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# Thinking and Caring About Cognitive Inconsistency: When and for Whom Does Attitudinal Ambivalence Feel Uncomfortable?

Ian R. Newby-Clark  
University of Windsor

Ian McGregor  
York University

Mark P. Zanna  
University of Waterloo

The relation between conflicting evaluations of attitude objects (potential ambivalence) and associated unpleasant feelings (felt ambivalence) was investigated. Participants indicated their potential and felt ambivalence about capital punishment (Studies 1 and 2) and abortion (Studies 1–3). The simultaneous accessibility (J. N. Bassili, 1996) of participants' potential ambivalence (i.e., how quickly and equally quickly conflicting evaluations came to mind) was measured using response latency (Studies 1–3) and manipulated by repeated expression (Study 3). The relation between potential ambivalence and felt ambivalence was strongest when potential ambivalence was high in simultaneous accessibility (Studies 1–3). This pattern was most pronounced for participants who were high in preference for consistency (Study 3; R. B. Cialdini, M. R. Trost, & T. J. Newsom, 1995). Similarities of ambivalence and cognitive dissonance constructs are discussed.

Our lives can be rife with cognitive inconsistency, both prosaic and profound. We might conduct an internal debate over which television show to watch or, while viewing a program about capital punishment, realize that our desire for vengeance conflicts with our love of all life, no matter how vile. Our inconsistent thoughts might cause uncomfortable mixed emotions and feelings of being torn about the value of state-sanctioned execution. When the program ends and our thoughts turn to what is in the refrigerator,

though, we may no longer feel torn. Also, some of us may not be particularly bothered when we are aware of our inconsistent thoughts about capital punishment. The conditions under which people experience negative emotions about their cognitive inconsistency, if they do at all, are explored in the current investigation.

A person who feels mixed emotions and is torn about an attitude object feels ambivalent about it (Jamieson, 1993). The experience of such negative affect is partly determined by attitudinal ambivalence—that is, positive and negative evaluations of an attitude object. If a person has both a highly positive and a highly negative evaluation of capital punishment, then he or she is attitudinally ambivalent and could experience mixed emotions about the issue. If that same person has only a highly negative evaluation of capital punishment, then he or she is not attitudinally ambivalent and probably will not feel torn about the issue (Priester & Petty, 1996; Thompson, Zanna, & Griffin, 1995).

Researchers usually measure attitudinal ambivalence by separately asking people about their positive and negative unipolar evaluations of an attitude object. Researchers obtain unipolar evaluations by instructing respondents to ignore their positive evaluations of an attitude object when giving their negative evaluations, and vice versa (Kaplan, 1972). The unipolar responses are then put into an ambivalence formula that produces an attitudinal ambivalence score (e.g., Priester & Petty, 1996; Scott, 1968; Thompson et al., 1995). As positive and negative evaluations become increasingly and equally extreme, attitudinal ambivalence increases

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Ian R. Newby-Clark, Department of Psychology, University of Windsor, Windsor, Ontario, Canada; Ian McGregor, Department of Psychology, York University, Toronto, Ontario, Canada; Mark P. Zanna, Department of Psychology, University of Waterloo, Waterloo, Ontario, Canada.

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Correspondence concerning this article should be addressed to Ian R. Newby-Clark, Department of Psychology, University of Windsor, Windsor, Ontario N9B 3P4, Canada. E-mail: newby@uwindsor.ca

(Kaplan, 1972; Priester & Petty, 1996; Scott, 1968; Thompson et al., 1995).

Feelings of ambivalence, in contrast, are measured with self-report scales that assess how torn or conflicted an individual feels about a certain attitude object (e.g., Jamieson, 1993; Priester & Petty, 1996). As might be expected, attitudinal ambivalence is correlated with feelings of ambivalence, though the correlation is not particularly high. Thompson et al. (1995) found that attitudinal ambivalence correlated only  $r = .40$  with feelings of ambivalence (for a similar finding, see Priester & Petty, 1996). This somewhat low correlation suggests that the potential to feel ambivalent (i.e., *potential ambivalence*), as measured by unipolar attitudinal ambivalence questions, does not necessarily entail feelings of ambivalence (i.e., *felt ambivalence*).<sup>1</sup> In the studies reported here, we focus on two moderators of the potential ambivalence–felt ambivalence relation: *simultaneous accessibility* (Bassili, 1996) and *preference for consistency* (PFC; Cialdini, Trost, & Newsom, 1995).

### Simultaneous Accessibility

Festinger (1957) held that cognitive inconsistency (i.e., dissonance) causes a negative affective experience. This aversive experience is eliminated by resolution of the inconsistency that caused it. Zanna, Lepper, and Abelson (1973) demonstrated the role of awareness of cognitive inconsistency in that dissonance process. They used a forbidden toy paradigm (e.g., Aronson & Carlsmith, 1963) and manipulated awareness of inconsistency. Children in the awareness condition were reminded during a temptation period that they were not playing with a favorite toy even though the punishment for doing so was relatively mild. Those children derogated the once-favored toy more than did children who were not reminded of their inconsistency. Presumably, toy derogation increased cognitive harmony because self-contradiction (e.g., “I am not playing with a toy that I like even though the punishment for doing so is mild”) became self-consistency (e.g., “I am not playing with a toy that I do not like”). In accord with Festinger (1957), Zanna et al. reasoned that the more pronounced reduction of cognitive inconsistency in the awareness condition occurred because children in that condition experienced more negative affect when their inconsistent cognitions were made salient.

The Zanna et al. (1973) findings suggest that an experience of inconsistency-related discomfort is more likely to occur when a person is simultaneously aware of his or her contradictory cognitions. However, because Zanna et al. inferred the existence of such discomfort from attitude change, any conclusion about the effect of simultaneous awareness on the experience of negative affect must remain tentative. Indeed, because cognitive dissonance studies typically infer the existence of discomfort, there has been substantial debate about the existence of negative affect caused by dissonance (Bem, 1967; cf. Fazio, Zanna, & Cooper, 1977). There is controversy at the other end of the dissonance paradigm as well. The forced compliance methods typically used to induce dissonance have led some to conclude that participants may indeed feel uncomfortable but that discomfort arises from self-threat and not cognitive inconsistency (Abelson et al., 1968; Steele, 1988).

We chose to explore the dynamics and effects of cognitive inconsistency within the ambivalence paradigm because doing so allowed us to sidestep the methodological controversies surround-

ing the dissonance paradigm. The ambivalence paradigm provides unambiguous methods for assessing cognitive inconsistency (i.e., potential ambivalence) and experienced discomfort (i.e., felt ambivalence). There is also a promising precedent in the ambivalence literature for assessing the simultaneous awareness of cognitive inconsistency (Bassili, 1996). To determine the simultaneous accessibility of people’s potential ambivalence, researchers measure their latencies in responding to unipolar evaluation questions. Those response latencies are then submitted to an ambivalence-like formula to obtain a simultaneous accessibility score. Thus, simultaneous accessibility scores have the same properties as do potential ambivalence scores. As unipolar evaluations come to mind more quickly and equally quickly, simultaneous accessibility increases.

Bassili (1998) demonstrated the utility of the simultaneous accessibility construct in his study of intrapsychic conflict about affirmative action. It is not surprising that participants were slower to express their opinion (i.e., were more conflicted) about affirmative action when they were high in potential ambivalence (i.e., when they held contradictory values that related to the issue). Most interesting from the present perspective, the relation between response latency and potential ambivalence was more pronounced for those whose contradictory values were relatively high in simultaneous accessibility.

We propose that the simultaneous accessibility of potential ambivalence determines the strength of the relation between potential and felt ambivalence. The relation between potential and felt ambivalence increases in strength as the simultaneous accessibility of the potential ambivalence increases. Thus, inconsistent evaluations are necessary but may not be sufficient for the experience of ambivalence. All three studies presented here test our simultaneous accessibility hypothesis.

### PFC

We also suspect that even when inconsistent cognitions are fully in awareness, not all people experience discomfort to the same degree. Indeed, the proposition that inconsistent cognitions are aversive for everyone (e.g., Abelson et al., 1968) has been redressed in the cognitive dissonance literature. Cialdini et al. (1995) demonstrated individual differences in the extent to which people are apparently averse to cognitive inconsistency. Cialdini et al. developed a measure of individuals’ PFC and found that dissonance reduction (i.e., attitude change) was more pronounced for those who were high in PFC. As in the Zanna et al. (1973) study, though, Cialdini et al. did not directly measure negative affect associated with inconsistent cognitions. Therefore, in this study we directly investigate the role of PFC in the experience of feeling mixed emotions and feeling torn.

We hypothesize that the moderating effect of simultaneous accessibility on the relation between potential and felt ambivalence is, in turn, moderated by PFC. We expect that high-PFC people who are aware of their conflicted evaluations of an attitude object will feel the most discomfort. In contrast, awareness of conflicting evaluations will not translate into uncomfortable feelings for low-PFC people, because cognitive inconsistency concerns them less.

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<sup>1</sup> In Priester and Petty’s (2001) terms, potential ambivalence is intrapersonal ambivalence and felt ambivalence is subjective ambivalence.

## The Current Studies

In three studies, we examined the relation between potential and felt ambivalence as a function of simultaneous accessibility (Studies 1–3) and PFC (Study 3). Our measure of potential ambivalence consisted of Kaplan's (1972) unipolar evaluation questions. Our measure of felt ambivalence consisted of two questions from the Jamieson (1993) scale that ask about feelings of ambivalence (i.e., mixed emotions and feeling torn).<sup>2</sup> In the first two studies we obtained correlational evidence for our claim that the relation between potential ambivalence and feelings of ambivalence is moderated by the simultaneous accessibility of the potential ambivalence. We used a phone survey in the first study and computer-driven trials in the second study. Both studies focus on ambivalence about capital punishment and abortion. In the third study, we extended our empirical and theoretical analysis in two ways. First, we manipulated simultaneous accessibility instead of only measuring it. We thus aimed to demonstrate that increased simultaneous accessibility of potential ambivalence causes a corresponding experience of that ambivalence. Second, we attempted to demonstrate that PFC moderates the hypothesized effect of simultaneous accessibility.

### Study 1

We conducted a phone survey study using a computer-assisted telephone interviewing (CATI) methodology developed by Bassili and Fletcher (1991; see also Bassili, 1996). An interviewer used a computer to administer a questionnaire about capital punishment and abortion and record participants' response latencies.

### Method

#### Participants

Participants were 198 undergraduate students (76 men and 122 women) enrolled in full-time studies at the University of Waterloo.

#### Questions Asked

Participants were asked potential and felt ambivalence questions about capital punishment and abortion. Following Kaplan (1972), for potential ambivalence we asked participants three pairs of questions about each issue. There was a positive evaluation question and a negative evaluation question within each pair. An example of a positive evaluation question is as follows:

Your options for responding are *not at all favorable*, *slightly favorable*, *quite favorable*, and *extremely favorable*. [For all questions, the four response options were scored 0–3, respectively]. Think about your evaluation of capital punishment. Considering only the favorable aspects of capital punishment and ignoring the unfavorable aspects, how favorable is your evaluation of capital punishment?

An example of a negative evaluation question is as follows:

Your options for responding are *not at all unfavorable*, *slightly unfavorable*, *quite unfavorable*, and *extremely unfavorable*. Think about your evaluation of capital punishment. Considering only the unfavorable aspects of capital punishment and ignoring the favorable aspects, how unfavorable is your evaluation of capital punishment?

The other two pairs of questions involved the dimensions *positive–negative* and *beneficial–harmful*. To ensure that participants were familiar

with the response format, we began the potential ambivalence questions with two practice questions (one about coffee and one about police radar).

Participants rated six felt ambivalence statements on an 11-point scale ranging from  $-5$  (*strongly disagree*) to  $5$  (*strongly agree*). The two items that formed the felt ambivalence index in this study and in Studies 2 and 3 were, "I have strong mixed emotions both for and against capital punishment [abortion], all at the same time" and "I do not find myself feeling torn between the two sides of the issue of capital punishment [abortion]; my feelings go in one direction only" (reverse scored).

### Procedure

The interviewer used an IBM-compatible computer that ran a survey program written in C code. A phone list of undergraduates was provided by the registrar's office. The interview began once the interviewer outlined the nature and duration of the study (a survey on social issues that would take 10 min) and consent was obtained.

Participants were asked two blocks of questions. The order of the two blocks was randomly counterbalanced across participants. One block consisted of the potential ambivalence questions about capital punishment and abortion. The other block consisted of the felt ambivalence questions about the two issues. Within both blocks, the abortion questions were asked as a subblock, as were the capital punishment questions. The order of the subblocks was randomly counterbalanced across participants and was the same within the two blocks.

The computer program guided the administration of the interview. The interviewer read the questions displayed on the computer screen aloud. Response latencies were recorded in the following manner: After uttering the last syllable of a question, the interviewer pressed the space bar. Doing so caused a timer in the computer to start. When a participant began to give his or her response, the interviewer pressed the space bar, which stopped the timer. The interviewer then judged the validity of the response latency. If the timer was started or stopped too early or too late or if a participant's response to a query did not meet the question format (e.g., the participant asked a clarification question), the response latency was coded as invalid and not included in subsequent analyses.

At the end of the survey, participants were debriefed, told that their response latencies had been recorded, and given the option of having their response latencies deleted from the database. No participant chose to have his or her response latencies deleted.

## Results and Discussion

### Initial Data Screening, Calculations, and Analyses

**Felt ambivalence.** Responses to the two felt ambivalence questions of interest were highly correlated for capital punishment,  $r(192) = .75, p < .001$ , and for abortion,  $r(185) = .69, p < .001$ . Thus, we created an index of felt ambivalence for each issue using those two items. Four participants did not provide any valid responses to the questions concerning abortion. They were therefore excluded from analyses involving abortion.

**Potential ambivalence.** For the three pairs of potential ambivalence questions for each issue, a potential ambivalence score was derived using the D. W. Jamieson (personal communication, June 23, 1991; from Scott, 1968) calculation, in which the less

<sup>2</sup> The other four items on the Jamieson (1993) scale are less relevant to the current investigation because they concern participants' thoughts or a combination of their thoughts and feelings. To be exhaustive, though, we included the full scale in all three studies. Results are parallel but somewhat weaker in Study 3 when the full scale is used.

extreme evaluation is squared and divided by the stronger evaluation (i.e., weak<sup>2</sup> / strong).<sup>3</sup> For each attitude object, the three measures of potential ambivalence were interrelated ( $r_s > .30$ ,  $p_s < .001$ ). Thus, we averaged the three measures for each issue to create potential ambivalence indices.

*Response latencies and simultaneous accessibility.* Valid response latencies were first reciprocally transformed because of skewness in the distributions. The response latency scores therefore became speed scores, with higher numbers indicating quicker responses. As with the calculation of potential ambivalence, simultaneous accessibility was calculated for the three pairs of potential ambivalence questions associated with each issue. As suggested by Bassili (1996), we used a formula similar to that of Jamieson (1993): For a given pair of questions, the slower speed score was squared and divided by the faster. This method of calculation entailed that simultaneous accessibility scores mirrored the properties of potential ambivalence scores. That is, just as potential ambivalence scores represent the extent to which inconsistent cognitions are extreme and equally extreme, simultaneous accessibility scores represent the extent to which inconsistent cognitions come to mind quickly and equally quickly. For each of the two issues, the three measures of simultaneous accessibility were interrelated ( $r_s > .30$ ,  $p_s < .01$ ). Thus, we averaged the three measures to create simultaneous accessibility indices for each issue.

Response latencies associated with the potential ambivalence questions were coded as invalid an average of 15.3% of the time (15.7% for abortion and 14.9% for capital punishment). The data of 194 participants were included in the capital punishment analyses, and the data of 187 participants were included in the abortion analyses. There were no sex of participant or counterbalancing effects in this or subsequent studies.

### Main Analyses

Our hypothesis was confirmed for both attitude objects. Participants who reported highly conflicted evaluations of capital punishment and abortion indicated that they experienced more ambivalence when their evaluations came to mind quickly and equally quickly.

*Capital punishment.* As expected from previous findings (e.g., Thompson et al., 1995), potential and felt ambivalence about capital punishment were correlated,  $r(192) = .18$ ,  $p < .025$ . We next conducted a regression analysis in which felt ambivalence about capital punishment was the criterion and potential ambivalence, simultaneous accessibility, and the interaction of the two were entered simultaneously as predictors. As suggested by Aiken and West (1991), we first centered the potential ambivalence and simultaneous accessibility indices before calculating the product of the two (representing the interaction). We obtained an effect for potential ambivalence,  $\beta = .18$ ,  $t(190) = 2.57$ ,  $p < .025$ ,<sup>4</sup> and a marginal effect for simultaneous accessibility,  $\beta = -.13$ ,  $t(190) = 1.84$ ,  $p < .07$ , indicating that higher simultaneous accessibility was related to less felt ambivalence. Because the simultaneous accessibility effect itself is not relevant to our hypothesis and did not occur reliably across studies, it is not discussed further.

The hypothesized Potential Ambivalence  $\times$  Simultaneous Accessibility interaction was significant,  $\beta = .14$ ,  $t(190) = 2.18$ ,  $p < .05$  (see Table 1 for the complete regression equation). Also as suggested by Aiken and West (1991), we subsequently explored the nature of this interaction by recalculating the full regression

Table 1  
*Regression Statistics for Capital Punishment and Abortion: Felt Ambivalence as a Function of Potential Ambivalence, Simultaneous Accessibility, and Potential Ambivalence  $\times$  Simultaneous Accessibility (Study 1)*

Variable	B	$\beta$	t	p <
Capital punishment				
Constant	-0.58		2.55	.025
Potential ambivalence	1.08	.18	2.57	.025
Simultaneous accessibility	-3.02	-.13	1.84	.07
Potential Ambivalence $\times$ Simultaneous Accessibility	6.04	.14	2.18	.05
Abortion				
Constant	-0.43		1.94	.06
Potential ambivalence	2.52	.37	5.58	.001
Simultaneous accessibility	-3.17	-.12	1.79	.08
Potential Ambivalence $\times$ Simultaneous Accessibility	9.57	.18	2.74	.01

*Note.* Potential ambivalence and simultaneous accessibility scores were centered before the product term was calculated. Betas were calculated in separate regression analyses in which all variables were standardized, the product term calculated, and the unstandardized solution used (Aiken & West, 1991).  $n = 194$  for capital punishment, and  $n = 187$  for abortion. For capital punishment,  $t(190)$ ; for abortion,  $t(183)$ .

equation for simultaneous accessibility values one standard deviation above and below the simultaneous accessibility mean ( $SD = 0.14$ ). At high simultaneous accessibility, the relation between felt and potential ambivalence was positive and significant,  $\beta = .32$ ,  $t(190) = 3.30$ ,  $p < .01$ . At low simultaneous accessibility, the relation was not significant,  $\beta = .04$ ,  $t(190) = 0.41$ , *ns*.

*Abortion.* The correlation between potential and felt ambivalence about abortion was  $r(185) = .39$ ,  $p < .001$ . Regression analysis revealed the hypothesized Potential Ambivalence  $\times$  Simultaneous Accessibility interaction,  $\beta = .18$ ,  $t(183) = 2.74$ ,  $p < .01$ . There was a strong relation between potential and felt ambivalence at high simultaneous accessibility (one standard deviation above the mean;  $SD = 0.13$ ),  $\beta = .55$ ,  $t(183) = 5.82$ ,  $p < .001$ , and a weaker but still reliable relation at low simultaneous accessibility,  $\beta = .19$ ,  $t(183) = 2.01$ ,  $p < .05$  (one standard deviation below the mean). See Table 1 for the complete regression equation and Figure 1 for an illustration.<sup>5</sup>

<sup>3</sup> We chose the Jamieson (1993) formula because it is parallel to Bassili's (1996) calculation of simultaneous accessibility. Another technique for calculating potential ambivalence, proposed by Thompson et al. (1995), was highly correlated with the Jamieson formula (all  $r_s > .90$ ). Thus, the pattern of results was virtually identical for both measures.

<sup>4</sup> Because this effect is essentially redundant with the potential-felt ambivalence correlations we report in all studies, it is not discussed here or reported in subsequent analyses.

<sup>5</sup> Comparable figures of the capital punishment analyses for Study 1 and both attitude objects for Study 2 are available on request from Ian R. Newby-Clark.

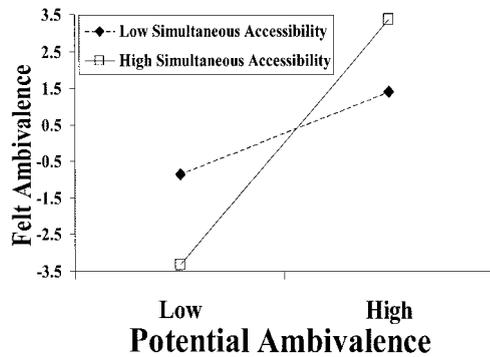


Figure 1. For abortion, the relation between felt ambivalence and potential ambivalence as a function of simultaneous accessibility (Study 1).

## Study 2

Though the CATI paradigm used in Study 1 allowed us to contact many people, our ability to accurately record all response latencies was somewhat hampered. Indeed, many response latencies were coded as invalid. Consequently, some participants were excluded from analyses. In addition, three aspects of Study 1 detracted from our measurement of response latencies. First, it was possible for participants to begin thinking about an answer before the interviewer stopped asking the question. Second, requiring the interviewer to start and stop the timer was somewhat imprecise. Third, telephone interviews do not afford control over the interview environment, and there was likely large variability in external distractions (e.g., a television or other people in the background) that might have influenced response latencies. In Study 2, we moved to a technique that enabled us to more consistently record response latencies, exert greater experimental control, and at the same time establish the reliability of our hypothesized effect.

Participants were brought into the lab and interacted with a computer program that prompted them for their positive and negative evaluations of capital punishment and abortion. The program presented participants with the relevant response set prior to their knowing what the attitude object was. Thus, as opposed to Study 1, it was not possible for participants to think of the answer to an inquiry before the start of the timer.

## Method

### Participants

Ninety-five undergraduate students (34 men and 61 women) at the University of Waterloo participated for course credit. Prior to data entry and analysis, the experimenter (a research assistant) categorized participants as to whether they understood and followed all directions. Primarily because of their difficulties with the English language, many participants (i.e., 26) did not understand the computer procedure (which was rather complex). They were excluded from all analyses reported here. Sixty-nine participants (25 men and 44 women) remained.

### Procedure

The experimenter outlined the procedure for participants and demonstrated how their fingers should be placed on the computer keyboard for responding. From left to right, four adjacent keys in the center of the keyboard were labeled with the numbers 1–4. Participants were instructed

to place the index and middle fingers of each hand on the four keys. They were asked not to move their fingers off of the keys while the study was in progress. They then followed instructions presented to them on the computer screen.

A trial, similar in many respects to a potential ambivalence question from Study 1, proceeded as follows. An evaluation instruction (e.g., “Ignoring the unfavorable aspects and focusing on the favorable aspects”) appeared in the upper left of the computer screen along with four options for responding (e.g., *not at all favorable*, *slightly favorable*, *quite favorable*, *extremely favorable*). As in Study 1, regardless of the dimension of evaluation, the order and numbering of the response options always ranged from *not at all* (1) to *extremely* (4). If the dimension of evaluation was “unfavorable,” the response set was *not at all unfavorable* (1) through *extremely unfavorable* (4). Also as in Study 1, there were six potential ambivalence questions for each attitude object (i.e., “favorable,” “unfavorable,” “positive,” “negative,” “beneficial,” “harmful”) that were scored *not at all* (0) through *extremely* (3). The sequence of trials was randomized.

Once participants familiarized themselves with a question and the associated responses, they pressed the space bar with their thumb while keeping their fingers positioned over the labeled keys. After a randomly determined delay of 250, 500, or 750 ms, a word representing an attitude object (e.g., *abortion*) appeared in the center of the screen. The participant then evaluated the attitude object by pressing the numbered key associated with his or her response. Participants were instructed to answer the questions as quickly as possible while maintaining accuracy. Response latencies were measured by the computer as the time between the appearance of the word and a participant’s key press. After the computer trials, participants indicated their felt ambivalence about capital punishment and abortion by filling out a paper-and-pencil version of Jamieson’s (1993) scale. Response options ranged from *strongly disagree* (1) to *strongly agree* (6). Participants were subsequently debriefed and excused.

## Results and Discussion

### Initial Data Screening, Calculations, and Analyses

As in Study 1, the two felt ambivalence questions of interest were highly correlated for both issues ( $r_s > .70$ ). For each issue, the three potential ambivalence scores were interrelated ( $r_s > .37$ ,  $p_s < .001$ ), as were the three simultaneous accessibility scores ( $r_s > .29$ ,  $p_s < .025$ ). We therefore created felt ambivalence, potential ambivalence, and simultaneous accessibility indices for both attitude objects (as in Study 1).

### Main Analyses

Our hypothesis was again confirmed for both attitude objects.

**Capital punishment.** The correlation between potential and felt ambivalence about capital punishment was  $r(67) = .29$ ,  $p < .025$ . Regression analysis, with felt ambivalence about capital punishment as the criterion, revealed the hypothesized Potential Ambivalence  $\times$  Simultaneous Accessibility interaction,  $\beta = .27$ ,  $t(65) = 2.19$ ,  $p < .05$ . See Table 2 for the full equation. There was a significant relation between potential and felt ambivalence at high simultaneous accessibility,  $\beta = .60$ ,  $t(65) = 3.16$ ,  $p < .01$  (one standard deviation above the mean;  $SD = 0.15$ ), and a nonsignificant relation at low simultaneous accessibility,  $\beta = .06$ ,  $t(65) = 0.38$ ,  $ns$  (one standard deviation below).

**Abortion.** The results were much the same for abortion. The correlation between potential and felt ambivalence was  $r(67) = .35$ ,  $p < .01$ . Regression analysis revealed a significant Potential Ambivalence  $\times$  Simultaneous Accessibility interaction,  $\beta = .15$ ,

Table 2  
*Regression Statistics for Capital Punishment and Abortion:  
 Felt Ambivalence as a Function of Potential Ambivalence,  
 Simultaneous Accessibility, and Potential Ambivalence ×  
 Simultaneous Accessibility (Study 2)*

Variable	<i>B</i>	$\beta$	<i>t</i> (65)	<i>p</i> <
Capital punishment				
Constant	3.43		20.10	.001
Potential ambivalence	0.80	.33	2.76	.01
Simultaneous accessibility	-0.46	-.04	0.38	.75
Potential Ambivalence × Simultaneous Accessibility	4.53	.27	2.19	.05
Abortion				
Constant	2.91		18.40	.001
Potential ambivalence	0.82	.30	2.72	.01
Simultaneous accessibility	-2.54	-.30	2.62	.025
Potential Ambivalence × Simultaneous Accessibility	2.43	.15	2.06	.05

*Note.* Potential ambivalence and simultaneous accessibility scores were centered before the product term was calculated. Betas were calculated in separate regression analyses in which all variables were standardized, the product term calculated, and the unstandardized solution used (Aiken & West, 1991). *N* = 69.

$t(65) = 2.06, p < .05$  (see Table 2). For high simultaneous accessibility (one standard deviation above the mean,  $SD = 0.17$ ), there was a significant relation between potential and felt ambivalence,  $\beta = .46, t(65) = 3.80, p < .001$ , and a nonsignificant relation for low simultaneous accessibility (one standard deviation below the mean),  $\beta = .15, t(65) = 1.02, ns$ .

### Study 3

In the first two studies, we obtained correlational evidence that simultaneous accessibility moderates the relation between potential and felt ambivalence. We next attempted to demonstrate that increased simultaneous accessibility of potential ambivalence causes the relation between potential ambivalence and felt ambivalence to be more pronounced. We adapted a repeated expression paradigm to manipulate the simultaneous accessibility of people's potential ambivalence. Fazio, Chen, McDonel, and Sherman (1982) demonstrated that repeatedly expressing an evaluation of an attitude object increases the accessibility of that evaluation. Repeated expression of positive and negative evaluations of an attitude object, therefore, should increase the simultaneous accessibility of potential ambivalence.

We also established the role of PFC (Cialdini et al., 1995) in this last study. We expected the moderating effect of simultaneous accessibility on the relation between potential and felt ambivalence to be more pronounced for those who were high in PFC. Thus, we hypothesized a Potential Ambivalence × Repeated Expression × PFC interaction.

We focus on the issue of abortion in this last study. To conduct a sensitive test of our hypotheses, we first identified a sample that considered the abortion issue to be important. We suspected that women would rate abortion (i.e., an issue involving pregnancy) as more important than would men. As part of a mass pretesting

session some weeks prior to the study, we asked 342 women and 119 men to rate the importance of abortion on a 7-point scale with the options labeled from *extremely unimportant* (1) to *extremely important* (7). Women indeed rated abortion as more important ( $M = 5.23$ ) than did men ( $M = 4.46$ ),  $t(459) = 5.52, p < .001$ . We thus elected to recruit female participants only. We measured potential ambivalence about abortion in the same mass pretesting session. Thus, in using the repeated expression manipulation, we aimed to render preexisting potential ambivalence simultaneously accessible.

### Study Overview

Participants either did or did not repeatedly express their unipolar evaluations of abortion and then answered felt ambivalence questions about abortion. The simultaneous accessibility of participants' potential ambivalence about abortion and their PFC were subsequently assessed.

### Method

#### Participants

We gave 154 female University of Waterloo students either course credit or \$7 for their participation.

#### Procedure

*Premeasure of potential ambivalence.* In the mass pretesting session, introductory psychology students completed a booklet of questionnaires in exchange for course credit. Included in that booklet was a questionnaire concerning participants' unipolar positive and negative evaluations of abortion. Potential ambivalence scores for participants in the current study were calculated using those unipolar evaluations.<sup>6</sup>

*Experimental session.* On arrival, participants were informed that the study concerned people's views of various social issues. They were randomly assigned to one of two conditions. In the repeated expression condition, participants filled out a potential ambivalence questionnaire, in which they indicated their unipolar evaluations of abortion. Next, the experimenter informed participants that other researchers wished to have access to their responses. Each participant was required to copy her responses onto two additional questionnaires, which (they were told) would be passed along to the other researchers. The two new questionnaires contained the same questions as the original, but the order of the questions differed from the original and from each other. Participants were thus instructed to copy their responses carefully and deliberately. Participants in the control condition did not fill out the three potential ambivalence questionnaires. Next, participants in both conditions filled out Jamieson's (1993) felt ambivalence questionnaire about abortion. The scale ranged from *strongly disagree* (-3) to *strongly agree* (3). To service our cover story that the study concerned an investigation of attitudes toward several social issues, all participants then filled out two other felt ambivalence questionnaires: one concerning capital punishment, and one concerning euthanasia.

We then assessed the simultaneous accessibility of participants' potential ambivalence about abortion using the computer procedure from Study 2. Participants first engaged in practice trials (i.e., questions about coffee and sports cars) before answering questions about abortion. Also in

<sup>6</sup> In a further effort to exclude those who were indifferent to abortion, we selected female participants who indicated at least some ambivalence about the issue.

service of the cover story and to ensure that participants did not know which attitude object would be presented on a particular trial, the computer prompted participants for their unipolar evaluations of capital punishment and euthanasia in addition to abortion.

After participants completed the computer trials, they filled out the short form of Cialdini et al.'s (1995) PFC measure. Participants rated their agreement with nine items on a 9-point scale, with the endpoints labeled *strongly disagree* (1) and *strongly agree* (9). Examples of items are "The appearance of consistency is an important part of the image I present to the world" and "It doesn't bother me much if my actions are inconsistent" (reverse scored). Participants were subsequently probed for suspicion, debriefed, and remunerated. No participant expressed suspicion about the procedure.

## Results and Discussion

### Initial Data Screening, Calculations, and Analyses

As in the previous two studies, the two felt ambivalence questions were highly correlated,  $r(152) = .68, p < .001$ . The response latencies were logarithmically transformed prior to reciprocal transformation.<sup>7</sup> The three simultaneous accessibility measures (corresponding to the three pairs of potential ambivalence questions) were reasonably interrelated ( $r_s > .39, p_s < .001$ ) and, thus, combined into an index. The PFC scale was acceptably reliable ( $\alpha = .86$ ). The items were combined into a PFC index, which, although measured after the accessibility manipulation, was not affected by it,  $t < 1$  ( $M = 5.03$  overall). Also, participants' potential ambivalence scores from the mass pretesting session did not differ significantly between conditions,  $t < 1$ .

### Manipulation Check

An analysis of covariance with mean speed score of the practice questions as the covariate revealed that participants in the repeated expression condition had higher simultaneous accessibility scores than did those in the control condition,  $F(1, 150) = 3.91, p < .05$ .<sup>8</sup> A subsequent regression analysis established that PFC did not account for significant variance in simultaneous accessibility scores (main effect and interaction  $t_s < 1.10, p_s > .25$ ). Also, using participants' responses to the unipolar questions from the computer task, we confirmed that repeated expression did not significantly affect potential ambivalence,  $t < 1$ .

### Main Analysis

The correlation between potential ambivalence (measured at mass pretesting) and felt ambivalence about abortion was  $r(152) = .36, p < .001$ . Potential ambivalence and PFC were centered and experimental condition was contrast coded ( $-1$  for the control condition and  $1$  for the repeated expression condition). The three 2-way and one 3-way interaction terms were then computed (Aiken & West, 1991). We conducted a regression analysis in which felt ambivalence about abortion was the criterion and all main effects and interactions were entered on the same step. We obtained a significant Potential Ambivalence  $\times$  Repeated Expression interaction,  $\beta = .18, t(146) = 2.37, p < .025$ . That interaction was qualified by the hypothesized Potential Ambivalence  $\times$  Repeated Expression  $\times$  PFC interaction,  $\beta = .18, t(146) = 2.37, p < .025$ .

We interpreted the three-way interaction by solving the regression equation for individuals whose PFC scores were one standard deviation above or below the mean on PFC ( $SD = 1.29$ ). See Figures 2a and 2b for the results for high- and low-PFC participants, respectively. As expected, for high-PFC participants the Potential Ambivalence  $\times$  Repeated Expression interaction was significant,  $\beta = .36, t(146) = 3.18, p < .01$ . There was a significant relation between potential and felt ambivalence for high-PFC participants in the repeated expression condition,  $\beta = .77, t(146) = 4.81, p < .001$ , and no significant relation for high-PFC participants in the control condition,  $\beta = .05, t < 1$ . For low-PFC participants, the Potential Ambivalence  $\times$  Repeated Expression interaction was not significant,  $\beta = .01, t < 1$ .<sup>9</sup>

## General Discussion

Our simultaneous accessibility hypothesis was confirmed and twice replicated. In all three studies, people's conflicted evaluations of attitude objects manifested more strongly as mixed emotions and feelings of being torn when those evaluations were simultaneously accessible. In the third study, heightened simultaneous accessibility of potential ambivalence caused the experience of ambivalence about abortion.

If, as our results suggest, simultaneous accessibility moderates the relation between inconsistent cognitions and the experience of negative affect, why are so many cognitive dissonance studies successful despite the lack of a simultaneous accessibility manipulation? Put simply, we suggest that those studies were implicitly, if not explicitly, designed to render participants' inconsistent cognitions simultaneously accessible. Consider, for example, the study of hypocrisy (e.g., Stone, Aronson, Crain, Winslow, & Fried, 1994). In those experiments, participants were reminded of a past act (e.g., not using condoms) that directly contradicted a just-performed behavior (e.g., preparing and giving a speech on safer sex). Thus, simultaneous accessibility was presumably high (Stone et al., 1994; see also McGregor, Newby-Clark, & Zanna, 1999).

We do not mean to suggest, however, that mere simultaneous accessibility of conflicting cognitions can account for dissonance effects. It is now established that dissonance effects are multiply determined. They are moderated by variables such as self-presentation (Baumeister & Tice, 1984), perceived choice (Linder, Cooper, & Jones, 1967), importance (Simon, Greenberg, & Brehm, 1995), self-affirmation (Steele, Spencer, & Lynch, 1993), attributions (Zanna & Cooper, 1974), aversive consequences (Cooper & Fazio, 1984), culture (Heine & Lehman, 1997), and individual differences in PFC (Cialdini et al., 1995) and repression sensitization (Zanna & Aziza, 1976). The current studies suggest, though, that whatever produces cognitive inconsistency, an expe-

<sup>7</sup> This initial logarithmic transformation was necessary because the reciprocal transformation alone did not completely eliminate skewness in the response latency distributions.

<sup>8</sup> One participant did not provide any valid responses during the computer task and was therefore excluded from the simultaneous accessibility analysis.

<sup>9</sup> As suggested by the slope difference between low- and high-PFC participants in the repeated expression condition, there was a significant PFC  $\times$  Potential Ambivalence interaction for those participants in the repeated expression condition,  $\beta = .20, t(146) = 2.14, p < .05$ .

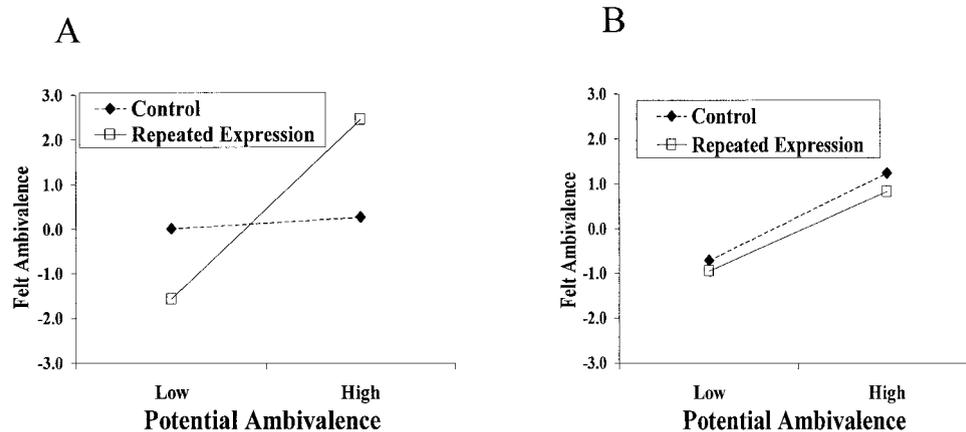


Figure 2. For abortion, the relation between felt ambivalence and potential ambivalence as a function of repeated expression for (A) participants with a high preference for consistency and (B) participants with a low preference for consistency (Study 3).

rience of discomfort will result only when that inconsistency is simultaneously accessible.

If cognitive dissonance researchers go to some lengths to create experimental situations that increase awareness of cognitive inconsistency, perhaps inconsistent cognitions are typically low in simultaneous accessibility. Indeed, because cognitive inconsistency is psychologically aversive (Elliot & Devine, 1994; Festinger, 1957), people may exert some effort to maintain chronically low simultaneous accessibility. People might distract themselves, for example. In a study of dissonance and distraction (Brock, 1962), half of the participants' attention was directed away from the content of their counterattitudinal essay and toward its grammar. Those participants shifted their attitudes toward the position of the essay less than did the half of the participants who were not distracted (see also Zanna & Aziza, 1976). Perhaps the simultaneous accessibility of distracted participants' inconsistent cognitions was lower than that of undistracted participants, thereby leading to reduced negative affect and, thus, little compensatory attitude shift.

According to dissonance theory, people are motivated to get their minds off their cognitive inconsistency only if they experience negative affect associated with that inconsistency (Festinger, 1957). From the results of Study 3, it appears that high-PFC people are more motivated than are low-PFC people to self-distract or otherwise lower the simultaneous accessibility of their inconsistent cognitions. High-PFC participants experienced negative affect when their highly inconsistent cognitions were rendered simultaneously accessible. In contrast, low-PFC participants' experience of ambivalent feelings was not affected when the simultaneous accessibility of their potential ambivalence increased. PFC differences in self-distract and other means by which simultaneous accessibility of cognitive inconsistency could be lowered should be investigated in future studies.

At the same time, the circumstances under which cognitive inconsistency becomes simultaneously accessible should be investigated. With respect to ambivalence, Priester and Petty (2001) tested and confirmed the balance theory notion that perceived disagreement with parents or friends about an attitude object is associated with greater felt ambivalence when that attitude object

is important. Perhaps when an attitude object is important, perceived disagreement (i.e., the discrepancy between one's own and another's attitude) is high in simultaneous accessibility (Roese & Olson, 1994). It might be interesting to determine whether the simultaneous accessibility of one's own and another's attitude moderates the perceived attitude disagreement–felt ambivalence relation.

Throughout this article, we have entwined theory and findings in ambivalence and cognitive dissonance. Indeed, we derived our ambivalence hypotheses in part from cognitive dissonance research (e.g., Cialdini et al., 1995; Zanna et al., 1973). There are important differences between our ambivalence studies and cognitive dissonance paradigms that must be noted, however. Participants in dissonance studies typically write counterattitudinal essays (e.g., Collins & Hoyt, 1972; Elliot & Devine, 1994; Harmon-Jones, 2000a; Scher & Cooper, 1989), choose between equally attractive alternatives (e.g., Brehm, 1956; Gerard & White, 1983; Younger, Walker, & Arrowood, 1977), or are made aware of their hypocrisy (Aronson, Fried, & Stone, 1991; Stone et al., 1994). In such studies, researchers assume, probably reasonably, that cognitive dissonance exists for most participants and that it causes an experience of negative affect (McGregor et al., 1999). Investigating cognitive inconsistency within the ambivalence paradigm, in contrast, allows us to measure the extent of each participant's cognitive inconsistency (i.e., potential ambivalence). Also, in accord with Elliot and Devine (1994) and Harmon-Jones (2000a), we elicited self-reports of negative affect associated with attitudinal ambivalence (i.e., felt ambivalence).

Although the methods typically used by dissonance and ambivalence researchers are different and the literatures remain largely unintegrated, we believe the two literatures can complement and inform one another. In both, there is an assumption that cognitive inconsistency is aversive. Furthermore, the ambivalence and dissonance constructs involve cognitive inconsistency about an attitude object. Researchers usually assess ambivalence by measuring an individual's positive and negative evaluations of an attitude object. They often create cognitive dissonance by inducing participants to perform a behavior that is inconsistent with a prior

attitude. Presumably, the “freely chosen” counterattitudinal behavior implies an attitude that contradicts the prior one.

Thus, the two literatures may simply represent different ranges of focus. Dissonance researchers, on the one hand, tend to neglect assessment and quantification of inconsistency and subsequent affective response in favor of manipulating inconsistency and assessing social–cognitive consequences of the assumed affective response. Ambivalence researchers, on the other hand, focus on mapping the inner workings of how cognitive inconsistency translates into experienced discomfort. Together, the two literatures provide a more complete picture than either alone can offer.

We contend that, despite the differing methodologies and foci of the paradigms, the ambivalence and dissonance constructs are remarkably similar and may share functional roots. Personal uncertainty arising from inconsistent evaluations of attitude objects may impede decision making about what to approach and what to avoid and disrupt one’s ability to act efficiently. This may be why, from an evolutionary perspective, it makes sense for cognitive inconsistency to feel bad and why people are apparently motivated to defend against it (Beckmann & Irle, 1984; Harmon-Jones, 2000b; McGregor, Zanna, Holmes, & Spencer, 2001).

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