveals four significant results. First, there were main effects for subject, conflicting, and dominant reactions. These main effects reveal that for all observations, as in Experiments 1 and 2, subjective ambivalence is positively associated with conflicting reactions \(b = .85\) and negatively associated with dominant reactions \(b = -.26\).

More important, these main effects, as in Experiments 1 and 2, are qualified by the predicted dominant reaction X threshold interaction. This interaction reveals that the influence of dominant reactions on subjective ambivalence is statistically different, depending upon whether the influence occurs below or above the threshold. This interaction is interpreted further by examining the influence of conflicting and dominant reactions on subjective ambivalence at each level of threshold.

The influence of conflicting and dominant reactions below the threshold. A multiple regression analysis examining the influence of conflicting and dominant reactions and their interaction on subjective ambivalence was conducted for those observations falling below the threshold (i.e., conflicting reactions equal to zero or one). This analysis yielded 2 significant results. First, there was a main effect for
Table 10. Results of Multiple Regression Analysis (Equation 10), Experiments 3 and 4.

<table>
<thead>
<tr>
<th>Predictor</th>
<th>degrees of freedom</th>
<th>$E$</th>
<th>probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUBJET</td>
<td>(150, 2259)</td>
<td>3.8</td>
<td>$p &lt; .0001$</td>
</tr>
<tr>
<td>CR</td>
<td>(1, 2259)</td>
<td>22.6</td>
<td>$p &lt; .0001$</td>
</tr>
<tr>
<td>DR</td>
<td>(1, 2259)</td>
<td>6.5</td>
<td>$p &lt; .01$</td>
</tr>
<tr>
<td>CR*T</td>
<td>(1, 2259)</td>
<td>0.9</td>
<td>n.s.</td>
</tr>
<tr>
<td>DR*T</td>
<td>(1, 2259)</td>
<td>50.0</td>
<td>$p &lt; .0001$</td>
</tr>
<tr>
<td>DR*CR</td>
<td>(1, 2259)</td>
<td>1.1</td>
<td>n.s.</td>
</tr>
<tr>
<td>CR<em>DR</em>T</td>
<td>(1, 2259)</td>
<td>0.7</td>
<td>n.s.</td>
</tr>
</tbody>
</table>
dominant reactions, $F(1, 1659) = 132, p < .0001, b = -.30$. Second there was a main effect for conflicting reactions, $F(1, 1659) = 146, p < .0001, b = 1.37$. The conflicting $\times$ dominant reaction interaction was not significant. This analysis replicates the results of Experiments 1 and 2 for the influence of conflicting and dominant reactions on subjective ambivalence below the threshold: Subjective ambivalence is a joint function of conflicting and dominant reactions. And as in Experiments 1 and 2, the best formula for predicting subjective ambivalence below the threshold is approximately $5C-D$ (specifically, 1.37 times conflicting reactions minus .3 dominant reactions, which simplifies to 4.6 times conflicting reactions minus dominant reactions).

**The influence of conflicting and dominant reactions above the threshold.** A multiple regression analysis examining the influence of conflicting and dominant reactions on subjective ambivalence was conducted for those observations lying above the threshold (i.e., conflicting reactions greater than one). As in Experiments 1 and 2, this analysis yielded one significant result. There was a significant main effect of conflicting reactions on subjective ambivalence, $b = .35, F(1, 1451) = 19.0, p < .0001$. In contrast, the main effect for dominant reactions on subjective ambivalence was not significant, $F < 1$. The conflicting $\times$ dominant reaction interaction was not significant. This analysis replicates the results of Experiments 1 and 2 for the influence of conflicting and dominant reactions on subjective ambivalence above the threshold: Subjective ambivalence is solely a function of conflicting reactions.
The nature of the influence between conflicting reactions and subjective ambivalence. As in Experiments 1 and 2, in order to examine the nature of the relationship between conflicting reactions and subjective ambivalence, a power analysis was conducted for the relationships between conflicting reactions and subjective ambivalence. In order to determine these power functions, log-log transformations were conducted on the dependent and independent variables.\textsuperscript{14} The analysis revealed that the slope associated with conflicting reactions was equal to .51.

Tests of the Ability of Models to Predict Subjective Ambivalence

In order to examine the ability of the models to predict subjective ambivalence, partial correlations among the models and subjective ambivalence were computed for all observations, those observations falling below the threshold, and those observations lying above the threshold. The Threshold Model of Ambivalence is set first such that $t = 1$ and $p = .4$ (as in Experiments 1 and 2) and second such that $p = .5$ (as determined by the power analysis conducted on the data from Experiments 3 and 4). Table 11 presents the partial correlational coefficients matrix for Experiments 3 and 4. Inspection of Table 11 reveals that the Threshold Model of Ambivalence (with $p$ set at either .4 or .5) is able to predict subjective ambivalence better than the other models.

More important than this overall analysis, however, is the question of whether the Threshold Model of Ambivalence is able to predict subjective ambivalence both above and below the threshold. Table 12 presents the partial correlational matrix for the observations below the threshold. Inspection of table 12 reveals that the
Table 11. Partial Correlation Matrix, All Observations, Experiments 3 & 4.

<table>
<thead>
<tr>
<th></th>
<th>AMB</th>
<th>CRM</th>
<th>SIM</th>
<th>NAM</th>
<th>PAM</th>
<th>CPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRM</td>
<td></td>
<td>.44</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIM</td>
<td>.46</td>
<td></td>
<td>.91</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NAM</td>
<td>.46</td>
<td>.84</td>
<td></td>
<td>.94</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAM</td>
<td>.42</td>
<td>.95</td>
<td>.93</td>
<td>.84</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPM</td>
<td>.40</td>
<td>.96</td>
<td>.83</td>
<td>.70</td>
<td>.89</td>
<td></td>
</tr>
<tr>
<td>TMA (p=.4)</td>
<td>.48</td>
<td>.90</td>
<td>.95</td>
<td>.96</td>
<td>.83</td>
<td>.80</td>
</tr>
<tr>
<td>TMA (p=.5)</td>
<td>.48</td>
<td>.92</td>
<td>.96</td>
<td>.96</td>
<td>.86</td>
<td>.83</td>
</tr>
</tbody>
</table>

Note: The n for all correlations except those associated with the PAM is 2,416. The n associated with the correlations with the PAM (2,265) is smaller due to the exclusion of all responses in which the number of dominant and conflicting reactions are both equal to zero.
Table 12. Partial Correlation Matrix, Observations Below the Threshold, Experiments 3 & 4.

<table>
<thead>
<tr>
<th></th>
<th>AMB</th>
<th>CRM</th>
<th>SIM</th>
<th>NAM</th>
<th>PAM</th>
<th>CPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRM</td>
<td></td>
<td>.19</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIM</td>
<td>.27</td>
<td>.42</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NAM</td>
<td>.28</td>
<td>.61</td>
<td>.92</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAM</td>
<td>.21</td>
<td>.68</td>
<td>.71</td>
<td>.91</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPM</td>
<td>.13</td>
<td>.84</td>
<td>.06</td>
<td>.22</td>
<td>.21</td>
<td></td>
</tr>
<tr>
<td>TMA (p = .4)</td>
<td>.28</td>
<td>.68</td>
<td>.95</td>
<td>.95</td>
<td>.80</td>
<td>.33</td>
</tr>
<tr>
<td>TMA (p = .5)</td>
<td>.28</td>
<td>.68</td>
<td>.95</td>
<td>.95</td>
<td>.78</td>
<td>.33</td>
</tr>
</tbody>
</table>
The Threshold Model of Ambivalence, the N.A.M., and the S.I.M. are able to better predict subjective ambivalence than the other models given zero or one conflicting reaction. Again, these models all predict differences in univalence as a function of dominant reactions. Thus, their superiority over the other models is not surprising given the nature of subjective ambivalence below the threshold.

Table 13 presents the correlational matrix for the observations above the threshold. Inspection of Table 13 reveals that the Threshold Model of Ambivalence and the C.R.M. are both able to predict subjective ambivalence better than the other models given more than one conflicting reaction. Above the threshold, these are the only models that do not predict an influence of dominant reactions on subjective ambivalence. Thus, their superiority over the other models is not surprising given the nature of subjective ambivalence above the threshold.

The means and standard deviations for Experiments 3 and 4 are presented in Table 14.
Table 13. Partial Correlation Matrix, Observations Above the Threshold, Experiments 3 & 4.

<table>
<thead>
<tr>
<th></th>
<th>AMB</th>
<th>CRM</th>
<th>SIM</th>
<th>NAM</th>
<th>PAM</th>
<th>CPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRM</td>
<td>.20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIM</td>
<td>.17</td>
<td>.93</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NAM</td>
<td>.10</td>
<td>.60</td>
<td>.84</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAM</td>
<td>.17</td>
<td>.92</td>
<td>.99</td>
<td>.87</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPM</td>
<td>.19</td>
<td>.92</td>
<td>.72</td>
<td>.25</td>
<td>.69</td>
<td></td>
</tr>
</tbody>
</table>

TMA (p = .4) | .20 | .99 | .92 | .60 | .91 | .92
TMA (p = .5) | .20 | .99 | .92 | .60 | .91 | .92
Table 14. Subjective Ambivalence as a Function of Conflicting and Dominant Traits, Experiments 3 and 4.

<table>
<thead>
<tr>
<th>Dominant Traits</th>
<th>Conflicting Traits</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 x = 2.1</td>
<td>3.7</td>
</tr>
<tr>
<td>sd = 2.6</td>
<td>2.5</td>
</tr>
</tbody>
</table>

| 5 x = 1.9 | 3.8 | 5.6 | 6.4 |
| sd = 2.6 | 2.3 | 2.5 | 2.7 |

| 4 x = 2.3 | 3.9 | 5.9 |
| sd = 2.5 | 2.2 | 1.9 |

| 3 x = 2.1 | 3.7 | 5.5 |
| sd = 2.3 | 2.4 | 2.0 |

| 1 x = 3.9 | 4.5 |
| sd = 2.7 | 2.4 |

| 0 x = 3.9 | 4.5 |
| sd = 3.4 |

| 0 | 1 | 3 | 4 | 5 | 7 |

Conflicting Traits
Discussion

Experiments 3 and 4 were conducted in order to provide a test of the Threshold Model of Ambivalence. This model proposes that 1) when the magnitude of conflicting reactions are above a certain minimum, subjective ambivalence is a positive and negatively accelerating function of the number of conflicting reactions, and 2) when the magnitude of conflicting reactions is minimal, subjective ambivalence is a joint function of the conflicting and dominant reactions.

The results of Experiments 3 and 4 supported the predictions offered by the model. When the magnitude of conflicting traits were above the threshold, subjective ambivalence was influenced by the amount of conflicting information: Subjective ambivalence increased in a negatively accelerating function as the amount of conflicting information increased (i.e., $C^p$), and the magnitude of dominant traits did not significantly influence subjective ambivalence. When, however, the magnitude of conflicting traits was below the threshold, subjective ambivalence was a joint function of the conflicting and dominant reactions (specifically, $5C-D$).

Support was also provided to the Threshold Model of Ambivalence by correlational analyses. The Threshold Model of Ambivalence correlated most highly with subjective ambivalence for all data. More importantly, the Threshold Model of Ambivalence correlated most highly with subjective ambivalence both above and
below the threshold. It is important to note that given the nature of the models (viz.,
different functions of the same independent variables), statistical comparisons among
the models' abilities to predict subjective ambivalence is not possible. Rather, the
importance of the correlational analyses is that they provide convergent evidence of
the superiority of the Threshold Model of Ambivalence: Not only does the Threshold
Model of Ambivalence correspond most closely to the results of the multiple
regression analyses examining the influence of conflicting and dominant reactions on
subjective ambivalence, but it is also able to more accurately predict subjective
ambivalence both above and below the threshold.

The superiority of the Threshold Model of Ambivalence lies in its ability to
incorporate the three properties found in Experiments 1 and 2 and Experiments 3 and
4. First, below the threshold, subjective ambivalence is a joint function of the
conflicting and dominant reactions (much like the prediction offered by the S.I.M.).
Second, above the threshold, subjective ambivalence is a function solely of the
conflicting reactions (much like the prediction offered by the C.R.M.). Third, the
nature of the relationship between conflicting reactions and subjective ambivalence is
negatively accelerating (much like the prediction offered by the N.A.M.).

In addition to providing a test of the Threshold Model of Ambivalence,
Experiments 3 and 4 also addressed the concerns that arose from the design of
Experiments 1 and 2. The first of these concerns was that the results of Experiments
1 and 2 could have been the result of the specific attitude objects used in those
studies. In contrast to Experiments 1 and 2, Experiments 3 and 4 used an impression
formation task to assess subjective ambivalence. Thus, rather than the attitude objects used in Experiments 1 and 2, Experiments 3 and 4 used attitudes toward fictitious target persons. If the first concern had been valid, it would have been highly unlikely that the results of Experiments 1 and 2 would have been replicated in Experiments 3 and 4. As the relationships discovered in Experiments 1 and 2 did replicate to Experiments 3 and 4, it is improbable that the relationships are the result of the attitude objects used in their designs. Rather, the replication across such disparate classes of attitude objects suggests that the relationships (as postulated by the Threshold Model of Ambivalence) are informative of a more basic process that can account for subjective ambivalence across a wide variety of domains. The second concern was that one could not conclude that the reactions assessed in Experiments 1 and 2 caused subjective ambivalence. This inability to infer causality stemmed from the correlational design of the research. In contrast to Experiments 1 and 2, Experiments 3 and 4 did not rely upon a correlational design, but instead manipulated the number of dominant and conflicting traits that individuals received about the target persons. The results of Experiments 1 and 2 did replicate to Experiments 3 and 4. Given this replication with manipulated, rather than measured, positive and negative information, the conclusion that the conflicting and dominant reactions cause subjective feelings of subjective ambivalence is justified.
CHAPTER IV
CONCLUSION

The present research was conducted in order to examine the ability of previously proposed models to predict subjective ambivalence. Utilizing a correlational design, the results of Experiments 1 and 2 suggested that none of the previously proposed models were constructed in a manner to predict subjective ambivalence across the entire domain of conflicting reactions. Based upon the results of Experiments 1 and 2, the Threshold Model of Ambivalence was proposed. Experiments 3 and 4 provided a first experimental examination of the influence of conflicting and dominant reactions on subjective ambivalence. The results of Experiments 3 and 4 replicated Experiments 1 and 2, and supported the ability of the Threshold Model of Ambivalence to more accurately predict subjective ambivalence both above and below the threshold.
Evaluation of Previously Proposed Models of Ambivalence

An important goal of the present research was to provide the first examination of how well the previously proposed models of ambivalence were able to accurately predict subjective ambivalence. Although several of the models hypothesized relationships that were adequate for specific sub-sets of the conflicting and dominant reactions, none of the models was the best predictor across the entire domain of conflicting and dominant reactions. Below, the six previously proposed models are examined in light of the results of the present research.

Conflicting Reactions Model

The Conflicting Reactions Model predicts that subjective ambivalence is a function solely of the conflicting reactions. As was found in the present research, this prediction is approximately accurate for those observations that lie above the threshold. The disadvantages of the Conflicting Reactions Model are that 1) it predicts a linear relationship between conflicting reactions and subjective ambivalence rather than the more accurate negatively accelerating relationship and 2) it does not predict differences in subjective ambivalence given univalence (i.e., conflicting reactions equal to zero). The present research found that 1) there exists a negatively accelerating function between conflicting reactions and subjective ambivalence and 2) below the threshold, subjective ambivalence is a joint function of dominant and
conflicting reactions. Thus, although the Conflicting Reactions Model does provide a somewhat cogent prediction for those observations above the threshold, it is inadequate in that it fails to predict the negatively accelerating function of conflicting reactions on subjective ambivalence and it does not predict subjective ambivalence well for those observations that fall below the threshold.

**Similarity-Intensity Model**

The Similarity-Intensity Model predicts that subjective ambivalence is a joint function of the conflicting and dominant reactions (viz., 3C-D). As was found in the present research, this prediction is approximately accurate for those observations that lie below the threshold. The disadvantage of the Similarity-Intensity Model is that it predicts that subjective ambivalence is a joint function of conflicting and dominant reactions across the entire domain of conflicting and dominant reactions. The present research found that, although subjective ambivalence is a joint function of conflicting and dominant reactions (viz., 5C-D) for those observations lying below the threshold, this relationship does not hold for observations lying above the threshold. Thus, although the Similarity-Intensity Model does provide a cogent prediction for those observations below the threshold, it is inadequate in that it fails to predict the more accurate relationship that subjective ambivalence is a negatively accelerating function of conflicting reactions above the threshold.
Negative Acceleration Model

The Negative Acceleration Model predicts that 1) subjective ambivalence is a negatively accelerating function of the conflicting reactions and 2) that given univalence (i.e., zero conflicting reactions), subjective ambivalence is a joint function of conflicting and dominant reactions. As was found in the present research, both of these predictions are accurate. The disadvantage of the Negative Acceleration Model, however, is that it predicts that subjective ambivalence is a joint function of conflicting and dominant reactions across the entire domain of conflicting and dominant reaction. That is, although subjective ambivalence is hypothesized to be a negatively accelerating function of conflicting reactions, with the addition of each dominant reactions, subjective ambivalence is always hypothesized to decrease. The present research found that although subjective ambivalence is a joint function of conflicting and dominant reactions for those observations that fall below the threshold, this relationship does not hold for observations that lie above the threshold. Thus, although the Negative Acceleration Model does provide a cogent prediction for those observations below the threshold, it is inadequate in that it fails to predict the more accurate relationship that subjective ambivalence is a negatively accelerating function solely of the conflicting reactions above the threshold.

Positive Acceleration Model

The Positive Acceleration Model is problematic for a variety of reasons. First, it does not predict differences in subjective ambivalence as a function of dominant reactions given univalence. The present research found, in contrast, that
below the threshold, dominant reactions do influence subjective ambivalence.

Second, the Positive Acceleration Model predicts that, other than at univalence, dominant reactions are always negatively associated with subjective ambivalence. The present research found, in contrast, that above the threshold, dominant reactions are not associated with subjective ambivalence. Rather, above the threshold, subjective ambivalence is solely a negatively accelerating function of the conflicting reactions.

Third, the Positive Acceleration Model predicts that subjective ambivalence is a positively accelerating function of the conflicting reactions. The present research found, in contrast, that subjective ambivalence is a negatively accelerating function of the conflicting reactions.

Cross-Product Model

The Cross-Product Model is also problematic for a variety of reasons. First, it does not predict differences in subjective ambivalence as a function of dominant reactions given univalence. The present research found, in contrast, that below the threshold, dominant reactions do influence subjective ambivalence. Second, the Cross-Product Model predicts that, other than at univalence, dominant reactions are always positively associated with subjective ambivalence. The present research found, in contrast, that above the threshold, dominant reactions are not associated with subjective ambivalence. Rather, above the threshold, subjective ambivalence is solely a negatively accelerating function of the conflicting reactions. Third, the Cross-Product Model predicts that subjective ambivalence is a linear function of the conflicting reactions. The present research found, in contrast, that subjective
ambivalence is a negatively accelerating function of the conflicting reactions.

**French's Threshold Model of Frustration**

The advantage of French's Threshold Model of Frustration is that it offered the implicit conceptual point that subjective ambivalence can be differentially determined as a function of some minimal threshold of conflicting reactions. More specifically, the model predicted that above a minimal level of conflicting reactions, frustration (ambivalence) was a function solely of the magnitude of conflicting reactions. The present research supported this prediction. The disadvantage of French's Threshold Model of Frustration, however, is that it does not specify the determinant of frustration (ambivalence) below the threshold.

**Summary**

Although a number of the previously proposed models provided hypotheses that corresponded to the results of the present research for specific sub-sets of the conflicting and dominant reactions, none of the models was able to provide predictions that correspond to the entire distribution of possible conflicting and dominant response pairs. Because of the inadequacies of the previously proposed models, the Threshold Model of Ambivalence was advanced.
The Threshold Model of Ambivalence

The present research provides the basis for advancing the Threshold Model of Ambivalence. This model incorporates modifications of the S.I.M. and C.R.M., the N.A.M., and French's Threshold Model of Frustration. In sum, the Threshold Model of Ambivalence proposes that 1) when the magnitude of conflicting reactions is below a critical threshold, subjective ambivalence is a joint function of the conflicting and dominant reactions (specifically, $5C-D$) and 2) when the magnitude of conflicting reactions is above a critical threshold, subjective ambivalence is a positive and negatively accelerating function of the conflicting reactions, irrespective of the dominant reactions.

The mathematical representation of the Threshold Model of Ambivalence is expressed as:

*Equation 11 (TMA)*: \[ \text{If } CR \leq t, \quad A = F(5C - D); \]

\[ \text{If } CR > t, \quad A = F(5C^p) \]

where $t=$threshold and $p < 1$

It is worth commenting upon two of the parameters specified by the Threshold Model of Ambivalence. First, the actual threshold ($t$) is allowed to vary. Although the threshold was found to be 1 in both sets of experiments, it is possible that the utilization of other scales to assess conflicting and dominant reactions could result in a
different threshold. For example, use of scales with a smaller range (e.g., 4-points, see Kaplan, 1972) could result in a lower threshold (e.g., 0), whereas the utilization of 100 point scales may result in a threshold of greater than one. That is, methodological factors might influence the specific threshold value obtained. Similarly, conceptual factors, such as the personal relevance of the attitude objects, might also influence the specific threshold value obtained. The importance of the present research lies not in specifying a universal threshold value, but rather in pointing out that there exists a threshold above which subjective ambivalence is differentially determined than below.

Second, the specific value of $p$ is not specified by the model. In the present research, $p$ was empirically determined to be between .4 and .5. Again, the importance of the present research lies not in specifying a universal power function value at which conflicting reactions are associated with subjective ambivalence. Rather, the importance of the present research lies in specifying that the general function of conflicting reactions and subjective ambivalence is positive and negatively accelerating.

Another caveat is also worth mentioning. Although the dominant reaction X threshold interaction was significant for Experiments 1 and 2 and Experiments 3 and 4, it is possible that with other attitude objects and/or individuals, the specific interaction might not reach significance. For example, using attitude objects for which individuals hold primarily univalent reactions would result in a preponderance of observations below the threshold. With such a distribution of conflicting and
dominant reactions response pairs, it is possible that the dominant reaction X threshold interaction might fail to reach statistical significance. Because the attitude objects selected for use in Experiments 1 and 2 provided a full range of response pairs, and the reactions toward the attitude objects were manipulated in Experiments 3 and 4, the dominant reaction X threshold interactions were significant. However, a failure to find a statistically significant dominant reaction X threshold interaction would not detract from the general point that there is a threshold that moderates the influence of dominant reactions on subjective ambivalence.

Finally, it is important to note that the scales used in Experiments 1 and 2 were designed to assess the psychological magnitude of the positive and negative reactions toward the attitude objects. That is, a response of 2 positive reactions is to be interpreted in terms of the 2’s relative magnitude to the negative reaction response, rather than an indication of the absolute number of positive reactions toward the attitude object. An advantage of this magnitude, rather than number, approach is that it allows for the assessment of individuals who might vary in terms of such factors as knowledge, experience, and expertise with the attitude objects, using the same scales. Although experts and non-experts might differ in terms of their overall number of positive and negative reactions, it is possible to use the present approach to assess the relative magnitude of positive and negative reactions for both experts and non-experts using the same scale.
Response Distribution and Ambivalence Models

The Threshold Model of Ambivalence predicts that the relative superiority of one of the previously proposed models over another will often be a function of the response pair distribution of a particular set of data. When the response pairs are distributed predominantly within the range of very low conflicting reactions (e.g., equal to zero or one), either the S.I.M. or the N.A.M. will be superior in predicting subjective ambivalence to the other 3 models. However, when the response pairs are distributed across a wide range of conflicting reactions, the C.R.M. and the N.A.M. will be superior in predicting subjective ambivalence to the other 3 models. It is plausible that the response pair distribution will sometimes be a function of the specific attitude objects toward which subjective ambivalence is measured and, alternatively, sometimes the specific population measured. Regardless, it is clearly beneficial to inspect the response pair distribution before the choice of one of the previously proposed models of ambivalence is made. It is also important to note, however, that given the extremely high inter-model correlations, very few substantive differences will emerge with the use of the S.I.M., N.A.M., or the C.R.M.
The advantage of the Threshold Model of Ambivalence over the other, previously proposed models, lies in its ability to predict subjective ambivalence both above and below the threshold with the highest accuracy and to better predict the response pattern across the full range of conflicting and dominant reactions. Other models, in contrast, either are able to accurately predict subjective ambivalence most accurately above the threshold but not below, or are able to most accurately predict subjective ambivalence below the threshold but not above. By utilizing the Threshold Model of Ambivalence, one is able to better predict subjective ambivalence irrespective of the specific conflicting and dominant response pairs: The Threshold Model of Ambivalence is appropriate for data predominately composed of minimal conflicting reactions and data predominantly composed of conflicting reactions greater than the threshold. Thus, the adoption of the Threshold Model of Ambivalence allows for assessment of subjective ambivalence free of response pair distribution artifacts.

The Psychological Bases of Subjective Ambivalence

In addition to providing a better model to predict subjective ambivalence, the present research also provided important and somewhat surprising discoveries as to the psychological nature of subjective ambivalence. To summarize, it was found that 1) dominant reactions only matter below the minimal threshold, 2) subjective ambivalence is a negatively accelerating function of conflicting reactions, and 3) the critical threshold for both Experiments 1 and 2 and Experiments 3 and 4 was quite low (i.e., a rating of just one conflicting reaction in both sets of studies).
All of the previously proposed models, save for the Conflicting Reactions Model and French's Threshold Model of Frustration, predict a relationship between dominant reactions and subjective ambivalence. Intuitively, it seems plausible that dominant reactions could attenuate the psychological experience of ambivalence. The present research found, however, that this relationship was obtained only given minimal conflicting reactions. From these results, it seems cogent that subjective ambivalence is associated with the extremity of valence given minimal conflicting reactions. The approach-withdrawal tendencies engendered by the dominant reactions serve to minimize the tension associated with an attitude object given few conflicting reactions. That is, the orientation provided by the dominant reactions serve to minimize the tension associated with such ambivalent manifestations as behavioral indecision.

Why then, do not dominant reactions attenuate the tension associated with attitude objects given higher levels of conflicting reactions? The present research suggests that it is the experience of the conflicting reactions, *per se*, that determine the amount of tension associated with attitude objects. This finding is consistent with consistency theories (e.g., Heider, 1948; Osgood & Tannenbaum, 1955). If individuals do expect positively evaluated attitude objects to be associated with only positive attributes and negatively evaluated attitude objects to be associated with only negative attributes, it is plausible that the conflicting reactions (i.e., negative reactions associated with a positive attitude object, positive reactions associated with a negative attitude object) are most psychologically salient to the individual. That is, it is the
inconsistency introduced by the conflicting reactions that are responsible for the psychological experience of subjective ambivalence. This explanation for the lack of a relationship between dominant reactions and subjective ambivalence above the threshold also suggests the reason for the negatively accelerating relationship between conflicting reactions and subjective ambivalence. Specifically, if it is the inconsistency of the conflicting reactions that are responsible for the psychological experience of ambivalence, it is plausible that it is the first few conflicting reactions that create the greatest feelings of subjective ambivalence. Thus, the greatest increases in subjective ambivalence are found by adding the initial conflicting reaction, with less of an increase in subjective ambivalence with each additional conflicting reaction.

Zero Conflicting and Dominant Reactions

It is also worth noting the potentially surprising result that attitude objects possessing zero conflicting and dominant reactions are associated with greater subjective ambivalence than attitude objects possessing zero conflicting and some dominant reactions. It is possible that the subjective ambivalence associated with zero conflicting and dominant reactions is especially felt by individuals when asked to respond to questions designed to assess their ambivalence (as in the present research), when asked to provide a behavioral decision (such as voting for a candidate or buying a particular product), or when asked their opinion by others. That is, it is plausible that the tension associated with subjective ambivalence is experienced for some attitude objects only when situationally induced. In contrast, there could be some
attitude objects for which individuals experience chronic subjective ambivalence, feeling tension toward the attitude object even when not situationally induced to consider their attitude. Clearly, such factors as the number of conflicting reactions, the importance of the attitude object, and the individual's experience with the attitude object might moderate this chronic versus situationally induced nature of the psychological experience of ambivalence. It is sufficient, for the present purposes, to point out that in both Experiments 1 and 2 and Experiments 3 and 4, individuals did report feeling greater subjective ambivalence toward attitude objects possessing zero conflicting and dominant reactions than attitude objects possessing zero conflicting and some dominant reactions.
Directions for Future Research

The purpose of the present research was to examine the properties of previously proposed models of ambivalence, and these models' ability to predict subjective ambivalence. Based upon these analyses, the Threshold Model of Ambivalence was proposed in order to overcome the difficulties associated with the previous models. In addition, Experiments 3 and 4 provided a first experimental manipulation of dominant and conflicting attributes along with a measure of subjective ambivalence. Although the research accomplished these goals, there remain further areas of investigation as to how subjective ambivalence is determined. For example, it is possible that the psychological experience of ambivalence is moderated by certain factors. And it is possible that factors other than an individual's own positive and negative reactions to an attitude object are responsible for the psychological experience of ambivalence.

Cognitive Versus Affective Bases of Reactions.

As mentioned in the Introduction, the present research was designed to assess the overall positivity and negativity of the reactions toward a variety of attitude objects. Given this strategy, the specific affective and cognitive bases of these reactions were not assessed. Interesting questions arise when considering the specific bases of the reactions to attitude objects. Namely, it is possible that certain
configurations of conflicting and dominant reactions (e.g., cognitive dominant reactions in combination with affective conflicting reactions) lead to greater feelings of subjective ambivalence than other configurations. That is, the influence of the conflicting and dominant reactions on subjective ambivalence might be moderated by the specific bases of the reactions. This possibility receives support when past persuasion research is examined. For example, both Edwards (1990) and Millar and Millar (1990) found differences in persuasion as a function of the cognitive or affective basis of an attitude. These findings suggest that there might be differences in the consequences of subjective ambivalence depending upon the specific basis of the attitude, even given equivalent conflicting and dominant reactions. Although this question is outside the present research question, it is an important area that should receive attention.

The Influence of Valence

Given that the majority of prior ambivalence research has conceptualized the reactions in terms of their magnitude rather than valence, the present research also adopted this approach. That is, the present approach conceptualized reactions in terms of conflicting and dominant reactions. It is possible, however, that the specific valence of the reactions moderates the influence of the reactions on subjective ambivalence (see Cacioppo & Berntson, 1994). Although this question is outside of the primary focus of the present hypotheses, preliminary analyses were conducted on the findings of Experiments 1 and 2 and Experiments 3 and 4 in order to determine whether the reactions influenced subjective ambivalence in a similar manner given the
valence of these reactions. In all experiments, valence did not influence the relationship between the conflicting and dominant reactions and subjective ambivalence above the threshold: The experience of ambivalence was always a positive and negatively accelerating function of the conflicting reactions, with no impact of dominant reactions, regardless of whether the conflicting reactions were equal to negative or positive. In contrast, valence did influence the relationship between dominant reactions and subjective ambivalence below the threshold. Specifically, below the threshold, negative reactions (given zero or one positive reaction) associated with an attitude object resulted in greater subjective ambivalence than positive reactions combined with zero or one negative reaction. Refer to Appendix E for the analyses examining valence. Clearly, the valence of the reactions could prove to be an important contribution to the bases of subjective ambivalence, and deserves further research.

Other Contributing Influences on Ambivalence.

The present research sought to investigate how the reactions that an individual has toward an attitude object influence the amount of subjective ambivalence experienced by that individual toward that attitude object. Given the moderate correlations found in this research between the predictions of the models and subjective ambivalence, however, it is possible that other, non-intra-personal factors might cause individuals to feel ambivalence. As but one example of such an influence, Balance Theory (Heider, 1958), suggests that an individual’s attitudes are influenced by those with whom that individual interacts. It is possible that
disagreement on an attitude object with others could lead to greater feelings of subjective ambivalence, even given identical conflicting and dominant reactions. That is, inter-personal, as well as intra-personal, factors could cause individuals to experience subjective ambivalence (Priester & Petty, 1994). Clearly, research should be conducted to examine these non-intra-personal influences on subjective ambivalence.

**Attitude Strength and Ambivalence**

It is possible that factors associated with the strength of an attitude (Petty & Krosnick, in press) might influence subjective ambivalence. For example, it is possible that the psychological experience of ambivalence is moderated by such factors as the importance and self-relevance of the attitude object. That is, the psychological experience of ambivalence could be augmented when the attitude object is especially important and could be attenuated when the attitude object is not important (see Festinger, 1957). Although outside of the domain of the present research, exploring the relationship between subjective ambivalence and other constructs associated with attitude strength appears to be an important next phase of research on ambivalence.

**Individual Differences**

Research has supported the possibility that there exist individual differences in how people experience ambivalence (e.g., Emmons & King, 1988; King & Emmons, 1990; Thompson & Zanna, in press). Clearly, it is possible that individuals who are chronically high in subjective ambivalence will be influenced by the conflicting and
dominant reactions associated with an attitude object differently than individuals who are not chronically high in the experience of ambivalence. By examining the influence of conflicting and dominant reactions on subjective ambivalence as a function of individual differences in the psychological experience of ambivalence, it might be possible to better understand the determinants of subjective ambivalence in general.
The Utility of the Ambivalence Construct

At the most basic, this paper 1) argues that the construct of ambivalence is measurable and 2) offers a model by which to understand how subjective ambivalence is influenced by its component elements. A sensible question is whether a widespread adoption of the construct of ambivalence is warranted: Just because a construct can be reliably measured does not necessitate its acceptance as a theoretical entity. The adoption of a theoretical construct should ideally provide theoretical benefits not available had the construct not been so adopted (Hempel, 1965). Not surprisingly, perhaps, it is argued that the adoption of the ambivalence construct is of theoretical benefit both within the specific domain of attitudes and persuasion research and across a wide variety of seemingly disparate domains of social inquiry.

The adoption of ambivalence as a construct within the domain of attitudes and persuasion provides a construct from which to approach several questions that have long teased researchers. Such questions as inconsistencies across evaluation and behavior, and inconsistencies between one's own attitude and the attitudes of others might best be addressed by incorporating the more parsimonious construct of ambivalence.
Another argument for the adoption of the ambivalence construct emerges when one examines other areas of social inquiry. Essentially, ambivalence is the psychological state that arises as a consequence of holding discordant reactions toward an attitude object. Once this construct is adopted, previously unrecognized relationships begin to appear. As an example, Lepore (1992) conducted a longitudinal study that examined, in part, the influence of positive and negative social experiences on psychological distress. One of the findings of the study was that conflict with a friend led to greater psychological distress than conflict with a roommate. What accounts for this difference in psychological distress? One possible difference between a friend and a roommate is that, by definition, a friend is a person toward whom one possesses generally more positive than negative reactions, whereas a roommate is a person toward whom one can possess positive, neutral, or even negative reactions. Given this distinction, the introduction of conflict (a negative event) into a friendship is *per force* an instantiation of ambivalence. In contrast, the introduction of conflict into a roommate relationship is not necessarily associated with ambivalence. Thus, though not so conceptualized by Lepore, one could infer from the results that ambivalence (as indicated by the difference of conflict between a friend and between a roommate) can lead to psychological distress.

As an additional example, research conducted on the self (Campbell, 1990) has suggested that individuals low in self-clarity differ from those high in self-clarity in ways that are not explicable from the difference in valence of self-esteem alone. For example, low self-clarity individuals take more time in responding to questions
concerning whether a trait is "like me" or "not like me" than high self-clarity individuals. Additionally, the low self-clarity individuals are more likely to both agree and disagree that certain traits are similar to them as compared to high self-clarity individuals, as well as show less stability in their self-characterizations over time. It is plausible that these differences found in the low self-clarity individuals are the result of ambivalence concerning themselves. If so, it is not surprising that these individuals also report higher instances of psychological distress.

The above examples are not provided in order to suggest that ambivalence is always associated with psychological distress. In fact, it is noteworthy that in both conditions under which ambivalence apparently is associated with distress, the attitude object (i.e., friends and the self) toward which the individual is ambivalent is most likely high in importance. It is plausible that ambivalence leads to increased psychological distress especially when associated with an attitude of high importance, or perhaps, when a behavioral decision concerning the ambivalent attitude object is required. These relationships are empirical questions that additional research should investigate. Importantly, these relationships might be most beneficially explored across domains of social inquiry.

The adoption of the ambivalence construct provides theoretical benefit. Of greatest benefit, ambivalence provides a conceptual tool that will allow for a potentially more parsimonious examination and integration of a wide variety of seemingly unrelated social processes under a common theoretical construct.
Although the concept of attitudinal ambivalence has existed in social psychology since at least the 1960s (Kaplan, 1972; Scott, 1966; 1969), it has not generated a great deal of research. One explanation for this dearth of investigation is that attitude theorists have, until recently, been guided by an over-riding assumption that rendered the study of ambivalence trivial. Such theories as cognitive dissonance (Festinger, 1957) and balance theory (Heider, 1946), for example, have taken as their most basic postulate that individuals are motivated to reduce conflicting reactions. In summarizing this paradigm, Brown (1965) wrote that "human nature abhors incongruity-dissonance-imbalance" (p. 604). It has not been until recently that researchers interested in attitudes (e.g., Cacioppo & Berntson, 1994; Zanna & Rempel, 1988) have begun to question this assumption. As this assumption is put aside, a different view of the human evaluator begins to emerge. Rather than being driven to reduce all inconsistencies in evaluation by any means possible, humans are viewed instead as being capable of maintaining, as well as reducing, conflicting reactions toward others, objects, and issues.

Exciting research questions emerge with this more balanced view of the human evaluator. Perhaps most importantly, the question arises as to when individuals are motivated to reduce conflicting reactions and, in contrast, when individuals are content to possess conflicting reactions. Thus, what was once accepted as an assumption about human psychology becomes an empirical and theoretical question.
REFERENCES


Frustration and aggression. New Haven, CT: Yale University Press.


Thurstone, L. L., & Chave, E. J. (1929). The measurement of attitude. Chicago, IL: The University of Chicago Press.


FOOTNOTES

1. As suggested by the terms "thoughts and feelings," the present approach allows that ambivalence can be the result of inconsistency between affective and cognitive attitudinal components. The present approach also allows, additionally, that ambivalence can be the result of inconsistencies within either affective or cognitive components themselves. Whether the different bases of the inconsistency have differential implications is an empirical question, outside the domain of the current research questions.

2. Scott (1966) used the terms "smaller" and "larger", whereas both Brown and Farber (1951) and French (1944) used the terms "stronger" and "weaker" to characterize the reaction greater and less in number. The present paper introduces the terms "conflicting" and "dominant" because of their greater conceptual meaning.

3. Breckler (in press) also reviewed these models, but confined his analysis of the models to their differing predictions without examining their abilities to assess ambivalence.
4. It should be pointed out that the term "number" refers not to some discrete quantity, but refers instead to the perceived magnitude of positive or negative thoughts and feelings.

5. In addition, the model does not allow for an ambivalence value when both the conflicting and dominant reactions are equal to 0, as this would entail division by 0.

6. One notable difference between Thompson et al.'s and our approach is that Thompson et al. conceptualize ambivalence as an individual difference, whereas we (allowing that there could indeed exist individual differences in ambivalence) conceptualize ambivalence as a function of the attitude objects.

7. Another approach to validating an ambivalence model is to assess attitudinal constructs hypothesized to be related to subjective ambivalence and comparing the predicted ambivalence with these attitudinal constructs. For example, Scott (1969) had subjects provide a variety of responses to several different attitude objects (e.g., nations, celebrities, acquaintances, self, family, occupation). From these responses Scott derived indices of 1) evaluative centrality, 2) affective-evaluative consistency, and 3) affective balance for the attitude objects. Scott then correlated the three attitude dimensions with the ambivalence measures derived from the N.A.M. The results revealed that ambivalence is significantly and negatively associated with affective balance and affective-evaluative consistency, and significantly and positively associated with
evaluative centrality. That is, support for the ability of the N.A.M. to predict subjective ambivalence was based upon its significant correlation with other attitudinal dimensions.

8. These three questions were chosen to measure ambivalence because of their relationship to the commonly accepted components of an attitude. Thus, the measure of indecision was intended as an indicator of the behavioral basis, mixed as an indicator of the affective basis, and conflicted as an indicator of the cognitive basis.

9. In fact, the differences between the correlational matrices partialing for subject response differences and not partialing for subjects response differences is minimal (e.g., differences in correlation coefficients of less than .004). Not surprisingly, given the minimal differences, no differences emerge in the rank ordering of the ability of the models to predict ambivalence as a function of the type of correlational analysis used.

10. In order to provide a closer examination of the results of Experiments 1 and 2 with the results of Thompson, Zanna, and Griffin (in press), the results of Experiments 1 and 2 were collapsed across subjects in order to yield an individual difference assessment. This comparison yielded two observations worthy of note. First, the general magnitudes of the correlations among the models and subjective ambivalence was similar across data-sets. However, the specific ordering of the ability of the models to predict subjective ambivalence differs across data-sets. This difference in rank order of the models' abilities could stem from several factors (e.g., specific attitude objects assessed).
Perhaps of greatest importance, however, is the need for cross-sample replication suggested by these differences.

11. Because of the high multicollinearity of the dummy coded threshold variable with the conflicting reactions measure (i.e., the threshold variable is a dichotomous representation of the continuous conflicting reactions measure), it is not included as a main effect predictor in the equation. This strategy is justified in that the variance accounted for by the threshold variable is highly redundant with the variance accounted for by the conflicting reactions main effect.

12. In order to overcome the difficulties associated with values equal to zero, a constant of one was added to all of the scores before the transformation (see Winer, 1971).

13. Each of the subjects received information on one target individual that read "no descriptions available" to create the cell in which the subjects received no positive and no negative traits. All analyses include this cell, though analyses do not differ if this cell is deleted.

14. In order to overcome the difficulties associated with values equal to zero, a constant of one was added to all of the scores before the transformation (see Weiner, 1971).
15. One potential explanation for the present findings is that this zero conflicting and dominant subjective ambivalence result is an artifact of the "mixed thoughts" ambivalence question. Specifically, although the other two ambivalence questions are anchored at zero by "feel no indecision at all" and "feel no conflict at all," the mixed thoughts question is anchored at zero with "completely one-sided reactions" and at ten with "completely mixed reactions." It is possible that subjects chose the middle of the scale for those attitudes for which they had no reactions, either one-sided or mixed. In order to examine this possible alternative hypothesis, the analyses for both Experiments 1 and 2 and Experiments 3 and 4 were conducted dropping the "mixed thoughts" question from the subjective ambivalence measure. These results replicated the findings using all three questions for the subjective ambivalence measure. Thus, it seems implausible that the zero conflicting and dominant reactions result is an artifact of the ambivalence indicators used. Rather, it seems most plausible that attitude objects possessing zero conflicting and dominant reactions are associated with more subjective ambivalence than attitude objects possessing zero conflicting and greater than zero dominant reactions.
APPENDIX A

(EXPERIMENTAL MATERIALS, EXPERIMENTS 1 AND 2)
VALENCED REACTIONS QUESTIONNAIRE
**Instructions:**

On the next few pages we will ask for your opinions on a variety of topics. First, we will ask for you to give an indication of all of your POSITIVE thoughts and feelings on the issue — that is, for all of the positive things that you personally think and feel about the issue. Later, we will ask for you to give an indication of all of your NEGATIVE thoughts and feelings on the issue.

For some issues or objects, you may not have many personal positive or negative thoughts and feelings. For other issues you may have some positive thoughts and feelings, but very few negative ones (or vice-versa). For still other issues and objects, you may have many positive AND negative thoughts and feelings.

For each of the issues, we will ask you to first rate the extent to which you have POSITIVE thoughts and feelings about it. In doing this, you should ignore any negative thoughts and feelings that you might have.

You will make your positive ratings on a scale such as the one below.

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Let's say that you are asked to rate your positivity toward "Diet Coke." You should put an X in the box above 0 if you have ABSOLUTELY NO POSITIVE THOUGHTS AND FEELINGS AT ALL about Diet Coke. A very tiny bit of positivity would be represented by putting an X above 1. A little more, a 2 or 3, a moderate amount would be 4-6; a lot of positivity would be 7-9. If you can't imagine being any more positive than you already are, and your thoughts and feelings are AS POSITIVE AS THEY COULD POSSIBLY BE, you should put an X above 10.

After making all of your positive ratings, you will use the scale below to rate the extent of your NEGATIVE thoughts and feelings about the issue and ignoring for the moment any positive thoughts and feelings.

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You should put an X in the box above 0 if you have ABSOLUTELY NO NEGATIVE THOUGHTS AND FEELINGS AT ALL about "Diet Coke." A -10 would indicate that your thoughts and feelings were the MOST NEGATIVE THEY COULD POSSIBLY BE.

So, on the next page you will see an object, issue, or person, and you should first rate how POSITIVE your overall thoughts and feelings are by placing an X above the appropriate box. Later, you will rate how negative your overall thoughts and feelings are.
ON THE SCALES BELOW, PLEASE RATE THE EXTENT OF YOUR POSITIVE THOUGHTS AND FEELINGS ABOUT EACH OBJECT OR ISSUE.

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<tbody>
<tr>
<td>0 -1 -2 -3 -4 -5 -6 -7 -8 -9 -10</td>
<td></td>
</tr>
</tbody>
</table>
AMBIVALENCE QUESTIONNAIRE
Instructions:

On the next few pages we will ask for your ratings on a variety of topics. First, we are interested in the extent to which you have mixed reactions to various people and issues or whether those reactions are one-sided. For example, for some issues and people you may have reactions that are mostly on one side or another (e.g., mostly favorable or pleasant reactions and few if any unfavorable or unpleasant ones). For other issues and people you may have reactions on both sides (e.g., a combination of favorable/pleasant and unfavorable/unpleasant reactions).

For each of the issues below, you should rate the extent to which your reactions are mixed or one sided using the scale below.

| Completely | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | Completely Mixed |
|------------|----|---|---|---|---|---|---|---|---|---|Reactions        |
| ONE-SIDED  |    |   |   |   |   |   |   |   |   |   | Reactions       |

0 indicates that you are COMPLETELY ONE SIDED in your reactions to the issue or person, and a 10 indicates that you are COMPLETELY MIXED in your reactions.
Now we would like you to consider each of the issues below and indicate the extent to which you are or think you would be INDECISIVE when it comes to your BEHAVIOR toward the object. You would feel NO INDECISION at all if you would know exactly what you would do with respect to the issue or person. You would be MAXIMALLY INDECISIVE if you were completely unsure as to what you would do or how you would behave toward it. For each of the issues below, you should rate the extent to which you would be INDECISIVE about the issue.

### LEGALIZED ABORTION

<table>
<thead>
<tr>
<th>Feel NO INDECISION at all</th>
<th>Feel MAXIMUM INDECISION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

### AFFIRMATIVE ACTION

<table>
<thead>
<tr>
<th>Feel NO INDECISION at all</th>
<th>Feel MAXIMUM INDECISION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

### NEUTRAL TONED WALL PAINT

<table>
<thead>
<tr>
<th>Feel NO INDECISION at all</th>
<th>Feel MAXIMUM INDECISION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

### YOUR MOTHER

<table>
<thead>
<tr>
<th>Feel NO INDECISION at all</th>
<th>Feel MAXIMUM INDECISION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

### RAISING TUITION AT OSU

<table>
<thead>
<tr>
<th>Feel NO INDECISION at all</th>
<th>Feel MAXIMUM INDECISION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

### THE NATIONAL ENQUIRER

<table>
<thead>
<tr>
<th>Feel NO INDECISION at all</th>
<th>Feel MAXIMUM INDECISION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

### WHITE CASTLE HAMBURGERS

<table>
<thead>
<tr>
<th>Feel NO INDECISION at all</th>
<th>Feel MAXIMUM INDECISION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
ON THE SCALES BELOW, PLEASE RATE THE EXTENT TO WHICH YOUR REACTIONS TO THE ISSUES, OBJECTS, AND PEOPLE ARE ONE-SIDED OR MIXED.

**LEGALIZED ABORTION**

Completely ONE-SIDED Reactions

![Scale](image1)

Completely MIXED Reactions

**AFFIRMATIVE ACTION**

Completely ONE-SIDED Reactions

![Scale](image2)

Completely MIXED Reactions

**NEUTRAL TONED WALL PAINT**

Completely ONE-SIDED Reactions

![Scale](image3)

Completely MIXED Reactions

**YOUR MOTHER**

Completely ONE-SIDED Reactions

![Scale](image4)

Completely MIXED Reactions

**RAISING TUITION AT OSU**

Completely ONE-SIDED Reactions

![Scale](image5)

Completely MIXED Reactions

**THE NATIONAL ENQUIRER**

Completely ONE-SIDED Reactions

![Scale](image6)

Completely MIXED Reactions

**WHITE CASTLE HAMBURGERS**

Completely ONE-SIDED Reactions

![Scale](image7)

Completely MIXED Reactions
Now we would like you to consider each of the issues below and indicate the extent to which you feel CONFLICTED about the issue. That is, do you feel very much CONFLICT about the issue, hardly any at all, or something in-between? For each of the issues below, you should rate the extent to which you FEEL CONFLICTED about the issue.

**LEGALIZED ABORTION**

Feel NO CONFLICT at all

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
</table>

Feel MAXIMUM Conflict

**AFFIRMATIVE ACTION**

Feel NO CONFLICT at all

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
</table>

Feel MAXIMUM Conflict

**NEUTRAL TONED WALL PAINT**

Feel NO CONFLICT at all

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<th>8</th>
<th>9</th>
<th>10</th>
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</thead>
</table>

Feel MAXIMUM Conflict

**YOUR MOTHER**

Feel NO CONFLICT at all

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
</table>

Feel MAXIMUM Conflict

**RAISING TUITION AT OSU**

Feel NO CONFLICT at all

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
</table>

Feel MAXIMUM Conflict

**THE NATIONAL ENQUIRER**

Feel NO CONFLICT at all

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
</table>

Feel MAXIMUM Conflict

**WHITE CASTLE HAMBURGERS**

Feel NO CONFLICT at all

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<th>8</th>
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<th>10</th>
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</thead>
</table>

Feel MAXIMUM Conflict
APPENDIX B

(SEPARATE ANALYSES FOR EXPERIMENTS 1 AND 2)
In order to examine whether the influence of dominant and conflicting reactions upon subjective ambivalence as a function of threshold replicated across Experiments 1 and 2, multiple regression analyses were conducted regressing conflicting reactions, dominant reactions, and the conflicting X dominant reactions interaction on subjective ambivalence for both levels of threshold separately for both Experiments 1 and 2.

The results of these analyses are presented in Table 15. Inspection of the table reveals that the results did replicate across experiments. For those observations below the threshold, subjective ambivalence was a joint function of conflicting minus dominant reactions. This relationship was obtained in both Experiment 1 and Experiment 2. For those observations above the threshold, subjective ambivalence was solely a function of the conflicting reactions. This relationship was also obtained in both Experiment 1 and Experiment 2.
Table 15. Analyses of the Influence of Conflicting and Dominant Reactions on Subjective Ambivalence as a Function of Threshold for Experiment 1 and Experiment 2.

Experiment 1

Conflicting reactions greater than one:

Conflicting reactions: $F(1,154) = 10.7, p < .002, \eta = .43$

Dominant reactions: $F(1,154) = 0.0, p > .9, \eta = .01$

Conflicting reactions equal to zero and one:

Conflicting reactions: $F(1,234) = 8.6, p < .004, \eta = .74$

Dominant reactions: $F(1,234) = 39.7, p < .0001, \eta = -.21$

Experiment 2

Conflicting reactions greater than one:

Conflicting reactions: $F(1,420) = 270., p < .0001, \eta = .37$

Dominant reactions: $F(1,420) = 0.6, p > .4, \eta = -.12$

Conflicting reactions equal to zero and one:

Conflicting reactions: $F(1,736) = 13.9, p < .0002, \eta = .68$

Dominant reactions: $F(1,736) = 27.4, p < .0001, \eta = -.21$
APPENDIX C

(EXPERIMENTAL MATERIALS, EXPERIMENTS 3 AND 4)
On each of the next pages you will find a set of words that describe a person. Your task is to read the set of words and form an impression about the person being described and decide how much you would like that particular person.

Each page describes a different person.

The descriptive words are listed alphabetically.

Each word is equally important.

Each word came from a different acquaintance of the person.

Simply read each word as it appears in the list with the intentions of:

1) forming an impression of that person and
2) deciding how much you would like that person.

At the bottom of each page you will be asked a series of questions about the person.

There are no right or wrong answers. Rather, your feelings about the person are what matters most.

When you are finished, turn the booklet over and wait for the experimenter to continue.

Thank you.
**DESCRIPTIONS:**

LOUD-MOUTHED

---

Please answer the questions by circling the number that best represents your answer.

1. People can feel very unfriendly or very friendly to other people. How friendly do you find this person?

   ![Number Scale](https://via.placeholder.com/150)

   -4  -3  -2  -1  0  +1  +2  +3  +4  
   very unfriendly  neutral  very friendly

2. Thoughts and feelings can be very consistent or very conflicted. How conflicted are your thoughts and feelings about this person?

   ![Number Scale](https://via.placeholder.com/150)

   0  1  2  3  4  5  6  7  8  9  10  
   no conflict  moderate conflict  maximum conflict

3. Thoughts and feelings can be all one-sided or very mixed. How mixed are your thoughts and feelings about this person?

   ![Number Scale](https://via.placeholder.com/150)

   0  1  2  3  4  5  6  7  8  9  10  
   not at all mixed  moderately mixed  maximum mixed

4. People can be very decisive or very indecisive in their thoughts and feelings toward others. How indecisive are your thoughts and feelings about this person?

   ![Number Scale](https://via.placeholder.com/150)

   0  1  2  3  4  5  6  7  8  9  10  
   not at all indecisive  moderately indecisive  maximum indecision
Please answer the questions by circling the number that best represents your answer.

1. People can feel very unfriendly or very friendly to other people. How friendly do you find this person?

-4 -3 -2 -1 0 +1 +2 +3 +4
very unfriendly neutral very friendly

2. Thoughts and feelings can be very consistent or very conflicted. How conflicted are your thoughts and feelings about this person?

0 1 2 3 4 5 6 7 8 9 10
no conflict moderate maximum conflict

3. Thoughts and feelings can be all one-sided or very mixed. How mixed are your thoughts and feelings about this person?

0 1 2 3 4 5 6 7 8 9 10
not at all mixed moderately maximum mixed

4. People can be very decisive or very indecisive in their thoughts and feelings toward others. How indecisive are your thoughts and feelings about this person?

0 1 2 3 4 5 6 7 8 9 10
not at all indecisive moderately maximum indecision
Please answer the questions by circling the number that best represents your answer.

1. People can feel very unfriendly or very friendly to other people. How friendly do you find this person?

very unfriendly
neutral
very friendly

2. Thoughts and feelings can be very consistent or very conflicted. How conflicted are your thoughts and feelings about this person?

no conflict
moderate conflict
maximum conflict

3. Thoughts and feelings can be all one-sided or very mixed. How mixed are your thoughts and feelings about this person?

not at all mixed
moderately mixed
maximum mixed

4. People can be very decisive or very indecisive in their thoughts and feelings toward others. How indecisive are your thoughts and feelings about this person?

not at all indecisive
moderately indecisive
maximum indecision

---

DESCRIPTIONS:

CLEVER
DEPENDABLE
HAPPY
HOSTILE
HUMOROUS
MARROW-MINDED
OBNOXIOUS
PHONY
DESCRIPTIONS:

BORING
Clever
CONSIDERATE
COURTEOUS
DEPENDABLE
DIshonest
HOSTILE
STAR
SINCERE
TRUSTWORTHY
TRUTHFUL

Please answer the questions by circling the number that best represents your answer.

1. People can feel very unfriendly or very friendly to other people. How friendly do you find this person?

-4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10
very unfriendly neutral very friendly

2. Thoughts and feelings can be very consistent or vary conflicted. How conflicted are your thoughts and feelings about this person?

0 1 2 3 4 5 6 7 8 9 10
no conflict moderate conflict maximum conflict

3. Thoughts and feelings can be all one-sided or very mixed. How mixed are your thoughts and feelings about this person?

0 1 2 3 4 5 6 7 8 9 10
not at all mixed moderately mixed maximum mixed

4. People can be very decisive or very indecisive in their thoughts and feelings toward others. How indecisive are your thoughts and feelings about this person?

0 1 2 3 4 5 6 7 8 9 10
not at all indecisive moderately indecisive maximum indecision
DESCRIPTIONS:

GREEDY
RUDEN
SELF-CENTERED
UNTRUSTWORTHY

Please answer the questions by circling the number that best represents your answer.

1. People can feel very unfriendly or very friendly to other people. How friendly do you find this person?

   very unfriendly  neutral  very friendly
   -4  -3  -2  -1  0  +1  +2  +3  +4

2. Thoughts and feelings can be very consistent or very conflicted. How conflicted are your thoughts and feelings about this person?

   no conflict  moderate conflict  maximum conflict
   0  1  2  3  4  5  6  7  8  9  10

3. Thoughts and feelings can be all one-sided or very mixed. How mixed are your thoughts and feelings about this person?

   not at all mixed  moderately mixed  maximum mixed
   0  1  2  3  4  5  6  7  8  9  10

4. People can be very decisive or very indecisive in their thoughts and feelings toward others. How indecisive are your thoughts and feelings about this person?

   not at all indecisive  moderately indecisive  maximum indecision
   0  1  2  3  4  5  6  7  8  9  10
DESCRIPTIONS:
NONE AVAILABLE

Please answer the questions by circling the number that best represents your answer.

1. People can feel very unfriendly or very friendly to other people. How friendly do you find this person?

   -4  -3  -2  -1  0  +1  +2  +3  +4
   very  very
   unfriendly neutral friendly

2. Thoughts and feelings can be very consistent or very conflicted. How conflicted are your thoughts and feelings about this person?

   0  1  2  3  4  5  6  7  8  9  10
   no moderate maximum
   conflict conflict conflict

3. Thoughts and feelings can be all one-sided or very mixed. How mixed are your thoughts and feelings about this person?

   0  1  2  3  4  5  6  7  8  9  10
   not at all moderately maximum
   mixed mixed mixed

4. People can be very decisive or very indecisive in their thoughts and feelings toward others. How indecisive are your thoughts and feelings about this person?

   0  1  2  3  4  5  6  7  8  9  10
   not at all moderately maximum
   indecisive indecisive indecision
DESCRIPTIONS:

CONCEITED
GRUEL
INSINCERE
MEAN
NARROW-MINDED
QUARRELSONE
UNTRUTHFUL

Please answer the questions by circling the number that best represents your answer.

1. People can feel very unfriendly or very friendly to other people. How friendly do you find this person?

-4  -3  -2  -1  0  +1  +2  +3  +4
very
unfriendly
neutral
very
friendly

2. Thoughts and feelings can be very consistent or very conflicted. How conflicted are your thoughts and feelings about this person?

0   1  2  3  4  5  6  7  8  9  10
no
conflict
moderate
conflict
maximum
conflict

3. Thoughts and feelings can be all one-sided or very mixed. How mixed are your thoughts and feelings about this person?

0   1  2  3  4  5  6  7  8  9  10
not at all
mixed
moderately
mixed
maximum
mixed

4. People can be very decisive or very indecisive in their thoughts and feelings toward others. How indecisive are your thoughts and feelings about this person?

0   1  2  3  4  5  6  7  8  9  10
not at all
indecisive
moderately
indecisive
maximum
indecision

XX070A
8
1. People can feel very unfriendly or very friendly to other people. How friendly do you find this person?

-4 -3 -2 (-1) 0 +1 +2 +3 +4
very unfriendly neutral very friendly

2. Thoughts and feelings can be very consistent or very conflicted. How conflicted are your thoughts and feelings about this person?

0 1 2 3 4 5 6 7 8 9 10
not at all moderate maximum conflict conflict conflict

3. Thoughts and feelings can be all one-sided or very mixed. How mixed are your thoughts and feelings about this person?

0 1 2 3 4 5 6 7 8 9 10
not at all moderately maximum mixed mixed

4. People can be very decisive or very indecisive in their thoughts and feelings toward others. How indecisive are your thoughts and feelings about this person?

0 1 2 3 4 5 6 7 8 9 10
not at all moderately maximum indecisive indecision indecision
DESCRIPTIONS:

ILL-MANNED
LOUD-MOUTHED
RELIABLE
UNTRUSTWORTHY
UNTRUTHFUL

Please answer the questions by circling the number that best represents your answer.

1. People can feel very unfriendly or very friendly to other people. How friendly do you find this person?

-4  -3  -2  -1  0  +1  +2  +3  +4
very
unfriendly
neutral
very
friendly

2. Thoughts and feelings can be very consistent or very conflicted. How conflicted are your thoughts and feelings about this person?

0  1  2  3  4  5  6  7  8  9  10
no
conflict
moderate
maximum
conflict
conflict

3. Thoughts and feelings can be all one-sided or very mixed. How mixed are your thoughts and feelings about this person?

0  1  2  3  4  5  6  7  8  9  10
not at all
mixed
moderately
maximum
mixed
mixed

4. People can be very decisive or very indecisive in their thoughts and feelings toward others. How indecisive are your thoughts and feelings about this person?

0  1  2  3  4  5  6  7  8  9  10
not at all
indecisive
moderately
indecisive
maximum
indecision

XXM41A
132

DESCRIPTIONS:

INTELLIGENT

Please answer the questions by circling the number that best represents your answer.

1. People can feel very unfriendly or very friendly to other people. How friendly do you find this person?

-4  -3  -2  -1  0  +1  +2  +3  +4
very unfriendly neutral very friendly

2. Thoughts and feelings can be very consistent or very conflicted. How conflicted are your thoughts and feelings about this person?

0  1  2  3  4  5  6  7  8  9  10
no conflict moderate conflict maximum conflict

3. Thoughts and feelings can be all one-sided or very mixed. How mixed are your thoughts and feelings about this person?

0  1  2  3  4  5  6  7  8  9  10
not at all moderately mixed maximum mixed

4. People can be very decisive or very indecisive in their thoughts and feelings toward others. How indecisive are your thoughts and feelings about this person?

0  1  2  3  4  5  6  7  8  9  10
not at all moderately indecisive maximum indecision
Please answer the questions by circling the number that best represents your answer.

1. People can feel very unfriendly or very friendly to other people. How friendly do you find this person?

   very unfriendly          neutral          very friendly

   -4  -3  -2  -1  0  +1  +2  +3  +4

2. Thoughts and feelings can be very consistent or very conflicted. How conflicted are your thoughts and feelings about this person?

   no conflict          moderate conflict      maximum conflict

   0  1  2  3  4  5  6  7  8  9  10

3. Thoughts and feelings can be all one-sided or very mixed. How mixed are your thoughts and feelings about this person?

   not at all mixed      moderately mixed      maximum mixed

   0  1  2  3  4  5  6  7  8  9  10

4. People can be very decisive or very indecisive in their thoughts and feelings toward others. How indecisive are your thoughts and feelings about this person?

   not at all indecisive      moderately indecisive      maximum indecision

   0  1  2  3  4  5  6  7  8  9  10
DESCRIPTIONS:

- PLEASANT
- SINCERE
- THOUGHTFUL
- TRUSTFUL

Please answer the questions by circling the number that best represents your answer.

1. People can feel very unfriendly or very friendly to other people. How friendly do you find this person?

-4 -3 -2 -1 ( ) 0 +1 +2 +3 +4
very very
unfriendly neutral friendly

2. Thoughts and feelings can be very consistent or very conflicted. How conflicted are your thoughts and feelings about this person?

0 1 2 3 4 5 6 7 8 9 10
no conflict moderate conflict maximum conflict

3. Thoughts and feelings can be all one-sided or very mixed. How mixed are your thoughts and feelings about this person?

0 1 2 3 4 5 6 7 8 9 10
not at all moderately mixed maximum mixed

4. People can be very decisive or very indecisive in their thoughts and feelings toward others. How indecisive are your thoughts and feelings about this person?

0 1 2 3 4 5 6 7 8 9 10
not at all moderately indecisive maximum indecision

---

X000044A
DESCRIPTIONS:

- BROAD-MINDED
- CHEERFUL
- CONSIDERATE
- HAPPY
- HUMOROUS
- INSINCERE
- MIND
- UNDERSTANDING

Please answer the questions by circling the number that best represents your answer.

1. People can feel very unfriendly or very friendly to other people. How friendly do you find this person?

   -4 -3 -2 -1 0 +1 +2 +3 +4
   very unfriendly neutral very friendly

2. Thoughts and feelings can be very consistent or very conflicted. How conflicted are your thoughts and feelings about this person?

   0 1 2 3 4 5 6 7 8 9 10
   no conflict moderate conflict maximum conflict

3. Thoughts and feelings can be all one-sided or very mixed. How mixed are your thoughts and feelings about this person?

   0 1 2 3 4 5 6 7 8 9 10
   not at all mixed moderately mixed maximum mixed

4. People can be very decisive or very indecisive in their thoughts and feelings toward others. How indecisive are your thoughts and feelings about this person?

   0 1 2 3 4 5 6 7 8 9 10
   not at all indecisive moderately indecisive maximum indecision
DESCRIPTIONS:

- BORING
- CONCEITED
- CRUEL
- MEAN
- RUDE
- SELFISH
- THOUGHTFUL
- UNFRIENDLY

Please answer the questions by circling the number that best represents your answer.

1. People can feel very unfriendly or very friendly to other people. How friendly do you find this person?

   
   -3  -2  -1  0   +1  +2  +3  +4
   very
   unfriendly  neutral  very
   friendly

2. Thoughts and feelings can be very consistent or very conflicted. How conflicted are your thoughts and feelings about this person?

   0  1  2  3  4  5  6  7  8  9  10
   no  moderate  maximum
   conflict  conflict  conflict

3. Thoughts and feelings can be all one-sided or very mixed. How mixed are your thoughts and feelings about this person?

   0  1  2  3  4  5  6  7  8  9  10
   not at all  moderately  maximum
   mixed  mixed  mixed

4. People can be very decisive or very indecisive in their thoughts and feelings toward others. How indecisive are your thoughts and feelings about this person?

   0  1  2  3  4  5  6  7  8  9  10
   not at all  moderately  maximum
   indecisive  indecisive  indecision
Please answer the questions by circling the number that best represents your answer.

1. People can feel very unfriendly or very friendly to other people. How friendly do you find this person?

   -4 -3 -2 -1 0 +1 +2 +3 +4
   very
   unfriendly
   neutral
   very
   friendly

2. Thoughts and feelings can be very consistent or very conflicted. How conflicted are your thoughts and feelings about this person?

   0 1 2 3 4 5 6 7 8 9 10
   no
   conflict
   moderate
   maximum
   conflict
   conflict

3. Thoughts and feelings can be all one-sided or very mixed. How mixed are your thoughts and feelings about this person?

   0 1 2 3 4 5 6 7 8 9 10
   not at all
   moderately
   maximum
   mixed
   mixed
   mixed

4. People can be very decisive or very indecisive in their thoughts and feelings toward others. How indecisive are your thoughts and feelings about this person?

   0 1 2 3 4 5 6 7 8 9 10
   not at all
   moderately
   maximum
   indecisive
   indecisive
   indecision
   XGR74A
**DESCRIPTIONS:**

**OBNOXIOUS**

**RELIABLE**

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. People can feel very unfriendly or very friendly to other people. How friendly do you find this person?</td>
<td>-4  -3  -2  0  +1  +2  +3  +4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>very unfriendly</td>
<td></td>
</tr>
<tr>
<td></td>
<td>neutral</td>
<td></td>
</tr>
<tr>
<td></td>
<td>very friendly</td>
<td></td>
</tr>
<tr>
<td>2. Thoughts and feelings can be very consistent or very conflicted. How conflicted are your thoughts and feelings about this person?</td>
<td>0  1  2  3  4  5  6  7  8  9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>no conflict</td>
<td></td>
</tr>
<tr>
<td></td>
<td>moderate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>maximum conflict</td>
<td></td>
</tr>
<tr>
<td>3. Thoughts and feelings can be all one-sided or very mixed. How mixed are your thoughts and feelings about this person?</td>
<td>0  1  2  3  4  5  6  7  8  9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>not at all</td>
<td></td>
</tr>
<tr>
<td></td>
<td>moderately mixed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>maximum mixed</td>
<td></td>
</tr>
<tr>
<td>4. People can be very decisive or very indecisive in their thoughts and feelings toward others. How indecisive are your thoughts and feelings about this person?</td>
<td>0  1  2  3  4  5  6  7  8  9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>not at all</td>
<td></td>
</tr>
<tr>
<td></td>
<td>moderately indecisive</td>
<td></td>
</tr>
<tr>
<td></td>
<td>maximum indecision</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX D

(SEPARATE ANALYSES FOR EXPERIMENTS 3 AND 4)
In order to examine whether the influence of dominant and conflicting reactions upon subjective ambivalence as a function of threshold replicated across Experiments 3 and 4, multiple regression analyses were conducted regressing conflicting reactions, dominant reactions, and the conflicting X dominant reactions interaction on subjective ambivalence for both levels of threshold separately for both Experiments 3 and 4.

The results of these analyses are presented in Table 16. Inspection of the table reveals that the results did replicate across experiments. For those observations below the threshold, subjective ambivalence was a joint function of conflicting minus dominant reactions. This relationship was obtained in both Experiment 3 and Experiment 4. For those observations above the threshold, subjective ambivalence was solely a function of the conflicting reactions. This relationship was also obtained in both Experiment 3 and Experiment 4.
Table 16. Analyses of the Influence of Conflicting and Dominant Reactions on Subjective Ambivalence as a Function of Threshold for Experiment 3 and Experiment 4.

**Experiment 3 analyses**

**Conflicting reactions greater than one:**
- Conflicting reactions: $F(1,259) = 9.5, p < .003, h = .40$
- Dominant reactions: $F(1,259) = 0.3, p > .6, h = .07$

**Conflicting reactions equal to zero and one:**
- Conflicting reactions: $F(1,955) = 85.3, p < .0001, h = 1.4$
- Dominant reactions: $F(1,955) = 34.9, p < .0001, h = -.25$

**Experiment 4 analyses**

**Conflicting reactions greater than one:**
- Conflicting reactions: $F(1,190) = 10.3, p < .002, h = .32$
- Dominant reactions: $F(1,190) = 0.6, p > .6, h = .07$

**Conflicting reactions equal to zero and one:**
- Conflicting reactions: $F(1,702) = 58.7, p < .0001, h = 1.3$
- Dominant reactions: $F(1,702) = 101.8, p < .0001, h = -.33$
APPENDIX E

(ANALYSES EXAMINING VALENCE AND SUBJECTIVE AMBIGUITY)
Analyses were conducted in order to conduct a preliminary examination of the influence of valence on subjective ambivalence. In these analyses, all responses with equivalent conflicting and dominant reactions were deleted. Following these deletions, subjective ambivalence was analyzed by a 2 (valence, dominant equal to positive versus dominant equal to negative) X 2 (threshold, above versus below).

The results of these analyses of variance are presented in Table 17. Inspection of the table reveals main effects for both valence and threshold. For both Experiments 1 and 2 and Experiments 3 and 4, observations above the threshold were associated with greater subjective ambivalence ($M_{1a2} = 4.2$ and $M_{3a4} = 5.8$) than observations below the threshold ($M_{1a2} = 2.5$ and $M_{3a4} = 3.1$). For both Experiments 1 and 2 and Experiments 3 and 4, dominant reactions equal to negative were associated with greater subjective ambivalence ($M_{1a2} = 3.5$ and $M_{3a4} = 3.9$) than dominant reactions equal to positive ($M_{1a2} = 2.7$ and $M_{3a4} = 3.2$). That is, for all observations, subjective ambivalence was greater when the dominant reactions were negative than positive in valence. This main effect, however, was qualified by a valence X threshold interaction. In both Experiments 1 and 2 and Experiment 3 and 4, this main effect of valence primarily occurred given observations below the threshold, whereas valence did not influence subjective ambivalence to such an extent given observations above the threshold. The influence of valence on subjective ambivalence as a function of positive and negative reactions and traits is presented in Tables 18 and 19.
Table 17. Subjective Ambivalence as a Function of Valence and Threshold, Experiments 1 and 2 and Experiments 3 and 4.

Experiments 1 and 2

<table>
<thead>
<tr>
<th>Predictor</th>
<th>degrees of freedom</th>
<th>$E$</th>
<th>probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUBJECT</td>
<td>(321 1533)</td>
<td>1.7</td>
<td>$p &lt; .0001$</td>
</tr>
<tr>
<td>VALENCE</td>
<td>(1, 1533)</td>
<td>72.4</td>
<td>$p &lt; .0001$</td>
</tr>
<tr>
<td>THRESHOLD</td>
<td>(1, 1533)</td>
<td>290.7</td>
<td>$p &lt; .0001$</td>
</tr>
<tr>
<td>VALENCE*</td>
<td>(1, 1533)</td>
<td>17.1</td>
<td>$p &lt; .0001$</td>
</tr>
<tr>
<td>THRESHOLD</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Experiments 3 and 4

<table>
<thead>
<tr>
<th>Predictor</th>
<th>degrees of freedom</th>
<th>$E$</th>
<th>probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUBJECT</td>
<td>(150, 1658)</td>
<td>3.3</td>
<td>$p &lt; .0001$</td>
</tr>
<tr>
<td>VALENCE</td>
<td>(1, 1658)</td>
<td>5.3</td>
<td>$p &lt; .02$</td>
</tr>
<tr>
<td>THRESHOLD</td>
<td>(1, 1658)</td>
<td>338.7</td>
<td>$p &lt; .0001$</td>
</tr>
<tr>
<td>VALENCE*</td>
<td>(1, 1658)</td>
<td>17.1</td>
<td>$p &lt; .0001$</td>
</tr>
<tr>
<td>THRESHOLD</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 18. Subjective Ambivalence as a Function of Positive and Negative Reactions, Experiments 1 and 2 (means and n associated with each cell are reported).

<table>
<thead>
<tr>
<th>Negative Reactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 2.6 4.4 3.2</td>
</tr>
<tr>
<td>233 17 9</td>
</tr>
<tr>
<td>9 2.4 3.4 4.1 4.2 4.4</td>
</tr>
<tr>
<td>54 57 18 4</td>
</tr>
<tr>
<td>8 2.2 3.6 4.4 4.2</td>
</tr>
<tr>
<td>34 35 38 14</td>
</tr>
<tr>
<td>7 3.9 3.3 3.7 4.7</td>
</tr>
<tr>
<td>16 27 27 30</td>
</tr>
<tr>
<td>6 2.3 4.6 3.8 4.6</td>
</tr>
<tr>
<td>8 6 15 15 19</td>
</tr>
<tr>
<td>5 3.4 3.2 5.2 5.3</td>
</tr>
<tr>
<td>23 11 14 15</td>
</tr>
<tr>
<td>4 2.2 4.3 4.4 3.8</td>
</tr>
<tr>
<td>11 10 13</td>
</tr>
<tr>
<td>3 4.0 4.1 3.6 3.5</td>
</tr>
<tr>
<td>8 7 10</td>
</tr>
<tr>
<td>2 4.0 3.2 2.6 3.1</td>
</tr>
<tr>
<td>6 9 13</td>
</tr>
<tr>
<td>1 3.4 3.3 2.5 3.3</td>
</tr>
<tr>
<td>15 24 10</td>
</tr>
<tr>
<td>0 2.9 2.8 3.4 3.2</td>
</tr>
<tr>
<td>121 15 16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Positive Reactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 2 3 4</td>
</tr>
</tbody>
</table>
Table 19. Subjective Ambivalence as a Function of Positive and Negative Traits, Experiments 3 and 4 (means and standard deviations associated with each cell are reported).

<table>
<thead>
<tr>
<th>Negative Traits</th>
<th>7</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>1</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>x = 2.9</td>
<td>3.9</td>
<td>6.1</td>
<td>7.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sd = 3.1</td>
<td>2.9</td>
<td>2.6</td>
<td>2.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.4</td>
<td>5.4</td>
<td>6.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>x = 3.0</td>
<td>4.0</td>
<td>5.9</td>
<td>6.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sd = 3.1</td>
<td>2.4</td>
<td>1.9</td>
<td>2.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.6</td>
<td>5.5</td>
<td>5.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>x = 4.2</td>
<td>4.5</td>
<td>2.8</td>
<td>3.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sd = 2.7</td>
<td>2.4</td>
<td>1.8</td>
<td>2.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.9</td>
<td>4.6</td>
<td>2.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>x = 3.9</td>
<td>3.4</td>
<td>1.4</td>
<td>1.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sd = 3.4</td>
<td>2.6</td>
<td>1.7</td>
<td>1.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.6</td>
<td>1.4</td>
<td>1.9</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Positive Traits

<table>
<thead>
<tr>
<th>Positive Traits</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>7</td>
</tr>
</tbody>
</table>