The Cognitive Processing of Politics and Politicians: Archival Studies of Conceptual and Integrative Complexity

Peter Suedfeld
The University of British Columbia

ABSTRACT This article reviews over 30 years of research on the role of integrative complexity (IC) in politics. IC is a measure of the cognitive structure underlying information processing and decision making in a specific situation and time of interest to the researcher or policymaker. As such, it is a state counterpart of conceptual complexity, the trait (trans-situationally and transtemporally stable) component of cognitive structure. In the beginning (the first article using the measure was published in 1976), most of the studies were by the author or his students (or both), notably Philip Tetlock; more recently, IC has attracted the attention of a growing number of political and social psychologists.

The article traces the theoretical development of IC; describes how the variable is scored in archival or contemporary materials (speeches, interviews, memoirs, etc.); discusses possible influences on IC, such as stress, ideology, and official role; and presents findings on how measures of IC can be used to forecast political decisions (e.g., deciding between war and peace). Research on the role of IC in individual success and failure in military and political leaders is also described.

The author’s research on integrative complexity would not have been possible without the collaboration of many colleagues as well as graduate and undergraduate students—too many to be listed here, but the names of most can be found in the References section—and funding from the Canada Council, the Social Sciences and Humanities Research Council of Canada, and, more recently, Defence Research and Development Canada. I am also grateful for the insightful comments about an earlier version of this article by Margaret G. Hermann, who suggested the elaboration of the link between IC and stages of policymaking.

Correspondence concerning this article should be addressed to Peter Suedfeld, The University of British Columbia, Department of Psychology, 2509-2136 West Mall, Vancouver, BC Canada V6T 1Z4. Email: psuedfeld@psych.ubc.ca.

Journal of Personality 78:6, December 2010
© 2010 The Author
Journal of Personality © 2010, Wiley Periodicals, Inc.
DOI: 10.1111/j.1467-6494.2010.00666.x
THEORETICAL BACKGROUND

“Ways of thinking” have long been considered as stable personality characteristics, although not always labeled that clearly. Intelligence, for example, is to a large extent a matter of thinking style, and it has hallmarks of many personality traits: it is quite stable across time and situations, affects behavior in a variety of ways, and has a strong innate component. The classic concept of authoritarianism (Adorno, Frenkel-Brunswik, Levinson, & Sanford, 1950), although based on the psychoanalytic theory of child development, clearly has cognitive implications. The thinking of people high in authoritarianism is characterized by rigidly held ideas, black-or-white evaluations, and a reluctance to consider alternative beliefs as legitimate. Other personality systems, some more and some less clear in their cognitive foundations, include dogmatism, field independence, personal constructs, explanatory style, need for cognition, and need for closure (see, e.g., Suedfeld & Tetlock, 2001).

Cognitive style theories entered the study of personality characteristics more explicitly in the course of the cognitive revolution in psychology during the 1960s. One subset of these theories focused on cognitive complexity, generally thought of as a combination of flexibility, high levels of information search, and tolerance for ambiguity, uncertainty, and lack of closure. Some provided psychometric instruments to measure individual differences in complexity, allying these approaches even more closely with those of more traditional personality theorists (see, e.g., Schroder & Suedfeld, 1971).

DECISION-MAKING EXPERIMENTS IN CONCEPTUAL COMPLEXITY

Conceptual complexity theory (Schroder, Driver, & Streufert, 1967), like other cognitive complexity approaches, asserted that ways of processing information constitute an individual difference dimension that can be usefully considered a personality trait. Conceptual complexity was measured by a semiprojective sentence (later, paragraph) completion test, the PCT. The PCT presented experimental subjects with six words or phrases (stems), each of which was to serve as the beginning of a paragraph on the same topic, to be written within a specified time limit (usually 90–12 min per paragraph).
The sentence stems represented a number of personally important topics, such as relations to authority (e.g., “Rules . . .”), uncertainty (e.g., “When I don’t know what to do . . .”), and social rejection (e.g., “When a friend acts differently toward me . . .”). The specific words and phrases could be varied to suit the subject sample; for instance, “Parents . . .” could be used as an authority stem with young students, but not with adults.

Conceptual complexity theory made two crucial departures from most cognitive complexity formulations. As we discuss later, both of these are also shared by the theory’s later derivative, integrative complexity theory. One novelty is the theory’s definition of complexity. Most other approaches measure complexity as the ability to notice and process many divergent pieces of information relevant to the topic under consideration, such as a problem situation that needs to be solved, or the characteristics of a competing group or person. Conceptual complexity theory incorporates this ability to perceive different dimensions within, or perspectives about, a target (differentiation), which in this schema is a prerequisite for the next step up in complexity: the explicit perception of connections among the dimensions or perspectives (integration). The relationships thus recognized could be interactions, trade-offs, syntheses, or belonging to a superordinate schema such as the global economy, a school of philosophy, or the march of history.

The second crucial aspect of the scoring system is that it measures the structure of thought, not its content. Structure refers to the conceptual rules utilized in thinking, deciding, and interrelating: how people think, not what they think. Any belief or thought might be expressed at any level of complexity, and conversely, opposing ideas can be expressed at the same level. Thus, for example, “Rules should always be obeyed” and “Rules are made to be broken” are contradictory in content, but identical in structure: neither shows any differentiation or integration, and both would be scored as Level 1, the lowest level of complexity (see Table 1).

The research of Schroder et al. (1967) relied primarily on experimental methodology. Perhaps the most prominent tool was the use of role-playing groups, in which teams of about three university students made decisions within a politico-military simulation. A series of studies found that groups made up of relatively complex individuals did in fact show more flexibility in planning, more information search, more consideration of what the other side might
<table>
<thead>
<tr>
<th>Score</th>
<th>Definition</th>
<th>Illustrative Example</th>
<th>Explanation of Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No differentiation</td>
<td>I refuse to even discuss it. I will tell them what we’re going to do, and they can just wait until I get around to it. I am not at all interested in what they want to happen or what they think of my plans.</td>
<td>A single rule for decision making, and an explicit rejection of other perspectives.</td>
</tr>
<tr>
<td>3</td>
<td>Differentiation</td>
<td>We are trying to find a solution. We will consult various stakeholders and consider the need for the program, its cost, and how it compares to the other available options. At some point, when we have the relevant information, we will choose the best program.</td>
<td>Recognition of several sources of information (various stakeholders) and dimensions (need, cost, comparisons) of the problem needed to make a decision; acceptance of delay in coming to closure until relevant information is obtained.</td>
</tr>
<tr>
<td>5</td>
<td>Differentiation Integration (trade-off)</td>
<td>Investing in “green” industry will benefit some aspects of the economy, but those benefits may come at a cost to other industries. A decline in those industries may in turn make further “green” investments impossible. Of course, “green” investments may also make other</td>
<td>Recognition of possible wider impacts of a decision to invest in “green” industry, and of the reciprocal interactions between such investments and the state of other economic sectors.</td>
</tr>
</tbody>
</table>

(Continued)
Table 1 (Cont)

<table>
<thead>
<tr>
<th>Score</th>
<th>Definition</th>
<th>Illustrative Example</th>
<th>Explanation of Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Differentiation</td>
<td>Sacrificing agricultural production in order to devote more manpower and funds to</td>
<td>Consideration of the interactive relationship (trade-off) between investments in</td>
</tr>
<tr>
<td></td>
<td>Integration within a superordinate schema</td>
<td>industrial development will be a hardship for our people. It will, however, lead to</td>
<td>agriculture and industry, and between present and long-term drawbacks and benefits.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>a better life for the people in the future and deter potential enemies abroad. The</td>
<td>These considerations are then subsumed under an overarching schema concerning the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>present sacrifice for future gain will enable us to fulfill our historical destiny</td>
<td>nation’s “historical destiny.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>in the inexorable march of human progress.</td>
<td></td>
</tr>
</tbody>
</table>
be doing, greater incorporation of new and sometimes dis-confirmatory information in further actions, tighter connections between earlier and current decisions, and better functioning in conditions of information underload or overload. One of the authors, Michael J. Driver (1962), working in Guetzkow’s Inter-Nation Simulation laboratory (1959), showed how information processing lost its multidimensional and relatively complex nature under extreme stress. As the threat of simulated war loomed larger, the role-playing teams increasingly focused on only two aspects of other nations in the simulation: their military strength and whether they were likely to be allies or enemies in the conflict. Although conceptually complex subjects resisted this trend longer, they too eventually ignored other characteristics, which in a time of major war became irrelevant.

INTEGRATIVE COMPLEXITY IN THE “REAL WORLD”

Integrative complexity (IC) theory, an offshoot of conceptual complexity, differs in two important ways from its predecessor (Suedfeld, Tetlock, & Streufert, 1992). One difference is theoretical, the other methodological. Theoretically, the IC model treats differentiation and integration as characterizing information processing at a particular time. The level of complexity in any given situation is thought to be jointly determined by personality (conceptual complexity), by other internal factors (e.g., fatigue, emotional arousal), and by external situational factors such as danger and time pressure. In this model, conceptual complexity is the trait component and integrative complexity the state component, akin to Spielberger’s concept of state and trait anxiety (e.g., Gaudry, Vagg, & Spielberger, 1975). Although, as we shall see, some IC studies show an important contribution of trait complexity, for the most part the research emphasis is on how state complexity, IC, changes under certain circumstances.

The second important innovation is a methodological one. In the measurement of IC, the criteria for scoring complexity are separated from the PCT and from specific tests. Rather, the material being scored is archival, produced during the day-to-day “real-life” activities of the source rather than in the context of research. Thus, the measure is unobtrusive, is noninvasive, and has very high ecological validity.
Because the crucial difference between conceptual and integrative complexity is in the emphasis on the latter’s dynamic qualities, much of the research is concerned with the conditions under which IC changes and the effects of those changes on information processing and decision making. Here, the guiding principle is the cognitive manager model (Suedfeld, 1992b).

The Cognitive Manager Model

The cognitive manager model is basically a resource-depletion model that tracks how relevant variables affect the level of state complexity. The model suggests that the path of increasing and declining IC as a cognitive resource is analogous to Selye’s General Adaptation Syndrome (1956), which traces the impact of stress on the organism’s ability to maintain physiological health.

The core idea of the cognitive manager model is that high-level complex thinking draws upon more resources, cognitive and other, than lower levels of processing. Complex information processing takes more time and more cognitive effort, ties up more psychological and material resources in information seeking and in formulating and evaluating plans, requires that other problems be ignored or deemphasized, and so on. Therefore, a good cognitive manager will devote to any decision or situation only as much complexity as is warranted by its importance (in comparison to all others that exist at the same time) and by the resources available. If a good cognitive manager perceives that an issue or a problem is not worth much investment or can be solved at a simple cognitive level, IC will be relatively low; if, on the other hand, the situation is both important and resistant to simple solutions, IC will rise. Both excessively high and excessively low levels of IC may be counterproductive, depending on the situation. There are situations in which processing at a high level of IC squanders time and resources that might be better devoted to other problems, as well as situations where low IC leads one to overlook important factors that are needed for an optimal solution. What is crucial is an appropriate match between the IC level needed to solve the problem and the level at which the person actually addresses it.

According to the model, every individual has a limited capacity for maintaining cognitive functioning at a high level. This capacity may differ from person to person according to his or her cognitive
resources. These resources represent an individual difference that is related to cognitive power (intelligence, creativity) and to cognitive styles, including conceptual complexity.

When a problem is first recognized, the person draws upon those cognitive resources to find a solution to it (analogous to Selye's "stage of alarm"). At this point, IC increases as the individual tries to identify various aspects of the problem, its implications, and possible alternative strategies for solving it (differentiation), and ideally to generate solutions that combine the various aspects and best-fit solutions to find an optimal strategy (integration). This is the counterpart of Selye's "stage of resistance."

The strategy may be successful at some level of IC, or the problem may end or be resolved through some other means. In either of those cases, the person returns to baseline IC in order to avoid expending cognitive resources unnecessarily. This may also happen if the problem is judged to be unimportant or at least not immediately important. However, if it is important and if the original approaches fail to solve it, continued investment of cognitive resources is necessary. IC in that case remains at the elevated level or rises even further.

Eventually, the individual's cognitive resources may be so depleted as to enter the equivalent of what Selye called the "stage of exhaustion." The problem may be important but for some reason unsolvable, or there may be too many other problems distracting the person, or the person may be too frustrated, ill, tired, or stressed to continue a high-level information-processing strategy. In any case, the cognitive resources for dealing with the issue are depleted. At that point, a steep reduction in IC will occur. This is the phenomenon called "disruptive stress." As a general pattern, when the high level of stress ends, IC returns to or even above its baseline level.

We shall next look at how IC scoring is applied to archival material. More detailed scoring rules and examples are available in Baker-Brown et al. (1992).

**Scoring Procedure and Considerations**

The basic scoring unit is the paragraph, adjusted as necessary to allow for differences in writing styles and conventions. Table 1 shows the definitions, gives examples, and explains the scoring bases of the four nodal scores (1, 3, 5, and 7); scores of 2, 4, or 6 are assigned when a passage contains some, but not sufficiently explicit,
indicators of the next higher score. Scores for paragraphs in a particular document are averaged to calculate a mean IC score for that document; when several documents are scored from the same source in a specific situation or time, the mean of those scores becomes the data point.

Scorers use a detailed manual (Baker-Brown et al., 1992) and are authorized to score independently only after passing a training course and achieving a reliability of \( \kappa = 0.85 \) or higher with the scores of experts on a common set of test materials. In research studies, scorer reliability is calculated between at least two qualified scorers working with overlapping portions of the material; again, a minimum of \( \kappa = 0.85 \) is required for scores to be accepted as correct.

With the exceptions of quotes, sarcasm, clichés, purely factual descriptions, and very short passages, the IC scoring system can be applied to almost any connected verbal (written or oral) material. It is thus possible to score a wide variety of both archived and contemporaneous materials, including those produced by people who are not accessible to psychological researchers. Scores can be derived from the statements of world leaders or people who lived centuries ago, as well as from the narratives of radio or television commentators in real time as they come over the air.

**Questions and Answers**

Frequently raised questions about scoring IC from archival materials have addressed issues of validity and possible artifacts. Among these are whether one is justified in scoring material that may have been written by people other than the identified source (e.g., speechwriters); whether IC can be deliberately manipulated by a source wishing to project a particular image; whether lying affects the IC score; whether IC changes depending on the audience; and whether interest or expertise in a particular area affects the complexity of the person in discussing that area. We shall take up these questions in turn.

**Speechwriters**

Modern leaders are known to use speeches and other materials originally prepared by aides. The question naturally arises whether researchers using archival materials are scoring the IC of the purported
source or that of a professional speechwriter. So far, no reason for major concern has been found. Several studies have confirmed that there is little, if any, difference between the complexity scores of private and public materials originated by a particular individual, where the latter might have been the work of an aide. The same is true of comparisons between spontaneous and prepared speeches, such as those during Question Period versus the Speech from the Throne (the latter not necessarily written by the Prime Minister alone) in the Canadian Parliament (Ballard, 1982). Furthermore, the IC scores of materials unquestionably originated from a known leader (e.g., handwritten drafts) do not differ significantly from those possibly or definitely produced by his or her speech- or ghostwriters (e.g., Suedfeld & Tetlock, 1977). Presumably, such subordinates (a) are selected to write in ways that are compatible with the way of thinking of their principal and (b) either revise their work in accordance with the directions of the principal or have it revised by that person (e.g., Donaldson-Evans, 2005; Frum, 2003).

Impression Management

Is it likely that a source could manipulate the complexity of utterances with the goal of being perceived by the audience as having certain beliefs, knowledge, policies, or intentions? Such an attempt may or may not be deceptive, as the individual may want to make his or her true position clear and unmistakable, or to disguise that position. Thus, according to the impression management hypothesis (e.g., Tetlock, 1985; Tetlock & Manstead, 1985), a leader who wants to be thought of as decisive and determined may strive to communicate at a low level of complexity; conversely, one who wishes to be seen as flexible, moderate, and considerate to opponents may manipulate his or her text in a way that results in a high IC score. The hypothesis does not, of course, require or imply that the source be aware of the IC concept. Rather, there may be some intuitive level of understanding guiding the phraseology (incidentally, there is evidence that people do hold some such implicit “feel” for some aspects of IC; Suedfeld, de Vries, Bluck, Wallbaum, & Schmidt, 1996).

Although the hypothesis is intuitively plausible, and although some experimenters have reported that explicit instructions can lead people to increase at least differentiation in the next task, there is no evidence that people dealing with real issues spontaneously and
intentionally manipulate their levels of IC. In fact, many studies show leaders scoring either low or high in IC when logic and common sense suggest that this is to their disadvantage (e.g., Suedfeld & Wallace, 1995; Tetlock & Tyler, 1996; Wallace, Suedfeld, & Thachuk, 1993). Content can, of course, be manipulated consciously; but this is less likely to be true of structure. Leaders trying to lull opponents into a false sense of security may overtly (and falsely) deny any intention of going to war (or, conversely, may rattle their rhetorical saber in order to deter an opponent) while the same statements reveal their true intentions in a pattern of IC reduction (or maintenance).

Another disconfirmation of the hypothesis is the consistency of IC across private and public utterances occurring in the same time frame, such as diary entries and letters to family compared with official documents and memoranda. In the case of private materials, there seems to be no reason for impression management, yet their IC shows no great difference from those found in materials intended for public consumption (e.g., Gruenfeld, Thomas-Hunt, & Kim, 1998; Suedfeld & Rank, 1976; Tetlock & Tyler, 1996). All of these data are inferential, of course, and there is no obvious path to a definitive solution (Tetlock & Manstead, 1985).

Lies and Truths

Related to impression management is the question of whether IC varies as a function of intent to deceive the audience. Discrepancy between content and structure may be one indicator of dishonest intentions revealed through IC scoring. Conway et al. (2008) asked university students to write essays on political topics either reflecting their actual opinions or the opposite. Deceptive essays were higher in IC than truthful ones; but interestingly, in another part of the study that asked students to write on unimportant, nonpolitical issues, the opposite pattern was found.

Conversely, harmony between structure and content may be a sign of sincerity. One study (Suedfeld, Tetlock, & Jhangiani, 2007) applied three content-analytic methods to speeches by President George W. Bush in which he spoke about foreign nations and leaders that either supported the U.S. invasion of Iraq or not, and that either did or did not share America’s democratic, capitalist, and nontheocratic ideology. The three measures included one of
cognitive structure (IC), one of motivation, and one of psychological
closeness. The pattern of scores was as would be expected if Bush's
feelings about these countries were as he proclaimed. There was high
psychological distance from enemies ("the Axis of Evil") and from
uncommitted friends (the "Axis of Weasels"), with closeness to
committed allies; a wish to influence neutrals and enemies (high need
for power), but not friends; and highest complexity when addressing
 neutrals who might be swayed (cf. the section on Accountability,
below), but not friends (who did not need to be persuaded) or
enemies (whom it was impossible to persuade).

Accountability

Being answerable for one’s words and acts to the intended or ex-
pected audience is another variable identified by Tetlock (e.g., 1983).
He has found that IC varies as a function of whether the views of the
audience are known to the source being scored, whether those views
are compatible with the source’s own, and whether the source ex-
pects that the audience will be able to identify who originated the
materials. IC is higher when the audience is known to start from a
position of criticism or disagreement (this is similar to the higher IC
of incumbents than challengers; see below) and when the source will
be identifiable. The available evidence from experimental research
supports this argument; the cognitive manager model predicts that
conditions calling for more cognitive effort—such as trying to con-
vince an unfriendly audience—will lead to IC increases.

Domain Specificity

People tend to exhibit higher IC when dealing with issues in which
they have particular interest and/or knowledge. A politician whose
background is in foreign policy will speak about that domain with
higher IC than while debating problems with the tax laws; a social
psychologist will show higher IC when lecturing on that subject than
when the introductory psychology syllabus moves on to neuropsy-
chology; Mikhail Gorbachev consistently showed higher complexity
in discussing foreign rather than domestic policy (Suedfeld, 2000;
Wallace, Suedfeld, & Thachuk, 1996). This pattern is the outcome of
the fact that more knowledge generally involves the recognition of
nuances, alternate explanations, and the relationships among variables and alternative outcomes.

However, there are also conditions under which domain specificity disappears: most obviously, upon reaching the level of disruptive stress. From that point on, a low IC level may characterize utterances regardless of the subject matter. People under extreme stress consistently show drops in IC regardless of the topic or the intended audience (including themselves, as they write in their diary).

MAJOR RESEARCH RESULTS

Research on IC can be categorized along several lines. Studies vary in how much emphasis they place on conceptual as well as integrative complexity. Subjects are people from very different walks of life. They may be political or military leaders; they may be midlevel functionaries, such as legislators or judges; they may also be ordinary citizens, students, artists, scientists, newspaper editors, or reporters. Related to these differences is the fact that both the problems being faced and the impact of the solutions differ greatly, from those affecting only the individual—serious illness or a career setback—to those with life-or-death implications for millions of people, as when a prime minister and cabinet are deciding how to deal with potential aggressors and a possible world war.

The study of large-scale events is both fascinating and important. War, peace, revolutions, international negotiations, elections, and the people who play major roles in them—statesmen, legislators, dictators, political candidates, diplomats, governments, generals, and ambassadors—all hold a grip on the scholarly and public mind. IC researchers are no exception. The focus of the present article is on the light that IC research has shed on political processes and outcomes; the sizable research literature on its role in other domains of thinking and decision making is not reviewed here.

STUDIES OF INDIVIDUAL LEADERS

As IC is theorized to derive from the interaction between conceptual complexity and other factors, including stress, one highly researched area is at the confluence of those variables. As a rule, stress is not directly measurable from archival materials; rather, it is inferred
from what is known about the particular situation: external pressures and dangers, and internal states such as illness, fatigue, fear, and uncertainty.

**Stable Levels of Complexity**

It appears that some leaders are characterized by generally high levels of conceptual (trait) complexity; this group can be subdivided into those whose IC remains high even during stressful times and others who show IC drops when the situation becomes too adverse or when their personal resources become exhausted. One study (Wallace & Suedfeld, 1988) investigated the remarkable career of Andrei A. Gromyko, who somehow managed to retain high-level posts in Soviet and post-Soviet diplomacy from the reign of Josef Stalin through the presidency of Mikhail Gorbachev, ending in the presidency of the country.

Averaged over a database of seven major crises, 15 American and Soviet leaders showed major IC drops from the precrisis to the crisis stage, with recovery to baseline after the crisis was over. Gromyko’s precrisis complexity scores were about the same as those of his Soviet colleagues, but unlike them his IC soared when a crisis approached. Speculating that his apparent immunity to disruptive stress might be related to his remarkably long career throughout decades of changing leaders and circumstances, the authors then studied six other successful long-term leaders. Four of them showed either no drop or an increase in IC when facing a crisis, with the Duke of Wellington very close to Gromyko’s pattern.

In contrast to those leaders who demonstrated sustained high complexity, President Bill Clinton’s pattern was one of stable low IC. Clinton’s leadership in his first term had been criticized as being too indecisive, overly flexible, and lacking in a firm commitment to valued goals. These characteristics are typically perceived as correlates of a high level of cognitive complexity (e.g., Tetlock, Peterson, & Berry, 1993), and journalists in fact often commented on the complexity of Clinton’s thinking. However, the study of Clinton’s utterances during the 1992 campaign and during the first few months of his administration (Suedfeld, 1994) revealed that his IC scores were quite low compared to a group of other recent presidents of the United States.

Not only that, but—unlike most American presidents—Clinton showed no increase in complexity after being elected. This pattern,
reflecting faulty cognitive management of resources applied to problem solving, is similar to those of unsuccessful presidents of the 20th century (Nixon, Carter, Harding, and Hoover) and failed (as opposed to successful) revolutionary leaders. An expanded dataset and extension of the sampling period showed nothing different. Even the predicted increase in IC as a function of more experience in office, and differences based on topic and audience factors, failed to materialize, although Clinton’s IC did drop during two major crises (see below). The findings were compatible with some qualitative analyses of Clinton’s decision-making style (Renshon, 1995). Panos (1998) extended the study further, finding no consistent increase in IC or domain specificity in Clinton’s second term up to the middle of 1998.

His consistently low IC may have played a role in the defeat of some of Clinton’s important policy proposals, such as that on national health care: framing the issues in black-and-white terms and reluctance to compromise provokes opposition. As one academic policy analyst wrote (Heclo, 1995, p. 97):

Any alternatives from congressional Republicans who backed universal coverage or Democrats who advocated a different approach to cost controls could be—and were—seen as a presumptive threat to the political and technical integrity of the Clinton plan. Health care reform was to be a triumph of synoptic policy design and a personal political victory for the president, pointing toward 1996. A number of Republican strategists needed no encouragement to try to turn that partisan challenge into a personal defeat. Eventually negotiators in 1994 would try to produce a single Democratic compromise, but by then it was too late.

This may be a good place to warn against a common error of analysts, the assumption that higher IC necessarily leads to success or at least to better decisions. In fact, high IC may result in wasting cognitive resources on unimportant, simple, or unsolvable problems, or on processing tangential, even irrelevant, information (see, e.g., Tetlock & Boettger, 1989). When facing an implacable, rigid opponent, a negotiator operating at a high level of IC may compromise so much as to put his or her own side at a disadvantage—during the fateful negotiations at Munich, Neville Chamberlain’s IC overall was twice as high as Hitler’s (Suedfeld, Leighton, & Conway, 2006).
The problem may be exacerbated among people whom one might expect to make better decisions. As just one example, Barker and Hansen (2005) identified what they called “analysis paralysis”: Being encouraged to process a variety of decision criteria in an electoral campaign resulted in weaker choice preferences, lower ideological consistency, and reduced intentions to vote among knowledgeable voters.

Individual Differences Related to Leader IC

A number of studies have looked at how leaders who may differ in trait complexity also differ on other job-related characteristics. For example, Dyson and Preston (2006) found that low-complexity politicians used historical analogies differently from their high-complexity counterparts. The analogies used by the former tended to come from their own generation and culture. To the extent that analogies, seen as highly accessible examples and precedents, are used to guide decisions (Tversky & Kahneman, 1973), the more restricted sources of this group could have an impact on the range of perceptions and decisions they might consider in dealing with a problem.

Changing Levels of Complexity

Most leaders, however, do show complexity changes in response to environmental challenges. Even President Clinton, whose IC level was remarkably constant, evidenced a major IC drop in a speech about the Lewinsky scandal and, a few days later, in discussing the American response to terrorist bombings of the U.S. embassies in Kenya and Tanzania (Panos, 1998).

Studies of individual leaders during the first Persian Gulf crisis (the 1990 Iraqi invasion of Kuwait and its successful reversal by the coalition’s attack against Iraq) showed Saddam Hussein’s IC dropping shortly before his attack on Kuwait (as is usual for leaders planning a surprise attack). As his victory was consolidated, his IC rose. It stayed relatively stable through the growing international condemnation of his actions, with some temporary increases during diplomatic attempts to persuade him to withdraw Iraqi forces, with a serious drop when the Coalition air attacks began. As the attacks neared their end, his IC rose to its highest level, only to drop drastically when the ground attack against Iraq began. When his
government was defeated but was left in place, and he started to restructure his regime, his IC once again rose (Suedfeld, Guttieri, & Tetlock, 2003). Other Middle Eastern leaders showed a variety of changes as a function of their country’s involvement in the Gulf War, their attitudes toward the major protagonists, and the unfolding of events (Suedfeld, Wallace, & Thachuk, 1993).

Another leader whose complexity changes over time were studied was Gen. Robert E. Lee (Suedfeld, Corteen, & McCormick, 1986). Baseline measures derived from his pre–Civil War correspondence and other writings showed him to be very high in complexity. A temporary drop occurred when the war was imminent and he decided to join the Confederate Army. During his first few years in command, as he faced superior numbers and managed to defeat them (or at least to avoid being defeated), his IC was consistently higher than that of the opposing commander. However, it began to slide downward with his increasing stress as the Confederacy ran out of manpower and other resources; and Lee finally met an opponent whose IC was at least the equal of his own, Ulysses S. Grant (a surprise to the authors, who expected Grant to score lower). The subsequent string of defeats ended with Lee’s surrender at Appomattox. The decision to surrender was accompanied by his recovery to high complexity, which persisted until his death.

POLITICAL CORRELATES OF IC

It is important to remember that stressors are not the only influences on changes of functional complexity. Other variables include both endogenous and exogenous characteristics. Among the factors known to be involved are political ideology and position (whether the person or group is in power or striving for it).

Political Ideology

It has long been known that people in the moderately left-of-center range of the political spectrum score as more open-minded and cognitively flexible, and generally show more complexity-related cognitive traits than those on the right or further on the left (Suedfeld et al., 1990; Tetlock, 1983; Thoemmes & Conway, 2007). There has been ongoing debate as to why. Tetlock’s value pluralism or value conflict model (1984, 1986) links the difference to the
concept of value hierarchies. Politicians who value both individual freedom and equality highly (moderate liberals) tend to operate at higher levels of IC than those whose value system emphasizes one or the other (e.g., conservatives, who emphasize freedom; socialists, who emphasize equality) or rejects both in service to some other value, such as power, racial glorification, or class superiority (Fascists, Nazis, Communists). Thus, the model predicts that political centrists will have higher IC than extremists, as many studies have confirmed (for an exception, see Van Hiel & Mervielde, 2003).

On specific issues, too, different political positions may call for different levels of IC. Tetlock, Bernzweig, and Gallant (1985) found that the higher IC of liberal justices of the U.S. Supreme Court compared to their conservative colleagues was especially marked in cases involving economic issues. IC may be lower when defending a popular position than when dissenting from it: A study of Canadian undergraduates showed that soon after the Iraqi invasion of Kuwait, those who supported expelling the invaders by force explained their position with lower IC than did opponents (Mandel, Axelrod, & Lehman, 1993).

This pattern holds for other value conflicts as well. For example, a politically and emotionally charged environmental controversy was characterized by relatively simple arguments on the part of both the forestry companies and environmentalist groups, with higher IC in the statements of an independent commission examining the issue as well as the local government, which was trying to find an acceptable and peaceful compromise (Lavallee & Suedfeld, 1997).

The curvilinear relationship between complexity and ideological position on the left-right dimension has been explored in more detail through experimental studies. When Tetlock (1986) tested his value conflict hypothesis in this way, he found that moderate liberals, who ranked both equality and their own economic prosperity highly on the Rokeach Value Survey, wrote their most complex essays in response to the question of whether they were willing to pay higher taxes to help the poor. By contrast, moderate conservatives, who ranked both national defense and their own prosperity highly, reached their highest complexity level when responding to the question of whether they were willing to pay higher taxes for the purpose of enhancing national defense. In a similar vein, another experiment found that students wrote significantly more complex essays discussing the relation between two values that they rated as highly conflicting (e.g., preserving the environment vs. a growing economy).
than in discussing two not very conflicting values (e.g., a growing economy and the preservation of human life).

Members of university student groups affiliated with political parties show a similar distribution of IC (Suedfeld, Bluck, Loewen, & Elkins, 1994). In the British Columbia context, the 1970s–1980s saw four major contending parties: Social Credit, a grassroots populist party holding traditional conservative views on such issues as abortion; the New Democratic Party, basically a social democratic movement favoring many social welfare initiatives; and two centrist, pragmatic parties, the Liberals and the Progressive Conservatives (PC). In line with the value conflict model, the members of Liberal and PC campus clubs were higher in IC than those of either the right or the left.

One especially interesting and important study based on the value conflict model looked at the IC of three political groups in mid-19th-century America: moderates, who were willing for slavery to continue but wanted to prohibit it in newly admitted states, and who experienced conflict between the values of human freedom and the preservation of the Union; abolitionists, who wanted instant and total elimination of slavery everywhere in the United States regardless of political consequences in the South; and states’ rights advocates who defended the unhindered expansion of slavery regardless of possible reactions in the North. Moderates were higher in IC than the other two groups (Tetlock, Armor, & Peterson, 1994).

This is also an excellent illustration of the fact that high IC is not equivalent to higher morality. Most people would agree that allowing slavery to continue anywhere in the United States was less defensible on moral grounds than abolishing it everywhere. Nor did high IC guarantee pragmatic success. The moderates were eventually overcome by those whose dedication to either slavery (and states’ rights) or abolition (and the Union) was supreme and who, as a result, fought the devastating American Civil War. In the same way, the low IC of Winston Churchill’s speeches about Nazi Germany would be considered as taking the high moral ground—as well as being more realistic—over Neville Chamberlain’s more complex attempts at compromise in Munich (Tetlock & Tyler, 1996).

Political Power

Perhaps because of greater accountability, top leaders tend to operate at higher levels of IC than their less visible subordinates (e.g., Suedfeld
& Leighton, 2002; Wallace et al., 1993). Furthermore, incumbents in office—particularly those who are up for reelection—tend to argue at higher levels of IC than challengers or aspirants to office. To defend one’s record and policies against critics requires more complex thinking than to attack the leadership of the opponent. Although there is mixed evidence concerning the effects of being in a majority or minority political position, at least under some conditions statements by members of majorities show higher complexity than their minority opponents (Gruenfeld et al., 1998). The same is true of opinions written by justices of the U.S. Supreme Court (Gruenfeld, 1995).

A particularly informative article (Pancer, Hunsberger, Pratt, Boisvert, & Roth, 1992) reported that in the Canadian House of Commons, speeches by members of the governing party were generally more complex than those of the opposition. This conforms to the general pattern, but there was a nuance resulting from the parliamentary system. At times, the governing party does not have a majority in the House; then it remains in power only by conciliating the opposition. When this was the case, the IC of both groups increased. In the British House of Commons, however, the major difference was based on status and was found only on the government side: The front bench (cabinet ministers) evidenced significantly higher complexity than the ordinary members of Parliament sitting in the back benches. Government ministers must explain and defend their policies and actions; the primary task of the government’s backbenchers, and of everyone in the opposition, is to applaud one’s own leaders and criticize the other party’s.

Sometimes it is difficult to make a clear attribution for differences in IC. One good example of this is the finding that the IC of foreign policy–related speeches of U.S. senators during 1951–1952 varied as a function of isolationism (Tetlock, 1981a). During this period of intense American involvement in international affairs, isolationist speeches were significantly lower in IC than internationalist ones. There is no way to tell whether the difference was domain specific, or whether it reflected either conservative-liberal patterns of value conflict (most of the isolationists were Republicans, most of the internationalists Democrats) or challenger-incumbent, minority-majority, critic-defender positions (the presidency had been in the hands of internationalist Democrats for almost two decades, Truman held it at the time, and Congress had a solid Democratic majority).
Many leaders shift to higher IC after moving from candidacy to incumbency (Tetlock, 1981b). This has been found among candidates who win elections for the presidency of the United States; those presidents who show the lowest such increases have been among those ranked by experts as the least successful in office (Suedfeld, 1994). The opposite is true as incumbents near the end of their term and need to become candidates again. In fact, among U.S. presidents, those who make this shift are more likely to win reelection (Thoemmes & Conway, 2007).

The very first use of archival methodology to study IC (Suedfeld & Rank, 1976) showed similar changes among the leaders of victorious revolutions. In their case, the optimal pattern for personal success is to operate at a low level of complexity during the revolutionary struggle and rise substantially after taking power. Leaders whose IC is too high during revolutionary combat tend to be mistrusted by their colleagues and to be kept out of the highest positions afterward; those who fail to make the upward change after victory tend to lose their positions of leadership, sometimes to the point of being exiled or executed.

Clearly, engaging in battle—and, to a lesser degree, engaging in the figurative battle of challenging an elected incumbent—calls for single-minded devotion to, and defense of, one’s own policies and plans, vilification of the enemy, and rejection of compromise. The situation is quite different when one’s group is governing the country. It takes a higher level of IC to reconcile previous opponents and neutrals; rebuild infrastructure, education, social services, and the economy; and establish the place of the new government in the international community. To do this successfully requires information search, flexible policies, an appreciation of others’ points of view, and compromised solutions—that is, complex thinking.

**PEACE AND WAR**

Perhaps the best-established findings concerning the relationship between IC and high-level politics relate to the outcomes of international confrontations (Suedfeld et al., 2006).

**The War Crisis Effect**

The “war crisis effect” is a substantial decrease in the IC of national leaders and their close subordinates, which is reliably found some
3–6 months prior to the outbreak of major wars. It may reflect the inability of the leadership to continue a search for a negotiated settlement of a crisis because disruptive stress has exhausted their cognitive resources. Alternatively, the decision to go to war may be arrived at through complex information processing, but the decision itself may make further resource investment in such a process unnecessary. The early stage of searching for successful strategies to reach one’s goals peacefully gives way to a simplifying solution and the mobilization of forces for war. As Margaret G. Hermann pointed out (June 2009, personal communication), the 2–6 month lag between the IC drop and the outbreak of war may identify the period between the decision’s being made and acted upon. Whether decreasing complexity leads to the decision, or whether the decision leads to a drop in complexity, is a question requiring further research.

**Escalating Conflict Cycles**

Studies by several research groups have shown that the outbreak of international war at the end of an increasingly tense international confrontation is commonly preceded by drops in the IC of governmental documents and leader speeches 2–6 months prior to war (e.g., World War I, the Korean War, the Six Days’ War; see, e.g., Suedfeld et al., 2006; Suedfeld & Tetlock, 1977).

Supporting IC theory’s emphasis on structure, this decrease is independent of the tone of the documents’ contents. Speeches and memoranda that show decreasing IC are equally valid predictors of war regardless of whether they profess peaceful intentions or contain threats and demands. Generally, both sides of the conflict evidence IC decreases; however, surprise attacks constitute a salient category of exceptions.

**Surprise Attacks**

Strategic surprise attacks (e.g., the invasion of the Soviet Union by Nazi Germany, the Japanese attack against Pearl Harbor, the North Korean invasion of South Korea) are consistently preceded by a major decrease in the IC of statements emanating from leaders of the eventual attacker only, beginning about 6 months prior to the onslaught. Leaders of the eventual target, on the other hand, show
no such decrease. Rather, during the week just before the attack, their IC rises perceptibly, as though they sensed the hostile intent of their opponents and were devoting extra effort to find a peaceful resolution. Once the attack occurs, however, their IC drops to the same level as that of the attackers. Of nine 20th-century surprise attacks studied, only one failed to show this pattern. That one, for reasons as yet unexplained, was the Argentine invasion of the Falkland Islands (Suedfeld & Bluck, 1988). On the other hand, a later surprise attack, Iraq’s occupation of Kuwait, replicated the results with President Bush as the “target” surrogate for the Emir, who did not originate a sufficient volume of public statements (Suedfeld et al., 1993).

Terrorist atrocities are an obvious next area for IC research on surprise attacks. Several projects have been initiated to examine whether such attacks could be predicted from changes in the websites and blogs of terrorist organizations and adherents. Partly because of the decentralized nature of these sources, and partly because of difficulty in obtaining authentic, verbatim materials, these efforts are progressing slowly. One study has shown that among pairs of organizations with shared goals and ideologies, those devoted to peaceful methods issue messages with higher levels of complexity than those espousing violence (Smith, Suedfeld, Conway, & Winter, 2008).

**Enduring Rivalries**

A third form of interstate confrontation is the enduring rivalry characterized by long-lasting hostile relations, frequently including guerrilla or terrorist raids, but punctuated by periodic full-scale war. Two such persistent situations, which have lasted for half a century, have been subjected to IC analysis. One is the enmity between Israel and Arab nations (Suedfeld et al., 1977), the other that between India and Pakistan (Suedfeld & Jhangiani, 2009). In the earlier study, the Arab protagonists were the then-extant United Arab Republic, composed of Syria and Egypt. IC scoring of prominent statesmen in both examples found significant drops in one or both leadership groups within a few months of the outbreak of each major war. In both cases, IC patterns correctly forecast what would happen after the completion of data collection. In the Middle East, there was an unexplained downward trend just at the end of data analysis in 1977;
history explained it a few months later when Israel launched the 1978 “Operation Litani” incursion into Lebanon. In South Asia, the researchers accurately predicted continued peace despite low-intensity violence in 2002–2003.

**Differentiated IC Changes**

Not all of the data show uniform patterns of IC change in the face of an international crisis. Leaders and elites of countries that are geographically or ideologically distant from a conflict show little or no disruptive stress. Before the onset of the first Persian Gulf War, leaders of nations that would be centrally involved (the United States and Iraq) showed greater IC reactivity than their allies (e.g., the United Kingdom), who in turn showed more than leaders whose nations would remain uninvolved (Wallace et al., 1993). Similarly, after the 9/11 attacks and the subsequent unseating of the Taliban, President Bush and British Prime Minister Tony Blair showed much higher IC reactivity to events than the leaders of France, Germany, and the NATO organization (Suedfeld, 2003).

In the prolonged Middle East confrontation (Suedfeld et al., 1977), both Israeli and Arab speeches showed the predicted pattern, but the respective Great Power supporters of the two sides reacted quite differently. The United States, apparently seriously identifying with Israel, moved in the same directions; the Soviet Union, perhaps seeing an opportunity in the outbreak of Arab-Israeli wars, showed the opposite. Soviet speeches were higher in IC prior to war, just when the other three sources were showing decreased IC, and were lower in periods of peace.

**Peaceful Conflict Resolution**

Of course, what is missing from the above summary is evidence that reductions in IC are found *only* in advance of impending violence or increased hostility. To put it another way, if the lowering of IC can predict the outbreak of war, can the absence of such a pattern predict continued peace? This is somewhat more difficult, if only because war is an obvious, punctate event whose beginning can usually be pinpointed in time. That is not the case with peace, except when it occurs as the end of a war. However, there are some relevant findings in the IC literature, generally because peaceful periods and resolutions have been studied as control events for the studies of war.
International confrontations resolved through a peacefully negotiated settlement are characterized by maintained or even increased levels of IC leading to their resolution. This pattern has been found in confrontations ranging from the Agadir (Moroccan) crisis of 1910, resolved by a British-mediated trade-off between France and Germany, through the Berlin Blockade and the Cuban Missile Crisis (Suedfeld & Tetlock, 1977). It holds reliably regardless of the specific protagonists on either the national or the individual level (see Suedfeld et al., 2006). Periods of increased tension may be indicated by some reduction in IC, with recovery before a critical level is reached, a pattern found in Soviet-American changes in foreign policy (Tetlock, 1985) and communications specifically related to the two Cold War superpowers’ repeated confrontations over Berlin (Raphael, 1982) as well as between South Korea and North Korea during about a decade of fluctuating tension (Koo & Han, 2006).

In the Middle Eastern and South Asian enduring rivalries discussed above, the researchers scored documents issued during “control” years. These were defined as periods when no major hostilities occurred either during that year or in the following year. Control years were marked by higher, stable or increasing, IC than was found in the times preceding wars. In the long history of U.S.-Soviet relations, both sides showed reduced IC in the few months prior to engaging in aggressive or confrontational behavior, and increased IC before the cooperative solution of a thorny problem (Tetlock, 1985, 1988). A similar pattern was found in an analysis of Israeli and Palestinian documents in 1993 and 1994, the years when the PLO and Israel formally recognized each other’s existence, although extremists continued to commit violent attacks (Lecomte, n.d.).

In diplomatic negotiations that do not end in violence, the complexity shown by negotiators tends to be reciprocal: i.e., increases or decreases by one party’s representatives tend to evoke similar changes in the IC of the other (Tetlock, 1985). A study of day-by-day changes in the IC of negotiators between the Mexican government and the Chiapas Mayan rebels (Liht, Suedfeld, & Krawczyk, 2005) showed that when the two sides differ in power, the effect is asymmetrical in that the weaker party is more likely to emulate the IC change of the stronger rather than the converse. In the same study, days on which the negotiators evidenced high IC were judged by reporters as showing more progress toward a peaceful resolution.
There is evidence of a relationship between negotiation strategy and IC. A case study of the Anglo-German crises of 1938–1939 showed fluctuations in complexity upward and downward as Neville Chamberlain shifted between cooperative and competitive strategies in negotiating with Hitler, with a significant drop when the British government fully committed itself to assisting Poland in case of an invasion (Walker & Watson, 1994). Likewise, Anwar Sadat’s level of IC was positively correlated with cooperative rather than competitive behaviors toward Israel (Maoz & Astorino, 1992).

**Domestic Crises**

Changes in the IC of leaders facing very serious domestic crises, where war between nations is not the issue, show that the leader can be under a similar level of stress. On three occasions in Canadian history, prime ministers faced extreme disagreement between Anglophone and Francophone public opinion that divided the nation: the first over the execution of Louis Riel, a rebel convicted of murder but seen by many Francophones as a leader for civil rights and political power for French-speaking Métis (people of mixed native and Caucasian descent), and the other two over participation and conscription in each of the world wars. All three crises were eventually resolved through unilateral, decisive action by the prime minister, and in all three cases one sees the same pattern of change as among leaders facing the possibility of war: a significant drop just prior to the announcement of the decision and eventual recovery (Ballard, 1983). During his stressful tenure as the leader of the Soviet Union and then Russia, Gorbachev’s IC was consistent with the cognitive manager model: a steady increase up to 1989, when the full scope of the USSR’s problems became obvious, and thereafter a decline to the unsolvable difficulties of 1991 (Suedfeld et al., 1996).

**THE SPREAD OF THE CRISIS EFFECT**

Some interesting findings have emerged from studies of people other than governmental leaders who are living through stressful times. IC was measured in the private correspondence of a small group of British authors (Porter & Suedfeld, 1981). When Great Britain was seriously at war (i.e., involved in fighting that caused at least 1,000 British military deaths), the IC of these materials dropped, a
phenomenon not found during economic or other categories of national hard times.

The effects of stress on the IC of people who are not involved in national decision making have been confirmed in several other studies. One showed that presidential addresses to the American Psychological Association (APA) during times when the United States was at war were significantly lower in IC than those given during peacetime. No such effect was found during other stressful times, such as the Great Depression. The study did find IC differences as a function of the scientific eminence and theoretical orientation of the APA president (Suedfeld, 1985).

The perceived imminence of war may have a similar effect. Another study involved the well-known Doomsday Clock on the cover of the Bulletin of the Atomic Scientists, whose hands move closer to or further from midnight as the editorial board judges nuclear war to be more or less imminent. Editorials in the Bulletin, not written by members of the editorial board and much of the time unrelated to the reasons why the hands had been moved, were lower in IC when the hands approached midnight than when they were moved back (Suedfeld, 1981).

Not only elite but mass media as well show the impact of potentially dangerous international disputes. During the Cold War, editorials appearing in major newspapers of the United States, USSR, and People’s Republic of China, concerned with either of the other two rivals, were reliably lower in IC when the relationship between the two countries turned especially unfriendly (Suedfeld, 1992a).

A more recent set of studies investigated the IC of television and radio broadcasts aired during the terrorist attacks on September 11, 2001, in New York City and Washington, DC, and on July 7, 2005, in London. The first report (Jhangiani & Suedfeld, 2007), dealing with 9/11, confirmed the cognitive manager model: in both cases, the initial reporting of the event showed increasing IC as the commentator sought explanations of what was happening, considered new pieces of incoming information (often confusing, vague, and inconsistent), and tried to resolve the uncertainty. Decreases in IC occurred when a tentative explanation seemed accurate, but especially when the full extent and nature of the atrocities became evident. This was the first precise identification of just when in the course of events disruptive stress sets in. Follow-up research (Jhangiani, 2008) showed the same pattern for the London bombing and also showed that the reactions of both broadcasters and leading politicians...
reflected an interaction between stress and physical and psychological distance from the event.

**CONCLUSION**

The importance of IC in decision making and information processing has been established beyond any reasonable doubt. One of the greatest strengths of the approach is that it can use a vast variety of connected verbal materials. Historical era, geographical distance, sociopolitical eminence, and linguistic variability can all be overcome in the pursuit of interesting research questions. Further, IC scoring can be juxtaposed to other kinds of thematic content analysis (see, e.g., Smith, 1992) to give a more rounded portrait or a more powerful predictive tool. In fact, some research has already been conducted where the same dataset was scored for IC, motive imagery, basic values, psychological distance, the use of metaphors, and other variables (see, e.g., De Landtsheer, 2004; Suedfeld, Lavallee, & Brough, 1998; Winter, 2007). Last, the method lends itself well to triangulation, research where archival results can be tested in laboratory experiments (and vice versa) to generate confirmations, disconfirmations, new hypotheses, and additional research ideas.

A number of hypotheses have been established to the point of not needing much further testing. Salient among them is the war crisis effect, which appears useful at this point for application in the “real world” of diplomacy, strategy, intelligence, and political forecasting. The basic research might well move on to new or underexplored issues. The two major gaps in this body of literature are the limited number of languages in which the effect has been demonstrated (no studies of Arabic, Chinese, and other Asian documents, except in translation) and the lack of data relating to terrorist attacks and nonstate, asymmetrical conflicts such as civil wars. Another possibly fruitful area would be the scoring of the “new media”: blogs, Web-based magazines, and the like. Whether IC patterns on the Internet would be useful predictors of political events—perhaps even more useful in gauging public sentiment than formal or official communications—is an intriguing question.

At this point, the major drawback of the IC approach is that the scoring system, while highly reliable and rigorous, is quite labor intensive and time-consuming. The technique can be learned through
an online tutorial or in a face-to-face training workshop that lasts approximately 3 days, but the utility of IC measurement would be greatly improved by a computerized counterpart. So far, despite several attempts, no such counterpart has been successfully developed. Word- and phrase-counting software can give a moderately useful measure of differentiation, with correlations in the $r = 0.10$ to $0.30$ range with the standard scoring method (author’s unpublished data). That is not very good, but at present, integration cannot be scored by computer at all.

The field is increasingly moving toward applications to the political world and toward forecasting as opposed to explaining. That movement opens additional opportunities for creative, interesting, and useful theoretical development and research ideas.

REFERENCES


