On the dominance of attitude emotionality

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ABSTRACT

Many situations in our lives require us to make relatively quick decisions as whether to approach or avoid a person or object, buy or pass on a product, or accept or reject an offer. These decisions are particularly difficult when there are both positive and negative aspects to the object. How do people go about navigating this conflict to come to a summary judgment? Using the Evaluative Lexicon (EL; Rocklage & Fazio, 2015), we demonstrate across three studies, 7700 attitude expressions, and nearly 50 different attitude objects that when positivity and negativity conflict, the valence that is based more on emotion is more likely to dominate. Furthermore, individuals are also more consistent in the expression of their univalent summary judgments when they involve greater emotionality. In sum, valence that is based on emotion tends to dominate when resolving ambivalence and also helps individuals to remain consistent when offering quick judgments.

Keywords: attitudes, attitude measurement, emotion, judgment and decision making, language

On the dominance of attitude emotionality

Imagine for a moment you are casually waltzing down the supermarket aisle when a prominent advertising display catches your eye. It's for K-cup cappuccino. Because you are constantly in need of caffeine – you are an academic after all – you are immediately drawn to the promise of the cappuccino. It's then that you notice that the price is nearly twice that of the coffee K-cups you usually buy. You're conflicted. Nevertheless, at that moment you are forced to make a decision whether you are generally positive or negative toward the K-cup cappuccino in order to act. Given that you have both positive and negative associations, how do you decide what to do?

There are, of course, multiple factors that will contribute to our decision to buy or not buy the cappuccino. These factors include those that are situational (whether one can actually see and smell the cappuccino itself; e.g., Shiv & Fedorikhin, 1999), motivational (how long it had been since one last enjoyed a cappuccino; e.g., Dai & Fishbach, 2014), and those that differ by individual (the extent to which one weights positive versus negative information; e.g., Fazio, Pietri, Rocklage, & Shook, 2015; Rocklage & Fazio, 2014). For the current research, however, we are interested in the nature of the conflicting reactions and how their specific qualities may help individuals come to a single evaluative judgment.

One such aspect that may be particularly helpful in resolving ambivalence into a single judgment is the extent to which individuals' positive and negative reactions to the object are relatively more affective or cognitive in nature. Indeed, attitude researchers in particular have become interested in the consequences of basing one's evaluations on these different aspects. For example, researchers have found that summary evaluations of political candidates were predicted by both traits ascribed to the candidate – cognition – (e.g., moral, dishonest, weak) and affective reactions toward the candidate (e.g., anger, happiness, hopefulness; Abelson, Kinder, Peters, &

Fiske, 1982). Corroborating these findings, other research has found that when assessing individuals' prejudicial attitudes toward different groups, the affective and cognitive bases of individuals' attitudes tend to both be important, significant contributors when predicting their summary evaluations (e.g., Haddock, Zanna, & Esses, 1993; Stangor, Sullivan, & Ford, 1991). Across these studies, then, researchers found that measuring the basis of individuals' attitudes was important to understanding individuals' final evaluation.

Despite this interest in attitude basis and its importance in understanding attitudes, surprisingly little psychological research has investigated the role attitude basis plays in resolving reactions of conflicting valence. To our knowledge, there are only two existing studies that begin to examine attitude basis and its relation to how individuals resolve ambivalence, each with its own set of limitations.

The first study, similar to the research conducted by Abelson et al. (1982) cited above, analyzed a database of attitudes provided toward political candidates from the 1980 through 1992 presidential races (Lavine, Thomsen, Zanna, & Borgida, 1998). In the time prior to each election, respondents were asked to indicate whether a candidate ever evoked within them a particular emotion or not (e.g., hopeful, proud, angry, afraid), to what extent a candidate exhibited a given trait (cognition; e.g., moral, knowledgeable, dishonest, weak), and their overall summary of the candidate. When individuals' affective and cognitive reactions conflicted (i.e., one was, on average, positive and one was negative), the valence based on affect better predicted their summary evaluations. There are, however, limitations to this study and its generalizability. First, these findings were specific to political figures as attitude objects. Indeed, these findings focused on people, who we know to be judged somewhat differently from other objects (e.g., Skowronski & Carlston, 1989). It is unknown whether these results describe properties of

attitudes generally or reflect evaluations of people specifically. Second, and more importantly, the method used to measure individuals' evaluations did not allow researchers to control for the extremity implied by the more emotional terms they used. For example, simply by signifying that they felt "angry" toward a political candidate, respondents may also have been indicating that their negatively-valenced reaction was more extreme than the positively-valenced reaction suggested by the candidate's expertise. It is therefore ambiguous whether emotionality tended to be more influential in summary judgments toward candidates because of emotionality per se, or because emotional reactions tend to be more extreme.

To build on this research and to address these limitations, Rocklage and Fazio (2015, Study 3) analyzed a large, naturalistic sample of consumer product reviews from Amazon.com. Specifically, these researchers analyzed the reviews that showed evidence of ambivalence in a database of 5.9 million Amazon.com product reviews ranging from movies to books to more utilitarian products such as vacuum cleaners, microwaves, and computers. They classified a review as ambivalent if it included both positive and negative adjectives within the review text. Using the Evaluative Lexicon (see below for an in-depth description), these researchers quantified the implied valence, extremity, and emotionality of the adjectives reviewers used in their reviews and then used these measures to predict the overall summary star rating (out of five) of the product that the reviewers offered. In addition, they also quantified the number of positive and negative adjectives individuals used in the reviews – termed "valence focus." Each of these aspects of individuals' attitudes significantly predicted their summary evaluations of products about which they expressed ambivalence. The greater the use of positive versus negative adjectives (differential valence focus) and the greater the extremity of the positive adjectives relative to the negative (differential extremity), the more positive the summary ratings.

More interestingly, even when controlling for differential valence focus and differential extremity, differential emotionality also predicted the summary evaluations: the more emotionality implied by the positive adjectives relative to the negative, the more positive the ratings.

Although this study expanded on the previous research by investigating an incredibly wide range of attitude objects and controlling for attitude extremity, there were other limitations within this study due to its use of naturalistic data where individuals' behavior is under less than ideal experimental control.

First, when writing Amazon.com product reviews, reviewers can issue a star rating or write the text of their reviews in any order they wish. Although both the text and the summary rating reflect individuals' attitudes, the temporal order in which the reviewers committed to each is ambiguous. It is possible, for instance, that some individuals wrote their review first and then issued a summary rating. Others may have done the reverse. Still others may have written part of their review, issued a summary rating, and then expanded upon their review. Despite this added source of variance within the Amazon.com reviews, the number of positive and negative adjectives used, their implied extremity, and their implied emotionality all mattered when predicting summary judgments. Nevertheless, the extent to which this effect is generalizable remains to be tested. In particular, the past findings make it impossible to know whether adjectives are used to justify a summary rating that has been expressed or whether the summary represents an integration of prior (potentially conflicting) evaluative reactions noted in the review.

Second, in the Amazon.com study, as well as in the Lavine et al. study on political candidates, individuals had as much time as necessary to come to a conclusion about the attitude

object. In the Amazon.com study, it is possible that as individuals continue to write their review and think about the product that they integrate a greater range of product attributes when issuing a summary judgment. While such a decision process reflects one approach individuals can use to come to a conclusion, we often do not have such a luxury. Indeed, individuals are often forced to make quick decisions regarding the positivity or negativity of a given attitude object in order to act on that object immediately. Individuals may rely on different aspects of their evaluative reactions to a greater or lesser extent as a function of the time that is available to them, thus raising the question of whether the findings obtained in the Amazon.com study would generalize to situations in which quick decisions are required.

Finally, the Amazon.com rating scale allows for reviewers to indicate a more neutral summary evaluation. Indeed, reviewers could simply choose the midpoint of the scale (three out of five stars) if they did not wish to issue a more positive or negative judgment. Many situations in our lives do not lend themselves to such indecision however. Instead, we must often quickly decide whether to approach or avoid an attitude object, buy it or leave it, etc, and thus must have some way of deciding on its general positivity or negativity before doing so. What aspects of individuals' evaluative reactions contribute to decision making in situations where they are forced to make such a dichotomous decision regarding an object's positivity or negativity?

Thus the primary aim of the current set of studies is to investigate the extent to which valence, extremity, and emotionality matter when individuals must make a quick, dichotomous decision regarding an ambivalent object's positivity or negativity. We will approach these aims through a more controlled, laboratory-based procedure that allows us to address a number of the limitations of the past studies while simultaneously exploring the generalizability of the effects obtained in previous ambivalence-resolution studies.

The Evaluative Lexicon

To pursue these aims, we used the power of language (e.g., Holtgraves, 2010) to understand individuals' underlying evaluations. In particular, we utilized a recently validated measure of individuals' attitudes named the Evaluative Lexicon (EL; Rocklage & Fazio, 2015). The creation of the EL stemmed from the observation that individuals use many more words than just "like" and "dislike" or "good" and "bad" to describe their evaluation of an attitude object. Indeed, we use a number of adjectives such as "amazing," "terrible," "awful," and "magnificent." Adjectives in particular are ideal candidates for measuring evaluations as they are abstract terms describing general and enduring aspects of the object in question (Semin & Fiedler, 1988). Although adjectives vary in their extremity, they can also imply different levels of emotionality. For example, although the words "perfect" and "magnificent" are very similar in their implied positivity, they differ drastically in their implied emotionality. Similarly, although "useless" and "appalling" are both extremely negative, "appalling" is much more emotional.

Rocklage and Fazio (2015) created the EL by first generating a lengthy list of adjectives. The final adjectives were required to be evaluative in nature and have a consistent meaning across objects. For example, while the word "big" is an adjective, it can be positive when referring to a television, but negative when referring to a smartphone; therefore, "big" was not included. After generating this list, they then had a large sample of judges rate each adjective for the extent to which it implied a positive versus negative evaluation and the extent to which it implied an evaluation based on an emotional reaction to the attitude object. By considering the absolute deviation of the valence rating from the neutral point, the EL also quantified the extremity of the evaluation implied by each adjective. The resulting variables could then be used whenever another individual used the adjective while assessing an attitude object. For example,

if an individual were to use the adjective “magnificent” to describe his/her evaluation of an attitude object, we could impute the values the original sample of judges gave for the valence (8.71 out of 9.00), extremity (4.21 out of 4.50), and emotionality (6.80 out of 9.00) implied by “magnificent.” In this way, we can quantify the adjectives individuals use and then utilize these variables to predict different outcomes of interest.

To validate the EL, Rocklage and Fazio (2015, Study 2) created affectively- and cognitively-based attitudes experimentally in the lab through narratives vividly describing an individual’s positive or negative encounter with a fictitious sea animal versus encyclopedic compilations of the animal’s positive or negative attributes. They then asked participants to select those EL adjectives that best described their evaluation of that attitude object. Using the normative ratings obtained from the original sample of judges, they found that the EL was 88.2% accurate in identifying not only the valence of the passage to which individuals had been exposed, but also whether that passage had been more affective or cognitive in nature.

They then further validated the EL within natural language by analyzing a large number of Amazon.com product reviews, as mentioned above (Rocklage & Fazio, 2015, Study 3). This large natural text corpus also allowed them to demonstrate that verbs that we would expect to accompany emotionality (“feel”) – versus those denoting reasoning (“think” and “believe”) – were indeed used more often with the more emotional adjectives (e.g., “magnificent”).

Another advantage of the EL is that it allows for the simultaneous assessment of multiple aspects of individuals’ attitudes, including extremity and emotionality. As Rocklage and Fazio (2015) found, there is certainly overlap between the two constructs, but they differ and can have separable, simultaneous effects.

Extremity and emotionality are not equivalent, and emotionality need not have all its effects through any associated extremity. Extremely-valenced reactions may sometimes generate relatively more emotion and sometimes not. For example, an object that is very well-liked may evoke all the more positive of an emotional reaction if the object is more valued than is typical for exemplars of a given category. A smartphone that has incredible battery life may evoke an emotional response due to its outstanding usefulness compared to other smartphones. Likewise, an extremely negative object, especially one that is unexpectedly so, may evoke a more negative emotion. Thus, more emotional evaluative reactions may signal not only valence extremity, but an object's surprising atypicality. Other times, however, this extremity may not relate to emotionality as, for example, when a blender is seen as very useful, but not surprisingly or atypically so.

Once an emotional reaction to an attitude object is experienced, that emotionality may prove informative. Emotionality may derive some of its effects through its perceived diagnosticity (Fazio, 1995). Affective reactions to an object may be perceived as more diagnostic to the attitude-holder him/herself compared to the recognition of the object's attributes. The emotional response arises from the person him/herself and therefore may be perceived as more indicative of his/her attitude than relatively more removed beliefs about the properties of an attitude object. Thus, emotionality and extremity are separable both conceptually and, as shown in the research by Rocklage and Fazio (2015), empirically. The emotionality of the adjectives included in the Amazon reviews contributed uniquely to the prediction of the reviewer's summary star ratings, over and above the extremity of those adjectives.

The general approach of the current research is to utilize the EL to first measure individuals' attitudes and their basis across a broad variety of attitude objects and then having

individuals, in a separate task, make a quick, dichotomous decision regarding their positivity or negativity toward each object. This approach will allow us to examine the influence of affectively- and cognitively-based evaluative reactions on individuals' expression of summary judgments.

Method

Given the similarities among the three studies that are reported in this paper, we overview the methods of all three one after the other prior to the presentation of any results.

Study 1

Participants.

Forty-four undergraduate students participated in partial fulfillment of a psychology course requirement.

Procedure.

The Evaluative Lexicon: Assessing emotionality and extremity.

Participants began the experiment by reviewing a list of adjectives drawn from the EL for the purpose of familiarizing themselves with it before they began the study. A representative subset of about half of the entire list of EL adjectives was used to shorten the experiment's overall length and simplify the participants' task (see Table A in the Supplementary Materials for a list of adjectives used).[1]

[1] Comparison of the subset of adjectives used in this study with those not used revealed no differences in valence, extremity, or emotionality (*p*s > .19). Minimum and maximum values were also similar. As with the original list of EL adjectives, the adjectives chosen showed no association between emotionality and valence ($r(41) = .08$, $p = .63$) or extremity and valence ($r(41) = -.08$, $p = .63$) and a comparable correlation between emotionality and extremity ($r(41) = .52$, $p < .001$).

After familiarizing themselves with the adjectives, participants were then asked to evaluate 41 different attitude objects (see Table B in the Supplementary Materials). The list provided us with three major benefits.

First, in terms of the sheer number, 41 objects should ensure a large enough sampling to speak to the effects of attitudinal properties generally. In the majority of studies investigating attitude basis and its consequences, investigators tend to use far fewer objects – anywhere from one to six (e.g., Fabrigar & Petty, 1999; Crites, Fabrigar, & Petty, 1994). Few studies use more than 10 attitude objects.

Second, the 41 objects involve a wide variety of possible attitudes, ranging from objects likely to evoke clearly positive to clearly negative evaluations as well as ones likely to evoke ambivalent reactions. Given that our goal is to study the effects of attitudes' properties in general, it is important that the list include a multitude of attitudes. To approach our selections more systematically, we first generated a large list of attitude objects based on our intuition of what individuals might normatively evaluate as positive or negative across both cognitive and affective bases. We then conducted a series of pilot studies using the EL to assess the extent to which the objects we chose represented a wide range of positivity/negativity as well as affective/cognitive bases. For instance, "sunshine" and "donating blood" can both elicit positive attitudes, but while "sunshine" is more likely to be based on affect (represented by adjectives such as "delightful" or "enjoyable"), "donating blood" is more likely to be cognitively-based (represented by adjectives such as "useful" or "valuable"). On the negative end of the spectrum, "rape" is highly negative and more likely to be based on emotion, while "pollution" is also highly negative, but more likely to be based on cognition. Indeed, an analysis of all the attitude objects used in all three studies revealed a wide range of valence at the aggregate normative level

(1.15 to 7.47 on a scale ranging from 0 to 9; *SD* = 1.93) and basis/emotionality (4.00 to 6.54 on a scale ranging from 0 to 9; *SD* = .72) across the objects. There was also no correlation between valence and basis ($r(39) = .004$, $p = .98$) across the attitude objects, consistent with a wide, unbiased distribution.[2]

Third, given that our focus is on ambivalent attitudes, we again utilized our pilot studies in order to choose objects that could elicit various combinations of possible conflict for attitude bases. Specifically, we chose objects that could elicit both affectively-based positive and negative reactions (e.g., skydiving as "exciting" but "terrifying"), affectively-based positive but cognitively-based negative reactions (e.g., chocolate cookies as "delightful" but "unhealthy"), cognitively-based positive and negative reactions (e.g., corporations as "valuable" but "harmful"), and cognitively-based positive but affectively-based negative reactions (e.g., cough syrup as "beneficial" but "dreadful"). Although participants obviously would differ as to whether they would have a positive or negative attitude toward any given object, we nevertheless included a large and wide-ranging list of objects that provided adequate coverage of attitude valence, basis, and ambivalence.

To evaluate each object, participants were shown the name of the object at the top of the screen and then asked to choose two to five adjectives that described their evaluation of that object. They were then asked to choose a single adjective from this list of two to five that *best* described their evaluation of each object.

[2] Further reflecting the wide range of attitudes in our sample, at the level of the participants (i.e., not at the normative level), individuals' attitudes ranged from extremely negative at .56 all the way to extremely positive at 8.60 (*SD* = 2.45). Emotionality at the participant level ranged from 3.07 all the way to 7.42 (*SD* = 1.00).

In this first experiment, the adjectives were listed in two separate columns. The first column contained all of the positive adjectives listed in alphabetical order while the second column contained all of the negative adjectives listed in alphabetical order. This approach was taken to simplify individuals' task when searching for an adjective appropriate for describing their attitude. In an effort to encourage participants to feel free to select from both the positive and negative adjective columns for a single object, they were given the additional instructions to "feel free to choose from both sides of the list for each object (both positive and negative adjectives)."

Forced dichotomous decision: The dependent variable.

After selecting adjectives for each of the 41 objects, individuals continued to the second part of the study. In this part of the study, participants were shown, one-by-one, the names of the objects they had previously rated using the EL and were asked to respond as quickly as possible whether they liked or disliked that object. Specifically, they were asked to make a dichotomous decision as to whether they "like" or "dislike" an object and were instructed to respond as quickly and as accurately as possible by pressing one of two keys.

Study 2

In Study 2, we wanted to replicate our results in Study 1 and also extend them. As will be outlined below, we changed the instructions and structure of the tasks in order to generalize our findings and bolster the evidence that the outcomes from Study 1 were the result of properties of the attitudes rather than properties of the task.

Participants.

Seventy-five undergraduate students participated in partial fulfillment of a psychology course requirement.

Procedure.

The Evaluative Lexicon: Assessing emotionality and extremity.

The same procedure as detailed in Study 1 was used in this current study except for the following changes:

First, an internal analysis of Study 1 revealed that individuals did not make much use of their license to list as many as five adjectives. When they did choose five, the additional adjectives were largely redundant with those already chosen. Based on these analyses, we changed the task so individuals would choose just two to four adjectives. This change had the added benefit of shortening and simplifying the task for individuals.

Second, we altered the ordering of the adjectives and removed the special instructions for participants to feel free to choose both positive and negative adjectives. It is possible that the structure and instructions of the task could alter the way they chose their adjectives and we wanted to ensure that these aspects of Study 1 did not reduce the generalizability of our results. In the Study 2, we simply arranged all the adjectives alphabetically and then split them into three columns for ease of reading.

Forced dichotomous decision: The dependent variable.

The forced dichotomous decision portion of Study 2 was also very similar to the portion in Study 1. In Study 1, however, it is possible that by giving participants instructions to decide between “liking” or “disliking” an object that they could be biased to rely relatively more on affective reactions they had when categorizing the object. Unintentionally, then, the results of Study 1 could reflect the instructions given rather than any general properties of attitudes.

To focus the instructions less on affect in the current study, we gave participants the instructions: “If you are generally positive toward the object, like it, believe it is good, are

favorable toward it, or are 'pro' it," press the key we labeled as '+'. For the negative option they were given the instructions: "If you are generally negative toward the object, dislike it, believe it is bad, are unfavorable toward it, or are against it," press the key we labeled as '-'. These more general instructions therefore allowed for the possibility that more cognitive reactions ("believe it is good" and "are 'pro' it") could be relied upon when making the dichotomous decision as well.

Study 3

Study 3 again sought to replicate and extend Studies 2 and 3. While Study 2 aimed to ensure that the instructions and structure of the adjective list were not unduly affecting our results, Study 3's aim was to further increase the coverage of the negative attitudes and to assess whether our results were similar when modifying the subset of adjectives we included from the EL.

Participants.

Sixty-three undergraduate students participated in partial fulfillment of a psychology course requirement.

Procedure.

The Evaluative Lexicon: Assessing emotionality and extremity.

The same procedure and instructions were used from Study 2 except for two changes.

In Study 3, we added eight additional negative attitude objects and removed two (see Table B in the Supplementary Materials). These negative objects were added for two reasons. First, they were added to test the generalizability of our effects. Would we see similar results even when altering the objects we included? Second, as will be detailed in the Results section, our effects in Studies 1 and 2 had been strong for positive attitudes, but weaker for negative

attitudes. We wanted to ensure that these smaller effects for negative attitudes were not due to an insufficient range of attitude objects. In order to increase the coverage of possible negative attitudes, we added eight objects that seemed capable of being based relatively more on emotion (e.g., maggots) or more on cognition (e.g., erosion). Two additional attitude objects – dancing and swimming – were removed to shorten the task given that we had added the additional objects. We removed these particular objects as internal analyses of Study 2 revealed that they did not add any additional coverage to the already-existing list of objects.

In Study 3, we also wanted to add further support that the weaker effects of negative attitudes were not due to any constraints presented by the task itself. To that end, we modified the negative adjectives included in the list (see Table A in the Supplementary Materials for the full list). As before, the new list of adjectives was very similar in composition to the full list of EL adjectives.

Forced dichotomous decision: The dependent variable.

The forced dichotomous decision portion of the study was the same as in Study 2.

Results

We utilized mixed modeling to analyze the data across the three studies as it allows us to take advantage of the fact that each participant expressed attitudes toward multiple objects. In other words, because we know each attitude stems from a given individual, we can model the shared variance that stems from the individual him/herself as well as the variance that arises across the attitude objects. Indeed, mixed modeling allows us to treat each expressed attitude on its own without violating traditional regression's assumption that each participant's attitude is independent of another. This approach offers three significant advantages.

Mixed modeling allows us to investigate the effects of aspects of attitudes specifically. It is possible, for example, that some individuals are simply more likely to endorse more emotional or extreme attitudes and that it is this difference among individuals, and not necessarily a property of attitudes more generally, that leads to the results we see. By allowing us to examine each attitude as originating from a given participant, mixed modeling gives us the ability to center each participant's attitude around his/her own average level of emotionality and extremity. We can therefore speak to the properties of emotionality or extremity apart from these individual differences.

Second, mixed modeling allows us to treat both the individuals and the objects in our sample as random factors. By doing so we are able to explicitly model the variance introduced by the participants and objects. Treating these factors as random through mixed modeling allows us to make stronger statements as to the generalizability of the effects reported here. That is, we are able to generalize more confidently beyond our current sample to a larger population of both individuals and objects (Judd, Westfall, & Kenny, 2012; Baayen, Davidson, & Bates, 2008).

Finally, mixed modeling allows us to ask questions that would have been very difficult to answer using alternative methods. For example, because we are interested in the effects of valence, emotionality, and extremity, we can use mixed modeling to assess whether these variables moderate each other or not. Intuitively, for instance, it makes sense that the effect of emotionality may depend on whether the attitude is positive or negative given past research on the differences between positivity and negativity (e.g., Fazio, Pietri, Rocklage, & Shook, 2015; Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001; Rozin & Royzman, 2001; Cacioppo, Gardner, & Berntson, 1997). Furthermore, mixed modeling allows us to easily control for the

influence of other predictors. If we want to examine the influence of emotionality, per se, apart from its relation to extremity, we need to simultaneously control for the extremity of the attitude.

Effects of study

Mixed modeling also allows us to assess the effect of the methodological changes we made in each study. As we pointed out while overviewing the procedure of each study, it is possible that changes to the instructions and structure of the EL and dichotomous decision task or the added and removed adjectives and attitude objects could lead to differences across the studies.

To assess whether the changes we made across the studies impacted our results, we dummy-coded the three studies and entered the resulting dummy-coded variables as predictors into a mixed model. We found that when allowing study to interact with all other predictor variables, none of our results were moderated by study. Thus, regardless of instructions, structure, adjectives, or objects used, our results were consistent across studies. For this reason, we collapsed across studies and present those results below (see Tables 1 and 2, however, for the results of each study).

How do individuals resolve their ambivalence to come to a single, quick judgment?

Constructing the mixed model.

One of the major goals of this research is to investigate how individuals resolve their ambivalence when deciding upon and expressing a single, dichotomous evaluation. We first identified the cases in which participants expressed ambivalent reactions. To do so, we simply analyzed whether they chose both positive and negative adjectives to describe their attitude toward a given attitude object. If they chose both positive and negative adjectives, these attitudes were categorized as ambivalent (n = 2,552; 33% of the total); otherwise, the attitude was

categorized as univalent (n = 5,121; 67%). This approach has been previously associated with various hallmarks of ambivalence, including greater use of words and phrases connoting conflicting evaluations (e.g., “on the other hand,” “however,” “despite”) and more tempered, less extreme summary ratings of the attitude objects (see Rocklage & Fazio, 2015).

To assess the attitudes individuals expressed using the EL, we followed the procedures used by Rocklage and Fazio (2015). Specifically, for each adjective an individual selected, we imputed the normative values that represented that adjective numerically. Next, we averaged these imputed extremity and emotionality values within each attitude object each participant evaluated. As we are first concentrating only on cases involving ambivalence, we averaged these values for positive and negative adjectives separately. Thus, we had four variables for each ambivalent attitude: average positive and average negative extremity, and average positive and average negative emotionality. As seen in the results from Rocklage and Fazio, simply the number of positive and negative adjectives also may matter when resolving ambivalence. Thus, we calculated two additional variables: the number of positive and negative adjectives chosen for each case of ambivalence.

As we mentioned previously, one of the benefits of utilizing mixed modeling is that we are able to assess the effects of extremity and emotionality apart from any differences individuals display when completing our attitude scale. To control for these individual differences, we “participant-centered” each attitude variable. First, we calculated each individual’s average positive and negative extremity and emotionality across their ambivalent attitudes. Next we centered each case’s positive and negative extremity and emotionality by subtracting that individual’s average positive and negative extremity and emotionality. In essence, then, we are controlling for an individual’s tendency to select extreme and emotional adjectives by

subtracting out this tendency for each attitude. This is a common approach to control for such possible effects (see Nezlek, 2011).

As our question concerned how individuals decide upon and express a single dichotomous evaluation when positivity and negativity conflict, we created three difference variables from the six participant-centered variables we generated previously. Specifically, we subtracted negative extremity from positive extremity (differential extremity), negative emotionality from positive emotionality (differential emotionality), and the number of negative adjectives from the number of positive adjectives (valence focus). We then used these three variables to predict the dichotomous decision making task. If participants categorized an attitude object as positive, we coded that as a '1' and if they categorized it as negative it was coded as '0.' To predict this categorization, we used a logistic mixed model with both participants and attitude objects treated as random factors. Based on a recommendation by Nezlek (2011), individual predictor variables were only estimated as random if they were significant at the 0.2 level or less.

Predicting how individuals resolved their ambivalence.

As a first step, we assessed the ability of extremity and valence focus to help individuals come to a decision regarding the ultimate positivity or negativity of each object. To that end, we entered both the differential extremity and valence focus variables into a logistic mixed model to predict whether individuals ultimately categorized the object as positive or negative. Both variables significantly predicted how individuals resolved their ambivalence. The more extremely positive (negative) individuals' evaluative reactions were, the higher the probability they would resolve their ambivalence in the positive (negative) direction ($\gamma = .31$, $t(2549) = 3.99$, $p < .001$, 95% CI [.16, .46]). Furthermore, the greater the number of positive (negative)

adjectives participants selected, the higher the probability they would resolve their ambivalence in the positive (negative) direction ($\gamma = .61$, $t(2549) = 13.92$, $p < .001$, 95% CI [.52, .70]).

Next, we added differential emotionality to the mixed model. While the effects of extremity and valence focus provide further validation of the EL, we are primarily interested in whether emotionality predicts ambivalence resolution even above-and-beyond both extremity and valence focus. Emotionality did so: the more individuals' evaluative reactions were based on positive (negative) emotionality, the higher the probability they would resolve their ambivalence in the positive (negative) direction ($\gamma = .09$, $t(2548) = 2.02$, $p = .04$, 95% CI [.002, .18]). Furthermore, the effect of valence focus remained relatively unchanged ($\gamma = .62$, $t(2548) = 13.92$, $p < .001$, 95% CI [.53, .70]), and the effect of extremity remained significant though its effect lessened ($\gamma = .22$, $t(2548) = 2.37$, $p = .02$, 95% CI [.04, .39]).

Using individuals' self-designated "best" adjective to predict dichotomous decisions.

We can also conceptually replicate our results by analyzing individuals' self-designated "best" adjective for each attitude and using its EL values to predict whether they remain consistent across their judgments. Individuals would be inconsistent if they initially chose a best adjective that was positive (negative), but then, when forced to make a quick, dichotomous decision they pressed the key indicating negativity (positivity). Individuals were inconsistent in 31% of their judgments (n = 789). Would we see effects of the emotionality of the single best adjective similar to those observed when we considered the entire set of adjectives that were chosen as descriptive?

To this end, we used the valence, extremity, and emotionality of individuals' self-selected best adjective to predict whether they remained consistent in the dichotomous decision making task. Extremity and emotionality were both participant-centered, while valence was

dichotomized. Dichotomizing the valence variable allows us to know whether the expressed attitude was positive (coded as ‘1’) or negative (‘-1’) and is also required as valence becomes largely redundant with extremity once the direction of the extremity is known. Given that we were primarily interested in the effects of extremity and emotionality when predicting whether participants resolved their ambivalence in the positive or negative direction, we examined valence, extremity, emotionality, and two two-way interactions: valence by extremity and valence by emotionality. The additional details of the mixed model were the same as those above.

Mirroring the results we obtained when averaging the adjectives, emotionality significantly predicted when individuals would express inconsistent judgments. In particular, the greater the emotionality of individuals’ best adjective, the lower the probability they had of being inconsistent subsequently ($\gamma = -.37$, $t(2546) = 8.21$, $p < .001$, 95% CI [-.45, -.28]).

There was also a significant valence by emotionality interaction ($\gamma = -.24$, $t(2546) = 5.12$, $p < .001$, 95% CI [-.33, -.15]), indicating that while both positive and negative attitudes were characterized by a lower probability of inconsistency when the attitude was more based on emotion, this was especially true of positive attitudes ($\gamma = -.59$, $t(2546) = 11.44$, $p < .001$, 95% CI [-.69, -.49]). Framing the outcome somewhat differently, participants were more likely to declare the object negative, despite their having chosen a positive adjective as the single best descriptor, if that best adjective implied relatively little emotionality. A similar, albeit somewhat weaker, relation was observed when a negative adjective was chosen as the single best descriptor ($\gamma = -.13$, $t(2546) = 1.79$, $p = .07$, 95% CI [-.27, .01]). In essence, this relatively smaller effect in the case of negativity indicated that while emotionality related to enhanced consistency, simply having a best adjective that was negative was more predictive of later resolving one’s

ambivalence toward negativity than a positive adjective was for resolving toward positivity. For example, at one standard deviation below the mean on emotionality, a best adjective that was negative corresponded to a 30% chance of being inconsistent. Contrast this with a positive "best" adjective: participants had a higher probability, 50%, of being inconsistent when at low emotionality. The effect of extremity and the extremity by valence interaction were non-significant (see Table 1 for results of each study).[3]

[3] The reader may be interested in how the adjectives participants selected relate to their best adjective. We found that only valence focus consistently predicted whether the final best adjective was positive or negative across the studies ($\gamma = 1.03$, $t(2548) = 20.10$, $p < .001$, 95% CI [.93, 1.13]). This process of deciding on a single best adjective obviously differs from the dichotomous decision making task in that individuals had unlimited time to come to a final decision. They did not have such a luxury in the dichotomous decision making task. Nevertheless, the results here converge when using either the averaged or best adjectives such that the valence associated with the greater emotionality is more likely to dominate during the dichotomous decision making task.

Table 1

Mixed model coefficients for ambivalent attitudes for each study and collapsed across studies.

Predicting whether individuals responded positively or negatively.

Averaged Adjectives			
	Emotionality	Extremity	Valence Focus
Study 1	.23**	-.07	.74***
Study 2	.12*	.26	.60***
Study 3	.24***	.12	.53***
Combined	**.09***	**.22***	**.62*****

Predicting inconsistent responding from the values of the "best" adjective.

"Best" Adjective					
	Emotionality	Extremity	Valence	Valence*Emotionality	Valence*Extremity
Study 1	-.21*	-.05	.19	-.15	-.32
Study 2	-.26**	-.21	-.08	-.20**	-.11
Study 3	-.27***	-.06	-.04	-.20*	-.34
Combined	**-.37*****	**.001**	**-.007**	**-.24*****	**-.20**

Note. * ≤ .05, ** ≤ .01, *** ≤ .001
The relative size of the coefficients should not be viewed as the strength of their association with the dependent variable as the predictor variables are on different scales.

Does attitude emotionality also matter for univalent attitudes?

The findings reported above indicate that the more a particular valence was based on emotionality, the higher the probability that valence would prevail when individuals were forced to offer a dichotomous summary judgment. It is possible that the effect of attitude basis that we saw for ambivalent attitudes has an impact even when an attitude appears to be either just positive or just negative. Would a similar pattern hold for evaluations that seemingly have little or no underlying ambivalence?

Although we might assume that individuals would be extremely consistent in their judgments of objects they view in a univalent fashion, they may not always be. In our current data, individuals expressed a total of 5,121 univalent attitudes. Out of this total, they were inconsistent in their evaluative responses 9.0% of the time (n = 463). Although such inconsistencies might typically be regarded as random errors or as noise, it is possible that there is actually some underlying systematicity to these errors. In particular, it is possible that attitude basis may predict individuals' likelihood of displaying consistency across the two evaluative judgments.

There is some reason to believe that evaluative judgments of even univalent attitude objects may not always be associated with a single valence. For instance, individuals can feel discomfort with their univalent attitudes because they anticipate that there may be countervailing information of which they are not yet aware (Priester, Petty, & Park, 2007). Furthermore, individuals can report discomfort with univalent attitudes if they perceive that close-others have differing attitudes from their own (Priester & Petty, 2001). Finally, individuals can feel discomfort with their univalent attitudes if they wish that their attitudes were different than they are (DeMarree, Wheeler, Brinol, & Petty, 2014). These lines of research point to the possibility

that, when forced to make a quick, dichotomous choice, individuals may not always be consistent in their judgments. Thus, the emotionality and/or extremity of even univalent attitudes may matter.

Constructing the mixed model.

As we did when using individuals' "best" adjective from their ambivalent evaluations, we calculated three variables from their selected EL adjectives: valence, extremity, and emotionality. Extremity and emotionality were each simply averaged across individuals' selected adjectives and then separately participant-centered to control for the effects of individual differences. As before, the valence variable was simply dichotomized as either positive (1) or negative (-1). The additional details of the model were the same as those outlined previously.

Predicting judgment consistency from attitude extremity and emotionality.

Logistic mixed modeling was used to predict whether individuals were inconsistent (coded as '1') or remained consistent ('0') across their evaluative judgments. We first entered just valence, extremity, and their interaction. There was an overall effect of extremity (γ = -.98, t(5117) = 4.21, p < .001, 95% CI [-1.44, -.53]) as well as a significant valence by extremity interaction (γ = -.50, t(5117) = 2.61, p = .01, 95% CI [-.88, -.12]). These results indicated that both positive (γ = -1.48, t(5117) = 6.02, p < .001, 95% CI [-1.97, -1.00]) and negative (γ = -.48, t(5117) = 1.39, p = .17, 95% CI [-1.17, .20]) attitudes tended to have a lower probability of being expressed inconsistently when the attitude was more extreme, but that this was mostly true of positive attitudes.

We then added emotionality and its interaction with valence. There was an overall effect of emotionality indicating that the more an attitude was based on emotion, the lower the probability individuals would be inconsistent (γ = -.46, t(5115) = 5.68, p < .001, 95% CI [-.62, -

.30]). There was also a significant valence by emotionality interaction (γ = -.26, t(5115) = 3.21, p = .001, 95% CI [-.42, -.10]), indicating that while both positive and negative attitudes tended to be associated with less inconsistency when the attitude was more based on emotion, this was especially true of positive attitudes (γ = -.72, t(5115) = 7.56, p < .001, 95% CI [-.91, -.54]; for negative attitudes, γ = -.20, t(5115) = 1.51, p = .13, 95% CI [-.46, .06]; see Figure 1). For negative attitudes, a shift from one standard deviation above the mean on emotionality ($M_{probability\ of\ inconsistency}$ = .04) to one standard below the mean in emotionality corresponded to a 50% increase in the probability of being inconsistent ($M_{probability\ of\ inconsistency}$ = .06). For positive attitudes, a shift from one standard deviation above the mean on emotionality ($M_{probability\ of\ inconsistency}$ = .04) to one standard deviation below the mean corresponded to a whole 250% increase in the probability of being inconsistent ($M_{probability\ of\ inconsistency}$ = .14). In addition, although the valence by extremity interaction was no longer significant when emotionality was included in the model (γ = -.02, t(5115) = .10, p = .92, 95% CI [-.46, .41]), there was an overall effect of extremity indicating that greater extremity also predicted a lower probability of inconsistent responding (γ = -.51, t(5115) = 1.99, p = .05, 95% CI [-1.01, -.006]).

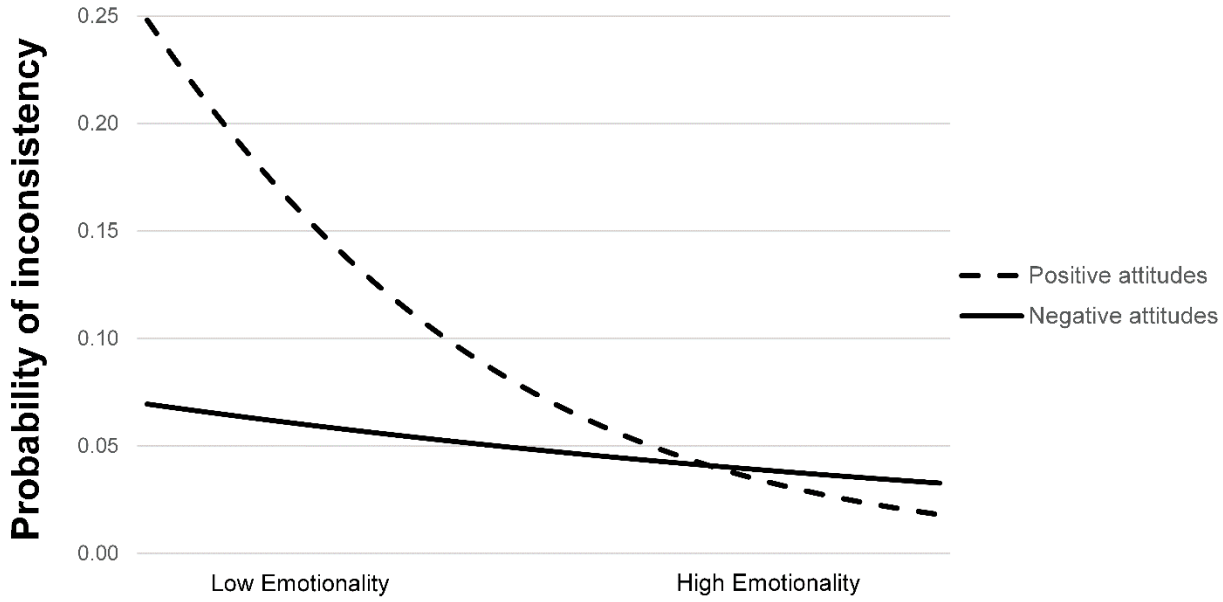

Figure 1 – Mixed model relating the implied emotionality of the adjectives as a function of valence, controlling for extremity. Values on the x-axis represent the range of possible values in the sample.

Using individuals' self-designated "best" adjective to predict judgment consistency.

We can also attempt to replicate our results using individuals' single best adjective. Using this approach, we again found an effect of extremity while simultaneously controlling for emotionality (γ = -.37, t(5115) = 2.59, p = .01, 95% CI [-.64, -.09]). As the implied extremity of their single best adjective increased, individuals had a lower probability of being inconsistent. There was no valence by extremity interaction (γ = .07, t(5115) = .53, p = .60, 95% CI [-.20, .35]).

Importantly, we replicated our primary findings as we again observed a significant effect of emotionality (γ = -.18, t(5115) = 3.08, p = .002, 95% CI [-.30, -.07]) and a valence by emotionality interaction (γ = -.18, t(5115) = 3.02, p = .003, 95% CI [-.30, -.06]; see Table 2 for results of each study). This interaction indicated that positive attitudes benefitted the most from emotionality (γ = -.50, t(5115) = 7.24, p < .001, 95% CI [-.97, -.24]) while negative attitudes did not benefit to the same extent (γ = -.06, t(5115) = .70, p = .49, 95% CI [-.23, .11]). These results again indicated that individuals had a lower probability of being inconsistent for negative attitudes one standard deviation below the mean on emotionality (M = .06) compared to an equally emotional positive attitude (M = .20).

Table 2

Mixed model coefficients for univalent attitudes for each study and collapsed across studies.

Predicting inconsistent responding from the average values of the chosen adjectives.

Averaged Adjectives					
	Emotionality	Extremity	Valence	Valence*Emotionality	Valence*Extremity
Study 1	-.45**	-.24	.37*	-.39*	-.41
Study 2	-.52***	-.38	.16	-.14	-.03
Study 3	-.40**	-.61	.39*	-.32*	.08
Combined	**-.46*** **	**-.51***	**.22***	**-.26*** **	**-.02**

Predicting inconsistent responding from the values of the "best" adjective.

"Best" Adjective					
	Emotionality	Extremity	Valence	Valence*Emotionality	Valence*Extremity
Study 1	-.37**	-.48	.43*	-.22	-.20
Study 2	-.22**	-.42*	.16	-.16	.24
Study 3	-.24**	-.33	.46*	-.25**	-.001
Combined	**-.18****	**-.37****	**.41***	**-.18****	**.07**

Note. * ≤ .05, ** ≤ .01, *** ≤ .001
The relative size of the coefficients should not be viewed as the strength of their association with the dependent variable as the predictor variables are on different scales.

General Discussion

Across three studies we found that the extent to which individuals base their evaluative reactions on affect versus cognition predicted how they resolved their ambivalence when forced to make a quick, dichotomous decision regarding an object's positivity or negativity. When individuals expressed ambivalence, the valence that was based more on emotion was more likely to dominate and win the day. Emotionality mattered even for univalent attitudes: the more an attitude was based on affect, the greater the probability that individuals would remain consistent across their evaluative judgments. Inconsistencies that individuals exhibited and that might appear to be random error or noise in fact have an underlying systematicity to them. These effects of affectively-based attitudes existed above-and-beyond the extremity of individuals' attitudes and were replicated in analyses focusing on individuals' self-designated "best" adjective.

Beyond these main findings, the present studies are characterized by a number of features that strengthen their contributions to attitudes research. First, these effects occurred across a large and diverse sample of nearly 50 attitude objects. Using a series of pilot studies, we selected objects that had the potential to evoke all combinations of positivity, negativity, and types of ambivalence. The majority of previous research investigating the effect of attitude basis used relatively few attitude objects and tended to focus primarily on judgments of people. Our results, on the other hand, represent the properties of attitudes and their basis more generally.

Second, because we conducted our research in a laboratory setting, we were able to control for various aspects of individuals' responses. For instance, unlike our past research using naturalistic text and product ratings from Amazon.com (Rocklage & Fazio, 2015), we were able to limit the amount of time individuals spent on each task as well as control for the order in

which they completed the tasks. Though both the text and final product rating reflected individuals' attitudes in the Amazon.com study, it was possible that those writing Amazon.com reviews could write their reviews and then issue a star rating, or that they could include adjectives in their reviews that served to justify their final summary evaluations. Our current studies clarify any ambiguity regarding the order in which individuals committed to a stance on the different measures. They therefore establish that final summary judgments can be predicted from the characteristics of the adjectives available in the EL that individuals selected prior to issuing the summary judgment.

Third, the current studies investigate how attitude bases relate to a decision process much like one we use every day. We often find ourselves in situations that require us to make a dichotomous evaluative judgment. Do we approach or avoid? As our results revealed, both ambivalent and univalent attitudes tend to be driven by the valence that is based more on affect.

Finally, these results control for attitude extremity and therefore speak to the effect of attitude emotionality per se. Previous research investigating how attitude bases relate to summary judgments have not taken into account that signifying an emotional response also means that response is often more extreme in nature. Our current results indicate that when required to make quick, dichotomous judgments, individuals rely on both emotionality and extremity, but that the emotionality of the attitude is often the stronger, more consistent predictor (see Tables 1 and 2). These findings reinforce the distinction between emotionality and extremity and their separability. Indeed, while there is an association between the two, correlations between these variables across both attitude objects and participants indicate that they are also discriminable (ambivalent: $r(2550) = .46$, $p < .0001$; univalent: $r(5119) = .59$, $p < .0001$).

The present studies have revealed the importance of attitude emotionality for dichotomous decisions. More emotional reactions may have this influence for a number of interrelated reasons. Individuals may view their own emotionality as a diagnostic cue of their evaluation of the object because it clearly emanates from oneself (Fazio, 1995). In that sense, it signals a rather undeniable reaction to the object. For example, the experience of being "appalled" by some object offers a stronger cue as to the nature of one's overall evaluation than does the equivalently extreme thought that it may be "useless." As a result of its perceived diagnosticity, the emotional reaction suggests that one can be confident of the summary evaluation that it connotes. This, in turn, may lead to the development of a relatively accessible attitude that is itself held with confidence. Thus, in terms of attitude-behavior consistency, the perceived diagnosticity of valence based primarily on affect (versus cognition) may lead individuals to be more likely to act in accord with this valence when the attitude is activated in memory. In line with the Motivation and Opportunity as DEterminants (MODE) model of attitude-behavior consistency (Fazio, 1990; Fazio & Olson, 2014), individuals must be both motivated and have the opportunity to override the influence of an activated attitude. In essence, the perceived diagnosticity of affectively-based attitudes and their associated confidence may often meet a threshold of validity, lead individuals to end their decision making process, and act accordingly. Thus, individuals may more readily rely on the valence that derives from their affective reactions for downstream judgments and behavior.

Interestingly, positive attitudes often benefitted more from being based on emotion than did negative attitudes. Specifically, simply holding a largely negative attitude was enough to remain relatively consistent across one's evaluative judgments. In a sense, as with emotionality, individuals may find negativity more diagnostic when coming to a final summary evaluation.

These findings are in line with previous research indicating that negativity can often have a greater influence than positivity (e.g., Fazio, Pietri, Rocklage, & Shook, 2015; Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001). They are also in line with evidence that people tend to discriminate between gradations of positivity more than they do so for negativity (Smallman, Becker, & Roese, 2014). This may stem from the fact that a negative object is one to be avoided and therefore there is less known about it; a positive object, on the other hand, welcomes approach behavior whereby individuals can gain further information and therefore encourages a more nuanced understanding of just how positive the object is (Fazio, Eiser, & Shook, 2004). Both of these explanations indicate that negativity can often be represented and treated differently than positivity and that negativity may sometimes have a greater and more uniform impact on subsequent judgments and behaviors.

Implications

The current results have considerable implications for understanding how individuals engage with their environments on a day-to-day basis. As we traverse our world, we are often faced with situations where we have little time or energy to devote cognitive resources toward our decisions. We must quickly decide whether to approach or avoid, to buy or pass. In these situations, individuals are more likely to rely on their affectively-based evaluative reactions compared to those that are cognitively-based to issue a summary judgment and, ultimately, make their decisions. Will you purchase your new, expensive K-cup cappuccino? That depends. You may want to start thinking of the adjectives you would use to describe it.

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