

The Perception of Political Advertising During an Election Campaign: A Measure of Cognitive and Emotional Effects

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ABSTRACT Scientific interest in political ads has been growing in recent years and has fuelled an important body of research, focusing mostly on the United States. Yet many issues associated with the impacts and contents of electoral ads remain unexplored, especially within the Canadian context. This article investigates the immediate and simultaneous effects of positive, negative, and mixed-content electoral ads. It presents data drawn from a series of pre-tests of an experimental design carried out with 31 voters during the Canadian federal election of 2011. Participants viewed ads selected for their argumentative content and non-verbal components. The impacts of the ads were tested using an innovative multimethod approach combining physiological and cognitive measures. Among its contributions, this novel method helped generate a more nuanced and precise evaluation of the effects of negative advertising on viewers.

KEYWORDS Televised electoral ads; TV ads; Political advertisement; Effects of TV ads; Cognitive response; Physiological reactions; Political communication; Negative advertising; Experiments

RÉSUMÉ Bien que le nombre d'études portant sur la publicité électorale—pour la plupart américaines—se soit considérablement accru ces dernières années, plusieurs aspects restent inexplorés, particulièrement eu égard aux campagnes canadiennes. L'objectif de cette étude est d'évaluer l'impact immédiat et simultané de publicités électorales télévisées (négatives, positives et mixtes). Ces publicités ont été analysées en tenant compte du contenu argumentaire, mais aussi des éléments non-verbaux qui leur sont inhérents. Une approche pluri-méthodologique combinant des mesures physiologiques et cognitives dans un contexte

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expérimental a notamment permis de mettre en exergue l'importance des mesures combinées pour une compréhension plus nuancée des effets de la publicité électorale négative. Les résultats présentés dans cet article sont issus des pré-tests menés auprès de 31 électeurs durant la dernière campagne électorale fédérale canadienne de 2011.

MOTS CLÉS *Publicités électorales télévisées; Publicités télévisées; Publicités politiques; Effets de la publicité télévisée; Réponse cognitive; Réactions physiologiques; Communication Politique; Publicité négative; Devis expérimental*

Television ads are a critical component of any modern election campaign strategy. There is accordingly a vast body of work in political communication focused on the nature and impact of political ads. This is particularly true for negative ads, where existing work tracks the trend toward negative advertising in the U.S., as well as the impact of those negative ads on voting behaviour, political engagement, and voter turnout. Nevertheless, there is very little work from a communication perspective exploring the impact of campaign advertising (Cheng & Riffe, 2008), nor is there much work relating to its impact outside the U.S. context. Moreover, very few studies have explored the effects of audiovisual cues in political advertising.

This study represents a first step toward filling these gaps. The objective is to explore the impact of the “tone” of campaign ads outside the U.S., namely, over the course of the 2011 Canadian federal election campaign. Impact is captured in an experimental lab setting using both cognitive and physiological measures. The use of two measures offers some important advantages. Physiological measures reveal the tendency for arousal and attentiveness to increase for negative over positive ads; cognitive measures suggest the potential importance of audiovisual cues in individuals’ processing of political advertising and point toward the possibility that efforts to process information are higher and more conducive to message acceptance when participants are exposed to ads reflecting participants’ own political affiliation. Taken together, these physiological and cognitive findings add to a growing body of work on political advertising and point toward some interesting possibilities for future research as well.

Capturing the impact of political ads

There is now a considerable body of literature in political science on negative advertising. Research focuses on the impact of negative ads, for instance, on political participation (e.g., Ansolabehere & Iyengar, 1995; Kahn & Kenney, 2001; Nesbitt-Larking, 2009), on voters’ cynicism (e.g., Dardis, Shen, & Edwards, 2008; Jin, An, & Simon, 2009; Kaid, Postelnicu, Landreville, Yun, & LeGrange, 2007), and on persuasive processes, including attentiveness and memorization (e.g., Bradley, Angelini, & Lee, 2007; Cheng & Riffe, 2008; Groenendyk & Valentino, 2002). There remain significant debates within the literature regarding potential effects of negative advertising on voters (see a review on this issue in Lau, Sigelman, & Rovner, 2007). For instance, some argue in favour of a positive impact on political participation (Finket & Geer, 1998; Goldstein & Freedman, 2002; Marcus, Neuman, & Mackuen, 2000; Pinkleton, 1998), while others suggest that the use of negative ads can trigger a “boomerang” effect that runs counter to the ad’s

desired impact, notably by enhancing political cynicism (Dardis, Shen, & Edwards, 2008) and ultimately reducing voter turnout rates (Ansolabehere & Iyengar, 1995). Overall, findings are divided—Lau et al.'s two meta-analysis (Lau, Sigelman, Heldman, & Babitt, 1999; Lau, Sigelman, & Rovner, 2007) find no regular relationship between negative campaigns and turnout. Some scholars also highlight a “third-person effect,” reflecting a tendency for some voters to project an influence of negative political ads on others, but not on themselves (Cheng & Riffe, 2008; Wei & Ven-Hwei, 2007). However, despite a lack of consensus on the effects of negative ads, their increasing prevalence in election campaigns in Canada, and in other national contexts where legislation permits their use, is abundantly clear, as is the importance of better understanding the impact of this type of advertising on individual voters.

Evaluating the impact of negative advertising poses some challenges related to the measurement of stimuli and impact, as well as to defining the impact of ads itself. Regarding the latter, the most tangible impacts of ads are actual voting decisions, but impacts may also be more indirect. Ads may provide information to voters as they weigh their voting options; ads may shift their view of the campaign; ads may also condition or frame the way in which voters interpret or seek out information later in the campaign. So while some research focuses on voting behaviour (e.g., Shaw, 1999), another body of research focuses, typically within an experimental lab context, on the short-term attitudinal, physiological, and cognitive responses to ads. This work has been critical to understanding ads as a means of campaign communication. It has helped us to better understand, at the individual level, whether political ads matter, and, if so, how and why they matter.

It is in this area—the individual-level impact of ads in an experimental setting—that we seek to make a contribution. Doing so requires, first, that we review and define our measurement of both stimuli and impact.

Measuring stimuli

The typical categorization of televised electoral ads is focused on the tone or content of argumentation—essentially, the text of the ad. Argumentation is unquestionably an important component of advertising. But focusing exclusively on argumentation means that we ignore some non-verbal elements of advertising—audiovisual components that are major determining factors in individuals' emotional reactions. Brader's (2005, 2006) argument for the importance of “emotional cues” is illustrative: “Political observers and practitioners share a strong belief that the audio-visual nature of TV lends it special emotional power and much of this power in political ads is borne by the imagery and music” (2006, p. 32); “Most systematic studies of content and especially of effects pay little attention to emotion. . . . Most of these studies focus on the verbal content of ads rather than on the symbolic elements most closely associated with emotional appeals, such as music and images” (2006, p. 42). It follows that, alongside the more traditional focus on the text of ads, it may be important to capture emotional cues in ads (or in the various components of ads).

An emotional cue contains audiovisual properties whose purpose is to increase credibility and liveliness and make the ad more convincing. These cues can be used to

evoke positive emotions (e.g., bright colours, laughing, lively music), such as joy, and negative emotions (e.g., dark colours, children's cries, disturbing music), such as hate or fear. Numerous psychological studies present solid evidence in support of the assertion that both these pleasant and unpleasant non-verbal stimuli produce the expected responses (Bradley, Codispoti, Cuthbert, & Lang, 2001; Bradley & Lang, 1999; Hemphill, 1996; Juslin, 2001). For example, disturbing music using high-pitch sounds can stimulate anxiety, while harmonious music using lower-pitch tones induces an increase in enthusiasm (Juslin, 2001). We can only assume that similar reactions are found in electoral ads.

It follows that work focused on the impact of campaign ads should take into account a combination of verbal and audiovisual attributes. Our own forthcoming analysis of a much larger body of campaign ads seeks to do exactly this: to examine the prevalence and use of a variety of both types of cues. For this initial study, however, we use a very simple threefold categorization of ads: positive, negative, and mixed. This categorization is based on both the verbal and audiovisual components of televised ads: the text, alongside music, colours, and visual and sound effects.

Measuring impact

How do we measure the impact of political ads? We focus here on a combination of physiological and cognitive measures.

Physiological effects

The potentially significant effects triggered by audiovisual stimuli (as well as more elaborate verbal content) stem in part from the possibility that they may be generated prior to the individual realizing that they are reacting (Iyengar & McGuire, 1993). Impacts must be captured immediately and concurrently as respondents are exposed to stimuli. Because emotions are short-term responses that often escape awareness, their effect on attitudes occurs as information is perceived and processed, making it difficult to discern their contribution once they have subsided (Brader, 2005). These immediate reactions translate into a series of physiological changes in the sensory system—including, for instance, an increase in heart rate, immediate changes in skin texture, muscular activity, and contraction or dilation of the pupils. As a consequence, emotional responses to ads are often captured by monitoring a variety of physiological indicators throughout the experiment.

Indeed, there is a growing body of work in communication that relies on physiological indicators to capture emotional responses, with a focus on variations in the intensity of activation of the sensory system as subjects are exposed to different stimuli (e.g., Bolls, Lang, & Potter, 2001; Brader, 2006; Codispoti, Ferrari, & Bradley, 2006; Daignault & Paquette, 2010; Isbell & Ottati, 2002; Lang, 1990, 1994; Marcus, 2000; Potter, 2000; Thorson & Lang, 1992). Two measures are very widely used. First, a considerable number of studies suggest that the intensity of the electrodermal conduction response—essentially fluctuations in dermal conduction captured by observing subtle differences in subjects' skin perspiration level, where the measure is often referred to simply as "skin conductance"—is a reliable indicator of emotional activation (Boucsein, 1992; Lang, Potter, & Bolls, 2009). The electrodermal responses generated by an individual during the viewing of media content correspond to different phases,

such as fluctuations in amplitude versus the regular conduction level, known as the tonic parameter (Boucsein, 1992). The amplitude of these phasic responses vis-à-vis the tonic parameter, measured in microsiemens (μS), captures the physiological force provoked by the stimuli. Second, heart rate is the most commonly used physiological cue in studies of media effects; it is typically regarded as an indicator of some combination of activation and attentiveness. (For a review of physiological measurement in studies of media effects, see Ravaja, 2004).

Note that both skin conductance and heart rate focus on the intensity of response, not the valence. Emotions involve both, of course (see, e.g., Bradley & Lang, 2000; Lang, 1994; Ravaja, 2004), though we focus here just on the first component, in part because valence is captured in some detail using a different (cognitive) approach, described below.

Cognitive effects

Another approach to capturing the immediate impact of ads focuses on cognitive responses. These are often the focus of work on persuasion, in which researchers capture participants' spontaneous thoughts during or immediately following exposure to stimuli. Initially developed by Greenwald (1968) and then introduced in work on advertising by Wright (1973), this approach supposes that the persuasive impact of an ad is determined primarily by the scope and nature of the reflections that an individual generates in response to a persuasive message (see also Eagly & Chaiken, 1993; Petty & Cacioppo, 1981). This line of analysis provides somewhat more information (in contrast with survey questions or physiological data) to understand exactly how a given stimulus influences the mental effort expended while processing a message—referred to as “cognitive elaboration” (Petty & Cacioppo, 1981).

In line with the cognitive-response approach, Petty & Cacioppo's (1981) elaboration likelihood model (ELM) distinguishes between two routes of persuasion positioned along an elaboration continuum: a) the peripheral route, where the individual uses the superficial attributes of the ad (images, music, attractiveness of the source)—which are often associated with emotional cues—to accept or reject the message, and b) the central route, where an individual analyzes, with a higher mental effort, the arguments presented (verbal and/or written content). The route an individual chooses in a given persuasive situation is based on a combination of motivation and capacity to process the message, but also on factors such as need for cognition, degree of education, and personal relevance of the message. Choosing the central route, according to these authors, tends to lead to changes in attitude that are more durable as well as more resistant to persuasion.¹

The direction and the amplitude of an individual's attitude change are typically analyzed with respect to a combination of valence (positive versus negative) and quantity of cognitive responses (Fourquet-Courbet & Courbet, 2004). We regard cognitive elaboration not just as a result of the quantity of individuals' cognitions, but also—and foremost—on the quality of those thoughts. Moreover, unlike Petty & Cacioppo, we argue that an individual can process all types of information—whether central or peripheral—with varying degrees of cognitive elaboration. As presented further in the methodology section, we base our analysis of cognitive responses on two categoriza-

tion systems. The first system, partially based on the original work of Wright (1973), accounts for the type of cognition (e.g., corroboration, counterargument), as well as for the strength of the cognitive elaboration, positioned along a continuum between a weak and a strong mental effort. The second system takes into account references to emotional cues (music, visual effects, colours) and to verbal and/or written arguments.

Research objectives and hypotheses

This study investigates the physiological and cognitive impacts of negative, positive, and mixed campaign ads, in the context of the 2011 Canadian federal election. Its goal is to add to a growing body of research on the effects of political advertising, not by focusing on their impact on voting behaviour per se, but rather on their immediate effects on viewers. These effects are likely to influence subsequent political attitudes and behaviours.

Research on media and psychophysiology suggests that individuals react more prominently to negative information than to positive information, on both the physiological activation level and on the amount of attention the individuals pay to the information. The negativity bias in general has been widely discussed in previous work (for some particularly valuable interdisciplinary meta-reviews, see Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001; Cacioppo & Gardner, 1999; Rozin & Royzman, 2001). In short, the literature builds on a combination of a) studies in psychology, particularly work on the tendency for individuals to give greater weight to negative information when forming impressions of others (e.g., Anderson, 1965; Fiske, 1980); b) work in experimental economics focusing on loss aversion—that is, our tendency to respond more strongly to potential losses than to potential gains (e.g., Kahneman & Tversky, 1979); and c) work in neurology and evolutionary biology suggesting the evolutionary advantages of focusing more on negative than on positive information (e.g., Hunt & Campbell, 1997; Öhman, Hamm, & Hugdahl, 2000). In political-communication research in particular, there is a vast body of work emphasising the tendency for new content to be negative (e.g., Fallows, 1997; Just, Crigler, & Neuman, 1996; Patterson, 1994; Soroka, 2006, 2012). In addition, experimental work suggests that participants choose to read negative rather than positive election stories (Meffert, Chung, Joiner, Waks, & Garst, 2006). There may well be a link between the tone of media and the human brain. Evolution may have produced humans with a tendency to focus primarily on negative information (see Ju, 2008; Shoemaker, 1996; Soroka & McAdams, 2012).

Of course, our interest in negativity need not be a product of evolution—it may be that a generally negative media environment conditions us to be interested in negative news (Altheide, 1985; Altheide & Snow, 1991). We cannot easily distinguish one possibility from the other here. We can, however, test the following hypothesis: where televised election ads are concerned, subjects in our study will be more attentive and activated (H₁) on a physiological level when exposed to negative electoral ads, compared with positive or mixed ads.

The heightened activation produced by negative ads may be linked to the tendency, demonstrated in studies on cognitive response and advertising, for negative ads to be associated with a stronger persuasive resistance—essentially an increase in the production of unfavourable responses, particularly counterarguments toward the

message (Ahluwalia, Burnkrant, & Unnava, 2000; Meirick, 2002; Wright, 1973). We consequently hypothesize that alongside changes in physiological activation, subjects in our study will show an increase in unfavourable responses aimed at negative political ads as opposed to positive or mixed-message ads (H2).

Other features of both ads and participating subjects will evidently mediate physiological activation and cognitive elaboration. We explore one such feature here. Since most participants are exposed to an enormous amount of publicity on a daily basis, they tend to process this information on a superficial level with little cognitive effort. Only messages with personal relevance are processed in a more complete manner (Petty & Cacioppo, 1981; Petty, Cacioppo, & Haugtvedt, 1992).² We therefore expect that the majority of ads in our study will be superficially processed, except those that are sponsored by the political party a participant supports (H3), the latter being more relevant for the individual.

Given the relative lack of research on the short-term impact of political campaign advertisements on individuals generally, and in Canada in particular, our hypotheses should be regarded as mainly exploratory at this stage. That said, taking physiological and cognitive hypotheses together, we expect this experiment to add considerably to what we know about the relative importance of negative advertising in electoral campaigns. In short, we investigate here the possibility that the apparent increase in negative campaign advertising is in part a consequence of the tendency of those ads to elicit much stronger physiological and cognitive reactions.

Method

This first round of the study was conducted during the last Canadian federal electoral campaign (April–May 2011). The experiment is relatively unique in that a) it was carried out during a real election campaign period with actual voters, b) most of the ads used in the experiment were actually airing during the campaign, and c) the experiment is multimethod, capturing both physiological and cognitive responses. Indeed, the use of both physiological and cognitive measures, alongside the use of a survey questionnaire in order to control for other variables (including political affiliation, age, sex, media consumption), is markedly different from previous, typically more limited, studies on the effects of political advertising.

The study began with the content analysis of 145 televised electoral ads broadcast during the last two federal election campaigns (2008 and 2011) by the four main political parties, in both French and English. Two research assistants were trained for this task. For the purposes of this initial study, messages were coded as positive, negative, or mixed based on a combination of rhetorical content (type of arguments used, themes exploited) and emotional cues (i.e., type of music, sound effects, colour tones, visual effects). For these simple codes, and given the small sample of ads eventually used in the current study, ads were first coded by both research assistants, with coding decisions confirmed by the authors.

Although most of the 145 ads originated from the 2011 election campaign, we used some messages from the 2008 federal election campaign to collect a sufficient number of stimuli, across language (French and English) and tone, to be ready for our first round of experiments in the first weeks of the campaign (i.e., before the par-

ties had released all of their 2011 ads). In the end, the experiment focused on 24 ads: 7 from the New Democratic Party (NDP), 7 from the Conservative Party of Canada (CPC), 7 from the Liberal Party of Canada (LPC), and 3 from the Bloc Québécois (BQ), with the latter seen only by Francophone participants. These 24 ads were selected to be representative of the three tones: 10 negative ads, 4 mixed ads, and 10 positive ads.³ Both official languages were represented, with 12 English televised ads (four from each of three parties) and 12 messages broadcasted in French (three from each of the four parties).

Participants were recruited throughout the election campaign at McGill University via calls for volunteers posted around campus. Each received monetary compensation for his or her participation. In all, 31 students (19 women and 12 men) took part in the experiment. Of these participants, 13 were Francophone and 18 were Anglophone. They reported various partisan affiliations: 2 participants had the intention to vote for the CPC, 14 for the LPC, 9 for the NDP, 2 for the BQ, and 4 indicated they were undecided about their vote in the upcoming federal election.

Experimental sessions were conducted individually on the university campus in a room arranged for this purpose. Each session began with a brief presentation to the participant explaining the sequence of the experiment and informing him or her that the goal of the study was to explore individuals' reactions to election ads. They were told they were to watch a series of ads in their native language, twice, on a computer screen. The participant then signed a consent form, and the experiment began.

The average duration of a session was 50 minutes, during which respondents watched a preliminary video followed by nine ads, randomly drawn from the sample of twelve (in each language) and shown in random order. Each of the nine ads presented was separated by a 40-second grey screen. A countdown indicated the last five seconds of grey before the presentation of the next ad. The preliminary video was a two-minute news report about a neutral unrelated subject,⁴ also followed by a period of grey screen. This first video was used to allow participants to get used to the sensors, as well as to establish the parameters that would subsequently be used to measure physiological effects.

Physiological reactions were measured by using the ProComp Infiniti encoder from Thought Technology Ltd. as well as equipment designed at The Centre for Interdisciplinary Research in Music Media and Technology (CIRMMT) at McGill University. More specifically, we measured skin conductance and heart rate in order to evaluate, respectively, the intensity of physiological activation and attention levels. Skin conductance level (SCL), which reflects the slight differences in perspiration produced by eccrine sweat glands, was measured by passing a very low electric current through a pair of electrodes attached to the palmar surface of two fingers. Heart rate was measured by using a BVP-Flex/Pro sensor by Thought Technology Ltd. attached to a finger; this sensor detects changes in the blood volume, which varies with the heart rate. Both physiological measures were captured 256 times per second, down-sampled for analysis below.

Sensors were used for the first round of ads, after which they were removed and participants were told that they would be shown all nine ads once more (in the same

order) and would have to take note of everything that was spontaneously going through their minds—in terms of words, images, and sentences—during their exposure to the ads. Capturing these cognitive responses during a second round of ads meant that physiological responses were not contaminated by respondents writing during the experiment. In turn, having seen the ads a first time could have affected the cognitive responses, though we suspect in a positive sense: participants had a second chance to understand the meaning of ads and thus to generate more relevant thoughts. We also believe that this second exposure did not affect the scope of cognitive elaboration to process ads, since participants were not aware of the nature of the task until right before this second exposure.

For this second viewing, we asked participants not to censor their thoughts, not to worry about the quality of their writing, and to express their thoughts even if they seemed unrelated to the content of the ads shown. Individuals were allowed a 60-second period immediately after each ad to write down their impressions on a document prepared for this purpose. When they had completed the task, or if they had nothing to write about, participants could move on to the next electoral ad by clicking a button.

The spontaneous cognitive responses method, also known as thought-listing, requires the receiver to make a list (here, a written list) of the thoughts prompted by a message during the exposition phase. Two categorization systems were then used to clas-

Table 1. Cognitive responses : Type of statement, weight, and example

Type of statement	Weight	Example*
Recall	1	"Quebec"; "red flag"; "mustach"
Positive judgement (intended)	2.5	"Canadian leadership is a good line for the NPD"
Positive judgement (unwanted)	-2.5	"hahaha, very funny"
Negative judgement (intended)	2.5	"Taxes on Ipods seem ridiculous"
Negative judgement (unwanted)	-2.5	"Fighter jets are not Canadian"
Standard corroboration	3.5	"Promoting idea that Canadian need someone they can trust"
Elaborated corroboration	5	"Young people jobs: finally someone cares! The ad really highlights young people's needs"
Counter-argument	-5	"Pretty ridiculous that Ignatieff would want to form a coalition government with the Bloc Quebecois"
Positive connection	4	"I have a family too"
Negative connection	-4	"This does not concern me"
Positive intention (low/mod.)	8	"I don't know who I'm gonna vote for. Maybe NPD"
Negative intention (low/mod.)	-8	"This time, I don't think of voting Liberal"
Positive intention (high)	10	"I already have decided to vote for them"
Negative intention (high)	-10	"After this, I want nothing to do with a Conservative government"

* Examples are comments generated among the participants of our study.

sify these cognitions. Drawing on categories previously implemented by Wright (1973) and Petty & Cacioppo (1979), we extended the first system to take into account the strength of cognitive elaboration by attributing a value ranging from 1 to 10 to different types of cognitions (see Table 1). The value attributed to a statement is based on the magnitude of the mental effort inferred (e.g., it seems logical to give less importance to a mere recall of the ad as opposed to a firm voting intention. This value allowed us to calculate a mean score of cognitive elaboration for each ad. We also included additional categories to create a more detailed view of the types of responses that may be reflected. Therefore, these categories vary from a simple recall of an element of a message to a firm intention of voting for or against one candidate/party, with other categories between the two, such as judgments, corroborations, counterarguments, and connections (i.e., establishing a link between the elements of a message and one's own life).

In this first classification, cognitive responses were analyzed not only according to their nature, but also according to their valence (positive or negative) for the categories that allowed for doing so. Moreover, we specified the valence of certain statements (judgments) by adding to them a value effect (desired or undesired). Certain comments, although apparently positive (e.g., "this ad makes me laugh"), may run counter to the desired effect of the message, thus they were scored with a value of "undesirable effect." Negative values correspond to statements that are negative and/or run counter to the effect sought by the message.

A second and simpler categorization system was used to distinguish the cognitions that fell within emotional cues from those related to verbal and/or written arguments. Thus, whenever a statement touched on an emotional cue (music, sound effects, visual effects, colour, tone), it was identified as one occurrence. The same procedure was performed with statements regarding the set of arguments (theme) of the message (economy, education, future of health, environment, international relations, national unity, et cetera) and the type of argument (promotion of a candidate or a party, attack on an opponent's program, attack on an opponent's record, attack on the opponent's personality, et cetera). This classification has allowed us to assess the importance that emotional cues play in how an individual treats information from televised ads versus verbal and/or written arguments.

Each session ended with the presentation of a short questionnaire containing questions about age, gender, media consumption, and voting intentions for the upcoming federal election. Two research assistants—one Anglophone and one Francophone—conducted the experimental sessions, and the instructions to participants were systematized. (The verbatim instructions are available upon request in both languages.)

Results

Physiological effects

We explore differences in psychophysiological reactions to televised ads using relatively simple within-respondent analyses of covariance (ANCOVA) of both SCL and heart rate, averaged over 5-second intervals.⁵ In each case, the physiological measure is modelled as a function of the following:

1. respondent identity, to account for level differences in physiological symptoms across respondents;
2. an ordinal variable representing order of presentation of the stories, to capture the possibility that respondents' reactions change based on the number of stories they have seen thus far;
3. time (in 5-second intervals) and time squared, to capture the (potentially non-linear) tendency for both SCL and heart rate to decline slightly over the course of the experiment; and
4. a categorical variable capturing ad tone (negative, mixed, positive), included directly and in interaction with the time variables. The direct effect captures the possibility that certain tones of ads produce an initial impact that is greater or lesser in magnitude than others; the interaction with time allows for the possibility that the effect of negative ads is more (or less) long-lasting.

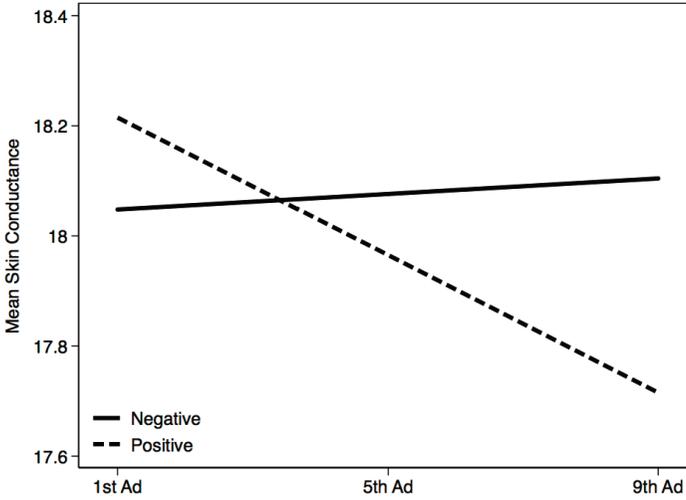
Our first hypothesis (H₁) states that respondents will be more attentive and activated on a physiological level when exposed to negative electoral ads, compared with positive or mixed ads. Table 2 shows the basic ANCOVA results for SCL. Results confirm the expectation that the tone of ads is related to levels of skin conductance—there are signs of a relationship regarding both the direct effect of tone and the impact of tone over time. Figure 1 makes the ANCOVA results more clear: it plots the predicted average SCL, by ad, based on the regression model underlying results in Table 2. In so doing, the figure shows both the direction and magnitude of the impact of tone on SCL.

Table 2. Within-respondent ANCOVA: Skin conductance levels

	Partial SS	df	F
Model	305.25	44	14.78***
Respondent	269.95	38	15.13***
Order (c)	4.52	1	9.64**
Time (c)	2.23	1	4.75*
Tone	16.08	2	17.13***
Tone*Time	18.14	2	19.32***
Residual	1270.58	2707	
Total	1575.8384	2751	

Notes: N=2752. * $p < .05$, ** $p < .01$, *** $p < .001$. Results are based on 8 positive or negative stories only, using data averaged at 5-second intervals.

Clearly, *ceteris paribus*, tone matters to levels of skin conductance. Respondents have roughly similar SCL for the first ad in the experiment. SCL declines gradually with positive ads; it does not for negative ads. (Of course, no respondent actually sees nine positive or negative ads—these are predicted values, based on a hypothetical respondent seeing either exclusively positive or negative ads.) The overall finding here is that ongoing activation is dependent in part on negativity, thus corroborating part of H₁ regarding the higher physiological activation provoked by negative ads.

Figure 1: Skin conductance according to advertising tone

Similar results are apparent for heart rate, which is used here as an indicator of attentiveness. Table 3 shows the ANCOVA, and Figure 2 plots predicted heart rate over the course of the experiment. Results are based on 5-second averages, and the model is identical to the one used for SCL. Again, physiological measure varies systematically with the tone of the ad. Here, negativity is associated with a decreased heart rate, pointing toward increased attentiveness. The impact of tone on heart rate is seen over the course of the experiment. In short, attentiveness appears to increase over the experiment with negative ads; this is not the case for positive ads. Consequently, the other part of H₁ relating to participants being more attentive to negative ads is also supported.

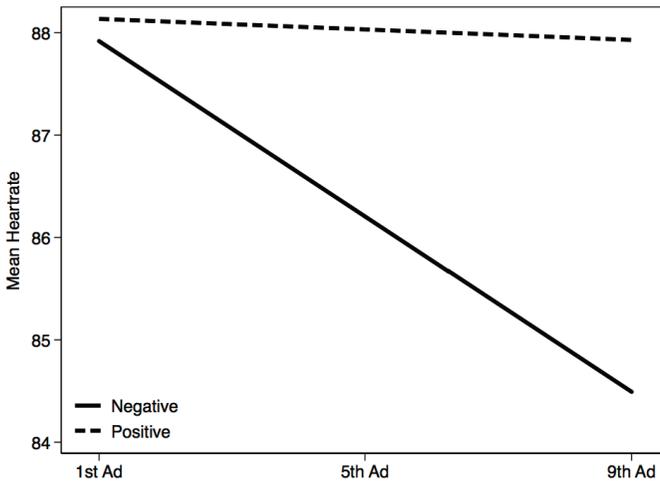
Figure 2. Heart rate according to advertising tone

Table 3. Within-respondent ANCOVA: Heart rate

	Partial SS	df	F
Model	628438.94	45	77.64***
Respondent	610186.97	39	86.98***
Order (c)	27.16	1	0.15
Time (c)	519.3	1	2.89
Tone	1277.19	2	3.55*
Tone*Time	979.93	2	2.72*
Residual	495903.55	2757	
Total	1124342.5	2802	

Notes: $N = 2803$. * $p < .05$, ** $p < .01$, *** $p < .001$. Results are based on 8 positive or negative stories only, using data averaged at 5-second intervals.

Cognitive effects

The 24 televised electoral ads generated a total of 868 cognitive responses. For validation purposes, a sample of the statements ($n = 105$) was subjected to interrater reliability measures. Types of cognitive responses were given rigorous operational definitions, and two research assistants were trained in the application of these definitions prior to the coding. A kappa value of 0.72—indicative of substantial agreement (Landis & Koch, 1977, in Leclerc & Dassa, 2010)—was achieved for the overall coding. Differences in coding were resolved by discussion.

Our second hypothesis states that participants will show an increase in unfavourable responses aimed at negative political ads as opposed to positive or mixed-message ads (H2). Table 4 shows the frequency distribution of categories of statements based on the three types of ads. In line with Petty & Cacioppo's model (1981), cognitive effort exerted when viewing an ad remained quite superficial. Most cognitive responses consisted of recalls (24.9%) and judgments (54.7%), two categories associated with low cognitive effort.

Table 4. Distribution frequency of cognitive responses according to advertising tone

Statement type of	Negative ads	Mixed ads	Positive ads	Total N	Total %
Recall	59	50	107	216	24.9%
Positive judgement (intended)	39	22	110	171	19.7%
Positive judgement (unwanted)	8	3	4	15	1.7%
Negative judgement (intended)	48	5	2	55	6.3%
Negative judgement (unwanted)	108	31	95	234	27 %
Standard corroboration	33	26	22	81	9.3%
Elaborated corroboration	4	3	5	12	1.4%
Counter-argument	37	9	17	63	7.2%
Positive connection	2	0	2	4	0.5%
Negative connection	1	2	6	9	1 %
Positive intention (low /mod.)	1	2	1	4	0.5%
Negative intention (low /mod.)	4	0	0	4	0.5%
Total	344	153	371	868	100 %

As expected (see Table 5), negative ads generated significantly more negative judgments than mixed and positive ads [$F(2, 24) = 7.379, p < 0.004$], while the positive ads generated more positive judgments than the other two types of ads [$F(2, 24) = 6.914, p < 0.005$]. This finding supports H2. It should also be noted that negative ads generated more counterarguments ($\mu = 4$ per ad) than positive ads ($\mu = 1.4$ per ad), although this finding does not quite reach the 0.05 level of significance [$F(2, 24) = 2.74, p > 0.088$].

This is interesting when contrasted with physiological responses. While the negative ads generated more emotional and attention responses than positive ads, the results on cognitive impacts show a greater resistance to persuasion, as evidenced by the increased number of counterarguments. Therefore, the physiological activation associated with negative ad content (negative bias) does not necessarily lead to greater persuasion. Our data actually indicates quite the contrary. Being more alert and active with respect to negative content could mean that an individual is thinking more about how to counter the information presented to him or her.

Table 5. Mean cognitive responses according to advertising tone

Statement type	Condition	Mean p/ad	F Value	p Value
Negative judgement (intended)	Negative	4.8	7.379	.004**
	Mixed	1.25		
	Positive	0.20		
Positive judgement (intended)	Negative	3.9	6.914	.005**
	Mixed	5.5		
	Positive	10.3		
Counter-argument	Negative	4.0	2.738	.088*
	Mixed	1.75		
	Positive	1.4		

Notes: * statistically significant at the .10 level; ** statistically significant at the .01 level

Petty & Cacioppo (1981) argue that most persuasive messages to which individuals are exposed are treated superficially, unless the information is relevant to the receiver and it allows him or her to confirm certain attitudes, in which case the cognitive effort will be more important. To this end, we predicted greater cognitive effort in relation to ads that match the partisan affiliation of the participants (H3). The results of the study confirm our theoretical expectation (see Table 6). The cognitive effort to process the information⁶ provided in the ads was significantly higher and more conducive to

Table 6. Mean cognitive elaboration according to party affiliation and party represented

Party represented	Mean cognitive elaboration	t Value	p Value
Conform to political affiliation	3.01	2.943	.006**
Non-conform to political affiliation	-.05		

Note: ** statistically significant at the .01 level

message acceptance ($t = 2.934, p < 0.006$) when participants were exposed to messages that reflected their political affiliation ($\mu = 3.01$) compared with when they were exposed to ads from opposing parties ($\mu = -0.05$).

What role do emotional cues play and what is their influence in the way viewers process information taken from televised ads? A total of 136 comments were written about emotional cues, particularly regarding music (46). For instance, one participant mentioned that “the light music is pleasant and comforting.” Another noted that “the colours (black and green) are very unpleasant.” Although emotional cues did not generate as many comments per ad ($\mu = 5.67$) as did the verbal/written argument ($\mu = 9.17$) ($t = 8.99, p < 0.000$), these data suggest that they still do contribute significantly to the information processing that a viewer engages in when watching electoral ads (see Table 7). Subsequent analyses will be conducted with a larger sample of the Canadian electorate to better reflect the relative influence of emotional cues in the information-processing of televised ad campaigns. These results could also help revise the Petty & Cacioppo theoretical model by showing that it is possible to thoroughly examine the attributes of the messages—such as emotional cues—instead of grasping only a superficial understanding of the main argument.

Table 7. Mean cognitive elaboration according to type of cue

Statement type	Mean p/ad	t Value	p Value
Emotional cue	5.67	8.99	.000***
Information content	9.17		

Note: *** statistically significant at the .001 level

Conclusions

This article presents the preliminary data and methodological framework of a series of experiments conducted during the Canadian federal election campaign in April 2011 with a sample of Canadian voters. These experiments were designed to assess the emotional and cognitive impact of positive, negative, and mixed televised political ads. Through a multi-methodological approach, we identified both physiological responses (via the combined measurement of fluctuations in skin conductance and heart rate) and cognitive reactions in viewers of electoral ads, and this during a live election campaign. So far in Canada, the effects of election advertising have mainly been studied through surveys that measure, in a very general way, political attitudes and voting intentions (Monière, 1995). However, surveys are not appropriate tools to evaluate the type of spontaneous reaction investigated in this paper. Moreover, many researchers have suggested that experiments are much better suited to the study of emotions in political communication (Brader, 2006; Glaser & Salovey, 1998; Isbell & Ottati, 2002).

The main strength of experimental designs is related to control, which can notably be ensured by using a random sampling and a comparison group, manipulating the independent variable, including double or treble blinding procedures, using precise measuring tools, and applying standardized statistical tests in the analysis of data. This

enhances the researcher's ability to state with confidence that the observed outcome can only be attributed to the effects of the experiment. The scientific and statistical rigour of experimental research maximizes internal validity and increases the probability of generalizing the findings beyond the study sample. One of the limitations of our study is precisely related to external validity issues. Our small sample exclusively composed of students may limit the extent to which it is representative of the parent population and, with it, the generalizability of the study findings. However, as previously mentioned, this article's sole purpose is to present initial (yet simultaneously very encouraging) data from the pre-test phase of a larger developing project during which similar experiments will be conducted with a representative sample of the Canadian electorate.

An interesting element of this study relates to emotional cues. Previous studies have mostly ignored audiovisual attributes of televised advertising (images, use of colour, presence of music, et cetera), even if their potency—including the experience of emotions—has been recognized. In this study, we have considered them in the definition of the advertising tone, which is usually determined solely on the basis of verbal and/or written arguments, and in the cognitive processing of ads. Our study aims to fill this gap in both the Canadian and international literature. Further analyses need to be done, however, to explain the influence of distinct types of emotional cues on individuals viewing televised political ads.

In general, the preliminary data from this study corroborate the assumptions made beforehand. Firstly, negative televised election ads generate heightened attention levels and a higher level of physiological activation in individuals when compared with positive or mixed messages. This finding confirms other international analysis on the impact of negative media content. Indeed, evidence shows that negative content elicits more attention compared with its positive counterpart (Bradley, Angelini, & Lee, 2007; Cheng & Riffe, 2008). Secondly, participants show an increase in cognitive elaboration while watching ads of the parties with which they identify politically. As argued by Phillips, Urbany, & Reynolds (2008), political affiliation is likely to influence how an ad is processed. Their findings show an increase in support arguments and fewer counterarguments toward ads that confirm participants' prior voting intention. Finally, participants of the study express more persuasive resistance to negative ad campaigns than to positive and mixed ads. This supports the few studies of political advertising based on the cognitive-response approach indicating that negative ads generate the most counterarguments (Meirick, 2002; Pentony, 1998; Schenck-Hamlin, Procter & Rumsey, 2000). The next phases of this project will take us across Canada to test our model with a representative sample of participants. These new experiments will measure physiological and cognitive responses that Canadian electoral ads generate in viewers from all over the country, according to various tones, the emotional cues that are inherent in them, and the partisan affiliation of participants.

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Notes

1. This model has been criticized for not accounting for secondary—peripheral—attributes that may have a more elaborate effect, as well as for the possibility that central arguments may be the subject of weak cognitive elaboration (Fourquet-Courbet & Courbet, 2004).
2. Note that a number of different models of persuasion indicate that personal relevance of the message is a prerequisite for persuasion. See also McGuire, 1964, 1989; Perloff, 2003; Petty & Cacioppo, 1986.
3. The majority of the ads analyzed were polarized (negative or positive), which explains the low representation of mixed ads.
4. For English-speaking participants, a report on the Toronto Film Festival was presented, while for the French-speaking participants, the report focused on the iPad.
5. For skin conductance (SC) evaluation, data are originally sampled 256 times per second, but they are down-sampled for analysis by taking averages over 125-millisecond intervals. The SC signal is smoothed slightly using LOWESS smoothing. Skin conductance measures tend to decrease over the experiment (a consequence of measurement issues with the electrodes), so the skin conductance levels (SCLs) have also been de-trended by regressing the entire time series on a count variable, capturing time in 125-millisecond intervals. The count variable was included in both its linear and quadratic form, allowing for the possibility of non-linear effects; predicted values were then subtracted from the original variable to produce the final de-trended series. Analyses of SCLs rely on these down-sampled, smoothed, and de-trended SC series. For analyses of covariance (ANCOVAs), values are also averaged over 5-second intervals. Similarly, heart-rate analyses are based on signals also down-sampled to 125-millisecond intervals and then averaged over 5-second intervals.
6. The average score of cognitive elaboration was calculated from the relative importance associated with each category. The further the score is from 0, whether positive (favourable elaboration to persuasion) or negative (unfavourable elaboration to persuasion), the more the cognitive effort is important.

References

- Ahluwalia, Rohini, Burnkrant, Robert E., & Unnava, H. Rao. (2000). Consumer response to negative publicity: The moderating role of commitment. *Journal of Marketing Research*, 37(2), 203–214.
- Altheide, David L. (1985). *Media power*. Beverly Hills, CA: Sage Publications.
- Altheide, David L., & Snow, Robert P. (1991). *Media worlds in the postjournalism era*. Hawthorne, NY: Aldine de Gruyter.
- Anderson, Norman H. (1965). Averaging versus adding as a stimulus-combination rule in impression formation. *Journal of Experimental Psychology*, 70(4), 394–400.
- Ansolabehere, Stephen, & Iyengar, Shanto. (1995). *Going negative: How political advertisements shrink and polarize the electorate*. New York, NY: The Free Press.
- Baumeister, Roy F., Bratslavsky, Ellen, Finkenauer, Catrin, & Vohs, Kathleen D. (2001). Bad is stronger than good. *Review of General Psychology*, 5(4), 323–370.
- Bolls, Paul D., Lang, Annie, & Potter, Robert F. (2001). The effects of message valence and listener arousal on attention, memory, and facial muscular responses to radio advertisements. *Communication Research*, 28(5), 627–651.
- Boucsein, Wolfram. (1992). *Electrodermal activity*. New York, NY: Plenum Press.
- Brader, Ted. (2005). Striking a responsive chord: How political ads motivate and persuade voters by appealing to emotions. *American Journal of Political Science*, 49(2), 388–405.
- Brader, Ted. (2006). *Campaigning for hearts and minds: How emotional appeals in political ads work*. Chicago, IL: The University of Chicago Press.
- Bradley, Margaret M., Codispoti, Maurizio, Cuthbert, Bruce N., & Lang, Peter J. (2001). Emotion and motivation I: Defensive and appetitive reactions in picture processing. *Emotion*, 1(3) 276–298.
- Bradley, Margaret M., & Lang, Peter J. (1999). Fearfulness and affective evaluations of pictures. *Motivation and Emotion*, 23(1), 1–13.

- Bradley, Margaret M., & Lang, Peter J. (2000). Measuring emotion: Behavior, feeling, and physiology. In R. D. Lane & L. Nadel (Eds.), *Cognitive neuroscience of emotion* (pp. 242–276). New York, NY: Oxford University Press.
- Bradley, Samuel D., Angelini, James R., & Lee, Sungkyoung. (2007). Psychophysiological and memory effects of negative political ads. *Journal of Advertising*, 36(4), 115–127.
- Cacioppo, John T., & Gardner, Wendi L. (1999). Emotion. *Annual Review of Psychology*, 50, 191–214.
- Cheng, Hong, & Riffe, Daniel. (2008). Attention, perception, and perceived effects: Negative political advertising in a battleground state of the 2004 presidential election. *Mass Communication & Society*, 11(2), 177–196.
- Codispoti, Maurizio, Ferrari, Vera, & Bradley, Margaret M. (2006). Repetitive picture processing: Autonomic and cortical correlates. *Brain Research*, 1068(1), 213–220.
- Daignault, Pénélope, & Paquette, Guy. (2010). Quelle efficacité de la stratégie menaçante dans les campagnes de sécurité routière? Une évaluation tridimensionnelle. *Revue Internationale de Communication Sociale et Publique*, 3-4, 1–18.
- Dardis, Frank E., Shen, Fuyuan, & Edwards, Heidi H. (2008). Effects of negative political advertising on individuals' cynicism and self-efficacy: The impact of ad type ad message exposures. *Mass Communication & Society*, 11(1), 24–42.
- Eagly, Alice H., & Chaiken, Shelly. (1993). *The psychology of attitudes*. Fort Worth, TX: Harcourt Brace Jovanovich.
- Fallows, James. (1997). *Breaking the news: How the media undermine American democracy*. New York, NY: Vintage.
- Finket, Steven E., & Geer, John G. (1998). A spot check: Casting doubt on the demobilizing effect of attack advertising. *American Journal of Political Science*, 42(2), 573–595.
- Fiske, Susan T. (1980). Attention and weight in person perception: The impact of negative and extreme behavior. *Journal of Personality and Social Psychology*, 38(6), 889–906.
- Fourquet-Courbet, Marie-Pierre, & Courbet, Didier. (2004). Nouvelle méthode d'étude des cognitions en réception (ECER) et application expérimentale à la communication politique. *Revue Internationale de Psychologie Sociale*, 17(3), 27–75.
- Glaser, Jack, & Salovey, Peter. (1998). Affect in electoral politics. *Personality and Social Psychology Review*, 2(3), 156–172.
- Goldstein, Ken, & Freedman, Paul. (2002). Campaign advertising and voter turnout: New evidence for a stimulation effect. *The Journal of Politics*, 64 (3), 721–740.
- Greenwald, Anthony G. (1968). Cognitive learning, cognitive response to persuasion, and attitude change. In A. G., Greenwald, T. C. Brock, & T. M. Ostrom (Eds.), *Psychological foundations of attitudes* (pp. 147–170). San Diego, CA: Academic Press.
- Groenendyk, Eric W., & Valentino, Nicholas A. (2002). Of dark clouds and silver linings: Effects of exposure to issue versus candidate advertising on persuasion, information retention, and issue salience. *Communication Research*, 29(3), 295–319.
- Hemphill, Michael. (1996). A note on adults' color-emotion associations. *Journal of Genetic Psychology*, 157(3), 275–280.
- Hunt, Pamela S., & Campbell, Byron A. (1997). Autonomic and behavioral correlates of appetitive conditioning in rats. *Behavioral Neuroscience*, 111(3), 494–502.
- Isbell, Linda M., & Ottati, Victor C. (2002). The emotional voter: Effects of episodic affective reactions on candidate evaluations. In V. C. Ottati (Ed.), *The social psychology of politics* (pp. 55–74). New York, NY: Kluwer.
- Iyengar, Shanto, & McGuire, William J. (1993). *Explorations in political psychology*. Durham, NC: Duke University Press.
- Jin, Hyun Seung, An, Soontae, & Simon, Todd. (2009). Beliefs of and attitudes toward political advertising: An exploratory investigation. *Psychology & Marketing*, 26(6), 551–568.
- Ju, Youngkee. (2008). The asymmetry in economic news coverage and its impact on public perception in South Korea. *International Journal of Public Opinion Research*, 20(2), 237–49.

- Juslin, Patrik N. (2001). Communicating emotion in music performance: A review and a theoretical framework. In P. N. Juslin & J. A. Sloboda (Eds.), *Music and emotions* (pp. 309–337). New York, NY: Oxford University Press.
- Just, Marion R., Crigler, Ann N., & Neuman, W. Russell. (1996). Cognitive and affective dimensions of political conceptualization. In A. N. Crigler (Ed.), *The psychology of political communication*. Ann Arbor, MI: University of Michigan Press.
- Kahn, Kim Fridkin, & Kenney, Patrick J. (2001). The importance of issues in senate campaigns: Citizens' reception of issue. *Legislative Studies Quarterly*, 26(4), 573–597.
- Kahneman, Daniel, & Tversky, Amos. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, 47(2), 263–292.
- Kaid, Lynda Lee, Postelnicu, Monica, Landreville, Kristen, Yun, Hyun Jung, & LeGrange, Abby Gail. (2007). The effects of political advertising on young voters. *American Behavioral Scientist*, 50(9), 1137–1151.
- Lang, Annie. (1990). Involuntary attention and physiological arousal evoked by structural features and emotional content in TV commercials. *Communication Research*, 17(3), 275–299.
- Lang, Annie (Ed.). (1994). *Measuring psychological responses to media messages*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Lang, Annie, Potter, Robert F., & Bolls, Paul D. (2009). Where psychophysiology meets the media: Taking the effects out of mass media research. In J. Bryant & M. B. Oliver (Eds.), *Media effects: Advances in theory and research* (pp. 185–206). New York, NY: Routledge.
- Lau, Richard R., Sigelman, Lee, Heldman, Caroline, & Babbitt, Paul. (1999). The effects of negative political advertisements: A meta-analytic assessment. *The American Political Science Review*, 93(4), 851–875.
- Lau, Richard R., Sigelman, Lee, & Rovner, Ivy Brown. (2007). The effect of negative political campaigns: A meta-analytic reassessment. *The Journal of Politics*, 69(4), 1176–1209.
- Leclerc, Bernard-Simon, & Dassa, Clément. (2010). Interrater reliability in content analysis of health-care service quality using Montreal's conceptual framework. *The Canadian Journal of Program Evaluation*, 24(2), 81–102.
- Marcus, George E. (2000). Emotions in politics. *Annual Review of Political Sciences*, 3, 221–250.
- Marcus, George E., Neuman, W. Russell, & MacKuen, Mikael B. (2000). *Affective intelligence and political judgment*. Chicago: University of Chicago Press.
- McGuire, William J. (1964). Inducing resistance to persuasion: Some contemporary approaches. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 1, pp. 191–229). New York, NY: Academic Press.
- McGuire, William J. (1989). Theoretical foundations of campaigns. In R. E. Rice & C. K. Atkin (Eds.), *Public communication campaigns* (2nd ed., pp. 43–65). Newbury Park, CA: Sage.
- Meffert, Michael F., Chung, Sungeun, Joiner, Amber J., Waks, Leah, & Garst, Jennifer. (2006). The effects of negativity and motivated information processing during a political campaign. *Journal of Communication*, 56(1), 27–51.
- Meirick, Patrick. (2002). Cognitive response to negative and comparative political advertising. *Journal of Advertising*, 31(1), 49–62.
- Monière, Denis. (1995). Le contenu du débat des chefs. In D. Monière & J.-H. Guay (Eds.), *La Bataille du Québec. Deuxième Épisode : Les Élections Québécoises de 1994* (pp. 123–144). Montréal : Fides.
- Nesbitt-Larking, Paul W. (2009). Reframing campaigning: Communications, the media and elections in Canada. *Canadian Political Science Review*, 3(2), 5–22.
- Öhman, Arne, Hamm, Alfons, & Hugdahl, Kenneth. (2000). Cognition and the autonomic nervous system: Orienting, anticipation, and conditioning. In J. Cacioppo, L. Tassinary, & G. G. Berntson (Eds.), *Handbook of Psychophysiology* (2nd ed., pp. 533–575). New York, NY: Cambridge University Press.
- Patterson, Thomas. (1994). *Out of order*. New York, NY: Vintage.
- Pentony, Joseph F. (1998). Effects of negative campaigning on vote, semantic differential, and thought listing. *Journal of Applied Social Psychology*, 28(23), 2131–2149.

- Perloff, Richard M. (2003). *The dynamics of persuasion: Communication and attitudes in the 21st century*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Petty, Richard E., & Cacioppo, John T. (1979). Effects of forewarning of persuasive intent and involvement on cognitive responses and persuasion. *Personality and Social Psychology Bulletin*, 5(2), 173–176.
- Petty, Richard E., & Cacioppo, John T. (1981). *Attitudes and persuasion: Classic and contemporary approaches*. Dubuque, IA: Brown.
- Petty, Richard E., & Cacioppo, John T. (1986). *Communication and persuasion: Central and peripheral routes to attitude change*. New York, NY: Springer-Verlag.
- Petty, Richard E., Cacioppo, John T., & Haugtvedt, Curtis. (1992). Ego-involvement and persuasion: An appreciative look at the Sherifs' contribution to the study of self-relevance and attitude change. In D. Granberg & G. Sarup (Eds.), *Social judgment and intergroup relations: Essays in honor of Muzafer Sherif* (pp. 147–175). New York, NY: Springer-Verlag.
- Phillips, Joan M., Urbany, Joel E., & Reynolds, Thomas J. (2008). Confirmation and the effects of valenced political advertising: A field experiment. *Journal of Consumer Research*, 34(6), 794–806.
- Pinkleton, Bruce E. (1998). Effects of print comparative political advertising on political decision-making and participation. *Journal of Communication*, 48(4), 24–36.
- Potter, Robert F. (2000). The effects of voice changes on orienting and immediate cognitive overload in radio listeners. *Media Psychology*, 2(2), 147–178.
- Ravaja, Niklas. (2004). Contributions of psychophysiology to media research: Review and recommendations. *Media Psychology*, 6(2), 193–235.
- Rozin, Paul, & Royzman, Edward B. (2001). Negativity bias, negativity dominance, and contagion. *Personality and Social Psychology Review*, 5(4), 296–320.
- Schenck-Hamlin, William J., Procter, David E., & Rumsey, Deborah J. (2000). The influence of negative advertising frames on political cynicism and politician accountability. *Human Communication Research*, 26(1), 53–74.
- Shaw, Daron R. (1999). The effect of TV ads and candidate appearances on statewide presidential votes, 1988–96. *American Political Science Review*, 93(2), 345–361.
- Shoemaker, Pamela J. (1996). Hardwired for news: Using biological and cultural evolution to explain the surveillance function. *Journal of Communication*, 46(3), 32–47.
- Soroka, Stuart N. (2006). Good news and bad news: Asymmetric responses to economic information. *The Journal of Politics*, 68(2), 372–385.
- Soroka, Stuart N. (2012). The gatekeeping function: Distributions of information in media and the real world. *The Journal of Politics*, 74(2), 514–528.
- Soroka, Stuart N., & McAdams, Stephen. (2012). News, politics and negativity (Working Paper 2012S-14). CIRANO Scientific Series http://www.cirano.qc.ca/publications_detail.php?lang=fr&id=2012S-14 [March, 2013].
- Thorson, Esther, & Lang, Annie. (1992). The effects of television videographics and lecture familiarity on adult cardiac orienting responses and memory. *Communication Research*, 19(3), 346–369.
- Wei, Ran, & Ven-Hwei, Lo. (2007). The third-person effects of political attack ads in the 2004 U.S. presidential election. *Media Psychology*, 9, 367–388.
- Wright, Peter L. (1973). The cognitive processes mediating acceptance of advertising. *Journal of Marketing Research*, 10(1), 53–62.