

**Using a Rolling Cross-Section Design to Model Media Effects: The Case  
of Leader Evaluations in the 1997 Canadian Election**

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Prepared for delivery at the 2003 Annual Meeting of the American Political Science  
Association, August 28 - August 31, 2003.  
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# Using a Rolling Cross-Section Design to Model Media Effects: The Case of Leader Evaluations in the 1997 Canadian Election

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## Abstract

Using data from the 1997 Canadian Election Study, we illustrate four different ways that a rolling cross-section can be used to assess the impact of media coverage on leader evaluations: first, a simple graphical analysis that compares trends in the balance of media coverage and average ratings of the leaders; secondly, a panel analysis and an end-of-campaign analysis of the impact of media attention on leader evaluations; third, a time-series analysis of the relationship between the tone of media coverage and mean leader evaluations; and, fourthly, individual-level analyses of the same relationship during the campaign.

## Introduction

Election coverage in Westminster-style parliamentary systems is becoming more and more centred on the party leader. Such is the focus on the party leaders in Canada that if the leader takes a day off from the campaign trail, his or her party will typically receive no coverage on that night's newscast (Mendelsohn 1993). The growing personalization of campaign coverage has contributed to the notion that Westminster-style systems are experiencing a "presidentialization of politics" (Mughan 1993). There is certainly evidence that media coverage focuses very much on the party leaders (Mendelsohn 1993, 1996; Blais et al. 2002). And there is certainly evidence that voters' evaluations of party leaders have a significant impact on their choice of party (Gidengil et al. 2000). What has been lacking is a compelling demonstration that campaign coverage actually does affect voters' evaluations of the party leaders.

This link is not self-evident. Indeed, it is not difficult to think of arguments to buttress the case for "minimal effects". Even if we are entering an era of "parties without partisans" (Dalton and Wattenberg 2000), there are still many voters whose partisan ties may serve to screen out dissonant messages. And they are not the only voters whose minds may be made up even before the campaign begins (Fournier et al. 2001). Such voters are unlikely to revise their assessments of the party leaders across the relatively short time span of a parliamentary election. Then there is the question of how much attention voters are actually paying to news about the campaign: if they are not watching the news or reading a newspaper (or even discussing the election with those who *are* paying some attention), they are not going to be susceptible to media influence. Finally, it is easy to point to a host of other factors that could affect people's evaluations of the party leaders, whether it be the leaders' stands on the issues or something as mundane as their social biographies (see Cutler 2002).

In this paper, we show how a rolling cross-section survey design can be used to determine whether media coverage does in fact affect people's evaluations of party leaders. The data are taken from the 1997 Canadian Election Study, which combined a rolling cross-section campaign survey with a post-election panel.

### **Alternative Methodologies for Assessing Media Effects**

In a rolling cross-section design, the total sample is broken down into replicates, one for each day of the campaign. Because each daily replicate is as similar to the others as random sampling variation permits, all that distinguishes the replicates (within the range of sampling error) is the date of interview. When combined with a media content analysis, this methodology constitutes an extremely powerful design for capturing the dynamic interaction between media coverage and leader evaluations.

As Johnston and Brady (2002) observe, rolling cross-section data “require—and also repay—intense graphical treatment.” Such treatment cannot substitute for formal, parametric tests, but it provides an invaluable way of getting an initial visual impression of the relationship, if any, between the variables of interests. In the case of media effects, visual analysis can enable us to see whether there is any apparent association between the changing tone of media coverage and voters’ mean evaluations of the leaders. More important, it allows us to see which moved first. We cannot simply assume that any causal connection between media coverage and voters’ assessments of the party leaders is unidirectional. It is at least equally plausible that voters’ re-assessments of the parties and/or their leaders (as revealed, say, in published polls) drive the changing tone of media coverage. After all, the dominant news frame is the “horse race” with its focus on who is ahead and who is behind (Joslyn 1984; Mendelsohn 1993, 1996). Visual comparison of the trends in media coverage and leader evaluations can help to resolve the knotty issue of causation by establishing time order.

To be useful, the graphical analysis has to employ some sort of smoothing. It is unlikely than any single day’s coverage will induce large numbers of voters to re-appraise the party leaders. Short of a true “media shock” (Mendelsohn and Nadeau 1999), it will take successive days of consistently positive or consistently negative coverage to register on voters (Fan 1987). Smoothing makes it easier to detect such trends beneath the daily ebb and flow of campaign coverage. Graphical analysis also has to confront the problem of small daily sample sizes. Almost inevitably, these mean that there will be a good deal of random “noise” in the rolling cross-section data for any given day. Moving averages can be used to smooth out this “noise” and capture the trends in evaluations of the leaders.

Any conclusions based on graphical analysis are necessarily impressionistic at best. Even if the trajectories match, and changes in the tone of media coverage precede changes in leader evaluations, we lack a summary measure of how strong the pattern is and whether it meets conventional levels of statistical significance. We also have no way of knowing if the pattern is spurious. It could be that media coverage and leader evaluations alike are responding to some common stimulus, such as changes in the campaign strategy of one or another of the parties or in their campaign advertising. Finally, there are severe constraints on the extent to which any controls can be introduced or interaction effects examined. In principle, the analysis could be repeated for relevant subgroups (partisans and non-partisans, early deciders and late deciders, viewers and non-viewers), but in practice the daily samples are too small for meaningful study via graphical treatments.

Visual analysis is best thought of as complementing formal statistical tests. At least three types of tests can be conducted with a design like that of the last four Canadian Election Studies. The first introduces a dynamic component into the traditional “attentiveness” approach to assessing media effects. The “attentiveness” approach requires a demonstration that media attentiveness makes a difference (see Dobrzynska, Blais and Nadeau 2003). Applied to the issue at hand, this means that people who pay more attention to the media should systematically differ

in their evaluations of the leaders from those who pay less attention. Specifically, they should provide higher ratings to leaders of parties that have received positive coverage, and lower ratings to those that have received negative coverage (see, for example, Joslyn and Ceccoli 1996).

The fact that recent Canadian election studies have combined a rolling cross-section campaign survey with a post-election panel survey makes it possible to incorporate a dynamic element into this approach. Because the same respondents are interviewed during the campaign and again after the election, we can determine whether those who were more attentive to news about the campaign were more likely to have re-evaluated the party leaders. Specifically, we can see whether they gave significantly higher ratings than before to leaders of parties that received positive coverage and significantly lower ratings than before to those that received negative coverage. This is achieved by adding their campaign-wave leader evaluations to the attentiveness model.

The attentiveness approach has two key advantages. First, it is easy to incorporate suitable controls for other variables that could plausibly affect *both* attentiveness *and* leader evaluations, such as education and feelings about politicians in general. Second, it enables us to assess the only media effects that ultimately matter: how much difference did campaign coverage make to voters' final assessments of the leaders? This "bottom line" question can also be assessed using data from the final week of the rolling cross-section. The disadvantage of this approach is the reduced sample size. On the other hand, it avoids a potentially important problem, and that is, that voters' post-election evaluations of the leaders may be influenced by the outcome of the election itself.

There are two issues that have to be addressed when using the attentiveness approach, namely, the measurement of "attentiveness" and the appropriate specification of its effects. There is no agreement on the best way to represent how much attention people pay to the media. While Chaffee and Schleuder (1986), for example, have argued the case for using media attention instead of simple exposure to the news, Zaller has made a persuasive argument for using an information measure (Zaller 1990; Price and Zaller 1993). The choice of measure has important implications for the power of statistical tests to detect media effects (Zaller 2000). This is because "different measures have different variances, reliabilities, and auxiliary correlations with other variables" (p. 309). Zaller warns, in particular, of the over-report bias that plagues self-reported measures. The proper specification of effects is also tricky. The "attentiveness" approach has typically assumed that those who are the most attentive will be the most affected by the tone of media coverage. However, the combined effects of the "reception axiom" and the "resistance axiom" predict that media effects may actually be most evident among those at middle levels of attentiveness (Zaller 1990). Indeed, the shape of media effects could very well differ from leader to leader, depending on the intensity of the coverage received by his or her party. If the coverage is sparse, for example, only the most attentive will be exposed to it.

Over and above these difficulties, there is one major limitation to the attentiveness approach to assessing media effects: the link between the content of media coverage and the change in leader evaluations rests wholly on inference. As such, it provides only an indirect test of media effects.

The other two approaches to assessing media effects do try to establish a direct, statistical link between the tone of media coverage and evaluations of the leaders, and they free us of the need to rely on rather unreliable measures of media attention when assessing media effects. Both approaches rely exclusively on the rolling cross-section campaign data. Where they differ is that

one—the time-series approach—aggregates the data by day of interview, while the other uses the individual-level data. As “linkage” approaches, both have the same drawback (see Dobrzynska, Blais and Nadeau 2002): they do not address the “bottom-line” question of just how much effect media coverage had on voters’ final assessments of the leaders. They also raise questions about the appropriate way of modelling media effects for which there is no reliable theoretical guidance. It is unlikely that people’s evaluations of the leaders rise and fall in response to day-to-day shifts in the tone of coverage. The notion of cumulative effects is more plausible (Fan 1987), but just how those effects should be represented is an open question. Lacking any *ex ante* justification for one specification over another, the only course seems to be brute empiricism.

The time-series design involves testing whether there is any relationship between the daily aggregated (mean) leader evaluations and the tone of recent media coverage (see Mendelsohn and Nadeau 1999). The units of analysis here are days of the campaign and not individual respondents. The basic idea is simple and intuitive: does the changing tone of media coverage help to explain movement in leader evaluations across the campaign? Indeed, the argument has been made that this is the most logical approach when it comes to assessing campaign effects (Blais and Boyer 1996, 147).

The chief limitation of the time-series approach is the fact that the daily estimates of leader ratings are based on very small sample sizes, which introduce the possibility of large sampling errors. With daily sample sizes averaging only about 110 respondents (or fewer), the results of a time-series analysis may not be very robust. This problem is compounded by the small number of cases available for analysis when campaigns last—as they do in Canada—only 36 days. This means that even quite substantial effects may not attain statistical significance. In this case, we have to be particularly wary of relying on “what Kahneman and Tversky have called ‘the law of small numbers’. If an effect is real, it will show up in the data at hand, even if the data are rather limited” (Zaller 2002, 324). As Zaller has demonstrated, the statistical power of the typical election study to detect media effects is questionable, and so there is a very real risk of mistakenly inferring minimal effects. This risk is amplified in a time-series analysis. On the plus side, though, if an effect *does* show up, we can be fairly confident that it is real.

A time-series analysis could also be vulnerable to the confounding effects of campaign events. If leader evaluations change, is this due to the changing tone of media coverage, or to something else that was happening in the campaign? Arguably, this is a more serious problem when it comes to assessing the impact of discrete factors, like the televised leaders’ debates or the polls. A case could be made that campaign events largely have their effect *via* media coverage of the campaign (see Shaw 1999). In any case, the effects of such events can be anticipated and appropriately controlled for in the time-series model.

However, this brings us to a more serious problem with time-series analysis, and that is the very limited scope for incorporating control variables. This again reflects the small number of cases. It is problematic for two reasons. In principle, the daily samples should be replicates. In practice, however, their socio-demographic and partisan composition may exhibit non-trivial variation from day to day, given the small size of the daily samples. Accordingly, it would be prudent to introduce explicit controls, but the scope for doing so is severely constrained. Secondly, the constraints on the number of variables that can be included increase the risk of mistakenly inferring minimal effects. As Zaller (2002, 316) has pointed out, “the probability of obtaining a statistically significant coefficient for a given X variable is higher, all else being equal, if other X variables are present in the model to hold down random error and drive up the overall r-square of the regression.”

Instead of aggregating the data by day of the campaign, the daily samples can simply be pooled. Because it uses individual-level data, this approach permits the inclusion of a range of control variables. It also becomes possible to study sub-groups of the electorate, such as partisans and non-partisans and early and later deciders, who may differ in their susceptibility to media effects.<sup>1</sup> This approach involves testing directly whether there is any relationship between leader evaluations at the individual-level and the tone of recent media coverage. Given these advantages, this type of individual-level analysis seems to have the greater potential of the two linkage approaches for assessing media effects. However, it still leaves the “bottom-line” question open of just how much media coverage mattered to voters’ final assessments of the leaders.

### **Survey Data and Media Measures**

We can use data from the 1997 Canadian Election Study to illustrate the different approaches to modeling media effects. For the campaign survey, the total sample was broken down into thirty-six daily replicates, one for each day of the campaign. Interviewing began the day the election was called, with the date of interview constituting a random event.<sup>2</sup> An average of 110 interviews was completed per day for a total sample size of 3,949. The response rate was 59 percent. Eighty percent of the campaign respondents were re-interviewed for the post-election survey. The date of post-election interview was orthogonal to the date of the campaign interview. All of the interviewing was done by telephone using CATI.

Leader evaluations were measured using a 0 to 100 scale on which 100 represented a very positive feeling towards the leader and 0 reflected a very negative feeling. In the campaign survey, respondents who answered “not at all” when asked how well informed they felt about the leader were not asked to provide a rating. In order to conserve cases, these respondents have been assigned a neutral score of 50, and so have those respondents who said that they did not know how to rate the leader. The Reform Party did not have a serious electoral presence in Canada’s predominantly French-speaking province and so Quebec respondents were not asked to rate Preston Manning. Conversely, the Bloc québécois did not run candidates outside Quebec. Accordingly, the analysis is restricted to Canada outside Quebec. This reduces the average daily N by about 25 percent to around 82 respondents.

The data on media coverage are derived from a content analysis of the late night newscasts on Canada’s two main English-language television networks, the CBC and CTV. We focus on television coverage for two reasons. First, the network news is typically voters’ main source of information about politics in Canada, as it is in most other Western democracies (Fletcher 1991; Ansolabehere et al. 1993). Second, there is likely to be less variability in tone across television channels than across the print media by virtue of the fact that there are many different newspapers appearing daily, but few Canadian channels broadcasting nightly news. The assumption of unidirectional influence is thus easier to defend in the case of television news (see Johnston et al. 1992) and, indeed, the tone of coverage can readily be compared across channels to verify the plausibility of this assumption.

The first step in the content analysis involved locating the campaign stories in each nightly newscast and then identifying which party was the principal subject of each story. Coding all stories that featured a given party is warranted on two counts. First, we can assume that, “It was through their leaders that the parties were, or were not, visible” (Blais et al. 2002, 38), as they were in the 2000 election. Second, in Canada, as elsewhere, television news coverage is preoccupied with the horse-race in general and with the leaders’ abilities as

campaigners in particular. Indeed, the "leaders and the horse-race become interchangeable" (Mendelsohn 1993, 160). An analysis of news frames used in the first week's coverage of the 1993 campaign confirmed this pattern: the focus was "...on what leaders did, what their tactical motivations were for doing it, and on understanding their actions and statements as a reaction to their standings in the polls" (Mendelsohn 1996, 18; cf. Mendelsohn and Nadeau 1999).

There were 417 news stories, in total, 202 for CBC and 215 for CTV. As incumbents, the Liberals were the subject of more stories than any of the other parties. The NDP, meanwhile, seemed to be a classic case of "hopeless cases get[ting] hopeless coverage" (Robinson and Shehan 1980, 76): on as many as a third of the evening newscasts, there was not a single story about the party that was trailing in the polls. The party suffered from especially low visibility in weeks two to four of the campaign.

In the second step of the content analysis, two trained coders independently rated the tone of every campaign story broadcast on the two networks. The coders used a three-point scale: a story was coded +1 if it was deemed to have reflected positively on the party, -1 if it was judged to have reflected negatively, and 0 if its tone was considered to be neutral.<sup>3</sup> The results proved to be very similar for the two networks, and so they can be combined to represent the tone of media coverage.<sup>4</sup>

This leaves the question of how to operationalize the media variable for the time-series and individual-level campaign analyses. Our basic measure captures the net treatment of each party in the nightly news by summing the scores for every story that featured the party and/or its leader on a given day.<sup>5</sup> This gives us the balance of media coverage for each day of the campaign. Days where there was no story that featured the party and/or its leader were given a score of zero.

The simplest model of media effects would simply relate the leader ratings to the preceding day's media coverage.<sup>6</sup> However, based on a modeling of the impact of media messages, Fan (1988) concludes that "...the impact of a mass media message decreases exponentially with a half-life of only one day" (5) and that most such messages will have minimal effects. He argues that "...it is more useful to think of a series of persuasive messages having a powerful cumulative effect..." (133). His argument is intuitively plausible. If the tone of coverage varies between positive and negative from night to night, we would expect the impact on leader evaluations to be minimal, certainly less than a few successive nights of consistently negative or consistently positive coverage.

[Figure 1 about here]

Accordingly, our preferred measure of media coverage involves identifying periods during the campaign when the media coverage of a given party and/or its leader was particularly positive or particularly negative (see Dobrzynska, Blais, and Nadeau 2003).<sup>7</sup> Such periods are readily apparent when we track the balance of media coverage for each party (see Figure 1). The Conservatives and the NDP each enjoyed a period of particularly positive coverage. For the Conservatives, the period began on May 11 and ended on May 24, while the NDP's positive coverage came at the very end of the campaign between May 29 and June 1. The incumbent Liberals and the Reform Party, meanwhile, each experienced a period of particularly negative coverage. For the Liberals, this came early in the campaign, beginning on May 5 and ending on May 9. For Reform, on the other hand, the intensely negative coverage came during the fourth week of the campaign, between May 18 and May 24.

The first and simplest way of representing these periods is to assign a value of +1 to each day of intensely positive coverage, a value of -1 to each day of intensely negative coverage, and

a value of 0 to the days outside the periods of particularly positive or particularly negative coverage.<sup>8</sup> The second set of measures allow for the possibility that the media effect lingers on. Lacking *a priori* reasons to favor any particular decay function, we experiment with different rates of decay. These allow for the effect to last anywhere from another one to four days after the period ends.<sup>9</sup> In the case of the NDP, there is no provision for decay since the period of positive coverage coincided with the end of the campaign.

## Results

### Graphical Presentation

We begin with a simple graphical treatment that allows us to compare the evolution of media coverage and leader evaluations across the campaign (see Figure 2). In order to facilitate a visual analysis, the vertical range is set separately on each Y-axis, with the daily mean media coverage assigned to one axis and mean leader evaluations to the other. Given the relatively small daily sample sizes, 5-day moving averages have been used to smooth out the random noise in the data.<sup>10</sup>

[Figure 2 about here]

There is little to suggest that the tone of media coverage affected voters' evaluations of the NDP leader, Alexa McDonough. This is hardly surprising given the sparseness of the coverage afforded her party. Her mean evaluations fluctuated within a narrow range across the campaign without any obvious connection to fluctuations in the tone of the NDP's coverage. Indeed, if anything, there appears to be a negative relationship between the two. The only exception comes at the end of the campaign. In the final week, the tone of the coverage became more positive and leader evaluations seemed to follow suit, though it may well have been a case of too little, too late.

There is even less indication of a media effect in the case of the Liberal leader, Jean Chrétien. The tone of Liberal coverage and evaluations of the party's leader actually appear to be negatively related: when coverage was more positive, evaluations seemed to be more negative, and vice versa. Indeed, there is a striking disjuncture between the tone of coverage, which was almost always negative on balance, and mean ratings of the leader, which were consistently positive across the entire campaign.

Coverage of the Reform Party was also consistently negative in tone, but so were evaluations of the party's leader, Preston Manning. Indeed, the visual tracking suggests that the two trends were related. When coverage grew less negative, evaluations of the leader apparently became less negative as well, and when coverage became more negative, so, too, did leader evaluations.

The Conservative graph also suggests that media coverage had an effect, at least until the final week of the campaign. As coverage of the Conservative Party went from being mildly negative on balance at the start of the campaign to clearly positive in the wake of the leaders' debate, evaluations of the party's leader, Jean Charest, appeared to improve accordingly. In the final week of the campaign, though, coverage went from positive to negative, while leader evaluations continued to rise. This suggests (but only suggests) that the positive media coverage may have had a lasting effect.

While the graphical analysis is suggestive of the possible media effects, it *is* only suggestive. It offers no way of quantifying the effects or determining whether they are robust. Nor does it permit very much in the way of control. On the other hand, it does help us to anticipate the sort of effects that we should uncover in a more rigorous statistical analysis.

## Attentiveness Approaches

### Panel Analysis

With the panel analysis, the objective is to determine whether media-attentive respondents evaluated the party leaders more favorably—or less favorably—in the post-election survey than we would predict based on their campaign interviews. Given the overall trends in the tone of media coverage (see Table 1), we would expect media-attentive individuals to evaluate the Conservative and NDP leaders more favorably and the Liberal and Reform leaders less favorably than they did when interviewed during the campaign.

[Table 1 about here]

For the panel analysis, the dependent variable is the evaluation of the leader in the post-election survey (on a 0 to 100 scale) and the key independent variable is media attentiveness (on a 0 to 1 scale). The models also include the evaluation of the leader in the campaign survey and controls for party identification and relevant social background characteristics. The choice of socio-demographic controls was guided by prior analyses of vote choice in the 1997 election (Nevitte et al. 2000). Controls were also included for education and for feelings about politicians in general. To the extent that media attention is related to education, there is a risk of confounding the effects of the media with social background unless education is controlled for (Joslyn and Ceccoli 1996). Similarly, it is possible that people's evaluations of individual leaders are influenced by their overall feelings about politicians.

[Table 2 about here]

The results are not what we would expect, given the tone of each party's coverage (see Table 2.1). As predicted, the coefficients for the media attentiveness variable are positive for the Conservative leader and the NDP leader, both of whose parties received, on balance, positive coverage. However, the effects for the NDP leader are stronger than we would expect, given that the party's coverage was only mildly positive and rather sparse. Worse, the coefficients for the Liberal leader and the Reform leader are also positive, despite the fact that both their parties received coverage that was mostly negative on balance. A similar pattern holds when an information-based awareness measure is substituted for media attention. In other words, it is unlikely to be the result of using a flawed measure of attentiveness. Similarly, we can rule out the possibility that the media attentive and/or politically aware came to evaluate all four leaders more favorably in the post-election survey because they are more elite-like or more favorably disposed toward politicians. The fact is that this pattern held, despite the presence of controls for education and for feelings about politicians in general.

At least part of the reason for the perverse pattern is to be found in the questionable validity of the post-election leader evaluations. It is not simply that the post-election evaluations seem to have been influenced by the outcome of the election. The problem is that this tendency was much stronger for respondents who paid less attention to the media. In the post-election survey, the leaders of the three losing parties all received lower evaluations than they had in the final week of the campaign (results not shown). Because this effect was less evident among those who paid more attention, the effect of media attention on leader evaluations *appears* to be positive.

### Campaign Analysis (final week)

This problem is avoided by using data from the final week of the rolling cross-section campaign survey. The setup is exactly the same, except now, of course, the dependent variable is the evaluation of the leader during the final week of the campaign. The results are much more in

line with expectations (see Table 2.2). They suggest that the generally positive coverage of the Conservative Party did indeed enhance evaluations of the party's leader. Other things being equal, the most attentive rated Charest about five and a half points higher than people who paid little or no attention to news about the campaign on television did. The information-based awareness measure yielded a very similar estimate. Conversely, the most attentive rated the Reform leader about four and a half points lower than the inattentive did. The awareness measure, meanwhile, suggests a six-point spread between the least aware and the most aware. The negative impact on evaluations of the Reform leader is just what we would expect, given the almost wholly negative coverage accorded his party.

On the other hand, the consistently negative coverage received by the incumbent Liberal Party does not seem to have hurt the leader's ratings. Neither of the attentiveness measures has a significant effect. Chrétien had been prime minister since 1993 and was running (successfully) for a third time. It is likely that many voters had already more or less made up their minds about him, and were not going to be much influenced by the tone of media coverage.<sup>11</sup> There is also little, if any, sign of a media effect for the NDP leader. Her party's coverage was positive on balance, but there was probably too little of it to register with viewers.

### **Time-Series Analysis**

The other two approaches—the time-series analysis and the individual-level campaign analysis—both yield similar results. The time-series model aggregates the data for each daily replicate of the campaign sample and treats the day of interview as the unit of analysis. The dependent variable is the mean leader evaluation on a given day (on a 0 to 100 scale). For each party, this is regressed on the various measures of the tone of media coverage. We use a lagged endogenous specification that includes the mean leader evaluation on the preceding day. The tone of media coverage is not the only possible source of shifts in leader evaluations during an election campaign; campaign events can also be consequential. In order to sort out the independent effects of media coverage, our models include variables that capture the effects of key campaign events. These were the English televised leaders' debate that took place on May 12 and a controversial Reform Party television advertisement that aired on May 22 (see Blais et al. 1999; Nevitte et al. 2000, chapter 2).<sup>12</sup>

One of the limitations of the time-series approach is the very limited number of control variables that can be included. For each leader, we selected the key social background characteristics, as indicated by prior analyses of the 1997 election (see Nevitte et al. 2000). A control was also included for party identification. All of the controls took the form of dummy variables.<sup>13</sup>

[Table 3 about here]

The results indicate significant media effects for both the Conservative and Reform leaders (see Table 3). The best-fitting model for the Conservative leader suggests that the consistently positive coverage received by the Conservative Party in the days following the televised leaders' debates boosted average evaluations of the leader by three and a half points (on a 0 to 100 rating scale), and that this effect was lasting. This permanent effect model fits better than models that assume that the effect either disappeared as soon as the tone of coverage changed or else decayed over the next few days. Meanwhile, the consistently negative coverage received by the Reform Party in the fourth week of the campaign was associated with a drop of over three points in the leader's average evaluations. This effect is not as robust as the effect for the Conservative leader, but it nonetheless approaches—or surpasses—conventional levels of

statistical significance. The best-fitting model suggests that the effect decayed within two days.<sup>14</sup> It should be noted that these time-series models provide a conservative test of media effects in that they control for the impact of major campaign events

There is little to suggest that the negative coverage of the Liberals early in the campaign or the positive coverage of the NDP late in the campaign had any effect on evaluations of the leaders. In both cases, the coefficients are dwarfed by their standard errors and the negative values for the adjusted  $R^2$  confirm the inadequacy of the models.

### **Individual-Level Analyses**

Individual-level analyses of the rolling cross-section data overcome the chief potential shortcoming of the time-series approach, namely the small number of cases that result from aggregating the data for each day. The dependent variable is each respondent's evaluation of the leader in the campaign interview (on a 100-point scale). For each party, this was regressed on the various measures of the tone of media coverage. Because of the large number of cases, a more extensive set of socio-demographic controls could be included. Controls were also included for party identification and for campaign events.

[Table 4 about here]

The results for the Conservative leader and the Reform leader are very similar to those obtained using a time-series analysis (see Table 4). They suggest that the successive days of positive coverage in the wake of the televised leaders' debate did prompt some re-evaluation of the Conservative leader. But now the estimates suggest that this coverage could have boosted the Conservative leader's evaluations by almost four and a half points. Again, the best-fitting model indicates that this effect was lasting.

Like the time-series analysis, the individual-level analysis reveals a significant effect for the successive days of particularly negative coverage that Reform received in the fourth week of the campaign. This time, though, the estimated effects are a little weaker than they were with the time-series analysis. Still, the basic conclusion would be that the negative coverage was associated with a drop of over three points that probably decayed over the next couple of days.

The results for the Liberal leader basically agree with the time-series results: the signs may differ, but the coefficients are dwarfed by their standard errors. The results for the NDP leader, though, suggest that the negative relationship hinted at in the graphical analysis may indeed have obtained. It seems an odd effect, but it holds even controlling for a variety of plausible factors that could be shaping evaluations of the NDP leader. Indeed, incorporating a wider range of controls actually makes for a stronger and more robust effect. Perhaps this is a case of any coverage being good coverage, given that the party was basically "off the radar screen" in the 1997 election (Nevitte et al. 2000).

The individual-level data from the rolling cross-section can also be used to provide an assessment of the overall impact of media coverage for the four leaders together. This assessment is based on a stacked regression analysis (see van der Brug, van der Eijk and Franklin 2003). This required the creation of a data set with four "stacks", one for each leader. Each respondent is represented by up to four "cases", depending on the number of leaders that he or she rated. For this analysis, the dependent variable is the evaluation of the leader for every combination of respondent and leader. Because the stacking process strips away the party labels, the focus is no longer on the impact of media coverage on a given leader. Instead, this approach provides a summary estimate of the total impact of media coverage for the party leaders as a

whole. It is likely to be particularly useful when the analyst wants to make comparisons across elections and/or across countries.

In our stacked analysis, each respondent accounts for up to four observations, which means that the observations are not independent of one another. Accordingly, we estimated robust standard errors that do not make any assumption about a homoskedastic distribution of the error terms and we defined the multiple observations for each respondent as dependent (see van der Brug, van der Eijk and Franklin 2003).<sup>15</sup> The models contain the same set of controls for each party as in the leader-specific analyses.

[Table 5 about here]

The results indicate that the overall impact of media coverage on leader evaluations during the 1997 campaign was modest (see Table 5). When the impact of media coverage is assumed to be uniform across the four leaders, the best-fitting model is one that assumes that the effects of periods of consistently positive or negative coverage generally decayed after one or two days. When the Conservative effect is allowed to persist, the coefficient becomes marginally stronger.<sup>16</sup> However, the estimated impact is rather small, and it is of borderline statistical significance. Indeed, if we use a more conservative approach to estimating the standard errors (namely, weighting the number of cases down to the original sample size), the effects would no longer qualify as being statistically significant (results not shown).

### Discussion

The overall impact of media coverage on evaluations of the party leaders may have been modest in the 1997 Canadian election, but for two of the leaders, at least, the media effects were certainly not minimal. Clearly, the tone of campaign coverage *can* affect how voters evaluate the party leaders, as it did in the case of the Conservative and Reform Party leaders. Equally clearly, though, evaluations of the leaders can be quite unaffected by their party's coverage, as they generally were in the case of the Liberal and NDP leaders. Our results suggest two possible reasons. When coverage of the party is sparse or when a leader is already very well known to voters, media effects may well be minimal. Obviously, though, any one election provides a flimsy basis for specifying the conditions under which the tone of media coverage does or does not matter. What is needed now is some serious attention to theorizing these conditions.

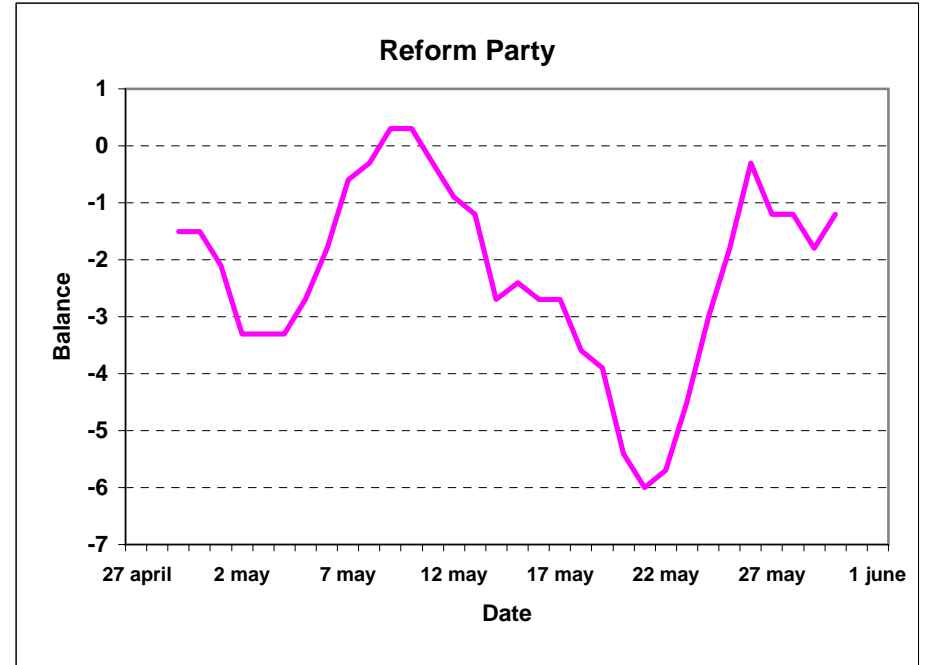
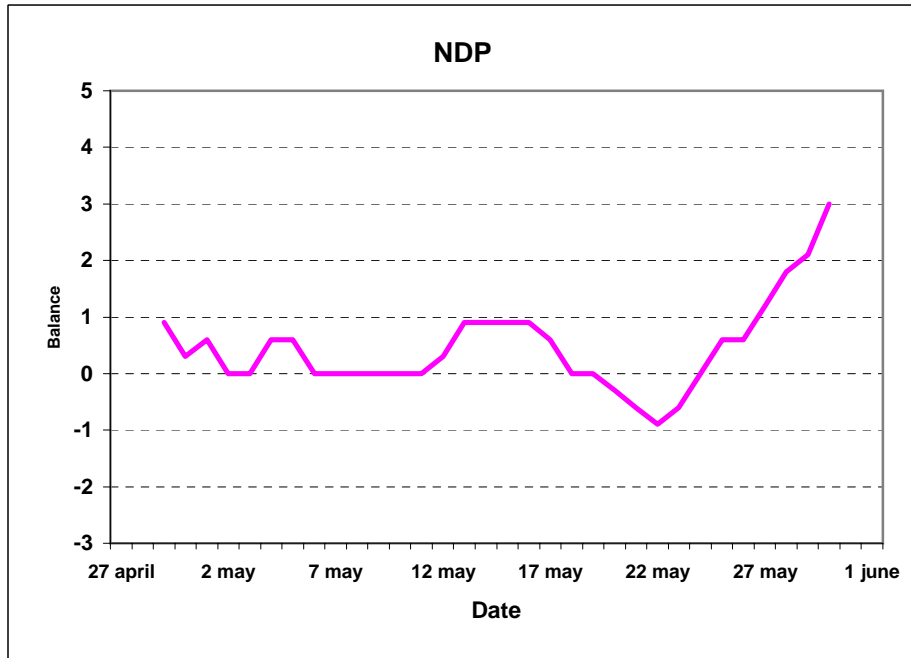
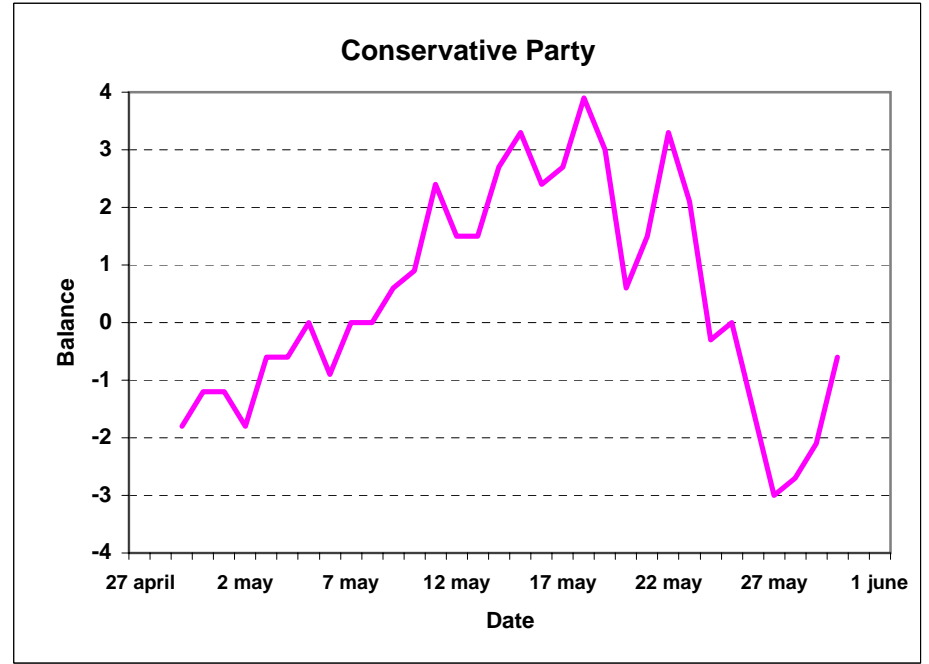
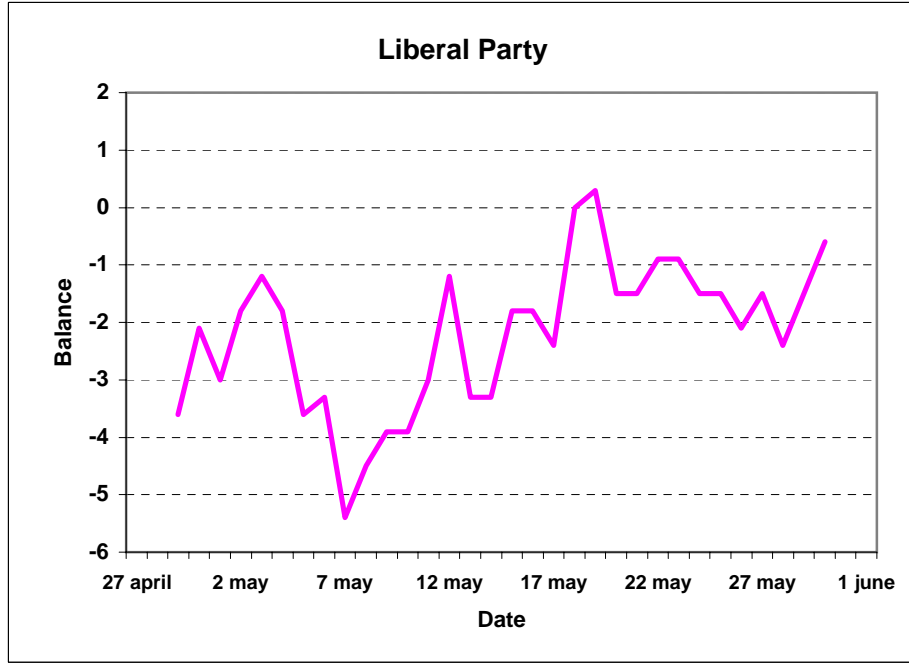
The more important conclusion to emerge from this study is that the combination of a rolling cross-section survey and a media content analysis is a powerful design for testing hypotheses about media effects. The least satisfactory approach proved to be the panel analysis. This was not because of any intrinsic flaw in the approach itself (over and above those that characterize the attentiveness approach in general), but because of problems with leader evaluations measured after the fact. In this case, using data from the final week of the campaign survey proved to be a more satisfactory way of getting a "bottom-line" estimate of how much media coverage mattered to voters' final evaluations of the party leaders.

Where the rolling cross-section design really comes into its own is in providing direct tests of the assumed linkage between leader evaluations and the tone of media coverage. The data can be aggregated by day of interview for a time-series analysis or the data from the daily sub-samples can be pooled for an individual-level analysis. The results of the latter are likely to be more robust because they are based on a much larger total sample size and because more controls can be incorporated.

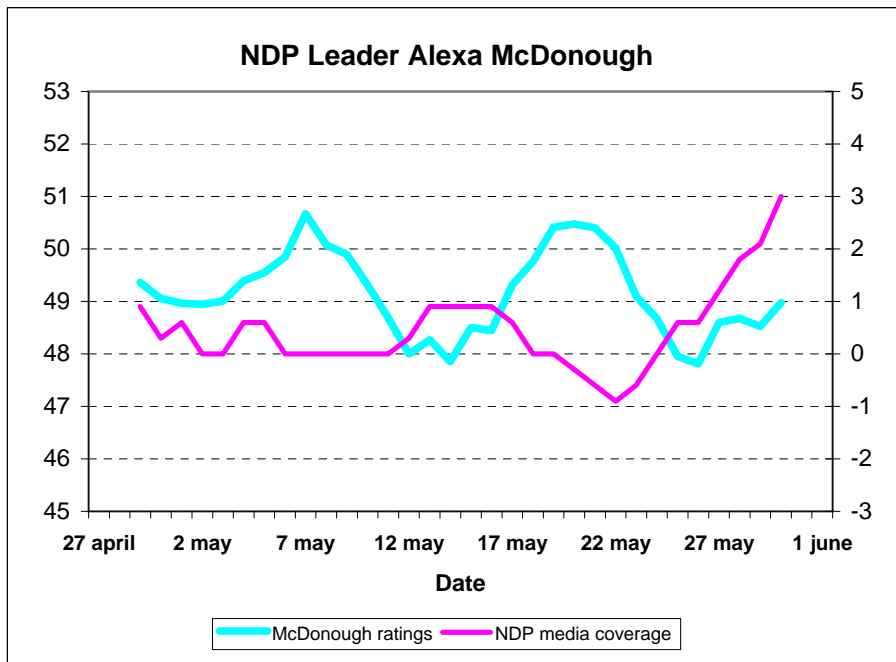
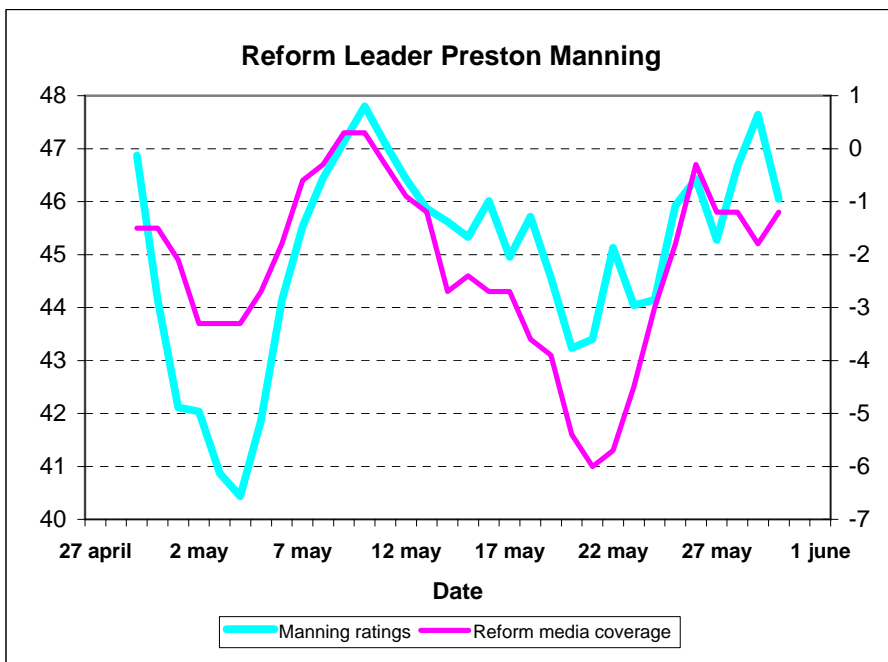
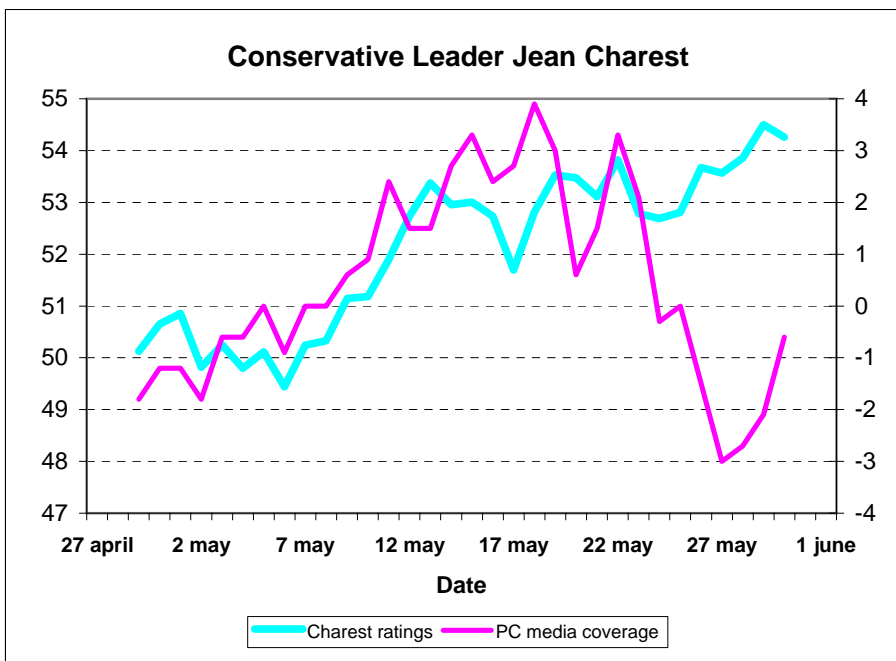
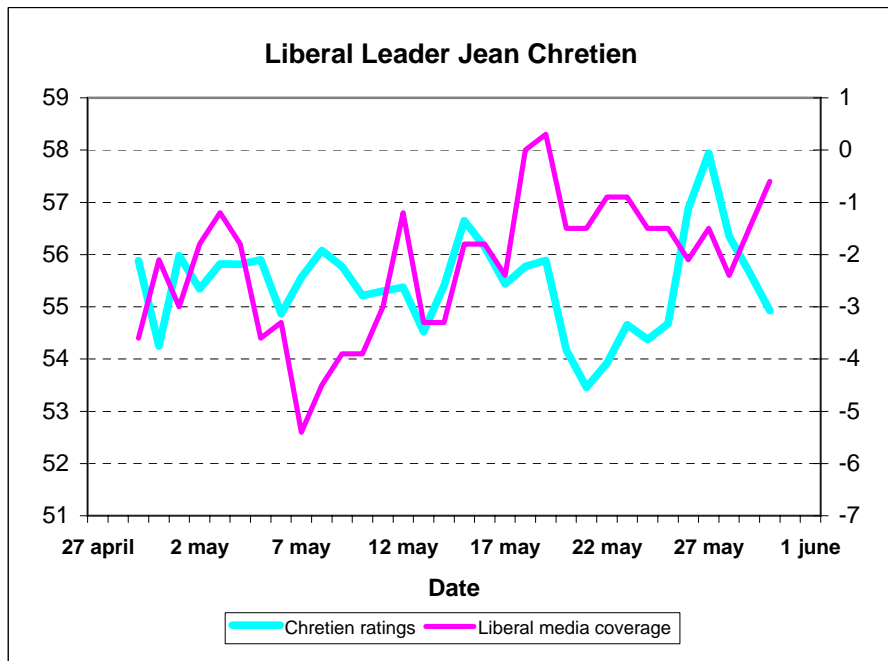
Rather than viewing these approaches as competitors, they should be seen as offering complementary ways of testing for media effects.<sup>17</sup> A graphical analysis can provide an initial

visual impression of the relationships that might hold between the tone of media coverage and leader evaluations. As such it can be helpful in specifying the form that media effects might take. Then a variety of statistical analyses can be undertaken to see whether the observed relationships are robust and hold in the face of pertinent controls. The attentiveness approach provides a “bottom-line” assessment of how much media coverage mattered to voters’ final appraisals of the party leaders, while time-series analyses and individual-level analyses of the pooled daily samples can be used to demonstrate whether there is indeed a link between the tone of media coverage and evaluations of the leaders. Where the results coincide, as they do in our study, we can then be confident that the media have indeed had more than minimal effects.

Figure 1: The Balance of Media Coverage by Party (five-day moving averages)



**Figure 2: The Balance of Media Coverage and Leader Evaluations by Party (five-day moving averages)**



**Table 1: The Tone of Media Coverage during the 1997 Canadian Federal Election***English language networks (CBC and CTV)*

	Overall balance of positive and negative coverage
Liberal Party	-81.0
Conservative Party	+28.5
NDP	+12.0
Reform Party	-76.5

**Table 2: The Impact of Media Attentiveness on Leader Evaluations****2.1 Panel Analysis**

	Conservative	Liberal	NDP	Reform
Attention	5.32 (1.59) <sup>***</sup>	4.07 (1.33) <sup>**</sup>	5.97 (1.64) <sup>***</sup>	3.62 (1.55) <sup>*</sup>
Adjusted R <sup>2</sup>	.31	.48	.25	.40
Number of cases	1,740	1,915	1,736	1,949
Awareness	6.39 (1.54) <sup>***</sup>	3.88 (1.28) <sup>**</sup>	5.66 (1.68) <sup>***</sup>	3.12 (1.54) <sup>*</sup>
Adjusted R <sup>2</sup>	.30	.46	.24	.40
Number of cases	1,808	2,000	1,804	2,036

**2.2 Campaign Analysis (final week only)**

	Conservative	Liberal	NDP	Reform
Attention	5.46 (2.60) <sup>*</sup>	0.40 (2.96)	1.87 (2.15)	-4.63 (2.83) <sup>*</sup>
Adjusted R <sup>2</sup>	.15	.27	.12	.19
Number of cases	536	591	534	600
Awareness	5.56 (2.37) <sup>*</sup>	2.38 (2.62)	-0.43 (1.97)	-5.98 (2.52) <sup>*</sup>
Adjusted R <sup>2</sup>	.15	.27	.12	.19
Number of cases	540	595	539	605

Note: column entries are unstandardized regression coefficients, with standard errors shown in parentheses. The regressions also included campaign evaluations (panel analysis only), social background characteristics including education, feelings about politicians in general, and intercepts. The full results are available from the authors.

\*\*\* p<.001    \*\* p<.01    \* p<.05    <sup>a</sup> p<.10

**Table 3: Time-Series Analysis of the Impact of Media Coverage on Leader Evaluations during the Campaign**

	Conservative	Liberal	NDP	Reform
Tone of media coverage	3.01 (1.10)**	-.40 (1.97)	-1.80 (3.04)	3.12 (1.67) <sup>a</sup>
Adjusted R <sup>2</sup>	.52	-.05	-.07	.14
Number of cases	35	35	35	35
Media effect assumed to decay after:				
1 day	2.64 (1.23)*	.37 (2.18)	n/a	3.40 (1.66)*
Adjusted R <sup>2</sup>	.47	-.05		.16
Number of cases	35	35		35
2 days	2.60 (1.31) <sup>a</sup>	.79 (2.24)	n/a	3.55 (1.70)*
Adjusted R <sup>2</sup>	.46	-.05		.17
Number of cases	35	35		35
3 days	2.87 (1.34)*	.92 (2.27)	n/a	3.36 (1.75) <sup>a</sup>
Adjusted R <sup>2</sup>	.47	-.05		.14
Number of cases	35	35		35
4 days	3.22 (1.35)*	.86 (2.27)	n/a	3.51 (1.79) <sup>a</sup>
Adjusted R <sup>2</sup>	.49	-.05		.15
Number of cases	35	35		35
Media effect assumed to be permanent	3.51 (1.24)**	n/a	n/a	n/a
Adjusted R <sup>2</sup>	.52			
Number of cases	35			

Note: column entries are unstandardized regression coefficients, with standard errors shown in parentheses. The regressions also included party identification, media events, social background characteristics, and intercepts. The full results are available from the authors. No decay is modeled for the NDP since the period of positive coverage came at the very end of the campaign.

\*\*\* p<.001    \*\* p<.01    \* p<.05    <sup>a</sup> p<.10

**Table 4: Individual-Level Analysis of the Impact of Media Coverage on Leader Evaluations during the Campaign**

	Conservative	Liberal	NDP	Reform
Tone of media coverage	3.40 (1.21)**	-.41 (1.39)	-.3.95 (1.78)*	2.48 (1.15)*
Adjusted R <sup>2</sup>	.08	.15	.09	.14
Number of cases	2,144	2,397	2,143	2,448
Media effect assumed to decay after:				
1 day	3.58 (1.30)**	-.26 (1.41)	n/a	3.11 (1.17)**
Adjusted R <sup>2</sup>	.08	.15		.14
Number of cases	2,144	2,397		2,448
2 days	3.69 (1.38)**	-.14 (1.44)	n/a	3.30 (1.20)**
Adjusted R <sup>2</sup>	.08	.15		.14
Number of cases	2,144	2,397		2,448
3 days	3.72 (1.45)**	-.01 (1.46)	n/a	3.23 (1.23)**
Adjusted R <sup>2</sup>	.08	.15		.14
Number of cases	2,144	2,271		2,448
4 days	3.90 (1.51)**	-.20 (1.47)	n/a	3.29 (1.28)**
Adjusted R <sup>2</sup>	.08	.15		.14
Number of cases	2,144	2,397		2,448
Media effect assumed to be permanent	4.43 (1.42)**	n/a	n/a	n/a
Adjusted R <sup>2</sup>	.08			
Number of cases	2,144			

Note: column entries are unstandardized regression coefficients, with standard errors shown in parentheses. The regressions also included party identification, media events, social background characteristics, and intercepts. The full results are available from the authors. No decay is modeled for the NDP since the period of positive coverage came at the very end of the campaign.

\*\*\* p<.001    \*\* p<.01    \* p<.05    <sup>a</sup> p<.10

**Table 5: Stacked Analysis of the Impact of Media Coverage on Leader Evaluations during the Campaign**

	Media Coefficient
Tone of media coverage	1.36 (.88)
R <sup>2</sup>	.15
Number of cases	8,466
Media effects assumed to decay after:	
1 day	1.63 (.92) <sup>a</sup>
R <sup>2</sup>	.15
Number of cases	8,466
2 days	1.62 (.95) <sup>a</sup>
R <sup>2</sup>	.15
Number of cases	8,466
3 days	1.56 (.97)
R <sup>2</sup>	.15
Number of cases	8,466
4 days	1.51 (.98)
R <sup>2</sup>	.15
Number of cases	8,466

Note: column entries are unstandardized regression coefficients, with robust standard errors shown in parentheses. Multiple observations for the same respondent were defined as being dependent. The regressions also included party identification, media events, social background characteristics, and intercepts. The full results are available from the authors.

\*\*\* p<.001    \*\* p<.01    \* p<.05    <sup>a</sup> p<.10

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## **Description of the Main Variables**

### **Leader Evaluations:**

In both the campaign and post-election surveys, respondents were asked to rate each leader on a scale from 0 to 100: “How do you feel about (name of the leader) on a scale from 0 to 100 where 0 means you really dislike him/her and 100 means you really like him/her?” The order of presentation of the leaders was randomized. In the campaign survey, a filter was used to exclude respondents who had responded “nothing at all” when asked in a previous question how much they knew about the leader. These respondents were given the neutral score of 50, and so were respondents who said they did not know how to rate the leader.

### **Media attentiveness:**

The variable is a scale from 0 to 10 indicating the degree of attention respondents paid to television news about the election, based on the following question asked in the campaign survey: “On a scale from 0 to 10, how much attention did you pay to the news about election on TV?”

### **General awareness:**

The variable is an index made up of four questions from the campaign survey:

“Do you recall the name of the president of the United States?”

“Do you recall the name of the federal Minister of Finances?”

“Do you recall the name of the Prime Minister of your province?”

“Do you recall the name of the first women Prime Minister of Canada?”

The index is the sum of the four scores divided by 4.

### **Party identification:**

Four variables have been created, one for each party using two questions from the campaign survey: “In federal politics do you usually think of yourself as (name of the party) or none of these?” and “How strongly (name of the party) do you feel: very strongly, fairly strongly, or not very strongly?” Each variable takes the value of 1 when the respondent has a strong/fairly strong identification with that party, 0 if the respondent either does not identify with the party or identifies not very strongly.

## Endnotes

This research was made possible by a grant from the Social Sciences and Humanities Research Council of Canada under its Major Collaborative Research Initiatives Programme. The authors would like to thank Blake Andrew for his research assistance.

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<sup>1</sup> We have not conducted subgroup analyses for this paper since our purpose is simply to illustrate the different possible approaches to assessing the overall impact of the media.

<sup>2</sup> Only 19 interviews could be completed on the day the election was called, and so our analyses only begin with the second day of the campaign (April 28). Further information on the design of the study can be found in Northrup (1998).

<sup>3</sup> The inter-coder reliability (based on a random sample of 10 percent of the stories) was a very acceptable 89 percent (see Holsti 1969, 160).

<sup>4</sup> For a full discussion of the results, see Nevitte et al. (2000, Chapter 3).

<sup>5</sup> The balance equals the number of positive stories minus the number of negative stories, divided by two (the number of coders). This seems preferable to a measure that simply averages the scores since it takes account of the relative amount of positive versus negative coverage. It is reasonable to suppose that three positive stories on a single night would carry more weight with voters than a lone positive story, but simply averaging the coverage would yield the same score (+1) for both scenarios.

<sup>6</sup> When the time-series analyses were run using the preceding day's coverage, there were no significant effects for any of the four leaders. However, the individual-level analyses suggested that the preceding day's coverage may have had a significant effect for the Reform leader. The coefficient for the NDP leader was negative.

<sup>7</sup> An alternative approach would be to cumulate coverage across successive days preceding the day of interview. The drawback of this approach is that it assumes that leader evaluations rise and fall with the ebb and flow of coverage and yet the effects of successive days of positive coverage were clearly enduring in the case of the Conservative leader. When this measurement approach was used, only one of the coefficients suggested that the media coverage affected evaluations of the Conservative leader.

<sup>8</sup> Since we are dealing with the 10 p.m. news, we assume that the effects of a period of particularly positive or particularly negative coverage will only begin to show up the day after the period begins. For example, the Reform media variable takes the value of -1 from May 19 to May 25 because the period of particularly negative coverage began on May 18 and ended on May 24.

<sup>9</sup> For example, assuming that it takes four days for the effect to decay, the scores would decrease by 0.2 per day down to 0. Thus, the Reform variable would take the value of -1 between May 19 and May 25, -0.8 on May 26, -0.6 on May 27, -0.4 on May 28, -0.2 on May 29, back to 0 on May 30 for the remainder of the campaign.

<sup>10</sup> Five-day moving averages cannot be computed for the first two days and the last two days, and so they are omitted. The margin of error for the five-day moving averages is four percentage points.

<sup>11</sup> We also estimated a model that assumed a curvilinear relationship between media attention/awareness and leader evaluations, but there was nothing to suggest that those in the medium attention and/or awareness categories were more influenced by the tone of media coverage.

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<sup>12</sup> Conservative leader Jean Charest was widely considered to have been the winner in both the English and the French language debates. The Reform advertisement raised the issue of whether the national unity question should be left to Quebec politicians (both Liberal leader Jean Chrétien and Conservative leader Jean Charest hailed from Quebec). The effects of both the leaders' debate and the Reform advertisement were only temporary. Accordingly, we use four variables to represent these effects: DEBATE (which takes the value of 0 until May 12, the day of the English debate, and values of 1 to 20 in the 20 days following the debate; DEBATE<sup>2</sup>; AD (which equals 0 until May 22, the day the advertisement was first aired, and 1 to 10 in the 10 days afterwards); and AD<sup>2</sup>.

<sup>13</sup> The characteristics were: region, ethnicity, religion (except the NDP), sex (NDP and Reform only), and union membership (Liberal and NDP only).

<sup>14</sup> We experimented with models that assumed the effect took up to 6 days to decay, but the fit of these models was clearly inferior.

<sup>15</sup> This was achieved by using the "cluster" option in STATA.

<sup>16</sup> The coefficients were 1.69 (.93) and 1.73 (.95), depending on whether the other effects were assumed to decay after one day or two days.

<sup>17</sup> Indeed, when used in conjunction with a media content analysis, the rolling cross-section design makes it possible to incorporate the effects of media attention into the linkage approach (see Dobrzynska, Blais and Nadeau 2003). For example, interaction terms could be created to determine whether media effects are stronger for those who pay the most attention to the media or parallel analyses could be performed for subgroups defined by the amount of attention paid to the media. However, this does not obviate the main drawback of the linkage approach since there is still no "bottom-line" assessment of the impact of media coverage.