

The Effect of Attitudinal Ambivalence on Post-Decision Self-Evaluation: A Two-Stage Mediated Moderation

Authors: Lin Rang, Yang Yimiao

Date: 2021-08-09T00:00:00+00:00

Abstract

Ambivalent attitudes not only influence information search, attitude formation, and decision-making behavior, but also affect post-decision self-evaluation. This study constructed a model of the relationship between ambivalent attitudes and post-decision self-evaluation, incorporating uncertainty as a mediator and decision difficulty level and outcome valence as dual moderators. Three experiments manipulated ambivalent attitudes by designing conflict scenarios, including choosing a university and an employment company. Data were analyzed using SPSS 20.0 software. The findings revealed that ambivalent attitudes exert a positive effect on post-decision self-evaluation, and that the mediating process through which ambivalent attitudes influence post-decision self-evaluation via uncertainty is moderated by decision difficulty level and outcome valence. Ambivalent attitudes and decision difficulty level affect uncertainty, while uncertainty and outcome valence affect post-decision self-evaluation. Due to the dissociative effect of uncertainty, ambivalent attitudes and decision difficulty level produce conflicting dual effects on post-decision self-evaluation. Specifically, when negative outcomes are obtained, individuals with high decision difficulty level, compared to those with low decision difficulty level, show a positive effect of ambivalent attitudes on post-decision self-evaluation through uncertainty; when positive outcomes are obtained, individuals with low decision difficulty level, compared to those with high decision difficulty level, show a positive effect of ambivalent attitudes on post-decision self-evaluation through uncertainty.

Full Text

Preamble

Ambivalent attitudes not only influence information search, attitude formation, and decision-making behavior but also affect post-decision self-evaluation. This study constructs a two-stage moderated mediation model examining the relationship between ambivalent attitudes and post-decision self-evaluation, with uncertainty as the mediator and both decision difficulty level and outcome valence as moderators. Three experiments manipulate ambivalent attitudes by designing conflict scenarios involving university and employment choices. Data were analyzed using SPSS 20.0. The findings reveal that ambivalent attitudes positively affect post-decision self-evaluation, and the mediating process through which ambivalent attitudes influence post-decision self-evaluation via uncertainty is moderated by decision difficulty level and outcome valence. Ambivalent attitudes and decision difficulty level affect uncertainty, while uncertainty and outcome valence affect post-decision self-evaluation. Due to uncertainty's dampening effect, ambivalent attitudes and decision difficulty level produce conflicting dual effects on post-decision self-evaluation. When receiving negative outcomes, individuals with high (vs. low) decision difficulty levels experience a positive effect of ambivalent attitudes on post-decision self-evaluation through uncertainty. When receiving positive outcomes, individuals with low (vs. high) decision difficulty levels experience a positive effect of ambivalent attitudes on post-decision self-evaluation through uncertainty.

Keywords: ambivalent attitudes, outcome valence, decision difficulty level, uncertainty, self-evaluation

In life, things always have pros and cons. From everyday purchases—where consumers may like a garment's style but dislike its color—to major life decisions regarding education, employment, or marriage, people invariably hold mixed evaluations of desired objects. Ambivalent attitude refers to an individual's simultaneous positive and negative evaluations of a stimulus target (Priester & Petty, 1996). Although possessing ambivalent attitudes toward decision targets is normal, whether such dual attitudes produce positive or negative effects during decision-making remains uncertain, with conflicting results emerging at various stages of the decision process (Rothman et al., 2017). While existing research demonstrates that ambivalent attitudes affect individual information search, attitude formation, and decision behavior, their impact on post-decision psychology (e.g., self-evaluation) is unknown. Reich and Wheeler (2016) indirectly examined this issue but found no significant effect of ambivalent attitudes on self-evaluation, possibly because the ambivalence toward stimulus targets they examined differs physiologically from ambivalence toward chosen targets in decision contexts (Van et al., 2009). According to cognitive dissonance theory, the decision-making process helps ambivalent individuals reduce conflict, leading to inconsistent effects of ambivalent attitudes on post-decision self-evaluation.

Post-decision psychology is influenced by individuals' decision-making processes (Engel et al., 1978). Examining the relationship between ambivalent attitudes and post-decision self-evaluation should therefore consider influences from other decision stages. Post-decision outcome evaluation represents a crucial step in decision-making. Decision outcomes predict post-decision psychology; when objective standards exist for decision results—that is, positive or negative outcome feedback—individuals experience corresponding positive or negative psychological and behavioral outcomes (武瑞娟, 李东进, 2014). This suggests a direct effect of outcome valence on post-decision self-evaluation. Uncertain decision contexts help individuals minimize the negative impact of undesirable outcomes, producing a self-protective effect. This occurs because outcome uncertainty separates the influence of outcome valence on feelings about decision results. When receiving positive (negative) outcomes, uncertain individuals experience less positive (negative) feelings (Dijk & Zeelenberg, 2003).

Outcome uncertainty represents a source of attitude uncertainty toward decision targets. Does ambivalent attitude lead to higher attitude uncertainty, thereby possessing self-protective functions? Previous research has found that attitude certainty and attitude ambivalence are not opposites; low attitude certainty does not equal high attitude ambivalence. Individuals' ambivalent attitudes (approach-avoidance) toward an object do not affect their clear awareness of this subjective conflict (魏谨, 佐斌, 2013). According to attitude strength theory, attitude certainty serves as an important indicator for evaluating attitude strength. While research on the relationship between ambivalent attitudes and attitude certainty remains limited, studies have confirmed that the difficulty of integrating inconsistent information about attitude targets affects the relationship between ambivalent attitudes and attitude strength. Strong attitudes manifest as attitude-consistent information search and attitude-behavior consistency. When integration difficulty is low, ambivalent attitudes produce strong attitudes; when difficulty is high, ambivalent attitudes produce weak attitudes, creating dual effects of ambivalent attitudes on attitude strength (Jonas et al., 2000; Jiang et al., 2016). This study introduces decision difficulty level to characterize the integration difficulty of inconsistent information. In decision contexts, individuals with high versus low decision difficulty levels may show inconsistent integration results regarding dual evaluations, leading to dual effects of ambivalent attitudes on uncertainty. Decision difficulty level may thus influence the relationship between ambivalent attitudes and uncertainty, which in turn affects the relationship between outcome valence and post-decision self-evaluation.

Therefore, based on two decision stages, this study examines the logical relationship of “ambivalent attitude → uncertainty → post-decision self-evaluation” and further analyzes the respective moderating roles of decision difficulty level and outcome valence in the two stages of this influence process. Ambivalent attitudes can be divided into subjective and objective ambivalence; this study focuses on objective ambivalence, which remains relatively more stable during decision-making processes (Priester & Petty, 1996). This research verifies and explains the effect of ambivalent attitudes on post-decision self-evaluation, sup-

plements research findings on ambivalent attitudes' impact on post-decision psychological feelings, explains the role of ambivalent attitudes before and after decision-making, and broadens the boundaries of ambivalent attitudes as a self-protection strategy. Based on these conclusions, cultivating ambivalent attitudes can help individuals withstand certain decision risks, and individuals can improve post-decision subjective experiences by comprehensively considering pre-decision contexts and anticipated outcomes.

Theoretical Background and Hypotheses

Ambivalent Attitudes and Post-Decision Self-Evaluation

Ambivalent attitude refers to an individual' s simultaneous positive and negative evaluations of a target object—that is, the co-occurrence of two (positive and negative) attitudes constitutes ambivalence (Kaplan, 1972). This dual attitude can manifest as a confirmed characteristic of certain choices; for instance, some individuals hold ambivalent attitudes toward high-calorie foods such as chocolate and fried chicken. Ambivalent attitudes include two types: subjective and objective ambivalence. Objective ambivalence refers to the actual existence of inconsistent evaluative responses, obtained by separately measuring participants' positive and negative attitudes and calculating ambivalence scores using formulas. Subjective ambivalence refers to the experience of evaluative conflict, mixed feelings of conflict, confusion, and tension toward the same object, measured by directly asking participants about their subjectively perceived degree of ambivalence. Subjective ambivalence represents experienced ambivalence, while objective ambivalence represents formula-based measurement and serves as an antecedent of subjective ambivalence, remaining relatively stable during decision-making processes (Priester & Petty, 1996). Jonas et al. (2000) suggest that when positive and negative evaluations of a target coexist, and the positive aspects are more important than the negative aspects, individuals may exhibit high objective ambivalence but low subjective ambivalence.

Self-evaluation refers to one' s overall general assessment of oneself, measured through self-report (Reich & Wheeler, 2016). Self-evaluation connects with global self-esteem and is influenced by feelings of self-worth (Brown, 2001). Cognitive dissonance theory posits that inconsistency between attitudes and behaviors creates discomfort, and by extension, attitudinal inconsistency from ambivalent attitudes also causes discomfort (徐展菲, 席居哲, 2018). After experiencing cognitive conflict, individuals develop motivation to reduce cognitive conflict (Geoffrey et al., 2016) and tend to take action to reduce their sense of dissonance (Koller & Salzberger, 2007). During the initiation and maintenance stages of behavior, the association between objective and subjective ambivalence strengthens (Armitage & Arden, 2007; Nohlen et al., 2016). When facing choices, increased conflict leads to negative outcomes such as confusion and reduced confidence (Sawicki et al., 2013). However, after ambivalent individuals make decisions, their discomfort level decreases (Harreveld et al., 2009). De Liver et al. (2007) confirmed that compared with a control

group, high ambivalence participants experienced reduced ambivalent feelings post-decision. Förster et al. (2005) explained this reduction in conflict, suggesting that lower physiological arousal toward decision targets post-decision influences experienced ambivalence, reduces discomfort, and thereby improves post-decision self-evaluation. Due to the instability of subjective ambivalence during decision-making, this study focuses on the effect of objective ambivalence on post-decision self-evaluation, proposing that for individuals with inconsistent evaluations of chosen targets, the decision-making process reduces anxiety and leads to higher post-decision self-evaluation.

Based on this reasoning, we propose:

Hypothesis 1: Ambivalent attitudes positively influence post-decision self-evaluation.

Uncertainty, Outcome Valence, and Decision Difficulty

Uncertainty represents an uncomfortable state when individuals cannot predict the future (Grant & Tybout, 2008). Reich and Wheeler (2016) confirmed the effect of outcome uncertainty on post-decision self-evaluation, viewing outcome uncertainty as a source of uncertainty involving trade-offs between gains and losses from decision targets—a focal point in risky choice research. Another source of uncertainty concerns individuals' uncertainty about decision target values. Individuals decide on targets by trading off attributes within the choice set. When each option has multiple conflicting dimensions, uncertainty about decision target value is highest (Attribute-Weight Uncertainty) (Kahn & Meyer, 1991). Attitude uncertainty toward decision targets encompasses both outcome uncertainty and decision target value uncertainty. Attitude certainty represents individuals' general feeling of belief in their own attitudes (Mcgraw et al., 2003), typically measured by asking about the certainty or belief in one's attitude, or the degree of confidence in self-judged correctness (Penny et al., 2004). When individuals are uncertain about both decision outcomes and target values, their attitudes and judgments toward decision targets become uncertain. This study measures attitude uncertainty toward decision targets through general attitude uncertainty, which connects with decision confidence and influences individual intentions and behaviors (Krosnick & Petty, 1995).

Individuals possess motivation to minimize the negative impact of negative outcomes, and self-protection motivation leads to self-protection strategies (Alicke & Sedikides, 2009), such as self-affirmation and defensive pessimism. Uncertain decision contexts produce self-protective effects. Outcome uncertainty exerts a dampening effect on feelings about both positive and negative outcomes (Dijk & Zeelenberg, 2006), also known as uncertainty's disjunction effect. Compared with certain information, individuals rely less on uncertain information when making decisions (Van & Zeelenberg, 2003) and experience less negative (positive) emotion based on negative (positive) outcomes (Dijk & Zeelenberg, 2006). It follows that uncertainty moderates the relationship between outcome valence

and post-decision self-evaluation. When receiving positive outcomes, individuals with higher uncertainty experience less positive feeling (lower post-decision self-evaluation); when receiving negative outcomes, individuals with higher uncertainty experience less negative feeling (higher post-decision self-evaluation). Reich and Wheeler (2016) explained outcome uncertainty's self-protective mechanism, confirming that individuals cultivate more ambivalent attitudes as a self-protection strategy in uncertain contexts, with outcome valence moderating the relationship between ambivalent attitudes and self-evaluation. However, ignoring uncertain contexts, does ambivalence toward decision targets still possess self-protective effects before decision-making? The self-protective effect of ambivalence toward decision targets is influenced by attitude uncertainty.

Ambivalent attitude represents an aversive, unstable state that causes discomfort and anxiety (Newby-Clark et al., 2002). According to attitude strength theory, the relationship between ambivalent attitudes and attitude uncertainty constitutes a focal issue, with ambivalent attitudes as structural indicators of attitude strength and attitude certainty as outcome indicators (Howe & Krosnick, 2017). Previous research has found that conflicting evaluations of decision targets produce negative outcomes such as uncertainty (Lipshitz & Strauss, 1997), hesitation, and choice delay (Sincoff, 1990). However, ambivalent attitudes may also produce positive outcomes for certainty. Ambivalent individuals have motivation to reduce cognitive dissonance, and processing more attitude-consistent information leads to attitude strengthening (Clark et al., 2008). Meanwhile, after systematically processing information to integrate conflicting evaluations, ambivalent individuals experience enhanced attitude strength, positively influencing decision certainty and individual confidence (Krosnick & Petty, 1995), resulting in positive outcomes such as attitude-consistent information processing (林让 et al., 2020) and attitude-behavior consistency (Sengupta & Johar, 2002). Therefore, the effect of ambivalent attitudes on uncertainty should consider systematic cognitive processing results for attitude integration; whether ambivalent attitudes enhance attitude certainty depends on whether cognitive conflict can be resolved (Jiang et al., 2016).

Decision difficulty level refers to the subjective perception of decision simplicity or difficulty within a choice set (Hanselmann & Tanner, 2008), typically measured by directly asking individuals about their subjective perception of decision difficulty (Zhang & Mittal, 2005). Decision difficulty level is influenced by choice set characteristics, personal knowledge levels, and other factors, leading to negative consequences such as decision avoidance, regret, and fear management (Anderson, 2003). Due to motivation to reduce cognitive conflict, high ambivalence individuals exert more cognitive effort toward decision targets than low ambivalence individuals, though cognitive effort does not necessarily enhance attitude certainty. High ambivalence individuals simultaneously understand both advantages and disadvantages of targets. When individuals have low decision difficulty levels, representing lower information integration difficulty, they make "optimal decisions," and this deliberation leads to increased confidence and enhanced attitude certainty (朱冬青, 谢晓非, 2013). However, when high am-

bivalence individuals have high decision difficulty levels, representing inability to integrate target advantages and disadvantages, cognitive conflict increases and attitude certainty decreases. Low ambivalence represents unitary attitudes toward choices, where attitude certainty is influenced by decision difficulty level; compared with high decision difficulty, individuals with low subjective decision difficulty exhibit higher decision certainty. Overall, when decision difficulty level is low, ambivalent attitudes negatively affect uncertainty; when decision difficulty level is high, ambivalent attitudes positively affect uncertainty.

Integrating uncertainty' s dampening effect, this study constructs a two-stage moderation model (Figure 1 [Figure 1: see original paper]). In this model, ambivalent attitudes and decision difficulty level interactively affect uncertainty, while uncertainty and outcome valence interactively affect post-decision self-evaluation. When positive outcomes occur, uncertain individuals experience less positive feeling; when negative outcomes occur, uncertain individuals experience less negative feeling. Therefore, when positive outcomes occur with high decision difficulty, high ambivalence individuals experience higher uncertainty, negatively affecting post-decision self-evaluation; when positive outcomes occur with low decision difficulty, high ambivalence individuals experience lower uncertainty, positively affecting post-decision self-evaluation; when negative outcomes occur with high decision difficulty, high ambivalence individuals experience higher uncertainty, positively affecting post-decision self-evaluation; when negative outcomes occur with low decision difficulty, high ambivalence individuals experience lower uncertainty, negatively affecting post-decision self-evaluation. Based on this reasoning, we propose:

Hypothesis 2: The mediating process through which ambivalent attitudes affect post-decision self-evaluation via uncertainty is moderated by decision difficulty level and outcome valence. When positive outcomes occur, individuals with low (vs. high) decision difficulty levels experience a positive effect of ambivalent attitudes on post-decision self-evaluation through uncertainty. When negative outcomes occur, individuals with high (vs. low) decision difficulty levels experience a positive effect of ambivalent attitudes on post-decision self-evaluation through uncertainty.

Figure 1 presents the theoretical model. Experiments 1 and 2 test the main effect of ambivalent attitudes and the effects of decision difficulty level and outcome valence on post-decision self-evaluation. Experiment 3 measures uncertainty to verify the interactive effect of uncertainty and outcome valence on post-decision self-evaluation, the interactive effect of ambivalent attitudes and decision difficulty level on uncertainty, uncertainty' s mediating role, and to replicate results from Experiments 1 and 2. The experimental procedure is illustrated in Figure 2 [Figure 2: see original paper].

Experiment 1: The Effects of Ambivalent Attitudes, Outcome Valence, and Decision Difficulty on Post-Decision Self-Evaluation

Pre-Test

The pre-test aimed to examine changes in ambivalent attitudes during decision-making. One hundred twenty-nine university students participated, completing all tasks on mobile devices. Following Jiang et al. (2016), we selected cameras as experimental materials and manipulated ambivalent attitudes through positive and negative evaluations of camera attributes. First, participants evaluated a newly launched camera, the JVC3500, which compared to two similarly priced cameras (MVX25 and MX350E) was superior on two attributes (pixel count, anti-shake) but inferior on two others (zoom, display screen). Second, participants rated their subjective and objective ambivalence toward the JVC3500. Subjective ambivalence was measured by asking participants to rate their subjective ambivalence level (simultaneous positive and negative evaluations; simultaneous positive and negative emotions; uncertain attitudes) on a scale from 1 (completely disagree) to 9 (completely agree), with higher numbers indicating stronger feelings. Objective ambivalence included two items: rating only the JVC3500's disadvantages while ignoring advantages, and rating only its advantages while ignoring disadvantages, on scales from 1 (not bad at all/not good at all) to 11 (very bad/very good), with higher scores indicating stronger feelings about negative or positive features. Scores were calculated using a formula (Priester & Petty, 1996). Third, participants decided whether to purchase the product. Fourth, participants re-evaluated their subjective and objective ambivalence toward the JVC3500.

Paired-sample t-tests analyzing ambivalence before and after decision-making revealed that subjective ambivalence decreased significantly after decision-making ($M = 4.29$, $SD = 1.97$) compared to before ($M = 4.77$, $SD = 2.22$), $t(128) = 2.96$, $p = 0.004$, $d' = 0.23$, 95% CI = [0.15, 0.78]. However, no significant difference emerged between objective ambivalence before ($M = 6.51$, $SD = 3.66$) and after decision-making ($M = 6.15$, $SD = 4.43$), $p = 0.179$.

Method

Experiment 1 aimed to test the main effect of ambivalent attitudes and the influence of decision difficulty level and outcome valence on ambivalent attitudes and post-decision self-evaluation. The experiment used university choice as the scenario, which has been validated for exploring ambivalence-self-evaluation relationships (Reich & Wheeler, 2016).

The experiment employed a 2 (high objective ambivalence/low objective ambivalence) \times 2 (high decision difficulty/low decision difficulty) \times 2 (positive outcome/negative outcome) between-subjects design, with post-decision self-evaluation as the dependent variable. Using G*Power 3.1 with significance level

$\alpha = 0.05$ and medium effect size ($f = 0.25$), the required total sample size for 80% statistical power was at least 211 participants. Four hundred thirty-four university students participated, completing all tasks on mobile devices.

First, participants read the following scenario and imagined it as real: “Before high school graduation, after a series of preparations, you have narrowed down two ideal universities. You spent time learning about both universities and discovered that an authoritative institution has compared their advantages and disadvantages across four main dimensions: post-graduation monthly salary, employment rate, city location, and average faculty quality. Compared to University B, University A is superior on two dimensions but inferior on two others (see Table 1).”

Table 1 Comparison of Two Universities

Dimension	University A	University B
Post-graduation monthly salary	¥5000-9000	¥4000-6000
Employment rate	85%	95%
City location	Tier-1 city	New Tier-1 city
Average faculty quality (max 5)	3.5	4.5

Second, participants chose their preferred university and rated the decision task’s difficulty on a scale from 1 (very simple) to 9 (very difficult), with higher numbers indicating greater perceived difficulty. Following Chernev (2006) and Zemborain and Johar (2007), participants with decision difficulty scores above 5 (median) were classified as “high decision difficulty” ($M = 6.79$, $SD = 0.80$, $n = 180$), while those scoring 5 or below were classified as “low decision difficulty” ($M = 3.19$, $SD = 1.53$, $n = 254$). An independent samples t -test confirmed significant differences between high and low decision difficulty groups, $t(401) = -31.78$, $p < 0.001$, $d' = -2.95$, 95% CI = [-3.82, -3.38].

Third, participants rated their ambivalence toward their preferred university. Following Huang et al. (2010), participants with objective ambivalence scores above 7 (median) were classified as “high ambivalence” ($M = 9.81$, $SD = 1.79$, $n = 222$), while those scoring 7 or below were classified as “low ambivalence” ($M = 4.38$, $SD = 1.99$, $n = 212$). The high and low ambivalence groups differed significantly, $t(432) = -29.92$, $p < 0.001$, $d' = -2.87$, 95% CI = [-5.79, -5.07].

Finally, participants were informed of their admission (or rejection) to their preferred university. Following Reich and Wheeler (2016), they rated their feelings about the outcome and their self-evaluation on scales from 1 (very bad) to 9 (very good), with higher numbers indicating better feelings and higher post-decision self-evaluation. Outcome feelings served as a manipulation check, while post-decision self-evaluation was the dependent variable.

Results

(1) Manipulation Check. Independent samples t-tests examining the two post-decision scenarios revealed that participants felt significantly better when receiving positive outcomes ($M = 7.18$, $SD = 1.56$, $n = 238$) than negative outcomes ($M = 2.86$, $SD = 1.96$, $n = 196$), $t(368) = 24.97$, $p < 0.001$, $d' = -2.43$, 95% CI = [3.97, 4.65].

(2) Main Effect of Ambivalent Attitudes. Independent samples t-tests revealed that high ambivalence participants ($M = 5.93$, $SD = 1.83$, $n = 222$) reported higher post-decision self-evaluation than low ambivalence participants ($M = 5.17$, $SD = 2.21$, $n = 212$), $t(410) = -3.91$, $p < 0.001$, $d' = -0.37$, 95% CI = [-1.15, -0.38].

(3) Moderating Effects of Decision Difficulty and Outcome Valence. ANOVA with objective ambivalence as the independent variable, decision difficulty level and outcome valence as moderators, and post-decision self-evaluation as the dependent variable showed a non-significant main effect of ambivalence ($p = 0.500$), significant effects of decision difficulty level, $F(1, 426) = 12.96$, $p < 0.001$, $p^2 = 0.03$, and outcome valence, $F(1, 426) = 326.61$, $p < 0.001$, $p^2 = 0.43$. The interaction between ambivalence and outcome valence was significant, $F(1, 426) = 4.01$, $p = 0.04$, $p^2 = 0.009$, while two-way interactions between ambivalence and decision difficulty, and between decision difficulty and outcome valence, were non-significant ($p_{\text{ambivalence} \times \text{difficulty}} = 0.08$, $p_{\text{difficulty} \times \text{valence}} = 0.42$). The three-way interaction between ambivalence, outcome valence, and decision difficulty was significant, $F(1, 426) = 8.99$, $p = 0.003$, $p^2 = 0.02$ (see Figure 3 [Figure 3: see original paper]). Simple effects analysis revealed that with positive outcomes, low decision difficulty participants showed no significant effect of ambivalence on self-evaluation ($p = 0.87$), while high difficulty participants showed a significant negative effect, $F(1, 429) = 5.33$, $p = 0.02$. With negative outcomes, both low and high difficulty participants showed significant positive effects of ambivalence on self-evaluation (low difficulty: $F(1, 429) = 6.95$, $p = 0.009$; high difficulty: $F(1, 429) = 6.36$, $p = 0.01$).

Figure 3 Interactive Effects of Ambivalence, Decision Difficulty, and Outcome Valence in Experiment 1

Discussion

Experiment 1 found, first, that ambivalent attitudes positively affect post-decision self-evaluation. Individuals with high (vs. low) objective ambivalence reported higher post-decision self-evaluation, supporting Hypothesis 1. Second, decision difficulty level and outcome valence influenced the relationship between ambivalent attitudes and self-evaluation. With positive outcomes, high decision difficulty individuals showed a negative effect of objective ambivalence on self-evaluation, while low difficulty individuals showed no significant effect. With negative outcomes, both high and low difficulty individuals showed

significant positive effects of objective ambivalence on self-evaluation, with the protective effect of objective ambivalence strengthening as decision difficulty increased. These results support Hypothesis 2. The findings confirm Harreveld et al.'s (2009) view that decision-making processes reduce conflict feelings in ambivalent individuals, enabling ambivalent attitudes to positively affect post-decision self-evaluation. Moreover, the results refine understanding of ambivalence's role in decision-making, demonstrating that the relationship between ambivalent attitudes and post-decision self-evaluation under positive versus negative outcomes is moderated by decision difficulty level.

Experiment 2: Replication with Enterprise Choice Scenario

Experiment 2 aimed to replicate Experiment 1's findings using different materials, changing the scenario to a choice between two enterprises.

Method

Based on Experiment 1's design and using G*Power 3.1 with $\alpha = 0.05$ and medium effect size ($f = 0.25$), the required sample size for 80% power was at least 211 participants. Three hundred twenty-one university students participated, completing all tasks on mobile devices.

First, participants read the following scenario: "After graduating from university and job searching for some time, you have received final interview invitations from two companies. Due to scheduling conflicts, you can only interview with one company. You spent time learning about both companies and discovered that an authoritative institution has compared their advantages and disadvantages across four dimensions: monthly salary, city location, number of employees, and brand value. Compared to Company B, Company A is superior on two dimensions but inferior on two others (see Table 2)."

Table 2 Comparison of Two Companies

Dimension	Company A	Company B
Post-graduation monthly salary	¥6000-10000	¥4000-6000
City location	Tier-1 city	New Tier-1 city
Number of employees	5000	20000
Brand value ranking	15th	8th

Second, participants chose their preferred company and rated decision task difficulty (very simple/very difficult) (Chernev, 2006). As in Experiment 1, participants scoring above 5 (median) were classified as "high decision difficulty" ($M = 6.85$, $SD = 0.87$, $n = 145$), while those scoring 5 or below were classified as "low decision difficulty" ($M = 3.41$, $SD = 1.57$, $n = 176$). The groups differed significantly, $t(282) = -24.65$, $p < 0.001$, $d' = -2.71$, 95% CI = [-3.71, -3.16].

Third, participants rated ambivalence toward their preferred company. As in Experiment 1, those scoring above 7 (median) were classified as “high ambivalence” ($M = 9.59$, $SD = 1.32$, $n = 191$), while those scoring 7 or below were classified as “low ambivalence” ($M = 4.76$, $SD = 1.87$, $n = 130$). The groups differed significantly, $t(214) = -25.41$, $p < 0.001$, $d' = -2.98$, 95% CI = [-5.21, -4.46].

Finally, participants were informed of their acceptance (or rejection) by their preferred company and rated their outcome feelings (no feeling/very good) and self-evaluation (very bad/very good) (Reich & Wheeler, 2016). Outcome served as the manipulation check, while post-decision self-evaluation was the dependent variable.

Results

(1) Manipulation Check. Independent samples t-tests revealed that participants felt significantly better with positive outcomes ($M = 6.88$, $SD = 1.66$, $n = 173$) than negative outcomes ($M = 3.91$, $SD = 1.73$, $n = 148$), $t(307) = 15.59$, $p < 0.001$, $d' = -2.43$, 95% CI = [2.60, 3.36].

(2) Main Effect of Ambivalent Attitudes. Independent samples t-tests showed that high ambivalence participants ($M = 5.75$, $SD = 1.90$, $n = 191$) reported higher post-decision self-evaluation than low ambivalence participants ($M = 5.18$, $SD = 2.21$, $n = 130$), $t(319) = -2.46$, $p = 0.01$, $d' = -0.28$, 95% CI = [-1.02, -0.11].

(3) Moderating Effects of Decision Difficulty and Outcome Valence. ANOVA with ambivalence as the independent variable and post-decision self-evaluation as the dependent variable revealed a significant positive main effect of ambivalence, $F(1, 313) = 4.96$, $p = 0.02$, $p^2 = 0.02$, a non-significant effect of decision difficulty ($p = 0.44$), and a significant effect of outcome valence, $F(1, 313) = 152.53$, $p < 0.001$, $p^2 = 0.33$. Two-way interactions between ambivalence and outcome valence, ambivalence and decision difficulty, and decision difficulty and outcome valence were all non-significant ($p_{\text{ambivalence} \times \text{difficulty}} = 0.93$, $p_{\text{ambivalence} \times \text{valence}} = 0.30$, $p_{\text{difficulty} \times \text{valence}} = 0.21$). The three-way interaction was significant, $F(1, 313) = 5.94$, $p = 0.01$, $p^2 = 0.02$. Simple effects analysis showed that with positive outcomes, low difficulty participants exhibited a significant positive effect of ambivalence on self-evaluation, $F(1, 316) = 9.14$, $p = 0.003$, while high difficulty participants showed no significant effect ($p = 0.63$). With negative outcomes, neither low nor high difficulty participants showed significant effects, though the direction matched Experiment 1 ($p_{\text{negative} \times \text{low}_{\text{difficulty}}} = 0.96$, $p_{\text{negative} \times \text{high}_{\text{difficulty}}} = 0.21$) (see Figure 4 [Figure 4: see original paper]).

Figure 4 Interactive Effects of Ambivalence, Decision Difficulty, and Outcome Valence in Experiment 2

Discussion

Experiment 2 replicated Experiment 1's findings under altered decision scenarios. First, ambivalent attitudes positively affected post-decision self-evaluation, with high (vs. low) objective ambivalence individuals reporting higher self-evaluation, supporting Hypothesis 1. Second, the three-way interaction between decision difficulty, objective ambivalence, and outcome valence significantly influenced self-evaluation. With positive outcomes, low difficulty individuals showed a significant positive effect of high (vs. low) ambivalence on self-evaluation. With negative outcomes, the interaction between ambivalence and decision difficulty was non-significant, partially supporting Hypothesis 2. This may reflect lower participant engagement and comprehension of experimental materials compared to Experiment 1. Experiment 2's sample comprised university students for whom choosing an ideal university was a relatable experience, whereas job searching after graduation required more imagination, reducing engagement and comprehension. This psychological simulation difference may have rendered the ambivalence \times decision difficulty interaction non-significant for negative outcomes.

Experiment 3: Testing the Theoretical Model

Experiment 3 aimed to validate the theoretical model. Using the same materials as Experiment 1, it tested the mechanism underlying ambivalence's effect on post-decision self-evaluation while replicating previous findings. The model was tested in steps: (1) verifying ambivalence's main effect, (2) testing the interactive effect of uncertainty and outcome valence on self-evaluation, (3) examining the interactive effect of ambivalence and decision difficulty on uncertainty, (4) validating uncertainty's mediating role, and (5) conducting robustness tests of the three-way interaction on post-decision self-evaluation.

Method

Based on Experiment 1's design and using G*Power 3.1 with $\alpha = 0.05$ and medium effect size ($f = 0.25$), the required sample size for 80% power was at least 211 participants. Three hundred fifty-eight university students participated, completing all tasks on mobile devices.

First, participants chose their preferred university from two options, as in Experiment 1.

Second, participants rated ambivalence toward their preferred university. As in Experiment 1, those scoring above 7 (median) were classified as "high ambivalence" ($M = 9.63$, $SD = 1.39$, $n = 207$), while those scoring 7 or below were classified as "low ambivalence" ($M = 4.39$, $SD = 2.14$, $n = 151$). The groups differed significantly, $t(240) = -26.23$, $p < 0.001$, $d' = 2.90$, 95% CI = [-5.62, -4.84].

Third, participants rated decision task difficulty (very simple/very difficult)

(Chernev, 2006). Those scoring above 5 (median) were classified as “high decision difficulty” ($M = 7.04$, $SD = 0.95$, $n = 161$), while those scoring 5 or below were classified as “low decision difficulty” ($M = 3.32$, $SD = 1.59$, $n = 197$). The groups differed significantly, $t(328) = -27.38$, $p < 0.001$, $d' = 2.84$, 95% CI = [-3.99, -3.45].

Finally, participants were informed of their admission (or rejection) and rated their certainty about their university choice (very uncertain/very certain) (Mcgraw et al., 2003), their outcome feelings (very bad/very good), and their self-evaluation (very bad/very good) (Reich & Wheeler, 2016). Outcome feelings served as the manipulation check, while post-decision self-evaluation was the dependent variable.

Results

(1) Manipulation Check. Independent samples t-tests revealed that participants felt significantly better with positive outcomes ($M = 7.27$, $SD = 1.54$, $n = 176$) than negative outcomes ($M = 3.82$, $SD = 1.82$, $n = 182$), $t(349) = 349.61$, $p < 0.001$, $d' = 2.04$, 95% CI = [3.07, 3.80].

(2) Main Effect of Ambivalent Attitudes. Independent samples t-tests showed that high ambivalence participants ($M = 6.03$, $SD = 1.95$, $n = 207$) reported higher post-decision self-evaluation than low ambivalence participants ($M = 5.27$, $SD = 2.38$, $n = 151$), $t(283) = -3.21$, $p < 0.001$, $d' = -0.34$, 95% CI = [-1.23, -0.29].

(3) Moderating Effect of Uncertainty on Outcome Valence and Self-Evaluation. Using SPSS 20.0' s PROCESS plugin with Hayes' s bootstrap method (Hayes, 2013), Model 1 was tested with outcome valence as X, post-decision self-evaluation as Y, and uncertainty as W. Regression results appear in Table 3 . Outcome valence and uncertainty significantly negatively predicted post-decision self-evaluation, and their interaction significantly affected self-evaluation. Further analysis revealed that when uncertainty was low ($M - 1SD$), outcome valence significantly negatively affected self-evaluation (effect = -4.48, $t(354) = -21.52$, $p < 0.001$); when uncertainty was high ($M + 1SD$), outcome valence' s effect was non-significant ($p = 0.96$) (see Figure 5 [Figure 5: see original paper]).

Table 3 Moderating Effect of Uncertainty on Post-Decision Self-Evaluation

Variable	Coeff.	SE	t	p
Outcome valence	-3.24	0.15	-21.52	<0.001
Uncertainty	-0.83	0.15	-5.48	<0.001
Outcome valence \times Uncertainty	0.32	0.10	3.20	0.001

Figure 5 Effects of Uncertainty and Outcome Valence on Post-Decision Self-Evaluation

(4) Interactive Effect of Ambivalence and Decision Difficulty on Uncertainty. Using PROCESS Model 1 with ambivalence as X, uncertainty as Y, and decision difficulty as W, regression results appear in Table 4. Ambivalence and decision difficulty significantly negatively predicted uncertainty, and their interaction significantly affected uncertainty. Further analysis revealed that when decision difficulty was low ($M - 1SD$), ambivalence significantly negatively affected uncertainty (effect = -0.828, $t(354) = -2.90$, $p < 0.001$); when decision difficulty was high ($M + 1SD$), ambivalence significantly positively affected uncertainty (effect = 1.79, $t(354) = 5.75$, $p < 0.001$) (see Figure 6 [Figure 6: see original paper]).

Table 4 Interactive Effect of Ambivalence and Decision Difficulty on Uncertainty

Variable	Coeff.	SE	t	p
Ambivalence	-0.41	0.14	-2.90	<0.001
Decision difficulty	0.52	0.14	3.71	<0.001
Ambivalence \times Decision difficulty	0.26	0.10	2.60	0.01

Figure 6 Interactive Effect of Ambivalence and Decision Difficulty on Uncertainty

(5) Mediating Role of Uncertainty. Data were split to test uncertainty's mediation in four conditions: positive outcome \times low difficulty, positive outcome \times high difficulty, negative outcome \times low difficulty, and negative outcome \times high difficulty. Using PROCESS Model 4 with ambivalence as X, post-decision self-evaluation as Y, and uncertainty as M, results showed: with positive outcomes, uncertainty significantly mediated the effect under both low difficulty (indirect positive effect) and high difficulty (indirect negative effect); with negative outcomes, uncertainty mediated the effect only under high difficulty (indirect positive effect), with non-significant mediation under low difficulty (see Table 5). Specifically, with positive outcomes and low difficulty, high ambivalence led to low uncertainty and high post-decision self-evaluation; with positive outcomes and high difficulty, high ambivalence led to high uncertainty and low self-evaluation; with negative outcomes and low difficulty, ambivalence had no significant effect on self-evaluation; with negative outcomes and high difficulty, high ambivalence led to high uncertainty and high self-evaluation. Thus, Hypothesis 2 was supported.

Table 5 Mediating Effect of Uncertainty

Condition	Effect	Boot SE	Boot LLCI	Boot ULCI
Positive outcome, low difficulty	0.42	0.15	0.18	0.78
Positive outcome, high difficulty	-0.38	0.16	-0.75	-0.12
Negative outcome, low difficulty	0.08	0.12	-0.12	0.35

Condition	Effect	Boot SE	Boot LLCI	Boot ULCI
Negative outcome, high difficulty	0.52	0.18	0.21	0.94

(6) Moderating Effects of Decision Difficulty and Outcome Valence. ANOVA with ambivalence as the independent variable, post-decision self-evaluation as the dependent variable, and outcome valence and decision difficulty as moderators revealed a significant positive main effect of ambivalence, $F(1, 350) = 4.60$, $p = 0.03$, $p^2 = 0.01$, a non-significant effect of decision difficulty ($p = 0.49$), and a significant effect of outcome valence, $F(1, 350) = 168.79$, $p < 0.001$, $p^2 = 0.32$. The ambivalence \times outcome valence interaction was significant, $F(1, 350) = 17.17$, $p < 0.001$, $p^2 = 0.04$, while ambivalence \times decision difficulty and outcome valence \times decision difficulty interactions were non-significant ($p_{\text{ambivalence} \times \text{difficulty}} = 0.56$, $p_{\text{valence} \times \text{difficulty}} = 0.07$). The three-way interaction was significant, $F(1, 350) = 30.86$, $p = 0.01$, $p^2 = 0.08$. Simple effects analysis showed that with positive outcomes, high difficulty participants exhibited a significant negative effect of ambivalence on self-evaluation, $F(1, 353) = 10.43$, $p = 0.001$, while low difficulty participants showed a significant positive effect, $F(1, 353) = 6.10$, $p = 0.01$. With negative outcomes, high difficulty participants showed a significant positive effect of ambivalence on self-evaluation, $F(1, 353) = 16.24$, $p < 0.001$, while low difficulty participants showed no significant effect ($p = 0.94$) (see Figure 7 [Figure 7: see original paper]).

Figure 7 Interactive Effects of Ambivalence, Decision Difficulty, and Outcome Valence in Experiment 3

Discussion

Experiment 3 explored and validated the mechanism underlying the effects of ambivalence, decision difficulty, and outcome valence on post-decision self-evaluation. First, ambivalent attitudes positively affected post-decision self-evaluation, supporting Hypothesis 1. Second, the study confirmed uncertainty's dampening effect: uncertain individuals experienced less positive (negative) post-decision self-evaluation when receiving positive (negative) outcomes. Third, the relationship between ambivalence and uncertainty was moderated by decision difficulty, with ambivalence producing conflicting results. When decision difficulty was low, ambivalence significantly reduced uncertainty; when decision difficulty was high, ambivalence significantly increased uncertainty. Finally, the experiment validated uncertainty's mediating role: the effect of ambivalence on post-decision self-evaluation through uncertainty was moderated by outcome valence and decision difficulty, supporting Hypothesis 2. On one hand, decision certainty connects with attitude strength (Krosnick & Petty, 1995), confirming ambivalence's dual effects on attitude strength. On the other hand, pre-decision metacognition and post-decision outcomes represent key factors in evaluating decision quality (Yeung & Summerfield, 2012). By introducing these critical

decision process points, Experiment 3 clarified the process through which ambivalence operates in decision-making, extending decision research forward by demonstrating ambivalence' s impact on decision metacognition.

General Discussion

Main Findings

This study yields three main conclusions. First, all three experiments demonstrated that ambivalent attitudes positively affect post-decision self-evaluation, with high (vs. low) ambivalence individuals reporting higher self-evaluation. Second, Experiments 1 and 2 confirmed the moderating roles of decision difficulty level and outcome valence. With positive outcomes, low decision difficulty individuals showed a positive effect of objective ambivalence on self-evaluation. Experiment 1 confirmed that with negative outcomes, high decision difficulty individuals showed a positive effect of objective ambivalence on self-evaluation. Although Experiment 2 did not confirm this conclusion, the directional consistency with Experiment 1 enhances result robustness. Third, Experiment 3 confirmed uncertainty' s mediating role. When receiving negative outcomes, high (vs. low) decision difficulty individuals showed a positive effect of objective ambivalence on self-evaluation through uncertainty. When receiving positive outcomes, low (vs. high) decision difficulty individuals showed a positive effect of objective ambivalence on self-evaluation through uncertainty. Experiment 3 also revealed the interactive effect of ambivalence and decision difficulty on uncertainty and uncertainty' s disjunction effect, validating findings from Experiments 1 and 2.

Theoretical Contributions

This research makes three primary theoretical contributions. First, it enriches research on ambivalent attitudes' effects on post-decision outcomes, filling a gap in post-decision stage research. Individual decision-making involves five stages: problem identification, information search, attitude formation, decision-making, and post-decision outcomes (Engel et al., 1978). Early research focused on ambivalence' s effects on pre-decision information search, attitude formation, and decision satisfaction, with less attention to the post-decision outcome stage (Tudoran et al., 2012). During information search, research has shown that high ambivalence individuals tend to process pro-attitudinal information and avoid counter-attitudinal information (黄敏学 et al., 2010; Yang & Unava, 2016), though this is influenced by knowledge level and information source characteristics, with some studies showing opposite patterns (Sawicki et al., 2013; 单春玲, 赵含宇, 2017). During decision-making, research has shown that ambivalence reduces purchase intention (张启尧, 孙习祥, 2018) and weakens attitude-intention and attitude-behavior relationships (Bee & Madrigal, 2013), yet other studies demonstrate that ambivalence increases online purchase intention (Moody et al., 2014) and strengthens attitude-behavior consistency (Jiang et al., 2016). In the post-decision stage, research has examined ambivalence' s effect on purchase

satisfaction (林让 et al., 2020), but such satisfaction typically concerns satisfaction during decision-making rather than psychological experience after some time has passed, leaving a research gap regarding ambivalence' s post-decision effects. This study extends Reich and Wheeler' s (2016) research question to decision contexts, confirming ambivalence' s positive effect on post-decision self-evaluation and enriching understanding of ambivalence-post-decision outcome relationships. Additionally, while previous research found that ambivalence leads to uncertainty (Rothman et al., 2017), this study confirms that ambivalence toward chosen targets in decision-making produces conflicting effects on uncertainty: reducing uncertainty under low decision difficulty but increasing it under high difficulty.

Second, this research broadens and develops the boundaries of ambivalence as a self-protection strategy. Reich and Wheeler (2016) examined ambivalence' s self-protective role in goal pursuit, demonstrating that when outcome uncertainty is highest, individuals cultivate more ambivalent attitudes, leading to better post-decision feelings and self-evaluation after negative outcomes, with ambivalence mediating uncertainty' s effect on self-evaluation. This study extends this theory to individual decision-making. Consistent with Reich and Wheeler' s outcome uncertainty research, attitude uncertainty also serves a self-protective function, positively affecting post-decision self-evaluation after negative outcomes and negatively affecting it after positive outcomes. However, contrary to their findings, this study found no significant effect of ambivalence and outcome valence on self-evaluation, instead confirming a direct positive effect of ambivalence toward decision targets on post-decision self-evaluation. This occurs because objective ambivalence toward decision targets represents mixed evaluations, whereas objective ambivalence toward ideal targets (without decision processes) involves greater physiological arousal and anxiety (Van et al., 2009). The decision-making process reduces ambivalence' s conflict, improving post-decision self-evaluation. Future research could compare conflict effects of ambivalence with versus without decision processes.

Third, this study proposes a new perspective on decision trade-off research based on ambivalence' s effect on post-decision self-evaluation. Traditional decision theory posits that individuals are generally risk-averse, with greater attention to negative factors and negative bias, forming attitudes toward new targets based on negative evaluations, though this is influenced by factors such as decision frames (Kahneman & Tversky, 2000). This research focused on post-decision self-evaluation and found that mixed evaluations of targets positively affect post-decision outcomes, with ambivalence enhancing individuals' ability to withstand risk and better cope with potential decision failure.

Limitations and Future Directions

First, future research should examine factors influencing decision difficulty level in greater detail. Choice set characteristics (structure, default options), individual differences (preference uncertainty, prior experience), and situational factors

(time constraints) all affect decision difficulty (Anderson, 2003). Future studies could refine decision difficulty level and investigate how its influencing factors affect ambivalence's self-protective function. Second, future research should explore other self-protection strategy factors in decision-making. Early research has confirmed that factors such as expectations and self-handicapping influence self-protection (Alicke & Sedikides, 2009). Future studies could incorporate these factors into decision trade-offs to explore whether they influence the interaction between decision difficulty and ambivalence. Third, combining this study's conclusions with Reich and Wheeler's (2016) findings, future research could compare conflict effects of ambivalence on self-evaluation with versus without decision processes.

References

- Alicke, M. D., & Sedikides, C. (2009). Self-enhancement and self-protection: What they are and what they do. *European Review of Social Psychology*, 20(1), 1-48.
- Armitage, C. J., & Arden, M. A. (2007). Felt and potential ambivalence across the stages of change. *Journal of Health Psychology*, 12(1), 149-158.
- Anderson, C. J. (2003). The psychology of doing nothing: Forms of decision avoidance result from reason and emotion. *Psychological Bulletin*, 129(1), 139-167.
- Bee, C. C., & Madrigal, R. (2013). Consumer uncertainty: The influence of anticipatory emotions on ambivalence, attitudes, and intentions. *Journal of Consumer Behaviour*, 12(5), 370-381.
- Brown, J. D., Dutton, K. A., & Cook, K. E. (2001). From the top down: Self-esteem and self-evaluation. *Cognition & Emotion*, 15(5), 615-631.
- Chernev, A. (2006). Decision focus and consumer choice among assortments. *Journal of Consumer Research*, 33(1), 50-59.
- Clark, J. K., Wegener, D. T., & Fabrigar, L. R. (2008). Attitudinal ambivalence and message-based persuasion: Motivated processing of proattitudinal information and avoidance of counterattitudinal information. *Personality & Social Psychology Bulletin*, 34(4), 565-577.
- De Liver, Y., Van der Pligt, J., & Wigboldus, D. H. J. (2007). Positive and negative associations underlying ambivalent attitudes. *Journal of Experimental Social Psychology*, 43, 319-326.
- Dijk, E. V., & Zeelenberg, M. (2006). The dampening effect of uncertainty on positive and negative emotions. *Journal of Behavioral Decision Making*, 19(2), 171-176.
- Dijk, E. V., & Zeelenberg, M. (2003). The discounting of ambiguous information in economic decision making. *Journal of Behavioral Decision Making*, 16, 341-

352.

Engel, J. F., Kollat, D. T., & Blackwell, R. D. (1978). *Consumer behavior* (3rd ed.). Hinsdale, IL: Dryden.

Förster, J., Liberman, N., & Higgins, E. T. (2005). How global versus local perception fits regulatory focus. *Psychological Science*, 16, 631–636.

Geoffrey, N., Soutar, J. C., & Sweeney. (2016). Are there cognitive dissonance segments? *Australian Journal of Management*, 28(3), 227–249.

Grant, S. J., & Alice, M. T. (2008). The effect of temporal frame on information considered in new product evaluation: The role of uncertainty. *Journal of Consumer Research*, 34(4), 897–913.

Hanselmann, M., & Tanner, C. (2008). Taboos and conflicts in decision making: Sacred values, decision difficulty, and emotions. *Judgment and Decision Making*, 3(1), 51–63.

Harreveld, F. V., Pligt, J. V. D., & De Liver, Y. N. (2009). The agony of ambivalence and ways to resolve it: Introducing the MAID model. *Personality and Social Psychology Review*, 13(1), 45–61.

Howe, L. C., & Krosnick, J. A. (2017). Attitude strength. *Annual review of psychology*, 68(1), 327–352.

Huang, M. X., Xie, T. T., & Feng, X. L. (2010). How do ambivalent consumers interpret diversified word-of-mouth information? *Acta Psychologica Sinica*, 10, 48–60.

Jiang, H., Liang, J., Wang, H., & Sun, P. (2016). The interplay of emotions, elaboration, and ambivalence on attitude-behavior consistency. *Journal of Consumer Behaviour*, 15(2), 126–135.

Jonas, K., Broemer, P., & Diehl, M. (2000). Attitudinal ambivalence. *European Review of Social Psychology*, 11(1), 35–70.

Kahn, B. E., & Meyer, R. J. (1991). Consumer multi-attribute judgments under attribute-weight uncertainty. *Journal of Consumer Research*, 17, 508–522.

Kahneman, D., & Tversky A. (2000). Choices, values, and frames. *American Psychologist*, 39(4), 341–350.

Kaplan, K. J. (1972). On the ambivalence-indifference problem in attitude theory and measurement: A suggested modification of the semantic differential technique. *Psychological Bulletin*, 77(5), 361–372.

Koller, M., & Salzberger, T. (2007). Cognitive dissonance as a relevant construct throughout the decision-making and consumption process: An empirical investigation related to a package tour. *Journal of Customer Behaviour*, 6(3), 217–227.

Krosnick, J. A., & Petty, R. E. (1995). Attitude strength: An overview. In R.E. Petty & J. A. Krosnick (Eds.), *Attitude strength: Antecedents and consequences* (pp. 1-24). Mahwah, NJ: Lawrence Erlbaum.

Larsen, J. T., Hemenover, S. H., Norris, C. J., & Cacioppo, J. T. (2003). Turning adversity to advantage: On the virtues of the coactivation of positive and negative emotions. In L. G. Aspinwall & U. M. Staudinger (Eds.), *A psychology of human strengths: Fundamental questions and future directions for a positive psychology* (pp. 211-225).

Lin, R., Yang, Y. M., & Xia, C. Y. (2020). Effect of option number on satisfaction: A moderated mediation model. *Journal of Business Economics*, 339(1), 5-14.

Lin, R., Yang, Y. M., & Xia, C. Y. (2020). The effect of ambivalent attitude on selective exposure—The moderated role of elaboration. *China Business and Market*, 34(6), 51-62.

Lipshitz, R., & Strauss, O. (1997). Coping with uncertainty: A naturalistic decision making analysis. *Organizational Behavior and Human Decision Processing*, 69, 149-163.

Mcgraw, K. M., Hasecke, E., & Conger, K. (2003). Ambivalence, uncertainty, and processes of candidate evaluation. *Political Psychology*, 24(3), 421-448.

Moody, G. D., Galletta, D. F., & Lowry, P. B. (2014). When trust and distrust collide: The engendering and role of ambivalence in online consumer behavior. *Electronic Commerce Research & Applications*, 13, 266-282.

Newby-Clark, I. R., McGregor, I., & Zanna, M. P. (2002). Thinking and caring about cognitive inconsistency: When and for whom does attitudinal ambivalence feel uncomfortable? *Journal of Personality and Social Psychology*, 82(2), 157-166.

Nohlen, H. U., van Harreveld, F., Rotteveel, M., Barends, A. J., & Larsen, J. T. (2016). Affective responses to ambivalence are context-dependent: A facial EMG study on the role of inconsistency and evaluative context in shaping affective responses to ambivalence. *Journal of Experimental Social Psychology*, 65, 42-51.

Nordgren, L. F., Harreveld, F. V., & Pligt, J. V. D. (2006). Ambivalence, discomfort, and motivated information processing. *Journal of Experimental Social Psychology*, 42(2), 252-258.

Penny, S. V., George, Y. B., & Jon, A. K. (2004). Exploring the latent structure of strength-related attitude attributes. *Advances in Experimental Social Psychology*, 38, 1-67.

Podoyntsyna, K., Bij, H. V. D., & Song, M. (2012). The role of mixed emotions in the risk perception of novice and serial entrepreneurs. *Entrepreneurship Theory and Practice*, 36(1), 115-140.

- Priester, J. R., & Petty, R. E. (1996). The gradual threshold model of ambivalence: Relating the positive and negative bases of attitudes to subjective ambivalence. *Journal of Personality and Social Psychology*, 71(3), 431-449.
- Reich, T., & Wheeler, S. C. (2016). The good and bad of ambivalence: Desiring ambivalence under outcome uncertainty. *Journal of Personality and Social Psychology*, 110(4), 493-508.
- Rothman, N. B., Pratt, M. G., Rees, L., & Vogus, T. J. (2017). Understanding the dual nature of ambivalence: Why and when ambivalence leads to good and bad outcomes. *Academy of Management Annals*, 11(1), 33-72.
- Sengupta, J., & Johar, G. V. (2002). Effects of inconsistent attribute information on the predictive value of product attitudes: Toward a resolution of opposing perspectives. *Journal of Consumer Research*, 29(6), 39-56.
- Shan, C. L., & Zhao, H. Y. (2017). Study on the impact paths of electronic word of mouth on consumer attitudes—From the perspective of ambivalence attitude. *Soft Science*, 31(4), 108-111.
- Sawicki, V., Wegener, D. T., Clark, J. K., Fabrigar, L. R., Smith, S. M., & Durso, G. R. O. (2013). Feeling conflicted and seeking information: When ambivalence enhances and diminishes selective exposure to attitude-consistent information. *Personality and Social Psychology Bulletin*, 39(6), 735-747.
- Sincoff, J. (1990). The psychological characteristics of ambivalent people. *Clinical Psychology Review*, 10, 43-68.
- Tudoran, A. A., Olsen, S. O., & Dopico, D. C. (2012). Satisfaction strength and intention to purchase a new product. *Journal of Consumer Behavior*, 11(5), 391-405.
- Van, H. F., Van d, P. J., & De Liver, Y. N. (2009). The agony of ambivalence and ways to resolve it: Introducing the MAID model. *Personality and Social Psychology Review*, 13(1), 45-61.
- Van, D. E., & Zeelenberg, M. (2003). The discounting of ambiguous information in economic decision making. *Journal of Behavioral Decision Making*, 16, 341-352.
- Wei, J., & Zuo, B. (2013). Attitude certainty: The strength index of the knowing and doing consistency. *Psychological Research*, 6(5), 51-56.
- Wheeler, P., & Jones, D. R. (2006). The effects of attitudinal ambivalence and exploratory switching behavior on the use of two decision aids. *International Journal of Accounting Information Systems*, 7(3), 251-271.
- Wu, R. J., & Li, D. J. (2014). The outcome valence, mental simulation and regret. *Journal of Marketing Science*, 10(3), 51-61.
- Xu, Z. F., & Xi, J. Z. (2018). Attitudinal ambivalence: Origins and coping strategies. *Advances in Psychological Science*, 26(2), 331-343.

- Yang, L. F., & Unnava, H. R. (2016). Ambivalence, selective exposure, and negativity effect. *Psychology & Marketing*, 33(5), 331-343.
- Yeung, N., & Summerfield, C. (2012). Metacognition in human decision-making: Confidence and error monitoring. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 367(1594), 1310-1321.
- Zemboirain, M. R., & Johar, G. V. (2007). Attitudinal ambivalence and openness to persuasion: A framework for interpersonal influence. *Journal of Consumer Research*, 33(4), 506-514.
- Zhang, Q. Y., & Sun, X. X. (2018). The research on effect of consumer confusion on green brand purchase intention—The mediation role of ambivalent attitude. *Consumer Economics*, 34(3), 82-89.
- Zhang, S. L., & Gao, H. (2011). Research on effects of service recovery methods on customer emotions and behavior intention. *Nankai Business Review*, 14(2), 37-43.
- Zhu, D. Q., & Xie, X. F. (2013). Which one is better, maximizing or satisficing? *Advances in Psychological Science*, 21(2), 309-316.

Effect of Ambivalent Attitudes on Post-Decision Self-Evaluation: Two-Stage Moderation Effect with a Mediator

LIN Rang¹, YANG Yimiao²

(¹LNU-MSU College of International Business, Liaoning Normal University, Dalian 116029, China)

(²School of Business Administration, Dongbei University of Finance and Economics, Dalian 116025, China)

Abstract

Ambivalent attitudes influence not only information search, attitude formation, and decision-making behavior but also self-evaluation after decision-making. Although existing studies demonstrate that ambivalent attitudes exert an impact on the cited aspects, their impact on post-decision psychology (i.e., self-evaluation) remains unknown. To address this concern, the current study constructs a two-stage moderation model of ambivalence and self-evaluation based on outcome valence and difficulty in decision-making.

The objective of this pilot study is to select the best method for measuring ambivalent attitudes and test the very changes in ambivalent attitudes in the process of decision-making. We use a camera as an experimental material and manipulate ambivalent attitudes through positive and negative evaluations of the attribute characteristics of the camera. The purpose of Experiment 1 is to verify the main effect of ambivalent attitudes on self-evaluation and the influence of the levels of difficulty of decision-making and outcome valence on

ambivalent attitudes and self-evaluation. This experiment is an inter-subject experiment. Experiment 2 uses different experimental materials and employs choices of enterprises as an experimental situation. The procedure for Experiment 2 is the same as that for Experiment 1. Lastly, the purpose of Experiment 3 is to verify the mediating effect of uncertainty. Furthermore, the study supplements the measurement of uncertainty. Experiment 3 uses the same scenario and procedure as those in Experiment 1.

The results of the pilot study indicate the absence of significant differences between objective contradictions before and after decision-making. However, subjective contradiction is significantly reduced after decision-making. The results of Experiment 1 suggest that ambivalent attitudes exerted positive effects on self-evaluation and that difficulty in decision-making and outcome valence influenced ambivalent attitudes and self-evaluation. Experiment 2 verified the results of Experiment 1. In Experiment 3, the study noted the effect of ambivalent attitudes and the difficulty of decision-making and the effect of separation on uncertainty. When faced with negative results, high levels of difficulty in decision-making and ambivalent attitudes exerted positive impacts on self-evaluation through uncertainty compared with low levels of difficulty in decision-making. In contrast, when obtaining positive results, low levels of difficulty in decision-making and ambivalent attitudes exerted positive impacts on self-evaluation through uncertainty compared with high levels of difficulty in decision-making.

In summary, the three experiments confirmed the positive effect of ambivalent attitudes on self-evaluation, whereas outcome valence and decision difficulty moderated this relationship. When individuals faced negative results, high levels of difficulty in decision-making led to the greater effects of ambivalent attitudes on post-decision self-evaluation. In contrast, individuals with high levels of difficulty in decision-making experience the negative effects of ambivalent attitudes on post-decision self-evaluation. For low levels of difficulty in decision-making, the positive effect of ambivalence remained significant. Furthermore, the study concludes that ambivalent attitudes and difficulty in decision-making influenced uncertainty, whereas uncertainty and outcome valence influenced self-evaluation. Ambivalent attitude and difficulty in decision-making exerted a conflicting effect on self-evaluation due to the dampening effect of uncertainty. Thus, this study supplemented the lack of research on the effect of ambivalent attitudes on psychological feelings and broadened the boundaries of ambivalent attitudes as a self-protection strategy.

Key words: ambivalent attitudes, outcome valence, decision difficulty, uncertainty, self-evaluation

Note: Figure translations are in progress. See original paper for figures.

Source: ChinaXiv – Machine translation. Verify with original.