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# The ABC of Ambivalence: Affective, Behavioral, and Cognitive Consequences of Attitudinal Conflict

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## Abstract

In a world where individuals are continuously exposed to information, the experience of ambivalence has become an intricate part of human existence. Recently, the consequences of ambivalence have been the subject of considerable research attention. In this chapter, we provide an overview of this research and present the ABC (Affect, Behavior, Cognition) model of ambivalence that integrates recent insights into the affective, behavioral, and cognitive consequences of ambivalence. This research shows when and why ambivalence leads to negative affect and that this affective response is

the fuel that drives subsequent effects of ambivalence on cognition and behavior. Moreover, the reviewed findings reveal that the effects on cognition and behavior serve the purpose of either resolving ambivalence or mitigating the negative affective response. With the ABC model of ambivalence, we aim to identify the distinctive features of ambivalence in terms of what we feel, think, and do.



## 1. INTRODUCTION

*Ambivalence is a wonderful tune to dance to. It has a rhythm all its own*

*Erica Jong*

Evaluation is one of the most pervasive concepts in psychology. Not only is nearly all cognition and perception evaluative in nature (Markus & Zajonc, 1985), evaluations often take place quickly and without requiring much cognitive effort (Bargh, Chaiken, Govender, & Pratto, 1992). Evaluations serve important functions (e.g., Katz, 1960), such as preparing and guiding our behavior (Allport, 1935). They are based on a relatively stable set of associations that together form an attitude (Cunningham, Zelazo, Packer, & van Bavel, 2007). When associations are of the same valence, i.e., either positive or negative, evaluations form quickly and are seemingly effortless guides of human behavior (Armitage & Conner, 2000; Bargh et al., 1992). Often, however, attitudes are made up of positive and negative associations. Such coexistence of positive and negative associations within one attitude is what we call ambivalence. Ambivalence has recently seen a surge in research interest. This chapter will integrate this research and show that ambivalent attitudes can have important and distinctive consequences for what we feel, think, and do. This integration will culminate in a model that specifies when these consequences are most likely to occur.

Many scholars in the social sciences have argued that ambivalence is an intricate part of human existence. Freud (1930/1964) argued that all intimate relationships contain a certain degree of ambivalence, and, indeed, ambivalence has been shown in the context of parent–child relationships (Luescher & Pillemer, 1988; Maio, Fincham, & Lycett, 2000), marriage (Signorielli, 1991), and between lovers while sorting out their relationship (Wiseman, 1976). Ambivalence has also been shown in relation to a multitude of other topics, including abortion (Alvarez & Brehm, 1995), men (Feather, 2004; Glick & Fiske, 1999), women (Glick & Fiske, 1996), eating meat (Povey, Wellens, & Conner, 2001), presidential candidates (Lavine, 2001), pregnancy (Bruckner, Martin, & Bearman, 2004), dieting (Armitage & Arden, 2007),

methadone treatment (Rosenblum, Magura, & Joseph, 1991), different ethnic groups (Katz & Hass, 1988), chocolate (Sparks, Conner, James, Shepherd, & Povey, 2001), drugs and condoms (Kane, 1990), smoking (Lipkus, Green, Feaganes, & Sedikides, 2001), physical exercise (Sparks, Harris, & Lockwood, 2004), among scientists (Mitroff, 1974), and toward the self (DeMarree, Rios Morrison, Wheeler, & Petty, 2011).

Research has extensively examined ambivalence as a structural property of attitudes (e.g., De Liver, van der Pligt, & Wigboldus, 2007; Katz & Hass, 1988; Lavine, Thomson, Zanna, & Borgida, 1998). Others have focused more on the consequences of ambivalence. This chapter will integrate insights into these consequences with more classic findings on the structural properties of ambivalence. This overview will culminate in the ABC (Affect, Behavior, Cognition) model, a comprehensive model of ambivalence that predicts what the affective, cognitive, and behavioral consequences of ambivalent attitudes are and how these consequences interact with each other.



## 2. WHAT IS AMBIVALENCE?

Research into ambivalence spawned from the observation that traditional bipolar measures of attitude (e.g., a semantic differential ranging from “good” to “bad”) fail to distinguish between ambivalence and indifference. On such bipolar measures, both respondents who are torn between strong opposing evaluations and those who simply do not care will tick the midpoint of the bipolar scale (Klopper & Madden, 1980), even though their evaluations are fundamentally different. Individuals who are indifferent have weak positive and negative associations, whereas those who are ambivalent have strong positive and negative associations (e.g., Cacioppo & Berntson, 1994; Cacioppo, Gardner, & Berntson, 1997; Kaplan, 1972; Priester & Petty, 1996). Empirical support for this notion is provided by research in which valenced primes (i.e., positive or negative) facilitated responses to ambivalent but not neutral (i.e., indifferent) attitude objects (De Liver et al., 2007).

Several definitions of ambivalence have been proposed. Gardner (1987, p. 241), for example, defined ambivalence as “a psychological state in which a person holds mixed feelings (positive and negative) towards some psychological object.” Eagly and Chaiken (1993, p. 123) emphasized the cognitive inconsistency in ambivalence and defined it as “the extent of beliefs’ evaluative dissimilarity (or inconsistency).” Wegener, Downing, Krosnick, and Petty (1995, p. 460) defined ambivalence as “the extent to which one’s reactions to an attitude object are evaluatively mixed in that both positive

(favorable) and negative (unfavorable) elements are included.” [Thompson, Zanna, and Griffin \(1995, p. 367\)](#) referred to ambivalence as an inclination to “give it [an attitude object] equivalently strong positive and negative evaluations.”

Although this list of definitions is by no means complete, two central elements of the psychological construct of ambivalence become clear. First, both positive and negative associations need to be present. Second, these associations can be (but not always are) relevant at the same time. Based on these two prerequisites, we make a distinction between the associative structure of ambivalence based on positive and negative association weights (objective ambivalence) and the experience of conflict due to this associative structure (subjective ambivalence). The latter is more closely related to defining ambivalence as simultaneously evaluating an object or behavior negatively and positively (cf. [Kaplan, 1972](#); [Thompson et al., 1995](#)). We will return to this distinction between different kinds of ambivalence later.

The positive and negative evaluative components that together form ambivalence come in many flavors. As indicated by the aforementioned definition by [Eagly and Chaiken \(1993\)](#), both evaluative components can be cognitive in nature, but ambivalence has also been investigated in the context of inconsistencies between cognitive and affective elements ([Lavine et al., 1998](#)), between emotions ([Fong, 2006](#); [Larsen, McGraw, & Cacioppo, 2001](#); [Vince & Broussine, 1996](#)), between newly endorsed and older rejected attitudes ([Petty, Tormala, Brinol, & Jarvis, 2006](#)), and between inconsistent anticipations for the future ([Priester, Petty, & Park, 2007](#)). In our focus on the consequences of ambivalence, this chapter will not distinguish between these different kinds of ambivalence. Regardless of the kind of associations leading to ambivalence, the negative component tends to be more influential than the positive (e.g., [Cacioppo & Berntson, 1994](#)). This negativity bias is illustrated by the fact that highly ambivalent individuals are more persuaded by negatively framed messages ([Broemer, 2002](#)).



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### 3. AMBIVALENCE AND ATTITUDE STRENGTH

This chapter focuses on the consequences of ambivalence, which came into the spotlight as a result of the extensive investigation of ambivalence as a dimension of attitude strength ([Petty & Krosnick, 1995](#)). In research on ambivalence as a dimension of strength, it is generally argued that ambivalent attitudes are one form of weak attitudes. This notion is supported by a large amount of research showing that ambivalence

attenuates the relation between evaluations on the one hand and intentions and behaviors on the other (Armitage & Conner, 2000; Bruckner et al., 2004; Conner, Povey, Sparks, James, & Shepherd, 2003; Conner et al., 2002; Costarelli & Colloca, 2007; Shepherd, 1999; Sparks et al., 2001, 2004). Also, ambivalent attitudes have been found to be less accessible in memory (Bargh et al., 1992; Bassili, 1996) and more susceptible to persuasion attempts (Armitage & Conner, 2000).

Although this research seems to support the notion that ambivalence is reflective of a weak attitude, there are reasons to believe the matter is more complicated than that. First, studies found ambivalence to be related to stronger relations between attitudes and behavioral intentions, due to increased information processing (Jonas, Diehl, & Broemer, 1997). Specifically, ambivalence was associated with less confidence in one's evaluation, which led to a higher amount of cognitive elaboration. This elaboration (as reflected in the number of attitude-related thoughts), in turn, yielded a stronger relation between attitudes and behavioral intentions.

Second, a study on attitudes toward minorities (Maio, Bell, & Esses, 1996) found that ambivalence was associated with greater differentiation between strong and weak arguments. Such differential effects of strong and weak persuasive arguments have been related to systematic processing of information (Petty & Cacioppo, 1986), which requires the motivation to invest cognitive effort. This motivation is usually associated with strong rather than weak attitudes (e.g., Fabrigar, Priester, Petty, & Wegener, 1998; Petty & Krosnick, 1995).

Thus, although research on ambivalence aimed to show that ambivalence is a property of weak attitudes, it inadvertently revealed that ambivalence can have consequences (cognitive elaboration, strong relations between attitudes and intentions, differential effects of strong vs. weak persuasive messages) that are usually associated with strong attitudes. It has been argued (e.g., Maio et al., 1996) that the motivation to be evaluatively consistent underlies these findings. Research on, for example, cognitive dissonance (Festinger, 1964) and balance theory (Heider, 1946) has shown that people are motivated to reduce internal inconsistencies, and ambivalence has been assumed to have similar consequences (McGregor, Newby-Clark, & Zanna, 1999). And, indeed, it has been shown that ambivalent attitude holders are prone to engage in response amplification (exhibiting more extreme responses to a stigmatized individual, e.g., Monteith, 1993) and that this tendency is even more pronounced when there is a motive to reduce ambivalence (Bell & Esses, 2002).

Using similar reasoning, it has been argued that ambivalent attitude holders experience an internal evaluative inconsistency and, therefore, are motivated to extensively process information about the attitude object in an effort to reduce their ambivalence. This hypothesis has stimulated a considerable amount of research on the consequences of ambivalence. Ambivalence is no longer predominantly seen as a property of attitude strength; instead, ambivalent attitudes may ignite efforts to cope with their inherent inconsistency (Van Harreveld, Van der Pligt, & Liver, 2009).



## 4. CONSEQUENCES OF AMBIVALENCE

Despite the surge in research on the consequences of ambivalence, there have been few attempts to integrate this research. This chapter aims to do just that. Here, we discuss the consequences of ambivalence and integrate them along the lines of the traditional distinction in the literature on attitudes between affect, cognition, and behavior (e.g., Rosenberg & Hovland, 1960). In contrast to research on the tripartite structure of attitudes in which the causal relations between components are largely unresolved (e.g., Fiske & Pavelchak, 1986; Piderit, 2000; Zanna & Rempel, 1988), the proposed ABC model of ambivalence describes the affective, cognitive, and behavioral consequences of ambivalence and specifically predicts how the different components interact with each other.

### 4.1 A: Affect

The first category of consequences of ambivalence we discuss is affect. In the context of attitudes, affect has been defined as the “feelings, moods, emotions, and sympathetic nervous system activity that people have experienced in relation to an attitude object and subsequently associate with it” (Eagly & Chaiken, 1998, p. 272). In our consideration of the affective consequences of ambivalence, we take a similarly broad scope. Ambivalence can be related to affective responses in at least two ways. The first way is captured by one side of the aforementioned distinction between objective and subjective ambivalence. Whereas measures of objective ambivalence (i.e., Kaplan, 1972) assess the simultaneous existence of positive and negative evaluative responses in relation to an attitude object (e.g., “How positive (negative) are your thoughts and/or feelings with respect to X”), measures of subjective ambivalence (Jamieson, 1993; Priester & Petty, 2001) tap into the extent to which the attitude holder feels torn between both sides of the attitude object (e.g., “I feel torn between the two sides of X”). Objective ambivalence thus

refers to the existence of conflicting associations, whereas subjective ambivalence refers to the (meta) experience of this conflict. The fact that measures of objective and subjective ambivalence do not always correlate highly (Armitage & Arden, 2007) reflects that ambivalence can either be salient (leading to an affective response) or remain in a dormant (and exclusively structural) state. Thus, subjective ambivalence is the form that elicits affect.

Subjective ambivalence is generally viewed as producing negative affect (e.g., Newby-Clark, McGregor, & Zanna, 2002; Van Harreveld, Van der Pligt, et al., 2009). This notion is of considerable importance to this chapter, and we discuss subjectively experienced ambivalence accordingly: as a reflection of ambivalence-induced negative affect. Also, most of the consequences of ambivalence discussed in this chapter have been obtained in the context of subjectively experienced ambivalence. Moreover, effects of objective ambivalence tend to be driven by subjective ambivalence (DeMarree, Wheeler, Brinol, & Petty, 2014). Although the existence of evaluatively incongruent associations (objective ambivalence) in our view is a prerequisite for experiencing subjective ambivalence, it is the more affective nature of the latter state that is the most consequential for what people think and do.

The second way in which ambivalence is theoretically linked to affective responses is via the aforementioned presumed human motivation to be consistent. Consistency violations can be experienced as unpleasant and lead to a negative affective response, as shown, for example, in the context of cognitive dissonance (e.g., Zanna & Cooper, 1974). Based on the similarities between ambivalence and dissonance (for an in-depth discussion of the similarities and differences between ambivalence and dissonance, see van Harreveld, Van der Pligt, et al., 2009), it has been suggested that ambivalence leads to negative affect as well (e.g., McGregor et al., 1999). Yet, although there are theoretical grounds to assume that ambivalence is unpleasant, the direct empirical evidence for the relation between ambivalence and negative affect is inconclusive.

On the one hand, several studies suggest that ambivalence is indeed unpleasant. For example, it has been found that when ambivalent attitude holders can attribute their discomfort to a placebo pill, they report less negative emotions than their counterparts who received a supposedly relaxing pill (Nordgren, van Harreveld, & van der Pligt, 2006), which suggests that ambivalence is experienced as negative. Also, racial ambivalence has been related to negative mood (Hass, Katz, Rizzo, Bailey, & Moore, 1992). Finally, in a recent EMG study (Nohlen, van Harreveld, Rotteveel,



Barendse, & Larsen, 2015), higher levels of subjective ambivalence were associated with less activation of the zygomaticus major, a facial muscle that pulls the corner of the mouth back and up (smiling).

On the other hand, however, it has been suggested that ambivalence may sometimes be evaluated positively. Maio and Haddock (2004) argued “Ambivalence may be desirable when an issue is controversial. In this situation, people who appear ambivalent may give the impression of being fair and knowledgeable” (p. 435). Consistent with this reasoning, ambivalence has been shown to be negatively related to physiological arousal (Maio, Greenland, Bernard, & Esses, 2001). Moreover, some studies indicate that ambivalence can be evaluated positively by others. Pillaud, Cavazza, and Butera (2013) showed that when participants had to present themselves positively (as opposed to negatively), they were more likely to express ambivalence on controversial issues, arguably because this may communicate a balanced view. In light of these conflicting findings, several researchers have focused not on whether but when ambivalence is associated with negative affect.

#### **4.1.1 Causes of ambivalence-induced negative affect**

Many people have ambivalent attitudes toward matters such as fast food, alcohol, exercise, the death penalty, or watching television, but most of these attitudes do not continuously make us feel conflicted. It has been argued that feelings of ambivalence only become unpleasant when the positive and negative components of the attitude are simultaneously accessible, because only then does one experience conflict (Newby-Clark et al., 2002).

#### **4.1.2 Conflict**

Whether both evaluations are indeed simultaneously accessible, and conflict occurs, depends on contextual factors. It has been argued, for example, that racial ambivalence is salient primarily in an intergroup context (Katz, Wackenhut, & Hass, 1986). In the aforementioned study on ambivalence and negative mood (Hass et al., 1992), the relation between the two was most pronounced when evaluative conflict was made salient by controversial (pro and con) racial statements. Other studies have shown that introspecting about one’s attitude can also render ambivalence unpleasant (Schneider et al., 2013; Van Harreveld, Rutjens, Schneider, Nohlen, & Keskinis, 2014).

A likely cause of simultaneous accessibility of both evaluative components (and conflict) is highlighted by a comparison of ambivalence and dissonance (McGregor et al., 1999). An important difference between these

concepts lies in the fact that dissonance is usually the result of a behavioral commitment that is in conflict with a preexisting attitude. Ambivalence is also defined by conflict, but within one's attitude and often not related to any behavioral commitment. For example, topics such as euthanasia and abortion may elicit ambivalent feelings, but it is likely that these mixed evaluations become irreconcilable mainly when people have to take an unequivocal stance, thus involving behavior. When the ambivalent attitude can no longer remain noncommittal, conflict between opposing associations arises, and ambivalence should become particularly unpleasant (Van Harreveld, Van der Pligt, et al., 2009).

Several lines of research support this line of reasoning. In the context of attitudes toward following a healthy diet, it was found that levels of ambivalence were higher when attitude holders were preparing for behavioral action than when they were in a precontemplative stage (Armitage, Povey, & Arden, 2003). Similarly, correlations between objective and subjective ambivalence are highest in stages of action and maintenance (Armitage & Arden, 2007). In other words, objective ambivalence becomes subjective ambivalence (with negative affect ensuing) when relevant behavior has to be executed and conflict between the opposing evaluative components has to be resolved.

#### **4.1.3 Choice and conflict**

The conflict that results from having to choose and resolve the cognitive competition between opposing evaluations has recently been investigated with a dynamic online measure of mental processing (Schneider et al., 2015). In three studies, participants' dichotomous evaluations with regard to a number of ambivalent and univalent attitude objects were assessed with a computerized task while measuring their movements of the mouse cursor over the screen. Tracking peoples' mouse trajectories can give insight into the mental processes accompanying the formation of an explicit evaluation (e.g., Freeman & Ambady, 2010; Freeman, Dale, & Farmer, 2011; Wojnowicz, Ferguson, Dale, & Spivey, 2009).

In a series of trials, participants were randomly and sequentially presented with ambivalent (e.g., abortion, organ donation, euthanasia, alcohol) and univalent (e.g., happy, holiday, depressed, disgust) attitude objects and in each trial were required to use their mouse to click on either the "positive" button or the "negative" button to indicate which of these best reflected their attitude. These buttons were presented in the top left and top right corner on the screen. During each trial, cognitive competition

(conflict) between evaluations was operationalized as the degree to which the curvature of the trajectory deviated toward the unselected response (Maximum Deviation, MD, cf. [Wojnowicz et al., 2009](#)). The results revealed that, compared to univalent topics with only negative or only positive associations, ambivalent topics with both negative and positive associations showed a line that was attracted more to the nonchosen response options. In other words, mouse trajectories for ambivalent evaluations were drawn more to both responses compared to those for univalent evaluations. As a result, MD was greater for ambivalent compared to univalent attitude objects, reflecting more evaluative conflict. These studies directly show that, in a situation requiring a binary behavioral output, greater cognitive competition exists between opposing evaluative tendencies for ambivalent than for univalent attitude objects. These findings corroborate the earlier finding that ambivalent objects activate both positive and negative associations ([De Liver et al., 2007](#)) and extend this work by showing that these evaluations are continuously in conflict during response formation.

#### **4.1.4 Choice and discomfort**

It seems that the experience of conflict is paramount to the unpleasant nature of attitudinal ambivalence. Moreover, conflict is often the result being aware of the two conflicting sides of one's ambivalent attitude and having to choose between them. The notion that choice situations are therefore a likely cause of ambivalence-induced discomfort is the central tenet of the Model of Ambivalence-Induced Discomfort (MAID; [Van Harreveld, Van der Pligt, et al., 2009](#)). Direct empirical evidence was provided in studies in which ambivalent attitude holders wrote about the attitude topic at hand. In doing so, they were either forced to commit to one side of the attitude object by writing a one-sided essay or could stay uncommitted ([Van Harreveld, Rutjens, Rotteveel, Nordgren, & van der Pligt, 2009](#)). These groups, as well as a univalent control group, were compared in terms of their physiological arousal (Galvanic Skin Response). The results showed that ambivalent attitude holders only experienced more arousal than participants with univalent attitudes when they had to commit to one side of the attitude object. Moreover, the effect of ambivalence on arousal was fully mediated by feelings of uncertainty, further supporting the notion that it is the combination of ambivalence and choice that causes negative affect.

In a follow-up study, it was found that a number of self-reported negative emotions were increased by ambivalent choices. One of these was regret, which is an emotion likely to be associated with ambivalence for a number

of reasons. Again, comparisons with cognitive dissonance can be drawn here. According to cognitive dissonance theory, subsequent to a decision, people immediately focus their attention on unfavorable aspects of the chosen alternatives and favorable aspects of the rejected alternatives, making regret likely (Festinger, 1964). Moreover, actions are associated with higher levels of regret than inactions (e.g., Gilovich & Medvec, 1994). For the ambivalent attitude holder, having to make a discrete choice is an action and thus is likely to lead to the anticipation of regret.

A recent neuroimaging study shed further light on the discomfort associated with ambivalent choices (Nohlen, van Harreveld, Rotteveel, Lelieveld, & Crone, 2014). In this study, participants were presented with several ambivalent (e.g., organ donation) and univalent (e.g., child labor, summer) concepts and were asked to judge each concept in terms of whether they were “for” or “against” it. Consistent with earlier research (Cunningham, Raye, & Johnson, 2004), greater activity was observed in the lateral PFC and ACC during ambivalent decision-making, reflecting the greater complexity of and conflict associated with the evaluation of ambivalent concepts. Interestingly, however, ambivalent decision-making was also associated with activity in areas that have been labeled a social-affective network, including the insula, temporoparietal junction, and precuneus/PCC. Activity in these areas was associated with lower levels of ambivalence on a subsequent measure. One way to interpret the observed activity in this social-affective network is that it was a reflection of efforts to reduce the unpleasant nature of ambivalence and cope with discomfort.

#### **4.1.5 Relevance**

Of course, decisions come in many shapes and sizes, and this applies to ambivalent decisions as well. In some cases, both evaluative components that together form ambivalence are relevant, such as when we are ambivalent about collaborating with a colleague who is both intelligent and dominant. In other cases, however, the two evaluative components may differ in terms of their relevance, such as when we have to decide whether or not this particular colleague is the right person to write a research paper. Although in this latter case, there are evaluatively opposing associations present, they are not likely to lead to the experience of ambivalence, because only one (intelligence) is directly relevant. In other words, different decisional contexts can put different weights on the associations and, as a consequence, determine whether objective ambivalence is translated into subjective ambivalence.

This line of reasoning was recently put to the test in an fMRI study in which objective ambivalence as well as the relevance of each of the components was manipulated (Nohlen, van Harreveld, Crone, & Cunningham, 2015). Participants first memorized profiles of four target persons that were either ambivalent (friendly, charming, lazy, dumb; or dominant, jealous, enthusiastic, intelligent) or univalent (friendly, charming, intelligent, enthusiastic; or dominant, jealous, lazy, dumb). In the scanner, participants then made dichotomous choices about each of the four target individuals, which elicited various degrees of subjective ambivalence dependent on the combination of question and target traits. It was shown that for someone who, for example, is friendly, charming, lazy, and dumb, a question such as “Do you think X can write a good newspaper article?” does not lead to subjective ambivalence, presumably because the positive traits are less relevant for writing a newspaper article. In those situations, ambivalence is temporarily resolved because more weight is given to the negative traits. However, if the question is “Would X be a good representative of your student union?” both the positive and negative traits are relevant and given equal weight, so resolution is difficult, and subjective ambivalence ensues.

Results revealed that regions in the posterior medial frontal cortex related to conflict detection and monitoring (anterior cingulate cortex) and higher executive control (superior frontal gyrus) were sensitive to questions that increased subjective ambivalence. Thus, objective and subjective ambivalence could be dissociated at a neural level. Additionally, ambivalent information for which conflict could be contextually resolved (low subjective ambivalence) engaged more anterior and posterior medial frontal cortex, as well as medial and left lateral frontal pole, than information that was only positive or negative. It seems, then, that the structural properties of ambivalent information require more effort to process even if they are not competing in the evaluation context.

In short, ambivalence leads to the experience of conflict and to negative affect when both evaluative components are of equal weight in a given situation. Although binary choice situations can put ambivalent decision-makers in a state of conflict because they have to trade off the evaluatively incongruent associations, to a large extent this depends on the relevance of the competing associations in the given situation.

#### **4.1.6 Individual differences**

Cultural and personality differences can also render the experience of ambivalence more or less unpleasant. For example, an inherent part of Buddhist

and Confucian philosophies is dialectical thinking, defined as the tolerance for holding apparently contradictory beliefs (Peng & Nisbett, 1999). As a result, contradictions are perceived as natural and common in East Asia, while people from North American and European cultures, on the other hand, are known to have a lower propensity to accept duality (Peng & Nisbett, 1999). Interestingly, it has been found that people with an East-Asian cultural background show higher levels of potential ambivalence than those with a European background. Moreover, this effect of culture on ambivalence was mediated by dialectical thinking (Hamamura, Heine, & Paulhus, 2007). In other words, East Asians exhibit more ambivalence on questionnaires because they are more tolerant toward inconsistencies. Future research should examine whether this tolerance is also reflected in lower levels of subjective ambivalence. In accordance with this line of reasoning, it has also been shown that individuals with an Anglo-American background, who do not embrace duality, have less favorable attitudes toward a mixed emotional appeal than their Asian American counterparts (Williams & Aaker, 2002). This research indicates that the consistency motives that underlie ambivalence-induced discomfort are not universal and vary across cultures.

The tolerance for contradictions not only varies across cultures but also between individuals. In research that related ambivalence to individual differences, it has been found that individuals high in Personal Fear of Invalidity (PFI: the extent to which individuals are concerned with the cost of committing errors, cf. Thompson, Naccarato, Parker, & Moskowitz, 2001) are more ambivalent than those low in PFI, especially when the decision is high in personal involvement (Thompson & Zanna, 1995). This is a particularly interesting finding, as it further supports the notion discussed earlier that ambivalence is inherently tied to the anticipation of regret about potentially making the wrong decision (cf. Van Harreveld, Rutjens, et al., 2009). Need for Cognition (NFC: the extent to which individuals are inclined toward effortful cognitive activities, cf. Cacioppo & Petty, 1982) has also been related to ambivalence. Specifically, it was found that higher levels of NFC are related to lower levels of ambivalence, supposedly because high NFC individuals typically bring coherence to issues (Thompson & Zanna, 1995). On a related note, ambivalence has been associated with stronger feelings of discomfort for attitude holders who are high (vs. low) in preference for consistency (Newby-Clark et al., 2002), and ambivalence is associated with stronger response amplification for individuals low (vs. high) in tolerance for ambiguity (Nowlis, Kahn, & Dhar, 2002).

To summarize, as indicated by the distinction between objective and subjective ambivalence, the notion that ambivalence can be unpleasant (but not always is) is almost inherent to the construct. Although ambivalence sometimes is evaluated positively (e.g., Pillaud et al., 2013) and cultural and individual differences play a moderating role, many studies on the topic point toward ambivalence as a cause of negative affect when the positive and negative components of the attitude are experienced as in conflict with each other. Notwithstanding the multiple potential causes of such conflict, choice is a primary catalyst of both conflict (Schneider et al., 2015) and the ensuing discomfort (Van Harreveld, Van der Pligt, et al., 2009). The central tenet of this line of research is that ambivalence is associated with conflict when (a) attitude representations are given equal weight and (b) one has to commit to one side of the evaluative continuum. In such situations, one's conflicting thoughts and/or feelings become irreconcilable. The need to commit to one side leads ambivalent attitude holders to experience uncertainty-induced physiological arousal, potentially rooted in the anticipation of regret about the decision (Van Harreveld, Rutjens, et al., 2009).

## 4.2 B: Behavior

Although behavior is presumably predicted by attitudes (Ajzen, 1991), we have already discussed the moderating influence of ambivalence on the attitude–behavior relation (e.g., Conner et al., 2003, 2002). Interestingly, however, several studies have found a direct influence of ambivalence on behavior. For example, Lipkus et al. (2001) found that subjective (and not objective) ambivalence toward smoking was the best predictor of the desire to quit, even after adjusting for the attitude toward smoking. Similarly, subjective ambivalence has been directly related to reduced meat consumption, independent of the attitude (Berndsen & van der Pligt, 2004). Finally, in the context of environmental behavior, subjective ambivalence was associated with weaker intentions to adopt proenvironmental practices (Costarelli & Colloca, 2004). In this study, the relation between objective ambivalence and behavioral intentions was mediated by subjective ambivalence. The dominant role of subjective (rather than objective) ambivalence in these studies suggests that it is the affective nature of ambivalence that drives the effects. The question remains how the experience of ambivalence influences behavior. What kinds of behaviors are ignited by subjective ambivalence?

### 4.2.1 *Body movement*

Before we discuss the influence of ambivalence on intentional behavior, we first turn to the unintended behavior that can reveal ambivalence. In “The expression of emotion in man and animal” (1872), Charles Darwin defined attitude as a collection of motor behaviors—especially posture—that reflect an organism’s evaluation of an object. Several lines of research have indeed shown that attitudes are reflected in body movement. For example, pride is reflected in a head tilted back and expansion of posture (Tracy & Robins, 2004), and liking of other people is reflected in a relaxed and open posture (Mehrabian, 1968). Positivity and negativity toward an affective image are, respectively, reflected in forward and backward leaning (Eerland, Guadalupe, Franken, & Zwaan, 2012; Hillman, Rosengren, & Smith, 2004).

Until very recently, research focused on one-sided evaluations, but neglected the question how our body responds to the experience of ambivalence. Nonetheless, there is reason to believe that ambivalence is physically expressed in a specific manner. When expressing ambivalence, people say that they are “torn” or “wavering” between two sides of an issue, and when reflecting on the opposing points of view regarding an ambivalent topic, they say: “on the one hand. . . but on the other hand” while gesturing with their hands alternatively (Calbris, 2008).

Whether these figures of speech indeed capture the physical embodiment of ambivalence was first examined in a study in which participants’ movements were assessed by having them stand on a Wii™ Balance Board (Schneider et al., 2013, Study 1). Side-to-side movement was operationalized as the amount of x-flips (Dale & Duran, 2011), that is, the number of directional changes in mediolateral balance (i.e., shifting balance from left to right and vice versa). The experiment consisted of three phases. During the first phase, the participants read a fake newspaper article concerning a proposal to abolish minimum wages for young adults. For half of the participants, this message was unequivocally positive, but for the other half, the message was ambivalent in nature. During the second phase, subjective ambivalence was assessed (Priester & Petty, 1996). During the third phase, participants were asked to think about the topic of the article for 30 s, after which they evaluated the topic (either positive or negative) by leaning left or right on the board (evaluation phase). This last phase allowed for examining the effects of ambivalent choices on body movement. The results of this study clearly indicated that participants in the ambivalent condition moved more from side to side (i.e., had more



x-flips) than those in the univalent condition, and this difference was obtained in each phase of the experiment.

In a follow-up study (Schneider et al., 2013, Study 2), the reverse relation was examined, i.e., whether body movement can influence ambivalence. Previous research has shown, for example, that people find cartoons funnier when their facial muscles are fixed in a smile (cf. Strack, Martin, & Stepper, 1988), but the influence of body movement on ambivalence had not yet been examined. In this study, participants were approached in an Amsterdam city park and asked whether they would like to participate in an experiment concerning Tai-Chi movements and information processing. If they complied, the experimenter handed them a clipboard holding a questionnaire assessing their ambivalence toward a self-chosen topic (cf. Van Harreveld et al., 2014). Subsequently, they were shown a film clip on a mobile video device. Participants were instructed to perform the shown movement while filling out the questionnaire. Dependent on experimental condition, participants saw and copied one of three movements: moving their body from side to side while keeping the feet to the ground (i.e., repeatedly swaying from left to right and vice versa), moving the body up and down while keeping the feet to the ground (i.e., repeatedly bending one's knees and then returning to the upright condition), or no movement. The results of this study indicated that participants moving from side to side reported more subjective ambivalence than those moving up and down and those not moving at all.

This line of research shows that our body movements are both cause and consequence of the experience of ambivalence. Strikingly, ambivalence can be influenced by behavior that is unrelated to the content of the attitude. An intriguing question concerns what causes this bidirectional relation. Research has shown that when people think of evaluative opposites, they mentally represent them at the opposite ends of a horizontal plane (Chatterjee, 2011). It could thus be that thinking about an ambivalent topic activates the opposing evaluations on this horizontal plane and thus also the accompanying motor patterns (cf. Miles, Nind, & Macrae, 2010). Conversely, the activation of motor patterns may activate the opposing evaluations on this horizontal plane, leading to more conflict experience and subjective ambivalence. An interesting potential implication of this logic is that physically curtailing movement over the horizontal plane could be a means to reduce subjective ambivalence and thus the negative affective nature of ambivalence.

### 4.2.2 Choice delay

Ambivalence also influences behaviors that are more deliberate in nature. Earlier, we discussed choice situations as a catalyst of ambivalence-induced negative affect. The type of behavior that is perhaps most directly aimed at (temporarily) resolving the unpleasantness of an ambivalent decision is delaying it (e.g., [Van Harreveld, Van der Pligt, et al., 2009](#)).

Research has shown that, in general, decisions and tasks are delayed when they are aversive, difficult, elicit negative affect, or when individuals are uncertain about the consequences of their decisions (e.g., [Anderson, 2003](#); [Hogarth, Michaud, & Mery, 1980](#); [Milgram, Sroloff, & Rosenbaum, 1988](#); [Solomon & Rothblum, 1984](#); [Tversky & Shafir, 1992](#)). These antecedents of delay also apply to ambivalent decision-making. In two field experiments, it was demonstrated that ambivalent choices are spontaneously delayed more often than univalent choices ([Nohlen, van Harreveld, van der Pligt, & Rotteveel, 2015](#)).

In the first study, people entering a supermarket were asked whether they wanted to participate in a small study. If they complied, they were presented with either ambivalent or univalent information about the possibility of free wireless Internet in the parks of Amsterdam. Subsequently, participants were asked whether they were for or against Wi-Fi in the parks and given the opportunity to either indicate their decision immediately or to delay it until after they finished shopping. The results indicated that, indeed, ambivalent participants were more likely to postpone the decision than their univalent counterparts, and that they did so particularly if they were frequent users of the parks, i.e., if the choice was consequential for them. This study is not only the first to show that ambivalent decision-making is associated with choice delay, but also that ambivalent decisions are especially associated with coping efforts if the decision is important. In a follow-up study, again people entering a supermarket were approached, now presenting them with ambivalent or univalent information about a fictitious food bank. Results revealed the same pattern, showing that ambivalent choices are delayed until after shopping, particularly if the decision at hand is personally relevant.

Indirect evidence suggests that these effects of ambivalence on choice delay are driven by ambivalence-induced negative affect, as it has been shown that difficult choices lead to negative feelings and avoidant behavior ([Luce, Bettman, & Payne, 1997](#)). In terms of how delay could mitigate negative affect, two opposing hypotheses can be formulated. On the

one hand, individuals may simply mitigate negative affect through distraction, which would be in line with an emotion-focused coping style (Luce et al., 1997) and the traditional view of procrastination. On the other hand, it could be the case that ambivalent attitude holders delay to generate time to further ponder their decision. This would be a problem-focused coping approach and more in line with a strategic view of procrastination (Klingsieck, 2013). A study by Nohlen, van Harreveld, van der Pligt, and colleagues (2015) supports the first hypothesis. They manipulated subjective ambivalence with an introspective task (cf. Van Harreveld et al., 2014) and assessed how participants wanted to spend the time until they had to make a decision for or against the ambivalent topic. When participants could choose between (a) deliberating by writing down the pros and cons of the issue or (b) doing an unrelated, relatively boring distraction task in which they would describe the route from their house to the university, significantly more people chose the distraction task over the deliberation task. This pattern suggests that, in the context of ambivalence, delay may not serve the purpose of creating the opportunity to reduce ambivalence, but rather is a means to distract oneself and reduce the negative affective experience (cf. Luce et al., 1997).

Currently, the effectiveness of delay in mitigating negative affect is unclear. Some researchers have found that avoidant behavior is successful in reducing the negative affect that caused the procrastination to begin with (Luce, 1998), but others have found detrimental affective consequences of decision delay (Nohlen, van Harreveld, van der Pligt, et al., 2015). Future research should continue to investigate whether and how delay mitigates negative affect.

To summarize, different behaviors are both causes and consequences of the experience of ambivalence. With respect to body movement, an increase in body movement over the horizontal plane has been related to higher levels of subjective ambivalence, but it remains to be seen whether or not objective ambivalence is affected. Moreover, in order to elucidate the exact nature of the relation between body movement, affect, and ambivalence, future research should also determine whether curtailing movement has a mitigating effect on subjective ambivalence (and thus affect). Another issue for future research is to investigate the effectiveness of choice delay. Decision delay may under some circumstances mitigate negative affect, but is unlikely to change levels of objective ambivalence, because individuals who delay choose to distract themselves rather than contemplate their decision.

### 4.3 C: Cognition

Research into ambivalence-induced cognitions lies at the heart of research on the consequences of ambivalence. As noted previously, research interest in the affective consequences of ambivalence originated from the observation that ambivalent attitude holders engage in more elaborate processing of attitude-relevant information than participants with univalent attitudes (e.g., Jonas et al., 1997; Maio et al., 1996). It has been argued that the motivation to engage in this more effortful (or systematic) processing originates from the unpleasant nature of ambivalence. More specifically, it has been argued that people are motivated to reduce ambivalence, and new information relevant to the attitude may be functional in doing so and thus reducing discomfort (e.g., Van Harreveld, Van der Pligt, et al., 2009). Again, there are similarities with research on cognitive dissonance, where it has been shown that dissonance is reduced by bolstering consonant cognitions (Sherman & Gorkin, 1980) or trivializing dissonant cognitions (Simon, Greenberg, & Brehm, 1995).

#### 4.3.1 Systematic processing

In terms of the effects of ambivalence on cognitive processes, several studies have shown that ambivalence is associated with increased systematic processing (Jonas et al., 1997), increased attention to discrepancy-related stimuli (Monteith, Devine, & Zuwerink, 1993), greater prefrontal cortex activity (Cunningham, Johnson, Gatenby, Gore, & Banaji, 2003; Nohlen, van Harreveld, Rotteveel, et al., 2014), and a larger difference in effectiveness between strong and weak persuasive messages (Maio et al., 1996). This latter study provided support for the notion that the relation between ambivalence and more systematic processing is driven by the motivation to reduce ambivalence, as it was found that the increased receptiveness of ambivalent attitude holders to a strong persuasive message helped to reduce subsequent feelings of ambivalence.

There is ample support for the idea that the motivation to reduce ambivalence underlies the relation between ambivalence and increased systematic processing. For example, ambivalence is known to lead to both elaboration and response amplification (i.e., the reduction of ambivalence; Hanze, 2001). Also, it has been shown that it is primarily subjective (and not objective) ambivalence, and the motivation to reduce it, that causes ambivalent attitude holders to have greater interest in attitude-relevant information (DeMarree et al., 2014). Along similar lines, egalitarian people who become

aware of having prejudiced thoughts show increased attention to discrepancy-related information, supposedly with an aim to reduce this internal inconsistency (Devine, Monteith, Zuwerink, & Elliot, 1991; Monteith, 1993; Monteith et al., 1993).

The reduction of ambivalence through effortful processing can potentially be achieved by carefully weighing all alternatives and thus aiming to come to the best possible evaluation. This is known as unbiased systematic processing (van Harreveld, van der Pligt, et al., 2009). However, when issues are ambivalent, thinking about them extensively could increase ambivalence even further. Therefore, in such cases, biased systematic processing and the use of specific heuristics might be more effective. Biased systematic processing could involve selectively focusing on one side of the issue and thus tipping the evaluative balance within one's attitude to that side. This strategy may be especially fruitful because biased processing is cognitively less effortful than unbiased processing (van Harreveld, van der Pligt, et al., 2009).

Empirical evidence for the relation between ambivalence and biased systematic processing has been obtained in several studies. For example, ambivalent attitude holders have been shown to focus on proattitudinal information and avoid counter-attitudinal information (Clark, Wegener, & Fabrigar, 2008). In other words, ambivalent attitude holders use any slight evaluative inclination they may have and process information in accordance with it.

In a different study (Nordgren et al., 2006), information processing was directly related to ambivalence-induced discomfort. In this study, ambivalence was manipulated by means of a (fake) newspaper article discussing the pros and cons of genetically modified foods. Subsequent to reading this article and filling out a measure of their attitude, participants were given a placebo pill that (ostensibly and dependent on experimental condition) caused either relaxation or arousal. Finally, negative emotions were measured and participants were presented with a thought-listing task in which they wrote down their thoughts on the topic of genetically modified foods. The results not only indicated that participants reported fewer negative emotions in the condition in which they believed the pill was a cause of arousal, but also that participants who could not attribute their discomfort to an external source were more biased in their thoughts about the attitude object in the thought-listing task. As in the study by Clark et al. (2008) mentioned earlier, the direction of this bias was predicted by the attitude. In other words, ambivalent participants' (slight) inclinations toward the positive or negative end of

the evaluative continuum predicted the evaluative nature of the thoughts reported on the thought-listing task. This pattern makes sense because it comprises the fastest route to a univalent attitude. Moreover, biased processing was effective in reducing ambivalence, indicating that it is indeed a way for ambivalent attitude holders to reduce their discomfort.

More recent studies have shed more light on this finding by showing that the effects of ambivalence on information seeking depend on knowledge about the ambivalent topic (Sawicki et al., 2013). Specifically, ambivalence was found to facilitate attitude-consistent exposure only when issue knowledge was low, arguably because less familiar information is perceived to be potentially effective in reducing ambivalence. However, when knowledge about the ambivalent topic was relatively high, more univalent attitudes were predictive of attitude-consistent information seeking.

#### **4.3.2 Heuristic processing**

Systematic processing can thus provide a way to reduce ambivalence, albeit a cognitively effortful one. A cognitively less demanding route toward univalence may be heuristic processing (Chaiken, 1980), such as conforming to a less ambivalent majority or taking the same unequivocal evaluative stance as someone viewed as an expert. Ambivalent attitude holders have indeed been known to process heuristically and reduce ambivalence accordingly. For example, the motivation to reduce conflict leads people to be less critical in examining the reliability of the source of information before being persuaded by it (Zembarain & Johar, 2007). Also, ambivalent attitude holders are more persuaded by consensus information than those who are not ambivalent (Hodson, Maio, & Esses, 2001).

#### **4.3.3 Compensatory cognitions**

Although reducing ambivalence is the most direct and permanent way of eliminating the problem of ambivalence-induced discomfort, coping with psychological threats such as inconsistency can also utilize strategies that are more distal to the threat itself, for example, through a process of affirmation. Affirmation is defined as:

*...heightened commitment to alternative expected relationships following the violation of expected relationships. The affirmed expected relationships may share content with the violated relationships (e.g., affirming a controlling God after personal control has been violated) or share no content with the violated expected relationships (e.g., punishing a criminal more harshly following a visual anomaly)*

*Proulx, Inzlicht, and Harmon-Jones (2012, p. 285)*

As indicated in this definition, affirmation comes in many forms. For example, threats to personal control foster visual illusory pattern perception (e.g., [Whitson & Galinsky, 2008](#)) but also belief in human progress ([Rutjens, van Harreveld, & van der Pligt, 2010](#)). Because ambivalence is defined by the coexistence of evaluatively incongruent thoughts and/or feelings, which violates the consistency humans prefer in their world (e.g., [Heider, 1946](#)), the experience of ambivalence is inherently one of perceived internal (evaluative) disorders. Therefore, it has been argued that a potentially effective affirmation strategy could lie in (compensatory) perceptions of order.

In a series of studies, ambivalence was related to perceptions of order ([Van Harreveld et al., 2014](#)). In a first study, ambivalence (vs. univalence) was manipulated by an introspective task (cf. [Schneider et al., 2013](#)) in which we asked participants to think of a topic they felt ambivalent (univalent) about. Participants in the ambivalent condition were then presented with four numbered lines on which they could write their positive thoughts and/or feelings regarding their chosen topic and four numbered lines on which they could write their negative thoughts and/or feelings regarding their chosen topic. Participants in the univalent condition were presented with eight numbered lines on which they could write their thoughts regarding their chosen topic (without distinguishing them in terms of valence). Next, participants were presented with a snowy pictures task ([Whitson & Galinsky, 2008](#)) consisting of 24 grainy images. For each of the pictures, participants were asked to determine whether an image was hidden (and, if so, what it was). Of these 24 images, 12 actually contained an image, whereas the remaining 12 did not. Although ambivalent and univalent participants both were very adequate in detecting the actual images, there was an important difference in terms of false positives. Ambivalent participants were more likely to see an image where in fact there was none than were their univalent counterparts.

A subsequent study conceptually replicated this effect with a different measure of order perceptions: conspiracy beliefs. Conspiracy beliefs represent complex events in a simplified and often monocausal way. It has been argued that conspiracy theories assign causes and motives to events that are more rationally seen as accidents ([Pipes, 1997](#)). As such, conspiracy theories satisfy a need for order and predictability. In this study, we again manipulated ambivalence (vs. univalence) with an introspective task (cf. [Schneider et al., 2013](#)) and subsequently presented participants with a scale measuring several negative affective responses that can be elicited by ambivalence (uncertainty, anxiousness, irritation, doubt, nervousness; cf. [van Harreveld, Rutjens,](#)

et al., 2009). Next, we presented participants with the same two scenarios that Whitson & Galinsky (2008) used to assess belief in conspiracy theories. In these scenarios, the protagonist was confronted with a positive or negative outcome. It was possible to interpret the outcome as the result of conspiratorial behavior of people around the protagonist, but the conspiratorial nature of the situation was ambiguous. The first scenario describes a negative outcome and the second a positive outcome. For both cases, participants were asked to what extent this outcome might be due to the actions of other people in the scenario. The results show that participants in the ambivalent condition are more inclined to interpret the outcome as the result of a conspiracy than their counterparts in the univalent condition. Importantly, the effect of ambivalence on conspiracy beliefs was mediated by the negative affective nature of ambivalence.

In the third and final study, we more directly examined the motivational nature of these perceptions of order by examining whether an affirmation of order subsequent to the ambivalence manipulation diminishes the need to perceive order (for ambivalent attitude holders). We replicated the finding that ambivalence fosters visual perceptions of order on the snowy pictures task, but additionally we also found that affirming participants' perceptions of order (by asking them to clean up their messy cubicle or not) makes ambivalent attitude holders less inclined to engage in compensatory perceptions of order. This finding is somewhat reminiscent of how self-affirmation can diminish the need to reduce cognitive dissonance through attitude change (e.g., Steele & Liu, 1983).

This final study supports the notion that ambivalence generates a need for compensatory order. The idea that order perceptions can help to reduce negative affect is supported by a study showing that, for men, belief in a just world is negatively related to emotional ambivalence about a female plaintiff in a gender discrimination case (Jost & Burgess, 2000). Arguably, a just world is more orderly than a world ruled by randomness and chance; therefore, these findings suggest that orderly perceptions of the world may help to mitigate ambivalence-induced negative affect.

Another compensatory coping strategy in the face of psychological threat is the assembly of unrelated meaning frameworks. Proulx and Inzlicht (2012) discuss assembly as a way of compensating for a threat to meaning through creating something (potentially unrelated) that does make sense to us. One specific form such assembly can take is the production of creative works. Although this is an area that has not yet been extensively examined, there are a few studies on other psychological threats that suggest that creativity



may be enhanced by ambivalence (Markman, Lindberg, Kray, & Galinsky, 2007; Routledge & Juhl, 2012).

The relation between ambivalence and creativity is indirectly supported by research in which dialectical thinking (related to ambivalence; Hamamura et al., 2007) was associated with creativity (Benack, Basseches, & Swan, 1989). The most direct test of the relation between ambivalence and creativity was provided by two studies on emotional ambivalence (Fong, 2006). In a first study, participants who were asked to recall an event that elicited both happiness and sadness were better able to identify associations in a Remote Associates Task (Mednick, 1963) than participants who recalled an event eliciting only one of these emotions or neutrals. A second study replicated this effect, but also found lower creativity scores for the emotionally ambivalent participants who believed having mixed emotions was common than for those who thought it to be uncommon. This latter finding may suggest that rendering emotional ambivalence as something that is acceptable reduces the need to cope and thus creativity. Whether creativity is effective in mitigating the unpleasant nature of ambivalence is yet to be determined.

To summarize, ambivalence has various consequences for cognition that are driven by the negative affective nature of ambivalence. On the one hand, the motivation to reduce the unpleasant nature of ambivalence can lead to (biased or unbiased) systematic or heuristic processing. On the other hand, ambivalence has been found to lead to more distal forms of coping in the form of compensatory perceptions of order or creativity. Although the effectiveness of the former in terms of reducing ambivalence has been established, future research will have to determine whether the more distal compensatory coping efforts are effective as well.

Another matter that has to be investigated in the future is what determines whether ambivalence leads to systematic processing (and thus potentially to the reduction of ambivalence) or to more compensatory cognitions (aimed at reducing the unpleasant nature of ambivalence). We would predict that systematic processing is a more likely consequence when a decision has to be made, because this is when the opposing evaluations are irreconcilable and regret about making the wrong decision is anticipated. The ensuing motivation to reduce the likelihood of regret should make systematic processing a likely consequence (e.g., van Harreveld, van der Pligt, et al., 2009). However, when ambivalence is experienced for reasons other than having to make a decision, the motivation to resolve ambivalence should not be as strong, and compensatory coping processes may be more likely

to ensue. Consistent with this reasoning, in the studies in which ambivalence was related to compensatory perceptions of order, ambivalence was manipulated through a process of introspection, and participants did not have to make a choice (Van Harreveld et al., 2014).

## 5. THE ABC OF AMBIVALENCE

It has become clear that ambivalence has a host of consequences for affect, behavior, and cognition. We now present the ABC model of the consequences of ambivalence, which summarizes how the affect, behavior, and cognition (1) relate to ambivalence and (2) relate to one another (Figure 1). The ABC model extends the aforementioned MAID (van Harreveld, van der Pligt, et al., 2009). Whereas the MAID model focuses on choice as a catalyst of affective consequences, the ABC model encompasses a wider range of affective, cognitive, and behavioral consequences. In the following section, we proceed with a description of each of the pathways in the ABC model.

### 5.1 Objective ambivalence causes negative affect when both evaluative components are accessible and conflict ensues

The first pathway in the ABC model is that from objective ambivalence to negative affect via simultaneous accessibility and conflict. The when and why of the relation between objective ambivalence and negative affect is a fundamental issue in the literature on attitudinal ambivalence. For example, the distinction between objective (Kaplan, 1972) and subjective measures of ambivalence (Jamieson, 1993) reflects the notion that

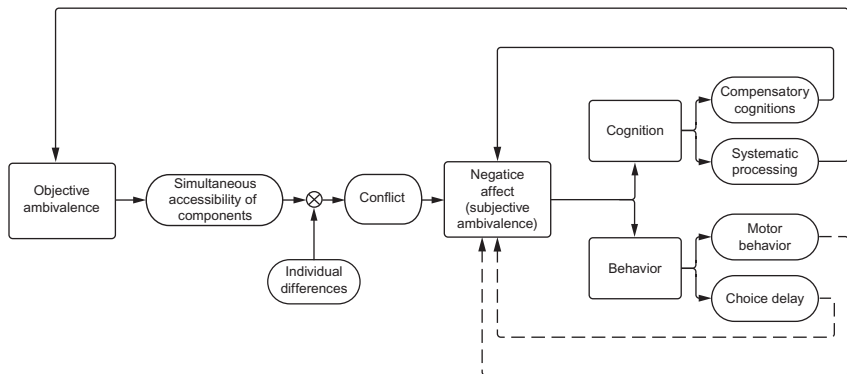


Figure 1 The ABC model of ambivalence.

ambivalence can either be experienced as unpleasant or remain in a dormant state without negative affect ensuing.

The relation between objective ambivalence and negative affect (or subjective ambivalence) hinges on whether the context renders both evaluative components salient and conflict arises. Specifically, ambivalence goes from the objective state to the more “hot” subjective state when individuals experience their positive and negative associations as conflicted. Such conflict can result from various sources, such as engaging in introspection (Newby-Clark et al., 2002; Van Harreveld et al., 2014) or having to trade off the positive and negative associations and come to one unequivocal evaluation (Schneider et al., 2015). Having to make a binary choice can render the two evaluations incompatible and lead ambivalence to be experienced as negative arousal, uncertainty, and feelings of regret (e.g., van Harreveld, Rutjens, et al., 2009). Recent research has indicated that not any binary choice renders ambivalence unpleasant—both associations have to be relevant in the given choice situation (Nohlen, van Harreveld, Crone, et al., 2015).

Although individual differences can moderate the relation between ambivalence and negative affect (e.g., Thompson & Zanna, 1995) and ambivalence can sometimes be valued positively (e.g., Pillaud et al., 2013), the majority of studies on this issue point to ambivalence as a cause of negative affect. This negative affect is the result of the conflict ambivalent attitude holders experience when evaluatively opposing associations are equally relevant in a given situation. According to the ABC model, the negative affect that ensues from this conflict is the fuel that drives the subsequent effects of ambivalence on cognition and behavior.

## 5.2 Affect influences cognitions

The next pathway in the model is that from affect to cognition. We discussed various studies that relate ambivalence to different types of information processing and distinguished effects of ambivalence on systematic processing and compensatory perceptions of order. The effects of ambivalence on unbiased or biased processing of information seem to be driven by the desire to reduce ambivalence-induced negative affect (e.g., Nordgren et al., 2006; Sawicki et al., 2013). Likewise, the effects of ambivalence on compensatory order perceptions are also driven by ambivalence-induced negative affect (Van Harreveld et al., 2014). In short, although ambivalence has various effects on cognition, these effects are generally driven by the negative

affective nature of ambivalence, which motivates its reduction. This is indicated by the fact that these effects are found only in the context of subjective ambivalence (e.g., Clark et al., 2008; Sawicki et al., 2013) or self-reported negative emotions (e.g., Nordgren et al., 2006; Van Harreveld et al., 2014).

### 5.3 Affect influences behavior

We also discussed various effects of ambivalence on behavior. Ambivalence was shown to influence physical behavior (Schneider et al., 2013), as well as delays in decision-making (Nohlen, van Harreveld, van der Pligt, et al., 2015). There is reason to believe that these effects are again driven by ambivalence-induced negative affect, as side-to-side movement on the Wii board was correlated with subjectively experienced ambivalence (Schneider et al., 2013). In the context of the relation between ambivalence and choice postponement, the evidence is more circumstantial. Manipulations of subjective ambivalence have affected decision delay (Nohlen, van Harreveld, van der Pligt, et al., 2015), and it has been found that difficult choices lead to negative feelings and avoidant behavior (Luce et al., 1997). These data suggest that the delay of ambivalent decisions may be driven by negative affect as well.

### 5.4 Cognition influences objective ambivalence and affect

In terms of the consequences ambivalence can have for cognition, we distinguish between effects on systematic processing of information on the one hand (e.g., Nordgren et al., 2006; Sawicki et al., 2013) and effects on compensatory cognitions on the other (Van Harreveld et al., 2014). As reflected in the model, we believe these paths have different subsequent effects. On the one hand, the effects of ambivalence on systematic processing seem to be guided by the motivation to reduce ambivalence altogether and obtain a more univalent attitude (e.g., DeMarree et al., 2014; Monteith, 1993). In other words, the ABC model predicts that systematic processing can directly influence objective ambivalence.

Compensatory cognitions, on the other hand, are not so much aimed at reducing objective ambivalence, but rather at making the experience less unpleasant. Empirical studies of the effects of ambivalence on compensatory cognitions are scarce, however, and thus there is little evidence for their effectiveness in terms of their ability to reduce the negative affective nature of ambivalence. It has been found that belief in a just world is negatively related to emotional ambivalence (Jost & Burgess, 2000). As a just world

is more orderly than a world ruled by randomness and chance, it seems likely that compensatory order perceptions may indeed help to mitigate ambivalence-induced negative affect. Generally, in the literature on psychological threats, it is argued that compensatory cognitions do not mitigate the threat itself, but the affective nature of it (e.g., Proulx & Inzlicht, 2012). As a consequence, the ABC model predicts that compensatory cognitions influence affect (or subjective ambivalence) rather than objective ambivalence.

## 5.5 Behavior influences affect

We distinguished effects of ambivalence on two kinds of behavior: body movement and procrastination. The fact that subjective ambivalence increases as a result of physically moving from side to side indicates that behavior can influence subjective ambivalence. It remains to be determined whether curtailing such physical movement can also help to decrease the subjective experience of ambivalence (and thus negative affect). If this turns out to be the case, it would be compatible with the idea that the activation of motor patterns also activates the opposing evaluations on this horizontal plane (Schneider et al., 2013). At this point, however, this path remains a speculative rhombus in the model.

In terms of the subsequent effects of decision delay, there is some evidence suggesting that delay is successful in reducing the negative affect that caused delay to begin with (Luce, 1998), as well as some evidence to the contrary (Nohlen, van Harreveld, van der Pligt, et al., 2015). In the latter studies, however, when given the choice of how to spend the time generated by delaying the decision, ambivalent attitude holders preferred to distract themselves rather than to deliberate the decision. This finding suggests that choice delay may not be directed at resolving objective ambivalence directly. The ABC model therefore tentatively predicts that decision delay influences affect, although the effectiveness of decision delay requires further investigation.

## 5.6 Putting it all together

The ABC model of ambivalence not only describes the consequences of ambivalence for affect, cognition, and behavior, but also how these different categories relate to one another and to its source: the ambivalent attitude itself (i.e., objective ambivalence). The three different categories of consequences have different roles within the model. Of the three, affect (often operationalized with measures of subjective ambivalence) plays the most

central role. In many ways, it is the engine that drives the subsequent effects of ambivalence on cognition and behavior. That is not to say that cognition and behavior play minor roles, as it is these factors that have been most directly related to subsequent levels of ambivalence and have influenced affect as well. In other words, although it is the unpleasant affective experience caused by ambivalence that drives the effects on cognition and behavior, the latter two mitigate the negative affective response and sometimes the underlying structure of the ambivalent attitude itself.

With regard to the ABC model, we discussed those pathways between the various factors that have actually been investigated. There are additional pathways that have not been included in the model because there is no empirical evidence to support them. In particular, one could argue that behavior and cognition may be related in the sense that people could deliberately perform the behavior in an attempt to reduce ambivalence. However, none of the participants in the study on ambivalence and physical movement (Schneider et al., 2013) expressed suspicion about the goal of the experiment, and there is no reason to believe people are aware of the effects of ambivalence on their physical behavior. Also, there is no evidence for ambivalent attitude holders to strategically procrastinate (e.g., Klingsieck, 2013) and delay the decision in an aim to generate the time needed to further ponder their decision. As such, there is no current evidence for the cognitive component influencing behavior or vice versa.

The ABC model reveals the experience of ambivalence to be a dynamic process, with ambivalent attitude holders showing various affective, behavioral, and cognitive responses, which can first render ambivalence unpleasant and eventually lead them to attain evaluative congruence or render the incongruence less unpleasant.



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## 6. DISCUSSION

Holding evaluatively mixed associations is an intrinsic part of human existence. From daily temptations such as fast food, alcohol, and cigarettes to societal issues such as abortion, nuclear energy, and the death penalty; we are continuously confronted with things that elicit both positive and negative associations in ourselves. Such simultaneous existence of positive and negative associations is what we call attitudinal ambivalence, and, in this chapter, we have integrated research on the consequences of ambivalence for affect, behavior, and cognition. We discussed what these consequences are and presented the ABC model, which predicts (1) how they impact on

ambivalence and (2) how they interact with each other. The model predicts that objective ambivalence can lead to negative affect, and that the effects of objective ambivalence on cognition and behavior tend to take place via this negative affective experience. Moreover, cognitive and behavioral processes can mitigate negative affect or the ambivalent attitude itself.

The added value of the ABC model is threefold. First, it is the only model that integrates the recent surge in research on the consequences of ambivalence. In doing so, it goes beyond the traditional conceptualization of ambivalence as a reflection of a weak attitude. Instead, the ABC model reveals that ambivalent attitudes have dynamic effects: They exert various influences on affect, cognition, and behavior that, in turn, can influence the weights of evaluative components, thereby (structurally or temporarily) changing the ambivalent nature of the attitude itself.

A second advancement of the ABC model is that it is a comprehensive model that makes specific predictions about each of the causal relations between the various components. There are broader theories in the realm of attitudes that predict relations between, for example, cognitions and behavior (Ajzen, 1991), behavior and cognition (Festinger, 1964), or affect and cognition (Zajonc, 1984), but very few that integrate all of these components and predict how they interact. There are exceptions, of course, such as Bagozzi (1982), whose volitional model not only predicts behavior from (among other things) cognition and affect but also predicts a number of interrelations between these variables. In the context of specific phenomena (such as ambivalence), comprehensive models are especially suitable, as their scope is limited enough to directly foster research into less established relations between the components and thereby increase understanding of the specific phenomena.

The third advancement of the ABC model is that it could feed future lines of research on ambivalence. We have shown that holding positive and negative associations especially becomes problematic once we become aware of both and they can no longer coexist because we have to make a binary behavioral choice. One matter that future research should further elucidate is how people aim to avoid such conflict. One way could be by compartmentalizing the opposing evaluative components that form their ambivalent attitudes. This could occur in different ways, for example, by strategically avoiding situations where both evaluations are likely to become salient (e.g., someone who is ambivalent about gun control may avoid discussions on this topic with advocates of both sides). Another example of such compartmentalizing is provided by the aforementioned study on contextual

resolution of ambivalence (Nohlen, van Harreveld, Crone, et al., 2015), in which it was found that objective ambivalence (e.g., Bob is friendly, charming, lazy, and dumb) leads to subjective ambivalence only when both evaluative components are relevant in that particular context (e.g., Is Bob a good representative of your student union?). In situations where only one component is relevant (e.g., Is Bob the right person to write a newspaper article?), ambivalence is temporarily resolved, in this case because more weight is given to the negative traits. It has to be investigated further whether ambivalent attitude holders strategically compartmentalize their opposing evaluations and thus avoid subjective ambivalence to ensue.

In terms of limitations, the current model's prediction about the causes and consequences of ambivalence-induced behavior is probably the most tentative and most in need of further investigation. The ABC model distinguishes two distinct types of behavior that may be the consequence of ambivalence-induced negative affect: motor behaviors and procrastination. There are various other kinds of behavior that may also be associated with ambivalence, but these have received limited research attention. For example, it has been found that when executives' evaluation of a strategic issue has both strong positive and strong negative evaluations, organizational action taking is more likely. Moreover, this predilection toward taking action facilitates more risky and novel behaviors (Plambeck & Weber, 2009). Whether risk-taking behavior is consistently facilitated by ambivalence and whether this effect is related to affect are issues that require future investigation.

We have discussed various ways in which behavior can potentially have an impact on ambivalence-induced affect. There is no direct evidence for an influence of motor behavior or decision delay on (objective) ambivalence itself. However, behavioral expressions of a more unequivocal attitude could reduce ambivalence as a consequence of biased processing driven by the motivation to justify one's behavior. In a line of studies on ambivalence and scapegoating, participants were put in the role of an "instructor" that required them to administer electric shocks to a black confederate. It was found that participants who were high on prejudice and high on sympathy (i.e., who were ambivalent) experienced guilt (i.e., negative affect) when administering the shocks and subsequently increased their prejudice, thus reducing ambivalence and justifying their behavior (Katz, Glass, & Cohen, 1973). Clearly, of the three types of responses associated with ambivalence reviewed in this chapter, the behavioral responses (and their consequences) are the most in need of future research attention.



The central role of affect within the model may seem in line with the notion that affect precedes cognition (Zajonc, 1984) and with the primary role of affect in the context of affective–cognitive ambivalence (Lavine et al., 1998). However, the ABC model focuses on affect as a primary consequence of ambivalence rather than on affect as one of the evaluative components of it. Moreover, although affect indeed has primacy over systematic and compensatory cognitions in the model, ambivalence-induced affect is dependent on the extent to which the opposing associations that determine objective ambivalence are both relevant in a given situation and thus lead to conflict. The role of cognition within the ABC model fits nicely within the Iterative Reprocessing model of Cunningham and Zelazo (2007). This model assumes stimuli to initiate an iterative sequence of evaluative processes, where the context determines the number of recursive feedback loops, and larger amounts of iterations lead evaluations to become increasingly reflective. In the context of ambivalence, we also propose that initial cognitions may objectively be in conflict, but may not always be experienced in that way. Contextual factors (such as having to make decision) can lead to additional processing, thereby leading individuals (1) to become aware of their ambivalence and (2) to generate subsequent cognitions aimed at coping with the ensuing negative affect.

A related matter is what defines ambivalence-induced affect. This negative affective response is reflected in measures of subjective ambivalence (e.g., “I feel torn between the two sides of this topic”; Jamieson, 1993), negative physiological arousal, and self-reported negative emotions (van Harreveld, Rutjens, et al., 2009). Regardless of whether these measures all tap into the same feeling, throughout this chapter it has been argued that objective ambivalence, the cognitive presence of evaluatively opposing associations, is a prerequisite for any subsequent effects of ambivalence. Crucially, however, situational factors determine whether these associations generate conflict. This conflict, in turn, arouses a negative affective response that requires some form of mitigation.

On the basis of the evidence reviewed in this chapter, it may appear at first glance that although attitudes generally may be functional (Katz, 1960), ambivalent attitudes do us more harm than good. First, they generate negative affect, and subsequently we have to go through effortful cognitive or behavioral processes to mitigate this affect. The question therefore presents itself: why do we have these ambivalent attitudes to begin with? The answer to this question is twofold. First, ambivalence may be of functional value, as it has recently been shown that emotional ambivalence increases receptivity

to alternative perspectives, which, in turn, increases judgmental accuracy (Rees, Rothman, Lehavy, & Sanchez-Burks, 2013). This functional value of ambivalence is something that certainly deserves future research attention.

The second answer to the question why we hold ambivalent attitudes lies in the fact that they are almost inevitable. In modern society, we are exposed to an increasing amount of information, and the amount of evaluatively conflicted information increases as well. Research has indeed shown that, with an increasing number of attitude-related thoughts, the likelihood of evaluatively opposing thoughts increases as well (Van Harreveld et al., 2004). Further, as we have seen, ambivalence increases the motivation to take into account a large number of considerations (Jonas et al., 1997), which conceivably could produce a cyclical process through which ambivalence continuously reinforces itself.

As a consequence, ambivalence is more than ever an intrinsic part of human existence. In this chapter, we have shown that ambivalent attitudes are complex not only in their structure but also in their consequences. People have to come to terms with having ambivalent attitudes, and how they do this has a profound impact on what we feel, think, and do.

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