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The role of epistemic style in the processing of style consistent and style inconsistent counterattitudinal editorials.

David Martin. Day
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THE ROLE OF EPISTEMIC STYLE IN THE PROCESSING OF STYLE CONSISTENT AND STYLE INCONSISTENT COUNTERATTITUDINAL EDITORIALS

by

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Abstract

The present study examined epistemic style predispositions associated with individual differences in responsiveness to style-consistent and style-inconsistent persuasive communications. Two hundred and fifty-seven undergraduate students participated. In Session 1, subjects were given (a) a questionnaire measuring their attitudes toward two relevant issues, student access to course evaluations and equal automobile insurance rates for men and women in Ontario, (b) the Psycho-Epistemological Profile (PEP) to assess their characteristic epistemic styles (rational, empirical, or metaphorical), and (c) a brief demographic survey. In the second session, subjects in the experimental group (n = 200) read two counterattitudinal, persuasive editorials on the two issues assessed in Session 1. One form of each editorial contained empirical information supporting the message arguments, while the other presented the arguments using figurative language and metaphorical expressions. After reading each editorial, subjects completed a series of dependent measures indicating the degree to which they found the editorial involving and persuasive and listed the thoughts they had while reading the editorials. After reading both editorials subjects completed a posttest attitude questionnaire. Control group subjects (n = 57) received only the posttest attitude questionnaire in Session 2. It was predicted that subjects would rate the editorial whose style was consistent with their dominant epistemic style as more involving and more persuasive than the style-inconsistent editorials. It was also expected that subjects would generate more supportive than unsupportive thoughts and change their attitudes more in response to the style-consistent editorials. Preliminary

analyses indicated that subjects preferred the empirical to metaphorical editorials and the editorials on auto insurance to course evaluations. Regression analyses revealed a significant metaphorical by editorial style interaction for the dependent variable measuring subjects' degree of involvement with the editorial. As predicted, high scores on the metaphorical scale were associated with high ratings of involvement for the metaphorical style editorials and low ratings for the empirical articles. No other significant interactions emerged. These findings were discussed in terms of affective versus cognitive responses to persuasive editorials within an information processing paradigm.

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CHAPTER 1

INTRODUCTION

Overview

The present investigation examined the role of a personality variable, epistemic style, in mediating people's preference for, and susceptibility to, persuasive information presented in one of two message styles, metaphorical or empirical (i.e., fact-based). Epistemic style refers to one's characteristic style or mode of acquiring knowledge. Royce (1964, 1974, 1975a; Royce & Powell, 1983) postulates three styles--empiricism, rationalism, and metaphorism--and while people may use all three, individuals tend to rely on one particular mode. The epistemic style construct has direct empirical application to persuasion research inasmuch as a person's dominant style may be characterized by a cognitive preference for information presented in a style-consistent format. Therefore, it may be reasoned that a person will show greater preference for, and be more influenced by, a counterattitudinal persuasive editorial which presents information in a style-consistent rather than a style-inconsistent format.

The introduction includes the following sections. First, Lasswell's conceptual model of persuasion is reviewed. The contribution of the recent social cognition movement to an information processing model of communication is considered next. Third, research examining interaction effects between personality characteristics and message variables in both a persuasive and non-persuasive context is presented.

Fourth, the concept of epistemic style as postulated by Royce and his colleagues is delineated and the implications for persuasion are discussed. Lastly, the research hypotheses of the present study are outlined.

Research on Persuasion

The Dominant Model

For the past 50 years, the attitude change and persuasion research has been dominated by the conceptual framework described by Lasswell (1948) as "Who says What in Which Channel to Whom With What Effect?" and set into place as a cornerstone of attitude change literature by Hovland and colleagues (Hovland & Janis, 1959; Hovland, Janis, & Kelley, 1953; Hovland, Lumsdaine, & Sheffield, 1949; Hovland & Weiss, 1951). Much of the relevant research has been concerned with variables associated with the source of the message (Chaiken, 1979; Eagly, Wood, & Chaiken, 1978; Hovland & Weiss, 1951; Sampson & Insko, 1964; Sternthal, Dholakia, & Leavitt, 1978), message content (Hovland, Janis, & Kelley, 1953; Leventhal, 1970; Milburn & Watman, 1981; Wood, Kallgren, & Preisler, 1985) and style (McCrosky & Combs, 1969; Reinsch, 1974), receiver or audience characteristics (Cacioppo & Petty, 1980; Insko, Turnbull & Yandell, 1974; Katz, McClintock, & Sarnoff, 1957; McGuire, 1968; Nisbett & Gordon, 1967; Papageorgis, 1968; Petty, Cacioppo, & Goldman, 1981), the channel of communication (Chaiken & Eagly, 1976; Maccoby, 1980; Maccoby & Alexander, 1980), and the outcome or target effect (Cook & Flay, 1978; Hovland, Lumsdaine, & Sheffield, 1949).

While some of the assumptions made by persuasion researchers of today are different from those made by their predecessors (DeBono & Harnish, 1988), many of the variables investigated and the methods of investigation remain similar. As McGuire (1985) stated, these five broad classes of variables "are the attitude change hypothesis' independent variables which the researcher can manipulate to test theories" (p. 258).

So entrenched is this organizing principle in the relevant literature that introductory social psychology textbooks typically arrange the information pertaining to the topic of attitude change and persuasion around some or all of the five components of Source, Message, Channel, Receiver, and Target (e.g., Feldman, 1985; Freedman, Carlsmith, & Sears, 1970; Himmelfarb & Eagly, 1974; Middlebrook, 1980; Myers, 1987; Penrod, 1983; Watson, Tregerthan, & Frank, 1984). Moreover, McGuire (1969, 1985) incorporated this organizing principle into his comprehensive review of the literature on attitudes and attitude change in both the earlier and recent editions of *The Handbook of Social Psychology.*

What typically follows in these sources is a veritable laundry list of variables associated with the facilitation and inhibition of the persuasion process. Much of the cited research tends to focus on the effects of single variables, manipulating one variable in isolation of the multitude of other potential factors which may enter into the equation.

More recent studies of persuasion and attitude change have examined potential interaction effects, manipulating variables factorially in more complex research designs. Examples of the combinations of variables which have been examined include message and modality factors (Chaiken & Eagly, 1983), persistence of the message and source

credibility (Cook, Gruder, Hennigan, & Flay, 1979), attitude type and means of persuasion (K. Edwards, 1990; Millar & Millar, 1990), source attractiveness and type of message (Pallik, Murroni, & Koch, 1983), and message and receiver characteristics (Cacioppo, Petty, & Sidera, 1982; DeBono, 1987; Johnson & Eagly, 1989; Lieppe & Elkin, 1987; Petty & Cacioppo, 1981; Worth & Mackie, 1978). Commenting on the number of articles that have focused on interaction effects, McGuire (1985) noted that this development "is a sign of the growing sophistication of the area" (p.291).

A New Model

It is true, as McGuire (1972) predicted, that attitude change research declined in the 1970's; it has experienced a revival in the 1980's, however, with the revivalist movement guided by a more interactionist research strategy than previous endeavours. One factor contributing to the renewed interest in attitudes and attitude change, which has resulted in a shift in research paradigms, is the recent interest in social cognition (Fiske & Taylor, 1984). The social cognition movement, with its emphasis on cognitive processes in social behaviour, has focused greater attention on the role of self-related characteristics on information processing tasks. The shift in persuasion research is, to some extent, a shift in focus from a "bottom-up" or "data-driven" conceptualization of the persuasion process to a "top down" approach with the emphasis on "schema-driven" or self-related constructs which are brought to the situation by the receiver and which act as mediators of cognitive processing (Bobrow & Norman, 1975; Markus & Sentis, 1982).

The bottom-up approach is characterized by Fishbein and Ajzen's (1981, p. 339) remark that: "Information is the essence of the persuasion process." It is now

recognized that individuals do not process information in the same way, but that such processing is sometimes systematically affected by salient personality characteristics. This trend toward increased attention on the self in social psychology is consistent with the growing interest in self-referent issues in many areas of psychology (Bandura, 1989).

Consequently, recent studies on persuasion have addressed interactive relationships between characteristics of the information being processed and relevant receiver variables, representing a considerable extension of Lasswell's (1948) original model. In general, the research on individual differences in information processing has demonstrated that information consistent with a receiver characteristic will be more effective in inducing attitude change than inconsistent information.

For example, it may be argued that a person who has a basically humanistic orientation or world view will be more responsive to a persuasive message that argues on the basis of such "humanistic" concepts as personal liberty, growth experience, and human equality. The same person should not be as influenced by a message bolstered by arguments concerned with personal gain, hegemony and individual interests. Such an approach has practical implications for presenting persuasive communications (e.g., advertising campaigns, public education programming) that have a greater impact by reaching more members of the heterogeneous audience known to be out there (Dervin, 1981; Eagly, 1981).

It is clear that many real-world instances do exist where textual material reflects different personality styles (e.g., civil libertarians, extroverts, workaholics, "health-nuts") in promoting lifestyle products from cigarettes to cars to perfumes and clothing as well as social advertising campaigns on AIDS, abortion and mental illness. Yet only

a few empirical studies have examined the interactive relationship between personality styles and persuasive message characteristics in terms of enhancing the impact of such information.

The next section will consider the research on personality variables as mediators of information processing in a persuasive context. Then, research will be presented on individual differences and the cognitive processing of non-persuasive information. Though few in number, these studies lay the important theoretical and empirical groundwork for the present investigation.

Research on Personality and Message Style Interactions in a Persuasion Context

As stated previously, a plethora of research exists on each of the five elements of a persuasive communication identified by Lasswell (1948) and promulgated by the Yale group. This is particularly true for the two elements of receiver and message. Research on individual differences and persuasion have investigated so-called "persuasibility" factors (see Hovland & Janis, 1959) such as self-esteem, intelligence, gender, dogmatism, field-dependence, and authoritarianism. Research on message characteristics includes high versus low fear appeals, one-sided versus two-sided messages, and primacy and recency effects of message argument presentation. In an early study, for example, Janis and Feshbach (1953) demonstrated that mild fear appeals were more effective to change patterns of behaviour pertaining to dental hygiene than were high fear appeals.

In a subsequent study, utilizing the same fear appeal messages dealing with the issue of dental hygiene, Janis and Feshbach (1954) examined the effect of high versus low fear-arousing communications on individuals characterized by high versus low

anxiety. They reasoned that individuals high in trait (or chronic) anxiety would be less susceptible to a fear-arousing communication than low anxiety subjects because of the already high degree of emotional tension experienced by the high anxiety subjects. A high fear appeal would be more likely to elicit a defensive reaction, thereby minimizing the effect of the message, and this result would be magnified in the high anxiety subjects. Therefore, the difference in responses to the messages would be greater between the high and low anxiety subjects for the high fear appeal and not as great for the low fear appeal message. The results of the study supported this hypothesis; high anxiety subjects showed more resistance to the high fear appeal message than low anxiety subjects. As Hovland and Janis (1959) noted, such a study has the advantage of providing mutually confirming evidence for both predispositional and message characteristics research.

More than 20 years later, Jepson and Chaiken (1986) also investigated the relationship between high and low anxiety and processing health-related messages. In this study, subjects were classified into one of two groups on the basis of their anxiety-level, related specifically to the threat of cancer. The persuasive messages used in the study advocated regular cancer-related checkups. The researchers found support for their hypothesis that higher anxiety subjects engaged in less systematic and more heuristic processing (Chaiken, 1980) of the message arguments than low anxiety subjects. The study demonstrated the same defensiveness principle (i.e., avoiding the message content) which was the focus of the study conducted earlier by Janis and Feshbach (1954).

In another study, Cacioppo, Petty, and Sidera (1982) demonstrated that a subject's salient self-schema may serve to bias the processing of schema-consistent or

schema-inconsistent persuasive information. A self-schema, according to Cacioppo and others (Petty & Cacioppo, 1986a; Markus, 1977) is defined as a person's knowledge structure or cognitive representation of him or herself in a particular domain.

In this study, subjects who were against government involvement in abortion and capital punishment were classified as either Religious Schematics (self-defined as religious) or Legalistic Schematics (self-defined as legalistic). Subsequently, subjects listened to proattitudinal arguments on one of the two issues (capital punishment, abortion) that reflected either a legalistic or religious perspective, that is, the message arguments were based on religious (e.g., "There is a sacramental quality to the nature of life that demands that we show the utmost reverence for it") or legalistic grounds (e.g., "The right to life is one that is constitutionally safeguarded").

The authors found that subjects who listened to the schema-consistent arguments rated the message as more persuasive and generated more supportive than unsupportive spontaneous thoughts on a thought-listing task than subjects who heard the schema-inconsistent arguments. To explain the study's findings, the authors reasoned that the subject's own prior self-schema biased the processing of the arguments to be consistent with the schema. In other words, top-down (as opposed to bottom-up or data-driven) schematic processing was invoked with the presentation of schema-relevant arguments rather than schema-irrelevant arguments (Petty & Cacioppo, 1986a).

Petty and Cacioppo (1986a, b), in their Elaboration Likelihood Model of persuasion, propose a more elaborate explanation of this interactive effect between self-related characteristics and message variables for information processing activities.

According to the model, attitude change can occur through one of two "routes," central or peripheral. Persuasion via the central route results because the person actively engages in thoughtful consideration and careful scrutiny of the message arguments. Persuasion that occurs through the peripheral route results because the person is influenced by some peripheral cue in the persuasion context such as the attractiveness or credibility of the source.

Petty and Cacioppo postulate further that persuasion which occurs through the central route can result because the person has engaged in relatively *objective* or relatively *biased* elaboration of the message. Certain variables have been found to affect one's ability or motivation to process the message as objectively as possible, seeking the truth wherever it may lead (Chaiken & Stangor, 1987). These variables include message repetition, message complexity, and the personal relevance of the issue. The resulting effect is either an increase or decrease in the pesuasive impact of the message depending on which of these variables is manipulated.

Central route processing may also be biased by the influence of an overarching schematic, situational, or knowledge base which guides one's elaboration in a particular direction, thus influencing the person to "generate a particular kind of thought (favorable or unfavorable) in response to a message, or [to] inhibit particular thoughts" (Petty & Cacioppo, 1986a, p. 19). In this way, Petty and Cacioppo propose that certain self-related characteristics may affect one's *ability* to process certain types of information, i.e., information that is consistent with a salient self-characteristic.

In a study of the functional role of attitudes as proposed by Katz (1960), DeBono (1987) divided subjects into two groups, high and low self-monitors, on the basis of their responses on the Self-Monitoring Scale (Snyder, 1974). Subjects' values

were also assessed by the Rokeach Value Survey (Rokeach, 1968). They were then randomly assigned to either the value-expressive or social-adjustive condition.

All participants listened to a message that discussed both the pros and cons of institutionalizing the mentally ill (subjects were generally in favor of deinstitutionalization of the mentally ill). In addition, subjects in the value-expressive condition were informed about the results of some research which found that "favorable attitudes toward institutionalization of the mentally ill were associated with valuing being a responsible and loving person" (p. 282) and not associated with valuing being courageous and imaginative. These were values previously found to be consistent with those favoured by the subjects. Subjects in the social-adjustive condition were told that surveys have indicated that a strong majority of their peers favoured institutionalization. DeBono predicted that attitudes would serve a value-expressive function for low self-monitors who look for inner sources of values and beliefs as the basis for their attitudes and a social-adjustive function for high self-monitors who tailor "their behavior to fit social and interpersonal considerations of appropriateness." (1987, p. 280).

As expected, subjects who were exposed to the information that was consistent with their self-monitoring characterization changed their attitude on the relevant issue more in favour of the message position than subjects exposed to the style-inconsistent information. In other words, high self-monitors were persuaded more by the message when told that their peers also held this attitude. Likewise, the low self-monitors were more influenced by the persuasive communication when told of the strong association between this position and holding values that were similar to their own. Moreover, high self-monitors reported more message-relevant thoughts in response to the social-

adjustive message as compared to the value-expressive message and low self-monitors reported more message-relevant thoughts in response to the value-expressive message than high self-monitors. These results were interpreted as indicative of the greater cognitive effort expended by the style-consistent than the style-inconsistent group. Other studies on the relationship between self-monitoring dispositions (Snyder, 1974) and differential responses to persuasive communications have been conducted manipulating the variables of source expertise, attractiveness and message quality (DeBono & Harnish, 1988) and examining the effects of image-oriented versus product-oriented advertisements (Snyder & DeBono, 1985). These studies provide additional support for the suggested relationship between individual differences and information processing (Tesser & Shaffer, 1990).

In the study by Cacioppo et al. (1982), religious or legalistic self-schema was a variable considered to alter a person's *ability* to process a schema-consistent or inconsistent persuasive message in favour of the self-schema (see also Petty & Cacioppo, 1986a). Petty and Cacioppo (1986a) also identify variables which are capable of altering a person's *motivation* to process information.

Sorrentino, Bobocel, Gitta, Olson, and Hewitt (1988) examined the role of uncertainty orientation as a variable motivating a person to engage in more systematic (rather than heuristic) processing of personally relevant information (Tesser & Shaffer, 1990). Subjects were classified on the basis of a personality measure as certainty-oriented or uncertainty-oriented. Certainty-oriented people are said to like certainty in their lives and are characterized as careful, cautious, and avoiding unpredictability. Uncertainty-oriented individuals, on the other hand, prefer uncertainty in their lives and may be described as risk-takers and adventurous (King & Sorrentino, 1988).

In Study 1, participants were presented with a persuasive counterattitudinal editorial on instituting comprehensive examinations for seniors at their own university (see Petty & Cacioppo, 1979, 1984). Moreover, the editorial was designed to be either personally relevant (would be implemented in the next year or two) or not personally relevant (would be implemented in five years) and contained either a one-sided or two-sided argument. The authors argued that, despite the fact that all subjects would prefer the one-sided editorials more, an interaction effect was expected between the personal relevance variable and the personality characteristic such that certainty-oriented individuals would be more susceptible to the two-sided message in low rather than high personal relevance conditions and the uncertainty-oriented subjects would find the two-sided message more persuasive in the high personal relevance condition than the certainty-oriented subjects. The findings confirmed this hypothesis.

In the second study, the variable of personal relevance was again manipulated, this time in conjunction with the expertness of the source and argument strength. The findings revealed that:

> For the uncertainty-oriented subjects, strong arguments were more effective and weak arguments less effective under high than low personal relevance; for the certainty-oriented subjects, the reverse was true, with strong arguments being more effective and weak arguments less effective under low than high personal relevance (p. 367).

With regard to the variable of source expertise,

> for the uncertainty-oriented groups, the expert source did appear to have more influence than the nonexpert source in the low but not in the high personal relevance condition, whereas the persuasive advantage of source expertise was greater for the certainty-oriented group in the high- than in the low-relevance condition (p. 367).

Sorrentino et al. concluded that, consistent with Cacioppo et al. (1982), schema-consistent messages evoked more careful consideration (systematic or central

processing) of the message arguments than did the schema-inconsistent communications.

Lastly, several studies have demonstrated the effect of an initial attitude in mediating the processing of information. Wood, Kallgren, and Preisler (1985) categorized subjects identified as being in favour of preservation of the environment into three groups: high retrieval, medium retrieval, and low retrieval. The groups were based on the number of self-referent behaviours and beliefs concerning the topic generated by individual subjects. Subsequently, subjects were exposed to strong or weak arguments taking an antipreservationist (counterattitudinal) position. As well, two versions of the message were prepared, one long and one short. The authors found that subjects with high prior knowledge changed their attitudes more in response to the strong argument than to the weak argument, whereas message strength had less effect on the opinion change of medium retrieval subjects. Furthermore, the low retrieval subjects were more influenced by the long rather than the short message, although this difference was not statistically significant.

Similarly, Zanna, Klosson, and Darley (1976) presented subjects with a newscast of a clash between university students and police for which the blame for initiating the confrontation was ambiguous and so might be assigned to either group. Subjects were identified as either believing that the police are rarely at fault in clashes with the public or that the police sometimes take liberties and interpret the law to their advantage. The results indicated that subjects presented with a counterattitudinal newscast tended to rate the presentation as less objective and rated the newscaster as less credible, trustworthy, and objective. These findings demonstrate the presence of an "attitude schema" mediating the processing of information in favour of the salient schema.

The studies reviewed here clearly highlight the point made by Eagly (1988) of the need for greater consideration of the role of personality characteristics in mediating information processing activities in a persuasion context (see also Sorrentino et al., 1988). The next section will consider research on individual differences in information processing activities within non-persuasion situations.

Research on Personality and Message Style Interactions in Non-Persuasion Contexts

Studies are available which demonstrate the importance of individual differences in mediating cognitive processing activities in areas other than processing persuasive information. Markus (1977), for example, clearly showed that a person's self-schema is an important cognitive filter when processing self-referent information. In this study, subjects were classified on the basis of several self-report tasks as either independent or dependent self-schematics or as aschematics (i.e., self-defined as neither dependent nor independent). Subjects were presented with a list of adjectives selected to be reflective of an independent ("individualistic," "independent," "ambitious," "dominating") or dependent ("dependable," "tactful," "tolerant," "cooperative") self-schema. Upon presentation of the word, subjects were instructed to indicate, by the push of a button, whether the adjective was self-descriptive or not.

Markus found that the schematic groups were significantly faster in identifying the schema-consistent than the schema-inconsistent adjectives. As well, schematics were able to provide a greater number of specific behaviours in support of their self-schema in response to the schema-consistent words than were the aschematics. In a subsequent task, Markus found that schematics were less likely than the aschematic

group to accept feedback on a bogus personality measure that was inconsistent with the self-schema. Finally, a repeated administration of the adjective identification task yielded results similar to those obtained in the first administration. Moreover, the aschematics were more inconsistent in their pattern of endorsing adjectives across two time periods than were the schematic groups. Further support for the self-schema construct as a facilitator of self-referent information processing is provided by Markus and her colleagues (Markus & Kunda, 1986; Markus & Sentis, 1982; Markus & Wurf, 1987) and elsewhere (Bruch, Kaflowitz, & Berger, 1988; Milburn, 1987; Strube, Berry, Lott, Fogelman, Steinhart, Moergen, & Davison, 1986).

In another study, King and Sorrentino (1988) investigated the impact of individual differences (certainty orientation) on person memory. Subjects were presented with an essay written about a fictitious male. Imbedded within the essay were 12 behavioural descriptions that presumably reflected either a certainty orientation ("cautious" and "stubborn") or an uncertainty orientation ("adventurous" and "reckless"). Subjects, who were previously classified on the basis of personality measures as one or the other orientation, were asked to reproduce the essay 15 minutes later and again after one week. As expected, subjects tended to distort the content of the essay in favour of their own self-schema. This effect was found only for the essays reproduced after the one week period, providing partial support for the hypothesis.

Another context in which the role of individual differences in processing either style-consistent or style-inconsistent information has been investigated is the classroom. It is now becoming more accepted that not all students learn in the same way, i.e., there are differences in the way students process information, for example, processing aural versus visual material. As well, students may be differentiated on the basis of

"learning styles" (Canfield, 1980). If children exhibit differences in learning styles, the implication is that the most effective learning would result by matching the student's learning style with a style-consistent teaching modality (Dunn, 1984; Friedman & Alley, 1984; Pettigrew, Bayles, Zakrajsek, & Goc-Karp, 1985; Smith & Renzulli, 1984; Wiesman, 1985). According to Kagan (1965),

> New pedagogical procedures should acknowledge the interactions between the dispositions of the learner and the materials, and tailor presentations to the preferred strategy of the child (cited in Henson & Borthwick, 1984, p.6).

While this approach appears intuitively obvious, particularly within the context of the social cognition and information processing movement just reviewed, this line of thinking reflects a new direction in educational psychology (Henson & Borthwick, 1984).

Epistemic Style

The present study is concerned with the role of epistemic styles in affecting responses to persuasive editorials that present information in a message style that is either consistent or inconsistent with a person's own style. Epistemic style refers to a person's dominant or characteristic mode of acquiring knowledge (Diamond & Royce, 1980; Royce, 1959, 1961, 1964, 1973, 1974, 1975a, 1975b; Royce & Powell, 1983). That is, epistemic styles are three ways of knowing termed rationalism, empiricism, and metaphorism. What may be of greatest importance to research on attitude change and persuasion is that epistemic style is concerned with judging the validity of information, i.e., epistemological justifiability. Each epistemic style invokes its own "truth-criterion" by which the individual is able to judge whether information is veridical or spurious. The particular set of rules or criteria which is applied depends on the individual's dominant or characteristic style.

In the most general sense, epistemic style is conceptualized both as a cognitive style of interacting with the environment and as a style for making justifiable knowledge claims, i.e., judging the veridicality of information. In this way, epistemic style may be understood as being dependent upon various cognitive processes (thinking, perceiving, and symbolizing), on the one hand, and as invoking a valid truth criterion (rational, empirical, and metaphorical), on the other. In order to provide a conceptual framework for the notion of epistemic style, a brief overview of Royce's multifactor theory of personality and individual differences is presented with an emphasis on the epistemic style component.

Royce's model of personality and individual differences is based on principles of systems theory (Bertalanffy, 1955) and derives its empirical support from factor analytic methodology (Diamond, Royce, & Voorhees, 1981; Powell & Royce, 1981; 1983; Royce & Mos, 1980; Royce & Powell, 1983; Wardell & Royce, 1978). According to the theory, the personality, or suprasystem, is comprised of six basic, interacting systems, arranged hierarchically (Mesarovic, Macko, & Takahara, 1970) from the least to the most complex (see Figure 1).

The six systems are: sensory. motor, cognitive, affective, style, and value. (It is the style system which is of most concern here.) Moreover, each system is made up of various subsystems which are further divided into subsystem components, and still further, into subsystem elements. In factor analytic terminology, these are referred to as third-, second- and first-order factors. Approximately 200 factors have been identified as comprising the whole of the personality (Diamond, Royce, & Voorhees, 1981; Royce, 1983).

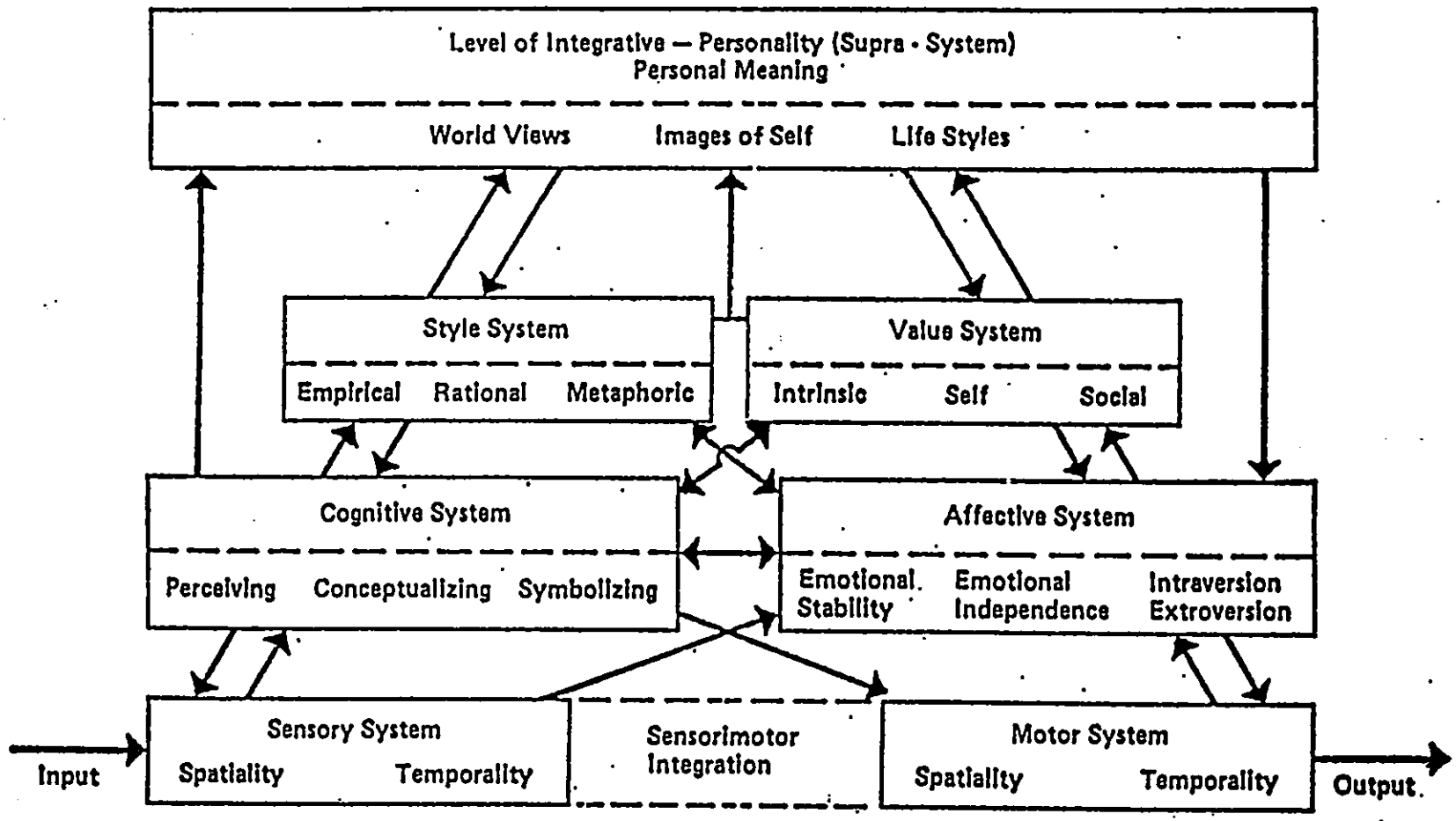

Figure 1. Integrated Personality Structure

The personality and its component parts is also said to be a goal-directed system "with internal norms for evaluating whether actions are 'successful'" (Royce & Powell, 1983, p. 12). At the highest level, the level of the personality, the goal is no less than a quest for the meaning of life--to find answers to the "big questions such as the nature of reality and being, questions of origin and destiny, what is worth living and dying for, and who one really is" (Royce & Powell, 1983, p. 234). It is through the activation of goal-directed processes that the personality becomes "an integrated whole as opposed to a loose collection of unrelated parts" (p. 261).

Returning to the personality structure, the two systems located nearest the apex of the suprasystem are the value and style systems. This placement implies that these systems have greater potential influence on that class of behaviour and play a greater role as personality integrators than other systems (Royce, 1983).

> The higher-level systems of integrative personality...in comparison with lower-level systems, (1) are more important with respect to the processes involved in personality integration; (2) can input coordinating information; (3) are concerned with longer units of time; (4) have a higher priority for action; and (5) are more closely related to the deeper (in the sense of significant) levels or aspects of personality (Royce & Powell, 1983, p. 12).

In this way, the style system (and concurrently, epistemic styles) is said to involve higher-order integrative functions, emphasizing its preeminent relevance for the development of one's conception of reality.

Royce defines the style system as "a multi-dimensional, hierarchical system which integrates and modulates information by coordinating cognition and affect, and by selecting particular modes of processing" (Royce & Mos, 1980, p. 20). The particular modes of processing refer to the specific epistemic styles, empiricism, rationalism, and metaphorism, which are themselves located at the apex of the style

system. When the style system is linked with the cognitive system (as opposed to the affective system), we are concerned with the acquisition of knowledge, i.e., epistemic styles. The particular cognitive process associated with each epistemic style is illustrated in Table 1.

Moreover, the specific "truth criteria" associated with each epistemic style may be described as follows:

1. Empiricism involves testing the validity of one's knowledge in terms of coming to understand the accuracy of one's perceptions, relating best to the world "through one's senses...testing one's ideas about reality in terms of reliability and validity of observations." (Royce & Powell, 1983, p. 135).
2. Rationalism involves testing the validity of one's knowledge in terms of the logical consistency of the information through the use of "clear thinking and the rational analysis and synthesis of ideas" (Diamond & Royce, 1980).
3. Metaphorism involves testing the validity of one's knowledge in terms of whether the information leads to universal principles rather than idiosyncratic awareness, "i.e., to constructing cognitive representations of experience that have the greatest degree of generality" (Royce & Powell, 1983, p. 135).

It is within the context of this complex and multifaceted theory of personality and individual differences that the role of epistemic style in selectively guiding information processing as a means of seeking truth, validating information, and acquiring knowledge can be best understood.

Table 1

Theoretical Alignments of Epistemic and Cognitive Styles

Epistemic Style		Cognitive Style		Truth Criterion
Empiricism	-	Perceiving	-	Perception-Misperception
Rationalism	-	Conceptualizing	-	Logical-Illogical
Metaphorism	-	Symbolizing	-	Universal-Idiosyncratic

Implications for Persuasion

A fundamental assumption of persuasion is that people are motivated to hold "correct" attitudes (Petty & Cacioppo, 1986a). Various criteria have been suggested by which the "correctness" of an opinion may be judged. For example, Festinger (1957) postulated that an attitude is judged as correct to the extent that other people are seen as holding similar attitudes. Hovland, Janis, and Kelley (1953) maintain that the correctness of a persuasive argument is judged according to the individual's own thinking habits. Information that is deemed as providing rational and logical support for the message arguments, they argue, will be accepted as veridical.

Royce's notion of epistemic style allows for a direct test of how people judge the validity of persuasive information according to their own thinking habits. However, rather than viewing people in a narrow sense, e.g., as only able to judge information on the basis of its rational, logical consistency, epistemic style suggests three ways of knowing: rational, empirical, and metaphorical.

Epistemic style is concerned with the question, "How does the knower come to know?" Royce's theory states that there are, in fact, three ways or modes by which a person can come to know. However, while people have access to all three, individuals tend to rely on one dominant or characteristic style. For the individual, epistemic styles provide the means by which epistemological judgements can be made. The immediate consequence of this process is that epistemic styles allow the individual to make judgements about what is correct and what seems to be fallacious. The ultimate objective is the formation of a world view and the noble pursuit of truth and understanding of basic questions concerning the meaning of our existence.

Epistemic styles may also be understood in terms of an information processing paradigm. Individuals are confronted with vast quantities of internal and external information. One method by which people cope with this overload is to adopt some sort of coding mechanism for ascribing meaning to these data. Some researchers have postulated that cognitive schemata effectively serve such a function with respect to social (Fiske & Taylor, 1984), self-referent (Markus, 1977) and persuasive information (Cacioppo et al., 1982).

Royce (1974) contends that epistemic style serves a similar function of ascribing meaning to information. Individuals process information through an epistemological coding mechanism as a means of structuring reality.

> we can view each of the three ways of knowing as an elaborate code, each with its own rules, devised in such a way that they are consistent with the epistemological justification for a given way of knowing....The point is that the three ways of knowing are elaborate cognitive subsystems, "constructed" by the organism as ways to understand the various sub-segments of the totality we call "reality" (Royce, 1974, pp. 165-166).

Moreover, as Royce (Royce & Powell, 1983, p. 215) maintains, people are particularly "prone to attend to and to integrate information" that is consistent with their own epistemic style. Lastly, a strong constructivist element in how we come to know is included in Royce's theory as he states that "knowledge only exists out of the interaction between subject and object (i.e., environment)" (Royce, 1974, p. 168).

It is expected, then, that, consistent with Petty and Cacioppo's Elaboration Likelihood Model (1986a, 1986b), the individual's susceptibility to persuasive information will be enhanced if the information presented is consistent with the person's own characteristic approach to knowledge or epistemic style. Such information will be more easily processed (through the central route) and more readily

adopted than information inconsistent with one's epistemic style because it meets the person's preferred criteria for "valid" knowledge. Likewise, persuasive arguments that are inconsistent with the person's characteristic epistemic style will reduce one's ability to check the veridicality of an attitude against this information. In this case, the message will be more difficult to process, thereby reducing its persuasive impact. For example, an individual who is highest on the empirical style will show a greater affinity for information concerning the "veridicality of perceptions" (Royce & Powell, 1983), and not be influenced by arguments that use metaphorical and figurative language, reflecting a style to which the person has a relatively low commitment. Likewise, a person who is highest on the metaphorical style will be most attuned to information presented in a literary, allegorical, or symbolic manner.

While the main premise of this investigation was that individuals will be differentially influenced by the message style variable only as a function of their own epistemic style commitments, some studies have found differences in the persuasive impact of an argument as a function of message style, notably in the use of metaphorical tropes, analogies, and similes (as opposed to literal messages). This research, reviewed in Appendix A, may help define what is meant by metaphorical and empirical (literal) arguments in the present study as well as to provide another perspective on the topic.

The Present Study

The present investigation was designed as a conceptual replication of the individual differences and persuasion research considered previously. The focus of the study was on the interaction between a personality variable, epistemic style, and a corresponding message style characteristic, i.e., metaphorical and empirical arguments.

Epistemic style, though a more psychologically "deep" characteristic than the relatively manifest self-schema or self-monitoring traits used in previous studies (e.g., Cacioppo et al., 1981; DeBono, 1987), was seen as an appropriate variable for this investigation for two reasons. First, epistemic style is conceptualized as a stable characteristic which people utilize as a means of differentially processing information (Royce & Powell, 1983). This information processing function appears to be consistent with the top-down (versus bottom-up) influence of self-schemas described by Cacioppo et al. (1982) and others (e.g., Markus, 1977). In this regard, it is expected that epistemic style will serve to "bias" how the subject processes the persuasive message in favour of the dominant style.

Second, epistemic styles are said to be theoretically related to cognition and various cognitive processes (Royce & Powell, 1983) which in turn are viewed as determining factors of one's attitudes (Cacioppo, Harkins, & Petty, 1981; Fishbein & Ajzen, 1975; Insko, Turnbull, & Yandell, 1974; Petty & Cacioppo, 1986a). According to Fishbein and Ajzen (1975), attitudes are based on the primary beliefs a person has about an object and are represented by the judgmental evaluations the person makes with respect to the object. In this way, questions of how we come to "feel" about issues, events, and people may extend to questions of how we come to "know" about these things. This would seem a plausible relationship given recent conceptualizations postulating that attitudes are based on our knowledge and beliefs about issues, events, and people (Cacioppo, Harkins, & Petty, 1981; Fishbein & Ajzen, 1975; Insko, Turnbull, & Yandell, 1974). In turn, our knowledge about the world and image of reality are determined by our epistemological commitments.

One important difference between the present study and the previous research, however, is that epistemic style represents a more latent variable than self-schemas, less accessible to a person's self-awareness. People do not define themselves as empirical, metaphorical, or rational thinkers (i.e., "epistemic" self-schema) in the same way as they would define themselves as religious or legalistic. The proposed study is concerned with the possibility that subjects' epistemic style will nonetheless influence their processing of message arguments in the same way that other "global" personality characteristics bias message processing.

A second difference is that, unlike the personality characteristics used in the previous research (e.g., self-schema and self-monitoring, certainty-uncertainty oriented), which were dichotomous variables, epistemic style is a profile or hierarchy of scores representing three epistemological styles. The Psycho-Epistemological Profile (Royce & Mos, 1980), a measure of a person's epistemic style commitments, generates a profile for each individual composed of three scores, one for each style, rationalism, empiricism, and metaphorism. Theoretically, the highest scale score denotes the person's preferred or dominant mode. Therefore, it remains a statistical issue to determine the effects due to a subject's epistemic style profile in response to an editorial that reflects a particular epistemic style.

Lastly, the proposed study is more complicated in its methodology and research design than the previous research. This complexity is in part necessitated by the particular characteristic under investigation (i.e., PEP as a profile of three scores) and the fact that subjects in the present study receive two editorials to read rather than one. Unlike the previous studies, the proposed investigation also employed different types of data analyses, again determined by the nature of the variables and

methodology. The effects due to demographic characteristics and initial attitudes were also considered in the present analyses. This author believes the advantages offered by these methodological issues relate to the greater internal validity of the experiment in that relevant variables may be held constant through statistical control.

Theoretical Orientation of the Present Study

Numerous theories have been postulated to explain or represent the transmission of information from source to receiver, referred to as communication. The general theory of communication most closely related to the context of the present research is an information processing model. Information processing deals with the ways in which people process information, i.e., how it is received, organized, stored, and used to alter behaviour. Such an approach draws upon cognitive psychology and recognizes the potential for individual differences in the persuasiveness of communications that reflect different message styles. For example, Schroder, Driver, and Streufert's (1967) cognitive complexity theory of information processing acknowledges the importance of both the predispositions of the individual (e.g., epistemic style) and the conditions of the environment (e.g., message style). According to Littlejohn (1983, p. 128), "how we process information depends on the complexity of our cognitive system and the demands of the situation."

Though not a theory of communication per se as much as it is a general approach to conceptualizing the process of communication, adopting an information processing model within the context of the present study (such as Schroder et al.'s, 1967 or Petty and Cacioppo's, 1986a) allows one to generate testable hypotheses concerning message effectiveness as a function of the interaction between message and

receiver characteristics. Indeed, the thesis of the present investigation is that Royce's construct of epistemic style operates to activate the cognitive complexities within an individual to affect the information processing of persuasive communications which reflect one of these epistemic styles so as to optimize processing of style-consistent messages.

Research Hypotheses

The purpose of the present study was to examine the influence of subjects' epistemic style profile on their responses to two counterattitudinal persuasive editorials that differed in the particular epistemic style each editorial reflects. In terms of specific research hypotheses, it was predicted that:

1. Subjects will rate the editorial that is consistent with their characteristic epistemic style as more persuasive than the style-inconsistent editorial.
2. Subjects will generate more supportive thoughts in response to the style-consistent than the style-inconsistent editorial.
3. Subjects will change their attitudes more when exposed to the editorial that is consistent with their characteristic epistemic style than to the style-inconsistent editorial.

While the principal focus of the study was on the relationship between epistemic style scores and subjects' responses to editorials as a function of message style, the research design necessitated that certain conditions be examined prior to testing these hypotheses. The preconditions pertain to the effects of the experimental manipulations of editorial style and issue and are based on the assumption that subjects would not favour one message style or the other and would not favour one issue or the other. The preconditions are stated here in the form of null hypotheses.

1. Subjects will rate the editorials presenting different attitude issues equally.
2. Subjects will generate an equal number of supportive thoughts in response to the editorials presenting different attitude issues.
3. Subjects will not change their attitudes more in response to one editorial issue than to the other issue.
4. Subjects will rate the editorials equally in response to the two different message styles.
5. Subjects will generate an equal number of supportive thoughts in response to the editorials of different message styles.
6. Subjects will not change their attitudes more in response to one message style than to the other style editorial.

CHAPTER 2

METHOD

Overview

Two independent variables were used in the present study--epistemic style and issue. The main experimental manipulation consisted of varying the epistemic style in which the information was presented--empirical or metaphorical. For each issue, two editorials were prepared. One of the editorials presented statistical, empirical information in support of the message arguments (empirical epistemic style). The other editorial presented metaphorical information to back up the main points (metaphorical epistemic style). Second, in order to control for a possible issue effect, two issues were used in the study--course evaluations and auto insurance rates. Moreover, of the four stimulus materials prepared for the study, each subject read two: one editorial in each style and one on each issue. Order of presentation was counterbalanced across subjects. A variable "Trial" (1 and 2) was included in the analyses to test for possible order effects.

The main study was preceded by a series of pilot studies conducted in order to: (1) select two relevant attitude issues, (2) develop an internally reliable attitude scale for each issue, and (3) prepare the persuasive editorials used as stimulus materials. For the first pilot study, two groups of students from first, second, and third year classes

(N = 48 and N = 40) were asked to indicate their relative agreement or disagreement with 25 statements, each of which focused on a different issue presumed by the experimenter to have at least some relevance for students. The two issues which elicited the most homogeneous responses--the right of students to have access to course evaluations and the inequity of automobile insurance rates for males and for females--were chosen as the attitude issues to be used in the main study. In both samples, the observed homogeneity was due to the fact that the majority of students believed that students should have access to course evaluations and that automobile insurance rates should be the same for both men and women.

Next, the experimenter developed a 5-item attitude scale for each of the two issues and pretested these scales on a sample of 58 undergraduate students. The experimenter then developed two editorials for each of the issues, arguing against the majority position and using one of the two epistemic styles. The experimenter strove for maximum face validity and then asked a sample of 18 subjects to evaluate the editorials in terms of how interesting, persuasive, easy to read, easy to think about, and convincing each was. The subjects used in these pilot studies were undergraduate students enrolled in first, second, and third year psychology courses.

Subjects for the main study were solicited from second and third year undergraduate psychology courses. The experiment was presented as a general survey of students' characteristics, tastes, and preferences and involved the completion of a number of questionnaires. Subjects were told that the study involved two sessions conducted about one month apart. Materials administered during the first session included an attitude scale assessing students' attitudes about a range of issues including the two relevant ones, the Psycho-Epistemological Profile (PEP), and a demographic questionnaire.

In the second session, experimental group subjects (n = 200) read two counterattitudinal persuasive editorials, one on each of the two issues. As well, one of the editorials reflected an empirical epistemic style and one reflected a metaphorical style. After reading each editorial, students answered a series of questions regarding the editorial's persuasibility. After reading both editorials, subjects completed the same attitude scale they had been given during the first session and a manipulation check. Subjects in the control group (n = 57) completed only the posttest attitude questionnaire in the second session.

Subjects

Three hundred and thirty-six students enrolled in second and third year psychology courses completed the first session of the study. Subjects received one experimental credit point toward their final grade in the course for their participation. Eighteen of these subjects were subsequently eliminated from the study because of incomplete data on the main dependent measures, leaving an initial pool of 318 participants (65 males, 251 females, and 2 not specified) with a mean age of 23.5 years. The ratio of males to females in the study is representative of the proportion of males and females typically enrolled in psychology courses. From this initial subject pool, 257 subjects completed Session 2 of the study for a second experimental credit point; 200 were assigned to the experimental group (38 males and 162 females) and 57 participated in the control condition (11 males and 46 females). Sixty-one individuals were not used for the second session because they could not be contacted or because they declined to participate due to time constraints. The proportion of males to females in the experimental and control groups was identical at 19% male and 81% female.

Stimulus Materials

For each of the two issues, student access to course evaluations and equal automobile insurance rates for men and women, two persuasive editorials were prepared, one reflecting an empirical epistemic style and one reflecting a metaphorical style (see Appendix B). The materials were developed according to Fishbein and Ajzen's (1981) contention that a persuasive message consists of two components: (a) a set of persuasive arguments and (b) the factual evidence presented to support the message arguments. The editorials prepared for the present study, then, consisted of these two components. The fundamental arguments were the same for both editorials on the same issue. The supportive evidence, however, reflected either an empirical or a metaphorical style.

Given the importance of the message arguments to the internal validity of the study, great care was given to their development. This task was aided by the existing literature on the use of metaphorical and empirical information in persuasive arguments (e.g., Bowers & Osborn, 1966; Reinsch, 1971) as well as Royce's own writings. Precautions were taken to ensure that the arguments had face validity and were equally persuasive in tone.

The development of the stimulus materials began with the preparation of the initial editorials followed by evaluation with small groups of undergraduate students. This iterative process of modifying and evaluating the materials occurred approximately six times until a final set of editorials was developed. Responses of a group of 18 undergraduate students who read all four editorials indicated that they were generally equivalent. In other words, all editorials were found to be equally and moderately persuasive (M = 4.0 on a 6-point scale), interesting (M = 4.2), and easy to

think about (M = 4.2). The only differences found were that the empirical editorials were rated as more informative (M = 4.6) than the metaphorical editorials (M = 3.8), $F(1,68) = 5.65$, $p < .05$, and the automobile insurance editorials were rated as better overall in quality (M = 4.8) than the course evaluation editorials (M = 4.1), $F(1,68) = 6.14$, $p < .05$. The range of scores observed in pilot testing (scores ranged from 1 to 6) indicated good variability of responses to the stimulus materials.

The main argument in the course evaluations editorial was that having access to course evaluations would not result in more informed decisions regarding course selections and would cause students to delay making course selections which would result in their not getting the courses they wanted. The empirical course evaluations editorial was written as a fact-based argument purportedly derived from and supported by empirical data and carefully analyzed studies and surveys which demonstrated the ways in which students would suffer if access was given. In the metaphorical editorial, the course evaluation situation was compared to another situation, requiring the transfer of an idea from one context to another. The metaphor used in the course evaluations editorial compared having access to course evaluations to being given yet another assignment in an already heavy course. The result is that some students spend too much time on their paper and consequently hand their assignment in late.

The main argument of the auto insurance editorials was that insurance rates should be based on gender because males submit more costly insurance claims than females and should, therefore, pay higher premiums. The empirical editorial presented statistics supposedly derived from research studies to support this argument. The metaphorical auto insurance editorial stated that the insurance situation was like Golden Stone Soup. In this fable, people maintained a constant supply of their golden

stone soup by dropping a magical stone into the soup pot after taking their share. Those people who took more than others were required to drop more than one stone into the pot to replenish the soup so that there would be enough to feed everyone.

An attempt was made to keep the length of the editorials as equal as possible. However, the metaphorical editorials were slightly longer than the empirical editorials at 443 versus 427 words for the course evaluations messages and 449 versus 422 words for the auto insurance messages.

Persuasive arguments used in the present study reflected the empirical and metaphorical epistemic styles only, excluding the rational style. This decision was based on the judgment that the empirical and metaphorical epistemic styles are more well-defined and better conceptualized in Royce's writings than the rational style. The empirical and metaphorical styles also seem to be the most dichotomous of the three epistemological types. That is, a person who is high on one of these styles will tend to be low on the other. Royce (1967, 1983) defines a "superempiricist" as having the style rank order of empirical, rational, and metaphorical (ERM) and the "supermetaphoricist" as having a style rank order of metaphorical, rational, and empirical (MRE).

Further evidence is derived from the theoretical relationship between epistemic styles and different disciplines of knowledge (Royce & Mos, 1980). According to Table 2, metaphorism alone seems to be important to the humanities and the arts. However, both rationalism and empiricism are dominant in the case of scientific knowledge and both rationalism and metaphorism are represented in religious knowledge. Therefore, one can say that, while metaphorism most clearly gives credence to knowledge through the arts, and empiricism is represented (along with rationalism) in scientific

epistemology, remaining distinct from metaphorical knowledge, rationalism cannot be dissociated from either the empirical or metaphorical epistemic styles.

Session 1 Measures

Psycho-Epistemological Profile. Subjects' epistemological style was assessed with the Psycho-Epistemological Profile (PEP; Form VI). The PEP is a 90-item questionnaire developed by Royce (Royce & Smith, 1964; Royce & Mos, 1980; Smith, Royce, Ayers, & Jones, 1967) to assess a person's level on three epistemic styles: empirical, metaphorical, and rational (see Appendix E). The items are divided into three scales of thirty questions corresponding to the three styles. Subjects respond to each item on a 5-point scale with strongly agree at one end and strongly disagree at the other end.

The resulting PEP profile consists of scores on all three dimensions, with the highest score indicating the person's dominant or characteristic style and the other scale scores identified in descending order. Thus, there are six profile types: ERM, EMR, REM, RME, MRE, and MER. For example, the profile ERM would indicate that the individual has her highest score on the empiricism scale, the next highest on rationalism, and lowest on the metaphorism scale. Royce notes that, while there are moderately positive correlations among the three scales, "their relative degree of independence supports the interpretation that these are three meaningful and isolatable dimensions" (Royce & Mos, 1980, p. 71).

The scale's psychometric properties and normative data are presented in the PEP Manual (Royce & Mos, 1980). PEP scores have shown predicted relationships with the Allport-Vernon-Lindzey Study of Values, the Meyers-Briggs Type Indicator,

Table 2

Representation of Styles of Knowledge by Discipline

Discipline		Major epistemologies
Science	-	Rationalism-Empiricism
Art	-	Metaphorism
Religion	-	Metaphorism-Rationalism

and the Strong Vocational Interest Blank (Royce & Mos, 1980). For example, in a study of 98 undergraduate university students, moderately high positive correlations were found between the Rationalism and Empiricism scales of the PEP and the Theoretical scale of the Allport-Vernon-Lindzey questionnaire. Significant positive correlations were also found between the Metaphorical scale of the PEP and the Religious and Aesthetics scales of the Allport-Vernon-Lindzey measure. Schact and Black (1985) report that the epistemic profiles of psychoanalytic-oriented therapists differed significantly from those of behavioural-oriented therapists. As predicted, 86% of the psychoanalytic therapists scored highest on the metaphorical scale and only 6% had a profile with empiricism as the highest score.

People with differing epistemic styles have been differentiated on the basis of occupational groups, nationality, religious commitment, and academic preference (Royce & Mos, 1980). For example, professionals in speech and drama had their highest mean score on the metaphorical scale. Professionals in the fields of mathematics and philosophy scored highest, on average, on the rationalism scale and experimental psychologists had their highest score on the empiricism scale. Similar findings are reported for university students in various fields of graduate study such as Botany, Zoology, Chemistry, English, and Fine Arts.

Test-retest reliabilities with a sample of 43 university undergraduates, as reported in the PEP Manual, were .68 (rationalism), .66 (metaphorism), and .87 (empiricism) for a nine-month interval. Split-half reliability correlation coefficients for Form VI of the PEP, the form used in the present study, are reported as .77 (rationalism), .88 (metaphorism), and .77 (empiricism). Finally, an item analysis supported the three dimensional structure of the PEP questionnaire.

Initial Attitude Questionnaire. Subjects' initial attitudes toward the two relevant issues were measured by two 5-item scales imbedded within a larger pool of 50 items covering a variety of topics (see Appendix F). Five-item scales rather than single items provided a more reliable index of subjects' attitudes, an important consideration given that the purpose of the study was to measure attitude change.

The two issues used in the present study were selected by means of a pilot study in which 48 undergraduate students responded on 9-point scales to 25 attitude statements on a variety of issues. These subjects also completed the PEP questionnaire. Criteria for inclusion of an attitude issue in the scale administered during the main study were that the scale score had: (a) a mean score beyond the neutral or mid-point but not too polarized (i.e., between 6 and 8 on the scale), (b) a small standard deviation indicating a narrow range of scores, and (c) no correlation with the three PEP scales, gender, or age. Five issues meeting these criteria were: access to course evaluations, increasing student involvement in university administration, providing graduate students with Ontario Student Assistance Program grants, mandatory courses in effective parenting, and equal auto insurance rates for men and women. These findings were replicated with a second sample of 40 undergraduate students.

The two issues selected as the foci in the main study were: (a) access to course evaluations and (b) automobile insurance rates for men and women. These topics comprised a school-related and a general, non school-related issue. Moreover, both issues involved potential goals or outcomes directly relevant to the sample population (Johnson & Eagly, 1989). The consensus views held by the students were that (a) students should have access to the results of the course evaluations completed by

students at the university and (b) auto insurance rates based on gender are discriminatory, i.e., rates for men and women should be equal. (These "views" were based on the fact that the aggregate scores were beyond the midpoint of the scale in the stated direction.)

A series of pilot studies was carried out to develop a 5-item attitude scale for each of these issues. First, a large pool of 9-point, Likert-type items was generated for each issue. These items were then administered to a group of undergraduate students and the data subjected to an item analysis. The best five items for each issue were retained to comprise the two scales. The ten items were then given to another sample of 58 subjects in order to determine the scale's internal reliability. Good item and scale statistics were found for both measures (course evaluation alpha = .83, M = 7.08, and auto insurance alpha = .79, M = 6.67).

For the 50-item attitude questionnaire used in the main study, subjects responded to each item on a 7-point scale with 1 = strongly disagree, 4 = neutral, and 7 = strongly agree. Responses to the five relevant attitude items were averaged to give the person's score for that issue. Two of the five items for each of the two scales required reverse scoring. A high score on the course evaluations measure indicated that the subject believed that students should have access to course evaluations. A high score on the auto insurance scale indicated that the subject believed men and women should be charged approximately the same rates for automobile insurance. Scores for the 40 non-relevant items included in the attitude questionnaire as fillers were not calculated.

Demographic Questionnaire. In Session 1, subjects also completed a brief demographic questionnaire which included items on age and gender, two variables

considered to be related to the PEP questionnaire and attitude issues (Appendix G). Two questions concerning marital status and academic major were included on the form as filler items and were not included in the data analysis.

Session 2 Measures

Editorial Rating Form. Subjects rated each of the editorials on 11 7-point scales. These rating scales were designed to investigate two aspects of subjects' preference for the editorials: their judgments of the editorial's quality and their degree of involvement in the editorial (see Appendix J). Six items pertaining to the editorial's quality were ratings of how persuasive, interesting, informative, and convincing the editorial was and how effectively it made its point. Subjects also provided a rating of the editorial's overall quality. Five items pertaining to their degree of involvement in reading the editorial were ratings of how easy it was to think about the message arguments, how easy it was to make judgments about the arguments, how involved they were while reading the editorial, how strongly they felt about the issue, and how certain they were about their feelings on the issue. Together, these items comprised the Editorial Rating Form (ERF) and were used as the main dependent measures in the study.

Thought Listing Task. The thought listing task was included as a dependent measure to assess subjects' cognitive responses to the persuasive editorials. The cognitive response technique has generated a considerable amount of research since it was first described by Greenwald (1968; Petty, Cacioppo, & Heesacker, 1981) and represents one of the most important recent developments in attitude change research. The basic tenet of this procedure is that the thoughts a person generates in response to a message will influence the persuasive impact of the argument.

> If the elicited thoughts (cognitive responses) are primarily favorable, persuasion will be the likely result, but if the thoughts are primarily unfavorable, resistance will be more likely (Cialdini, Petty, & Cacioppo, 1981, p. 361).

Subjects were given three minutes to list "all the thoughts and ideas you had during the presentation of the editorial" (see Appendix K). The thoughts were then subjected to a content analysis and coded first as either message relevant or irrelevant. Message relevant thoughts were either direct responses to something in the editorial or elaborations or extensions of an argument on the message topic in general. Message irrelevant thoughts were thoughts that had nothing to do with the editorial or, although initiated by the editorial, were irrelevant to the topic. The message relevant thoughts were subsequently coded as message supportive, unsupportive, or neutral. Supportive thoughts were statements in favour of the advocated position that mentioned specific favourable consequences, desirable attributes or positive associations, statements ruling out alternatives, statements that supported the validity or value of the message arguments, and statements of positive affect about the editorial or issue. Unsupportive thoughts were defined as statements directed against the advocated position that mentioned specific unfavourable consequences, undesirable attributes, or negative associations, statements of alternative positions, statements that challenged the validity or value of the arguments, and statements of negative affect about the editorial or issue. Neutral thoughts were all other message relevant thoughts. This method followed a procedure described by Cacioppo and Petty (1981) and Cacioppo et al. (1981) and utilized in Cacioppo et al. (1982), DeBono (1987) and DeBono and Harnish (1988). The proportion of supportive thoughts to the total number of message relevant thoughts reported by the subjects was calculated as the cognitive response index. The measure is reported to correlate with post-message attitudes (DeBono, 1987).

Posttest Attitude Questionnaire. At the end of Session 2, both experimental and control subjects completed the posttest attitude measure. The questionnaire consisted of only the ten relevant items (five items for each of two issues) included in the pretest questionnaire (Appendix L).

Message Style Manipulation Check. At the end of the second session, participants were provided with definitions of the three epistemic styles and asked to indicate which style each of the two editorials they had just read reflected (Appendix M). Subjects were also asked to indicate what main arguments had been presented in each of the two editorials.

Procedure

Subjects were recruited from second and third year psychology courses during regular class times. The students were told that they were being asked to participate in a study concerning the "characteristics, tastes, and preferences of undergraduate students." Students were also informed that the study involved two separate sessions "because of the number of questionnaires involved and because they involve a fair amount of concentration." They were told that they would be telephoned by the experimenter about one month after their first session to schedule a time to complete the second set of questionnaires which involved reading and rating a short set of materials. They were informed that their participation was voluntary and that they could drop out of the study at any time (see Appendix C for the information given to students at the time of recruitment). Those students who participated were given an envelope containing the materials for the first session and were instructed to complete the enclosed questionnaires, following the instructions carefully. The first session was held during the class period and took approximately 50 minutes.

About four weeks after completing the initial questionnaires, subjects were contacted by telephone to arrange a time to complete the second set of materials. An attempt was made to contact all of the subjects from the pool of 318 students who had completed the first session materials correctly. If contact was made, a time was arranged to complete the second part of the study. If the person was not available, the experimenter left a message stating that he would call back at another time. All 318 subjects were telephoned at least once.

An attempt was made to schedule the subjects for the second session in groups of six (found by the experimenter to be an optimal number). However, due to scheduling difficulties and subjects' failure to show up at the assigned time, the number of subjects in each group ranged from one to twelve people. The modal number per group was six.

As subjects arrived for their appointment they were given an envelope from the top of a pile containing the materials for the second session. The envelopes were arranged so that subjects were randomly assigned to one of the four "order of presentation" groups.

Each envelope contained two editorials in addition to the Information Sheet, Consent Form, and dependent measures. Subjects received one editorial on each of the two issues, auto insurance and course evaluations. One of these editorials reflected an empirical epistemic style and the other reflected a metaphorical style.

To reduce the possible influence of an order effect, the editorials appeared in one of four orders:

1. Empirical-Course Evaluations/Metaphorical-Auto Insurance
2. Metaphorical-Course Evaluations/Empirical-Auto Insurance
3. Empirical-Auto Insurance/Metaphorical-Course Evaluations

4. Metaphorical-Auto Insurance/Empirical-Course Evaluations

When all of the subjects had arrived for the second session, they were instructed to open their envelopes and proceed, being sure to pay close attention to the instructions. Subjects were informed in the face sheet that they would be reading two editorials which "are like those you might find in a newspaper or magazine" and would then be rating them in a number of ways (see Appendix H). The Consent Form (Appendix I) was followed by the first editorial, the Editorial Rating Form (ERF), the thought listing instructions, and corresponding response sheets. These materials were followed by the second editorial, the corresponding ERF, thought listing materials, the posttest attitude questionnaire, and lastly, the manipulation check. The dependent measures were always presented in the same order and required approximately 30 minutes to complete.

For the thought listing measure, subjects were provided with a sheet of instructions followed by three pages with four boxes on each page in which subjects were to list their thoughts. When the subjects looked up to indicate that they had completed reading the instruction sheet, they were told to begin listing their thoughts. All subjects were given a full three minutes. If they began to proceed to the next editorial before the three minutes had elapsed, they were asked to wait until instructed to move on.

After subjects had read and rated both editorials, they completed a brief attitude questionnaire on the two relevant issues and a message style manipulation check asking them to identify each editorial's epistemic style. Upon completion of the study, the participants were debriefed. Debriefing involved asking the group if they had any questions about the study or materials they had just read or completed. After

answering any questions that were raised, the experimenter told the subjects that the focus of the study was to persuade them with the editorials and that the materials they had just read had been prepared specifically for the study. They were also told that they would be receiving a brief outline of the study including some of the results in about one month. No subject was able to correctly ascertain the exact nature of the study or to articulate the main hypotheses. After the debriefing, subjects were given an experimental credit point card, asked not to discuss the nature of the study or materials with other students, thanked, and dismissed.

Subjects who participated in the control group were contacted after all the data from experimental condition subjects had been collected. The group was contacted by telephone in the same manner as subjects in the experimental group, at which time an arrangement was made to complete the materials for the second session. Upon arrival, they were given an envelope containing a consent form and the posttest attitude questionnaire and told to proceed, being sure to follow the instructions carefully. When they had completed the materials, the participants were debriefed, handed an experimental credit point card, thanked, and dismissed (see Figure 2 for an overview of the study's procedure).

Design of the Study

The research strategy used in the present study was a pre-post design with a control group. Subjects completed an attitude questionnaire in Session 1 (in addition to the epistemic style and
demographics questionnaires) and then again, about one month later, as part of the second phase of the study. Subjects in the experimental group read the two persuasive

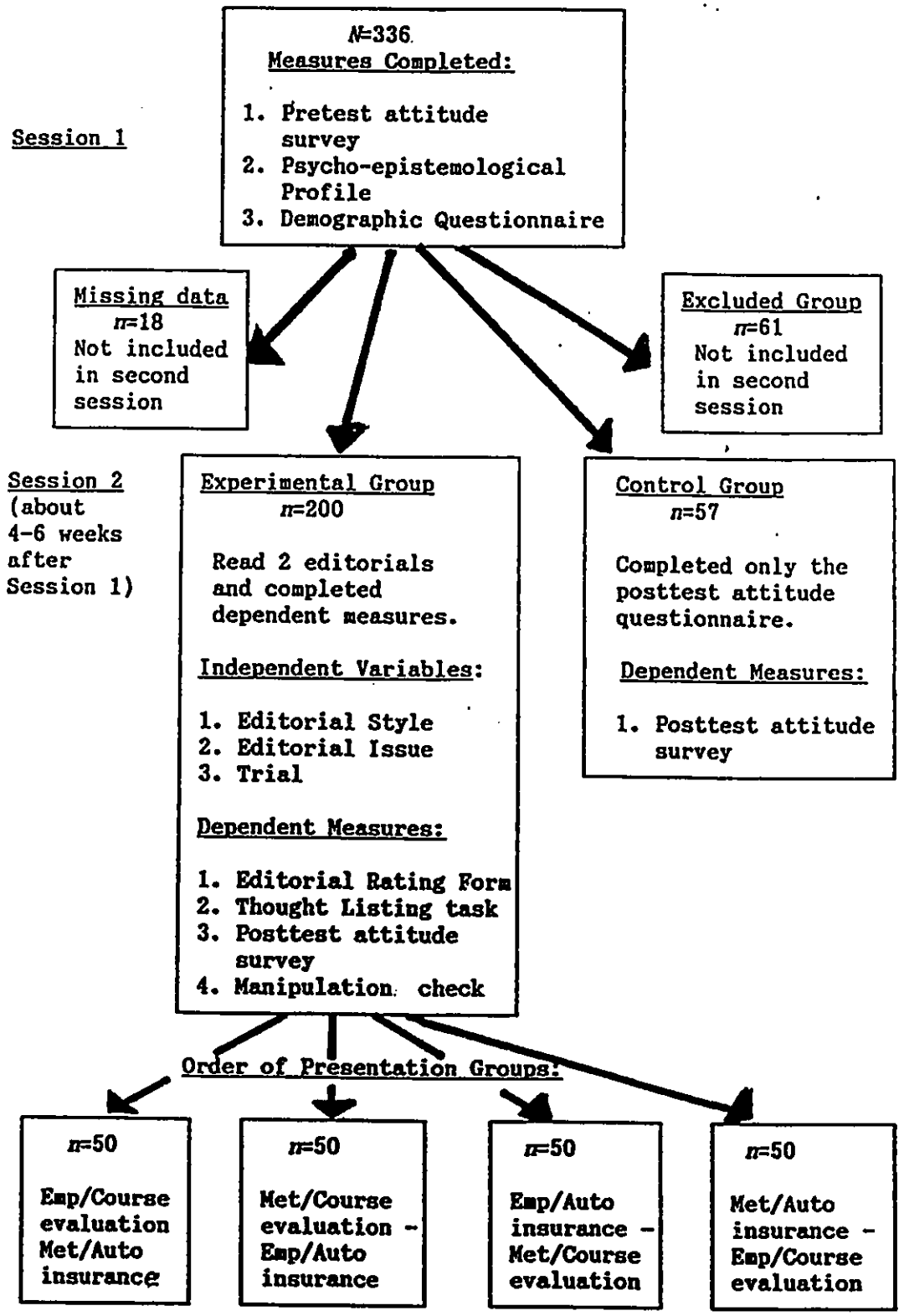

Figure 3. ***Schematic Diagram of Study Procedure and Data Collection***

editorials in Session 2, in addition to completing the dependent measures, while the control subjects completed only the second attitude questionnaire.

The purpose of the control group was to determine whether subjects in the experimental group changed their attitudes in the expected direction more than subjects who were not exposed to the persuasive editorials. The inclusion of the control group was judged necessary because of the media exposure given to the issue of auto insurance during the posttest data collection phase of the present study. At that time, the Ontario government proposed extensive modifications to the present system of establishing auto insurance rates in which gender is an important factor. Under the proposed system, gender would not be considered in establishing rates, resulting in a situation counter to the position argued in the study's editorials on this issue.

Because media exposure on this issue began shortly after the posttest data collection phase started and was entirely unexpected, the decision to include a control group was made subsequently. For this reason, subjects in the control group were contacted after the collection of the experimental group data was completed.

Treatment of the Data

From the point of view of data analysis, the study's design may be represented in several ways. In one sense, the study was an incomplete mixed factorial model with style and issue of the editorial as within-subjects factors and the style by issue interaction as the between-subjects effect (i.e., Lindquist Type II design, Lindquist, 1953). Subjects in the experimental condition completed two sets of dependent measures, one for each editorial they read. The study is an incomplete design in that subjects received only half of the complete set of materials, one editorial on each issue and each style.

In another sense, the experimental design may be classified as a "fractional factorial" study (see Kirk, 1982; Winer, 1962). In such a design, only a certain portion of the total number of conditions is utilized in the experiment. For example, in a one-half replication of a 2^4 design, only eight of the possible sixteen conditions are actually employed in the study. Typically, this is done as a means of reducing the number of treatment conditions when the number of independent variables and their levels is large.

This latter design was adopted as the model to guide the data analysis of the present study. While perhaps a more complicated design, it was necessary to present subjects with only half of the complete set of stimulus materials. Providing subjects with all four of the stimulus materials, that is, empirical *and* metaphorical editorials on each issue, would have been an unnecessary confound of the issue effect. In this case, subjects might have responded to the editorial style differently simply because they had previously been exposed to an editorial on the same issue and presenting the same set of arguments.

Moreover, to proceed with the data analysis as a repeated measures design would have resulted in some difficulties due to such factors as the need to consider half of the data for each subject as missing, the greater complexities in analyzing repeated measures data, and the need to meet the more restrictive assumptions of the mixed-model design (see Keppel, 1982).

Analysis of the data proceeded in much the same way as in a complete independent groups, factorial design except that certain effects are said to be "aliased" as other effects, that is, retrievable and tested as aliases of other effects. "Main effects are aliased with third-factor and higher interactions; two-factor interactions are aliased

with other two-factor as well as higher-order interactions" (Winer, 1962, p. 450). In the present study, the effects of interest are aliased as follows:

Effect		Alias
OS	=	T X S
OI	=	T X I
OS X OI	=	S X I
OS X OI X T	=	S X I X T
OS X T	=	S
OI X T	=	I
T	=	T

where OS is order of style, OI is order of issue, S is editorial style (metaphorical or empirical), I is issue (course evaluations or auto insurance) and T is trial. Trial in the present study refers to the first or second editorial subjects were exposed to. The first editorial the subject read, regardless of its style or issue, may be referred to as Trial 1; the second editorial is Trial 2. In order to test for a specific order effect, e.g., order effect for style (a preference for the empirical or metaphorical editorial as a function of whether it was presented first or second), one may test the interaction effect between style and trial. The issue order effect is retrievable by testing the issue by trial interaction. Therefore, the main effect of order (of style or issue) is aliased as a second-order interaction with trial.

CHAPTER 3

RESULTS

The main data analyses were performed in two ways. First, the effects of the experimental manipulations of message style, issue, and trial on subjects' responses to the editorials were examined using analyses of variance in order to determine whether subjects had been differentially affected by these variables. Second, the hypotheses pertaining to the relationship between epistemic style scores and subject responses to the two editorials were examined. A series of hierarchical multiple regressions was performed using responses to the editorials as criterion variables. Predictor variables included demographic information, initial attitudes, subjects' epistemic style scores, message style and epistemic score by message style interactions.

Description of Subjects

Characteristics of the sample are presented in Table 3. Three hundred and eighteen students ranging in age from 18 to 67 (mean age of 23.5) comprised the initial pool of subjects who had complete data in the first session. (Three hundred and thirty-six students took part in the first session. Of these, 18 were eliminated due to missing data.) From this sample of 318, 200 were contacted to participate in the experimental group, and 57 were assigned to the control group. Sixty-one subjects who could not be contacted for the second session or who declined to participate comprised the excluded group.

Table 3

Characteristics of Initial Subject Pool

Variable	Groups						
	Experimental (n=200)		Control (n=57)		Excluded (n=61)		$F(3,396)$
	Mean	SD	Mean	SD	Mean	SD	
Age	23.7	6.8	22.0	4.1	24.2	6.9	2.06
Attitude toward course evaluations	5.7	1.1	6.0	0.8	5.5	1.3	4.58*
Attitude toward auto insurance	5.2	1.4	5.5	1.4	4.6	1.5	6.60*
Metaphorical raw score	102.2	13.4	102.1	11.6	98.1	14.7	2.37
Empirical raw score	100.3	11.1	99.6	8.7	99.1	11.0	.27
Rational raw score	100.9	10.5	97.9	8.7	99.7	9.2	2.15
Metaphorical T-score	50.5	10.1	50.6	8.6	47.8	10.7	1.78
Empirical T-score	50.2	10.5	49.7	8.1	49.6	9.9	.11
Rational T-score	50.7	10.5	47.4	8.7	49.7	8.9	2.06

Note. Mean scores for attitudes toward course evaluations and auto insurance were based on responses to 7-point scales. High means indicate greater agreement that students should have access to course evaluations and that insurance rates should not be based on gender. Raw scores on the Metaphorical, Empirical, and Rational subscales had a possible range of 30 to 150.

* $p<.05$.

One-way analyses of variance were conducted to compare mean scores across the three groups. The Scheffé post hoc test was used to examine further pairwise differences. As shown in Table 3, the three groups differed significantly only on the two attitude measures. The control group was significantly more favourable regarding access to course evaluations than the excluded group (*M*s of 6.0 and 5.5, respectively). For the issue of auto insurance, the experimental and control groups differed in their initial attitudes from the third group (*M*s of 5.2, 5.5 and 4.6, respectively). In neither case, however, did the experimental and control groups differ significantly from each other. Internal reliability of the two attitude questionnaires was acceptable, according to Nunnally's (1967) standards, as the coefficient alphas calculated for data collected from the initial pool of 318 subjects were .74 for the course evaluations measure and .86 for the auto insurance rates measure.

Subsequent tests pertain to subjects in the experimental and control groups only ($N = 257$). A comparison of the means indicated that subjects differed in their attitudes toward the two issues, $t(256) = 4.88$, $p < .001$, being more convinced that students should have access to course evaluations ($M = 5.8$) than that auto insurance rates should not discriminate on the basis of gender ($M = 5.3$). It should also be noted that the means obtained on the two attitude scales were greater than 4.0, the midpoint of the scale, consistent with the results obtained in pilot studies.

Not surprisingly, males and females differed significantly on the auto insurance issue with males more in favour of equal rates for both genders ($M = 5.9$) than females ($M = 5.2$), $t(255) = 3.33$, $p < .001$. This finding suggests that, as expected, males felt more strongly than females that auto insurance rates for men and women should be equal. No gender difference was found for the issue of course evaluations.

Subjects' PEP scores were standardized by gender to a mean of 50 and a standard deviation of 10, as described in the manual (Royce & Mos, 1980). Alpha coefficients for the three scales calculated for the present study were .85, .76 and .72 for the metaphorical, empirical and rational scales, respectively. Means obtained on the PEP scales closely approximated data reported by Royce and Mos (1980). No significant gender differences were found for either the raw or standardized PEP scores, although females' raw scores were slightly higher than males' raw scores on the Metaphorical (M = 102.48 and M = 101.03, respectively), Rational (M = 101.29 and M = 99.34, respectively) and Empirical scales (M = 100.15 and M = 100.66, respectively). These findings are consistent with data reported by Royce and Mos (1980). Subjects were also fairly evenly divided in terms of having their highest scores on each of the three epistemological dimensions: 37.0%, 35.8% and 27.2% for the metaphorical, empirical and rational styles, respectively.

Lastly, data from the present study support the distinction between the metaphorical and empirical types: 41.6% of the initial sample had a profile of either MRE (n = 53, 20.6%) or ERM (n = 54, 21.0%). The mean scores for these two profiles also appear to be diametrically opposed, forming a nearly perfectly symmetrical "X" distribution when plotted, and differing significantly when subjected to a profile analysis, Pillais trace $F(2,104) = 151.65$, $p < .001$. The T-score means for the two profiles were, 56.1, 49.6 and 43.6 for the MRE group and 54.6, 49.7 and 43.9 for the ERM profile. The remainder of the sample was about equally divided among the four profiles of MER, EMR, REM, and RME.

Table 4 presents the intercorrelations among the epistemological styles, initial attitudes, and age. The correlations between age and the other measures were generally small. The three PEP scores were found to be highly intercorrelated.

Editorial Ratings

Preliminary Analyses. Prior to analysis with the rating scales, principal components analyses with varimax rotation were performed in order to reduce the 11 rating items subjects completed on each editorial into a smaller subset of homogeneous scales. Three principal components analyses of the 11 items were performed: for the first set of ratings each subject provided (Trial 1), the second set of ratings (Trial 2). and for the combined set.

The results of these analyses provided confirmatory evidence for the expectation that the 11 items are reducible to a two-factor structure. It will be recalled that items 1, 2, 3, 4, 8, and 9 (see Appendix J) were conceptualized as ratings of the editorials' quality. Items 5, 6, 7, 10, and 11 were designed to tap subjects "Involvement" in the editorial. As presented in Table 5, the analyses revealed three factors for Trial 1 and two factors for Trial 2 and for the combined analysis. These results suggest that subjects showed greater stability in their ratings for the second editorial than for the first. The same six items loaded on Factor 1 across all three analyses, accounting for about 50% of the variance, with the remaining five items splitting between the second and third factors (Trial 1) or loading on the second factor. The second and third factors accounted for an additional 23% of the variance for Trial 1. The second factor accounted for 16.0% of the variance for Trial 2 and 14.3% of the variance for the combined analysis. Four of the items also loaded consistently on more than one factor (Items 2, 5, 7, and 9).

The six items whose loadings were highest on the first factor (Items 1, 2, 3, 4, 8, 9) were [illegible]med and averaged to create a single composite measure of subject ratings of th[illegible]ls. This factor, labelled "Evaluation," concerned subjects' evaluative

Table 4

Intercorrelations Among Initial Set of Variables

	Age	PreAtt Course	PreAtt Auto	Met	Emp	Rat
PreAtt Course	-.01	--				
PreAtt Auto	.13*	.03	--			
Met	.14*	.14*	.05	--		
Emp	.02	.14*	.03	.50**	--	
Rat	.17*	.17*	.04	.63**	.71**	--

Note. PreAtt Course = initial attitudes toward course evaluations; PreAtt Auto = initial attitudes toward auto insurance; Met = standardized metaphorical score; Emp = standardized empirical score; Rat = standardized rational score.
* $p<.05$. ** $p<.001$.

Table 5

Principal Components Analysis of Editorial Rating Form Items

Evaluation Scale			
Item	Trial 1	Trial 2	Combined
	Factor 1	Factor 1	Factor 1
1	.77	.86	.83
2	.68	.60	.63
3	.75	.82	.79
4	.78	.88	.84
8	.86	.91	.89
9	.83	.84	.85
Eigenvalue	5.12	5.67	5.50
% of variance	46.5	51.6	50.0
Alpha	.90	.92	.92

Involvement Scale				
Item	Trial 1		Trial 2	Combined
	Factor 2	Factor 3	Factor 2	Factor 2
5	.79		.65	.65
6	.89		.73	.69
7		.47	.68	.60
10		.83	.80	.72
11	.32	.69	.71	.72
Eigenvalue	1.45	1.06	1.76	1.57
% of variance	13.2	9.7	16.0	14.3
Alpha		.72	.81	.77

Note. Loadings of .30 or greater are presented for items loading on the relevant factors.

judgments of the message arguments (i.e., how persuasive, interesting, informative, and convincing the editorial was, how effectively it made its point, and the editorials' overall quality). The alpha coefficient for the new scale was .92 when ratings of both editorials were combined. The remaining five items (Items 5, 6, 7, 10, 11) related more to subjects' degree of involvement in the editorial (i.e., how involved you were while reading the editorial, how easy it was to think and make judgments about the message arguments, how strongly you felt about the issue, and how certain you were about your feelings on the issue). These items were also summed and averaged to create a composite measure labelled "Involvement." The alpha coefficient for this measure was .77 when the ratings of both editorials were combined. The zero-order correlation between the two composite measures was moderate and positive at .54 ($p < .001$). According to an item analysis of the new scales, inspection of the alphas if each item was deleted from that subset of items was consistent with the results of the principal components analyses.

Summary Dependent Measure Statistics. Mean scores of the five dependent measures used in the present study (Evaluation and Involvement Scale ratings, proportion of supportive to total thoughts, and posttest attitude scores for the two issues) by editorial style and issue are presented in Table 6. The bivariate relationships among this set of outcome variables are presented in Table 7. The correlations between the Evaluation and Involvement Scale ratings and the posttest attitude scores were small and not significant. Correlations between the proportion of supportive thoughts to total thoughts and the Evaluation and Involvement Scale scores were statistically significant and positive indicating that more supportive thoughts were associated with higher ratings, particularly on the Evaluation Scale. The correlations

between the proportion of supportive thoughts and posttest attitude scores were also significant. The latter correlation coefficients remained significant even after controlling for initial attitudes, -.21 and -.36 for the issues of course evaluations and auto insurance, respectively. The negative sign indicated that more supportive thoughts were associated with lower attitude scores (lower scores indicated that the subject's attitude was consistent with the position taken in the editorials). The relationship among the sets of three dependent measures, in fact, appears to be linear, from A (message ratings) to B (proportion of supportive thoughts) to C (posttest attitudes). A is associated with B, B is related to C, and A is not related to C.

Analyses of Variance. It will be recalled that the research design of the present study may be conceptualized in several ways (e.g., incomplete mixed design, fractional factorial). It was decided to proceed with the data analysis as in a fractional factorial study in which subjects receive only a portion of the total number of stimulus materials, rather than as a variation of a repeated measures design. Further support for the contention that the former approach was most appropriate for data analysis was provided by the nonsignificant correlations between subjects' ratings of the first editorial they read and their ratings of the second editorial. The correlation between Trial 1 and Trial 2 Evaluation Scale scores was -.10 ($p < .08$), and the correlation between Trial 1 and Trial 2 Involvement Scale ratings was .04 ($p < .29$). These results suggest that subjects' responses to the two editorials may be considered as independent, that is, treated statistically as if they had been provided by different subjects.

Prior to examining the relationship between subjects' epistemic style scores and their responses to the persuasive editorials, it was necessary to examine the relationships between the set of three independent variables (editorial style, issue, and

Table 6

Mean Scores and Standard Deviations for Five Dependent Measures by Issue and Style

	Evaluation Rating	Involvement Rating	Prop. of Supportive Thoughts	Posttest Attitude Course Eval	Posttest Attitude Auto Ins
			Course Evaluations and Auto Insurance (n = 200)		
Empirical	4.65 (1.18)	4.83 (1.05)	0.33 (0.34)	5.37 (1.37)	4.59 (1.42)
Metaphorical	4.02 (1.25)	4.73 (1.08)	0.25 (0.30)	5.37 (1.37)	4.59 (1.42)
Both	4.34 (1.26)	4.78 (1.07)	0.29 (0.32)	5.37 (1.37)	4.59 (1.42)
			Course Evaluations (n = 100)		
Empirical	4.41 (1.32)	4.73 (1.08)	0.33 (0.35)	5.35 (1.39)	4.64 (1.34)
Metaphorical	3.82 (1.16)	4.54 (1.06)	0.28 (0.32)	5.39 (1.36)	4.53 (1.51)
Both	4.11 (1.27)	4.64 (1.07)	0.30 (0.33)	5.37 (1.37)	4.59 (1.42)
			Auto Insurance (n = 100)		
Empirical	4.90 (0.97)	4.93 (1.02)	0.33 (0.35)	5.39 (1.36)	4.53 (1.51)
Metaphorical	4.23 (1.31)	4.93 (1.08)	0.22 (0.28)	5.35 (1.38)	4.64 (1.34)
Both	4.56 (1.20)	4.93 (1.05)	0.28 (0.31)	5.37 (1.37)	4.59 (1.42)

Note. Standard deviations are in parentheses.

Table 7

Intercorrelations Among Dependent Measures for Attitude Issues

	Eval	Involve	Supp Thought	PostAtt Course	PostAtt Auto
			Issues Combined (*N*=400)		
Eval	--				
Involve	.54**	--			
Supp Thought	.39**	.15*	--		
PostAtt Course	-.06	.01	-.11	--	
PostAtt Auto	-.02	.07	-.19**	-.13*	--
			Course Evaluations Issue (*n*=200)		
Eval	--				
Involve	.50**	--			
Supp Though	.42**	.15*	--		
PostAtt Course	-.15*	.07	-.25**	--	
			Auto Insurance Issue (*n*=200)		
Eval	--				
Involve	.56**	--			
Supp Thought	.39**	.16*	--		
PostAtt Auto	-.11	.04	-.43**	--	--

Note. Eval = Evaluation Scale rating; Involve = Involvement Scale rating; Supp Thought = proportion of supportive to total thoughts; PostAtt Course = posttest attitude toward course evaluations; PostAtt Auto = posttest attitude toward auto insurance.
*$p<.05$. **$p<.001$.

trial) and the dependent measures. It was predicted that subjects would not differ in their responses as a function of these three variables. Subjects were not expected to prefer one particular style over another, to respond more favourably to one of the two issues, or to discriminate on the basis of which editorial they read first.

The results of issue (course evaluations versus auto insurance) X style (empirical versus metaphorical) X trial (first versus second) analyses of variance for Evaluation and Involvement Scale ratings are presented in Table 8. Contrary to prediction, the Evaluation Scale analysis yielded statistically significant effects for issue, style, and trial and a significant style by trial interaction. Subjects preferred the auto insurance editorials (M = 4.6) to the course evaluations (M = 4.1) editorials. Subjects also rated the empirical editorials (M = 4.7) higher than the metaphorical editorials (M = 4.0) and, in general, the second editorial was preferred (M = 4.6) to the first (M = 4.1). The style by trial interaction indicated that subjects rated the empirical editorials higher when they came second in order (M = 5.1) than when they were read first (M = 4.3). The ratings for the empirical editorials were also higher than the ratings for the metaphorical editorials regardless of whether the metaphorical editorial came first (M = 3.9) or second (M = 4.1).

With regard to the Involvement Scale rating, both the issue and trial effects were statistically significant. As with the Evaluation Scale, subjects rated the auto insurance editorials higher (M = 4.9) than course evaluations editorials (M = 4.6) and the second editorial they read higher (M = 5.0) than the first editorial (M = 4.6). Subjects did not differ on the style dimension, as they had on the Evaluation Scale. The mean values were 4.8 for the empirical editorials and 4.7 for the metaphorical editorials. The significant effect yielded for trial may be due to a less conservative use

Table 8

Issue by Style by Trial ANOVAs for Evaluation and Involvement Scale Ratings

Evaluation Scale (N = 400)

Source	SS	df	MS	F
Issue	20.18	1	20.18	14.73**
Style	40.00	1	40.00	29.21**
Trial	20.63	1	20.63	15.06**
Issue X Style	.15	1	.15	.11
Issue X Trial	2.08	1	2.08	1.52
Style X Trial	6.46	1	6.46	4.71*
Issue X Style X Trial	3.84	1	3.84	2.80
Residual	536.91	392	1.37	
Total	630.24	399		

Involvement Scale (N = 387)[a]

Source	SS	df	MS	F
Issue	8.23	1	8.23	7.66*
Style	.84	1	.84	.78
Trial	18.23	1	18.23	16.46*
Issue X Style	.80	1	.80	.75
Issue X Trial	.76	1	.76	.71
Style X Trial	2.39	1	2.39	2.23
Issue X Style X Trial	.49	1	.49	.46
Residual	407.45	379	1.08	
Total	439.41	386		

[a] N = 387 due to 13 missing responses on Items 10 and 11.
* $p<.05$. ** $p<.001$.

of the rating scales for the second editorial than for the first. That is, subjects may have been more likely to use the extreme end of the scales in their second set of ratings than in their first.

The results of these analyses of variance indicated that subjects were differentially influenced by editorial style, issue, and order of presentation with respect to their evaluative ratings of the editorials and differentially influenced by editorial issue and order of presentation with respect to their degree of involvement in the editorial. These results failed to support the precondition that subjects would not be affected simply by the style or message issue. The degree of association between the independent and dependent variables was approximately the same or larger for the Evaluation Scale than for the Involvement Scale. Eta-squared values for the three main effects--issue, style, and trial--for the Evaluation Scale were .03, .06, and .03, respectively. For the Involvement Scale, the eta-squared values were .02, .002, and .04, for the issue, style, and trial variables, respectively. The larger eta-squared values indicate that the issue and style variables accounted for a larger proportion of variance in the Evaluation Scale scores than in the Involvement ratings.

Hierarchical Regression Analyses. The hierarchical regression analyses were guided by the main hypothesis that a high score on one of the Psycho-Epistemological Profile scales would increase the persuasive impact of the argument for the style-consistent but not for the style-inconsistent editorial. It was presumed that subjects' highest PEP score denoted their characteristic epistemic style.

Hierarchical regression analyses were performed to examine the relative importance of the predictors on the criterion variable. The variables were entered into the equation in blocks or sets. The predictor sets and the variables comprising these

sets were as follows: (a) demographic variables comprised of age and gender, (b) the three PEP scores entered as a set, (c) initial attitudes, (d) editorial style, and (e) the three interaction terms created by multiplying the style variable with each of the three epistemic style scores. The unique variance added to the R^2 by the independent variable or interaction term at that point of entry is indicated by the squared semi-partial correlation. In the case of entering sets of predictor variables, as in the present case, the unique contribution is determined by the "multiple" semi-partial correlation (Cohen & Cohen, 1983).

The order of entry of the variables was selected on the basis of causal or theoretical importance with the least important, age and gender, entered first followed by the standardized PEP scores, initial attitude, the style of the editorial, and the interaction terms between PEP scores and style. Age, gender, and the PEP scores were not hypothesized to have any theoretical importance to the outcome variables. Initial attitude was expected to be positively related to subjects' preferences for the editorials. Style, the classification variable, was entered just prior to the interaction term, the variable which had the most theoretical importance. The proportion of variance in the criterion variable explained by the less important variables, age and gender, was taken into account and so controlled for by entering these variables into the equation before entering the covariates, initial attitude and PEP scores.

In order to create the interaction term, subjects' PEP scores were "centred," that is, the mean group value for each epistemic scale score was subtracted from their three PEP scores (these mean values were slightly higher than 50 because scores were standardized by gender). A new variable for the interaction term was created by multiplying this deviation score by the values for style coded as 1 (empirical) and -1

(metaphorical) (see A. L Edwards, 1985). In essence, the cross product of the subject's PEP score and the style of the message is known as a continuous by class effect (SAS Users Guide: Statistics, 1980). This effect is the homogeneity-of-slopes model for covariance analysis. In the present study, it was expected that the separate slopes calculated for the two message style groups would be different, that is, the effect of the PEP score on message ratings would differ as a function of the message style. The regression weight for the interaction term would be statistically significant if the two slopes were found to differ.

The full specification of the hierarchical multiple regression equation was as follows:

```
y = X1 + X2 + X3 + A + Z1*A,Z2*A,Z3*A + C where;

y    =  message rating score (Evaluation or
        Involvement Scale) for a given issue

X1   =  demographic variables, age and gender,
        entered as a set

X2   =  the subject's three PEP scores
        entered as a set

X3   =  the subject's initial attitude
        score for the given issue

A    =  editorial style
        (Metaphorical or Empirical)

Z1*A, Z2*A, Z3*A =  cross product of
                    editorial style and
                    subjects' PEP scores
                    (calculated separately
                    but entered as a set)

C    =  Intercept
```

The ratio of subjects to predictor variables was acceptable at 20:1 (Tabachnick & Fidell, 1989) when the issues were combined and 10:1 when examined in separate analyses.

The zero-order correlations among the sets of variables entered into the regression equations appear in Tables 9 to 11.

Results of the regression analyses with the Evaluation and Involvement Scale scores as the criterion variables for the issues combined are presented in Table 12. Because the issue effect was statistically significant in the analyses of variance, separate hierarchical regression models were also tested for each issue. These results are presented in Tables 13 and 14. The residuals appeared satisfactory in terms of normality, linearity, and homoscedasticity.

Concerning the Evaluation Scale, editorial style was the only predictor that accounted for a significant portion of variance, resulting in a change in R^2 of .064. The change in R^2 as indicated by the delta R^2 or multiple semi-partial correlation, represents the amount of variance added to the R^2 by each set of variables as it enters the equation at that particular point. The R^2 with all of the variables entered into the equation was .085. Furthermore, style yielded the only significant beta weight.

When the Involvement Scale score was the criterion variable, the demographic set yielded a significant change in R^2 as did subjects' PEP scores when entered together and the set of three interaction terms. With all of the predictor sets entered into the equation, 9.7% of variance in the Involvement score was accounted for. Examination of the standardized regression coefficients or beta weights (B's) provides further information concerning the model. The beta weights for five of the 11 variables reached statistical significance: age, subjects' empirical and rational epistemic style

Table 9

Intercorrelations of Variables When Issues Combined

	Age	Sex	Style	PreAtt Course	PreAtt Auto	Met	Emp	Rat	Eval	Involve
Sex	.07	--								
Style	.00	.00	--							
PreAtt Course	-.00	-.01	.00	--						
PreAtt Auto	.13*	-.19**	.00	-.00	--					
Met	.15*	-.07	.00	.12*	.06	--				
Emp	.04	-.05	.00	.12*	.05	.53**	--			
Rat	.19**	.05	.00	.17**	.04	.66**	.75**	--		
Eval	-.06	.00	.25**	-.00	-.02	.07	.05	.08	--	
Involve	-.16*	-.11*	-.05	.07	.09*	.05	-.02	.04	.54**	--

Note. Sex is coded as 1 = male, 2 = female; Style is editorial style coded as 1 = empirical, 2 = metaphorical; PreAtt Course, PretAtt Auto = pretest attitude scores; Met, Emp, Rat = Standardized scores on the PEP scale; Eval = Evaluation Scale scores; Involve = Involvement Scale Scores.
*$p<.05$. **$p<.001$.

Table 10

Variable Intercorrelations: Course Evaluations Issue

	Age	Sex	Style	PreAtt Course	Met	Emp	Rat	Eval	Involve
Sex	.07	--							
Style	-.00	-.05	--						
PreAtt Course	-.00	-.01	-.07	--					
Met	.15*	-.07	-.02	.12	--				
Emp	.04	-.05	-.07	.12	.53**	--			
Rat	.19*	.05	-.10	.17*	.66**	.75**	--		
Eval	-.07	-.08	.23**	-.08	.12	.08	.11	--	
Involve	-.17*	-.01	-.09	.12	.15*	-.02	.14*	.50**	--

Note. Sex is coded as 1 = male, 2 = female; Style is editorial style coded as 1 = empirical, 2 = metaphorical; PreAtt Course = initial attitudes toward course evaluations; Met, Emp, Rat = standardized scores on the PEP scale; Eval = Evaluation Scale scores; Involve = Involvement Scale scores.
* $p<.05$. ** $p<.001$.

Table 11

Variable Intercorrelations: Auto Insurance Issue

	Age	Sex	Style	PreAtt Auto	Met	Emp	Rat	Eval	Involve
Sex	.07	--							
Style	.00	.05	--						
PreAtt Auto	.13	-.19*	.07	--					
Met	.15*	-.07	.02	.06	--				
Emp	.04	-.05	.07	.05	.53**	--			
Rat	.19*	.05	.10	.04	.66**	.75**	--		
Eval	-.05	.10	.28**	.03	.03	.01	.06	--	
Involve	-.13	-.21*	-.00	.09	-.06	-.02	-.05	.56**	--

Note. Sex is coded as 1 = male, 2 = female; Style is editorial style coded as 1 = empirical, 2 = metaphorical; PreAtt Auto = initial attitudes toward auto insurance; PreAtt Auto = initial attitudes toward auto insurance; Met, Emp, Rat = standardized scores on the PEP scale; Eval = Evaluation Scale scores; Involve = Involvement Scale scores.
* $p<.05$. ** $p<.001$.

Table 12

Hierarchical Regression Analyses: Issues Combined

Evaluation Scale

Predictor Set	R^2	R^2 Change	Predictor Variable	Beta
A) Demographic Set	.004	.004	Age	-.084
			Sex	.000
B) PEP Scores Set	.015	.012	Met	.043
			Emp	-.058
			Rat	.119
C) Initial Attitude	.016	.001	Course	-.023
			Auto	-.015
D) Style	.079**	.064**	Style	.252**
E) Pep-Style Interaction Set	.085**	.006	Metint	-.035
			Empint	-.098
			Ratint	.073

Involvement Scale

Predictor Set	R^2	R^2 Change	Predictor Variable	Beta
A) Demographic Set	.034**	.034**	Age	-.191**
			Sex	-.091
B) PEP Scores Set	.054**	.021*	Met	.026
			Emp	-.186*
			Rat	.193*
C) Initial Attitude	.068**	.013	Course	.051
			Auto	.105*
D) Style	.070**	.002	Style	.050
E) Pep-Style Interaction Set	.097**	.027*	Metint	-.157*
			Empint	-.137
			Ratint	.149

Note. Sex is coded as 0 = male, 1 = female; Met, Emp, Rat = standardized PEP scores; Course = pretest attitudes toward course evaluations; Auto = pretest attitudes toward auto insurance; Style is editorial style coded as 1 = empirical, -1 = metaphorical; Metint, Empint, Ratint = interaction terms of PEP score by editorial style.
* $p<.05$. ** $p<.001$.

scores, initial attitude toward auto insurance rates, and the interaction term between the metaphorical score and editorial style. Older subjects tended to rate the editorials as less involving than younger subjects. Subjects who scored high on the empirical scale rated the editorials as less involving than subjects who scored low on the empirical scale and a high rational score was associated with more involvement. As well, subjects who favoured equal auto insurance rates tended to be more involved in reading the editorials than subjects who felt less strongly that insurance rates should be equal for men and women (see Appendix N for a discussion of personal involvement).

The cross-product interaction term between subject PEP scores and editorial style provides the test of the study's hypothesis that a person's dominant or characteristic epistemic style (i.e., highest scale score) would be positively associated with his or her ratings of the style-consistent editorials and negatively related with ratings of the style-inconsistent editorials. The significant metaphorical score by style interaction indicated that the relationship between subjects' metaphorical scores and their Involvement Scale scores differed as a function of the style of the editorial they were rating. In other words, the regression lines determined separately for the empirical and metaphorical editorials have significantly different slopes. It is necessary, then, to determine the separate slopes for the two styles using the following formula (Cohen & Cohen, 1983; see also Pedhazur, 1982):

$$Y_E = B1X_1\ (1) + B2X_2 + B3X_3 + A$$
$$= (B_2 + B_3)_v + B_1 + A$$

when style equals 1 (empirical editorial), and:

$$Y_M = B1X_1\ (-1) + B2X_2 + B3X_3\ (-1) + A$$
$$= (B_2 - B_3)_v - B_1 + A$$

when style equals -1 (metaphorical editorial). In the above formulae, X_1 represents the dichotomous style variable, X_2 is the continuous PEP score, X_3 is the interaction term, and A is the intercept or constant. Solving Equations 1 and 2 using the nonstandardized regression coefficients, the separate slopes were calculated as follows:

$$Y_E = (.002763 - .016598)_v + .052331 + 5.065$$
$$= (-.013835)_v + 5.12$$

$$Y_M = (.002763 + .016598)_v - .052331 + 5.065$$
$$= (.019361)_v + 5.01$$

The slope of the line for the empirical editorial, then, was -.014 and for the metaphorical editorial it was .019. When editorial style was empirical, the slope was negative, indicating that subjects who scored high on the metaphorical scale tended to be less involved in these editorials than subjects who scored low on the empirical scale. For the metaphorical editorials, the slope was positive indicating that subjects who scored high on the metaphorical scale rated these editorials as more involving than subjects who scored low on the metaphorical scale. The intercept, however, was larger for the empirical editorials (5.12) than for the metaphorical editorials (5.01), consistent with the means reported previously. This finding provides partial support for Hypothesis 1. A high metaphorical score was associated with a higher rating on the Involvement Scale for the metaphorical editorials than for the empirical editorials. No

significant effect was found for the empirical score by message style interaction, however.

The results of the analyses performed thus far indicated that the Evaluation Scale appeared to reflect a more extrinsic judgment of the editorial quality, affected by such characteristics external to the person as editorial style, issue, and order of presentation. The Involvement Scale, on the other hand, appeared to reflect a more intrinsic judgment concerning the subject's degree of involvement in the editorial. The analysis of variance indicated that the Involvement Scale scores were affected by the order of presentation and the particular issue presented in the editorial but not by the editorial style. The amount of variance accounted for in the Involvement Scale by these two variables, however, was the same or less than the amount of variance accounted for by the variables in the Evaluation Scale. Moreover, the regression results suggested that-such judgments were influenced by characteristics internal to the individual such as age and epistemic style scores and by the interaction term between metaphorical scores and editorial style.

Tables 13 and 14 present results for the hierarchical regression analyses for each issue considered separately. Again, for both issues,
editorial style was the only variable that accounted for a significant portion of variance in the Evaluation Scale. Concerning the Involvement Scale, subjects' age, along with the empirical and rational epistemic style scores, yielded significant regression coefficients for the analyses of both course evaluations and auto insurance issues. The metaphorical score by style interaction also reached statistical significance for both issues.

Table 13

Hierarchical Regression Analyses: Course Evaluations Issue

Evaluation Scale

Predictor Set	R^2	R^2 Change	Predictor Variable	Beta
A) Demographic Set	.011	.011	Age	-.108
			Sex	-.068
B) PEP Scores Set	.033	.022	Met	.068
			Emp	-.059
			Rat	.199
C) Initial Attitude	.045	.012	Course	-.096
D) Style	.100*	.056**	Style	.241**
E) Pep-Style Interaction Set	.114*	.013	Metint	.042
			Empint	-.129
			Ratint	.142

Involvement Scale

Predictor Set	R^2	R^2 Change	Predictor Variable	Beta
A) Demographic Set	.034**	.034**	Age	-.177**
			Sex	-.110*
B) PEP Scores Set	.054**	.021*	Met	.029
			Emp	-.182*
			Rat	.188*
C) Initial Attitude	.057**	.003	Course	.054
D) Style	.059*	.002	Style	.050
E) Pep-Style Interaction Set	.087**	.027*	Metint	-.157*
			Empint	-.138
			Ratint	.150

Note. Sex is coded as 0 = male, 1 = female; Met, Emp, Rat = standardized PEP scores; Course = pretest attitudes toward course evaluations; Style is editorial style coded as 1 = empirical, -1 = metaphorical; Metint, Empint, Ratint = interaction terms of PEP score by editorial style.
* $p<.05$. ** $p<.001$.

Table 14

Hierarchical Regression Analyses: Auto Insurance Issue

Evaluation Scale

Predictor Set	R^2	R^2 Change	Predictor Variable	Beta
A) Demographic Set	.012	.012	Age	-.075
			Sex	.082
B) PEP Scores Set	.018	.006	Met	.029
			Emp	-.053
			Rat	.094
C) Initial Attitude	.020	.003	Auto	-.026
D) Style	.092*	.072**	Style	.268**
E) Pep-Style Interaction Set	.115*	.023	Metint	-.082
			Empint	-.044
			Ratint	-.051

Involvement Scale

Predictor Set	R^2	R^2 Change	Predictor Variable	Beta
A) Demographic set	.034**	.034**	Age	-.192**
			Sex	-.091
B) PEP Scores Set	.054**	.021*	Met	.026
			Emp	-.187*
			Rat	.203*
C) Initial Attitude	.065**	.011*	Auto	.106*
D) Style	.067**	.002	Style	.049
E) Pep-Style Interaction Set	.095**	.027*	Metint	-.158*
			Empint	-.136
			Ratint	.149

Note. Sex is coded as 0 = male, 1 = female; Met, Emp, Rat = standardized PEP scores; Autc = pretest attitudes toward auto insurance; Style is editorial style coded as 1 = empirical, -1 = metaphorical; Metint, Empint, Ratint = interaction terms of PEP score by editorial style.
* $p<.05$. ** $p<.001$.

These results indicate that older subjects felt less involved in the editorials than younger subjects. As well, two of the epistemic style scores--rationalism and empiricism--affected subjects' rating of the editorials. The direction of the beta weights suggested that subjects who scored high on the empirical scale tended to rate these editorials as less involving than subjects who scored low on the empirical scale, regardless of the style of the editorial. Likewise, a high rational score was associated with a low Involvement rating, regardless of the message style. Lastly, partial support for Hypothesis 1 was provided by the significant metaphorical score by style interaction. The direction of the beta weights indicated that high metaphorical scores were associated with high ratings for the metaphorical editorial and low ratings for the empirical editorial. For both the course evaluations and auto insurance issues, the slopes of the lines were -.013 and .019 for the empirical and metaphorical editorials, respectively.

Other results indicated that males felt more involved in the course evaluations editorial than females. For the issue of auto insurance, subjects who felt more strongly that auto insurance rates should be equal for men and women were more involved in the editorial than subjects who were less in favour of equal rates.

Thought Listing Task

Preliminary Analyses. Following data collection, a rater who was blind to the subjects' epistemic style profiles scored all of the thoughts generated for the thought listing task. The thoughts were coded first as either message relevant or message irrelevant. Subsequently, the message relevant thoughts were coded as message supportive, unsupportive, or neutral. These ratings comprised the dataset for this

dependent measure. In order to determine the inter-rater reliability of the coding scheme, a second rater, working independently of the first, coded the thoughts listed for 92 (46%) of the participants. Inter-rater reliability for thoughts coded as supportive, unsupportive, or neutral, using Cohen's Kappa (Cohen, 1960), was .68 ($p < .001$), indicating a high rate of agreement.

The mean number of thoughts reported by the subjects is presented in Table 15. The majority of thoughts were message relevant (96%), suggesting a high degree of central versus peripheral message processing (Petty & Cacioppo, 1986a). In other words, subjects were clearly attempting to actively process the content of the message as reflected by the proportion of message relevant to message irrelevant thoughts. As well, subjects tended to generate more unsupportive than supportive thoughts, though only the latter were considered in the data analyses.

Nature of Thoughts Reported by Subjects. Subjects' responses to the editorials were both varied and interesting. Some subjects reported how persuasive they felt the editorial was. For example, one subject stated: "I really believe after reading this that course evaluations are more harmful than good." Another subject said, "I enjoyed reading the editorial it was very persuasive." On the other hand, two subjects wrote: "I thought it wasn't very interesting" and "it didn't persuade me."

With regard to the epistemic style of the editorials, the range of opinions provided by the subjects clearly supports the important point of the present investigation--that some people respond favourably to empirical arguments (Billow, 1977) while other people prefer the uniqueness and novelty of a metaphor (Berlyne, 1960). Some excerpts of the thoughts reported by the subjects aptly illustrate and clarify this point. For example, one subject reported that, "I felt the 'soup from the

Table 15

Thought Listing Task Means

Variable	Issues Combined (N=400)		Course Evaluation (n=200)		Auto Insurance (n=200)	
	Mean	SD	Mean	SD	Mean	SD
Relevant	4.96	2.24	4.93	2.22	4.99	2.26
Irrelevant	.16	.66	.17	.67	.15	.65
Total	5.12	2.29	5.10	2.29	5.14	2.29
Supportive	1.50	1.76	1.58	1.85	1.43	1.67
Unsupportive	2.19	2.03	2.29	2.11	2.08	1.95
Neutral	1.27	1.75	1.01	1.55	1.49	1.92

pot' analogy was effective and humorous to read." Other comments in support of the metaphorical argument on auto insurance were: "The comparison between [insurance] rates and soup was good;" "[the] reference to the soup analogy was good;" "The parallel with the Golden Stone Soup is very attention-getting;" "Soup story was a good example of the insurance rates." "Enjoyment of technique used to persuade;" "I agree that if more people take from the pot the more (sic) they should put back." Lastly, one subject aptly summed up the importance of metaphorical expressions in persuasive argumentation stating that "I liked the analogy because it simplifies the issue I don't have knowledge of." In support of the metaphor on the issue of course evaluations, two subjects reported that "I feel my condition is like Chris's" and "I also work like Chris--overwork." However, some subjects did not respond as favourably to the metaphorical style as illustrated by these thoughts: "The analogy to soup was poor and uneffective (sic);" "The Golden Stone Soup was not an important issue to insurance rates (sic);" "This analogy was confusing;" and "I did not see the need to refer to Chris and his problem."

With regard to the empirical editorials, subjects reported that: "it presented a clearcut view and back (sic) it up with many statistics;" "The statistics presented were effective in comparing male and female drivers." On the negative side, subjects said: "Too many percentages to understand;" "There was lots of numbers which was (sic) sort of confusing;" "Poor statistics;" and more generally, "I thought there was no empirical evidence to back the statistics up with." Regardless of the range of responses to the different styles of editorials, as illustrated by the sample of quotations, the primary aim of this study was to examine the presence or absence of *systematic* variance in subject preferences as measured by the various dependent measures.

Analyses of Variance. For these analyses, the proportion of message supportive thoughts to the total number of message relevant thoughts was calculated for each subject. The mean proportion score was .29 with a range from 0 to 1. As with the Evaluation and Involvement Scale scores, the correlation between the proportion of supportive to total thoughts given in response to the first or second editorial, was very small (r = .04) confirming the position taken in the present study that subjects' responses to the two editorials may be treated in the statistical analyses as independent ratings.

Table 16 presents the results of a 2 (issue) X 2 (style) X 2 (trial) ANOVA. Subjects indicated the same editorial style preference, generating a greater proportion of supportive thoughts in response to the empirical (M = .33) than to the metaphorical editorials (M = .25). As well, subjects generated more supportive thoughts in response to the second editorial they read (M = .34) relative to the first (M = .24).

The three-way interaction reflected a shift in subjects' preferences from Trial 1 to Trial 2 in the two styles and issues. At Trial 1, subjects most preferred the empirical editorial on auto insurance (M = .30), followed by the two editorials on course evaluations (M = .27 and M = .22 for the metaphorical and empirical editorials respectively), and preferred the metaphorical-auto insurance editorial the least (M = .15). At Trial 2, subjects generated more supportive thoughts in response to the empirical-course evaluations editorial (M = .43), followed by the empirical-auto insurance (M = .38), metaphorical-course evaluations (M = .28), and metaphorical-auto insurance editorials (M = .28). These results are contrary to the expectation that subjects' thought listing responses to the two editorials would not differ as a function of message characteristics.

Table 16

Supportive Thoughts: Issue by Style by Trial ANOVA

Supportive Thoughts

Source	SS	df	MS	F
Issue	.07	1	.07	.66
Style	.73	1	.73	7.48*
Trial	1.19	1	1.19	12.12**
Issue X Style	.12	1	.12	1.25
Issue X Trial	.00	1	.00	.00
Style X Trial	.13	1	.13	1.36
Issue X Style X Trial	.38	1	.38	3.89*
Residual	38.49	392	.10	
Total	41.12	399		

* $p<.05$. ** $p<.001$.

Hierarchical Regression Analyses. The zero-order correlations and results of the regression analyses are presented in Tables 17 to 20. Significant correlations were found between initial attitude and supportive thoughts for the issue of course evaluations. Significant correlations were found between age, sex, message style, and initial attitude and supportive thoughts for the auto insurance issue. The direction of the relationship between supportive thoughts and initial attitudes was negative, indicating that less agreement with the attitude issues was associated with a greater proportion of supportive thoughts.

The percentage of variance accounted for by the set of predictor variables was relatively small, though significant at about 9%, for the combined analysis and for the course evaluations issue. For the issue of auto insurance, 17.4% of the variance was accounted for with all of the predictors entered into the equation. Initial attitudes attained statistically significant beta weights for the three analyses, and the style main effect reached statistical significance for the auto insurance issue and the combined analysis. Other results indicated that age and subjects' rational scores resulted in significant beta weights for the combined analysis such that younger subjects generated more supportive thoughts relative to the total number of thoughts and a higher rational score was associated with a greater proportion of supportive thoughts.

In general, initial attitude was the main predictor accounting for variance in the thought listing measure. The negative sign indicated that more supportive thoughts were generated by subjects who were initially favourable to the position taken in the editorials. The positive sign of the regression coefficient for the style effect supports the analysis of variance result that subjects preferred the empirical rather than the

Table 17

Correlations of Supportive Thoughts with Predictor Variables

	Age	Sex	Style	PreAtt Course	PreAtt Auto	Met	Emp	Rat
			When Issues Combined (N=400)					
Support Thoughts	-.09	.08	-.13*	-.08	-.15*	.00	.04	.08
			Course Evaluations Issue (n=200)					
Support Thought	-.06	-.01	-.08	-.15*	--	.09	.05	.11
			Auto Insurance Issue (n=200)					
Support Thoughts	-.13	-.18*	-.20*	--	-.25**	.09	.02	.05

Note. Support Thoughts = proportion of supportive to total thoughts generated for thought listing task; Sex is coded as 1 = male, 2 = female; Style is editorial style coded as 1 = empirical, 2 = metaphorical; PreAtt Course = initial attitudes toward course evaluations; Met, Emp, Rat = standardized scores on the PEP scale.
* $p<.05$. ** $p<.001$.

metaphorical editorial. The lack of a significant interaction between epistemic style scores and message style indicates a failure to provide support for Hypothesis 2. The metaphorical score by message style interaction, however, approached statistical significance ($p < .063$) for the issue of auto insurance. The sign of the regression coefficient was negative, consistent with analyses of the Involvement Scale. A high metaphorical score was associated with more supportive thoughts generated in response to the metaphorical editorial on auto insurance than to the empirical editorial on the same issue.

Table 18

Hierarchical Regression Analyses: Issues Combined

Supportive Thoughts

Predictor Set	R^2	R^2 Change	Predictor Variable	Beta
A) Demographic Set	.016*	.016*	Age	-.105*
			Sex	.045
B) PEP Scores Set	.029*	.013	MET	-.059
			Emp	-.054
			Rat	.199*
C) Initial Attitude	.054*	.025*	Course	-.097*
			Auto	-.131*
D) Style	.072**	.018*	Style	.134*
E) Pep-Style Interaction Set	.092**	.020*	Metint	-.074
			Empint	-.103
			Ratint	.018

Note. Sex is coded as 0 = male, 1 = female; Met, Emp, Rat = standardized PEP scores; Course = pretest attitudes toward course evaluations; Auto = pretest attitudes toward auto insurance; Style is editorial style coded as 1 = empirical, -1 = metaphorical; Metint, Empint, Ratint = interaction terms of PEP score by editorial style.
* $p<.05$. ** $p<.001$.

Table 19

Hierarchical Regression Analyses: Course Evaluations Issue

Supportive Thoughts

Predictor Set	R^2	R^2 Change	Predictor Variable	Beta
A) Demographic Set	.004	.004	Age	-.089
			Sex	.011
B) PEP Scores Set	.022	.019	Met	.036
			Emp	-.100
			Rat	.167
C) Initial Attitude	.052	.030*	Course	-.179*
D) Style	.058	.006	Style	.074
E) Pep-Style Interaction Set	.094*	.034*	Metint	.002
			Empint	-.122
			Ratint	.092

Note. Sex is coded as 0 = male, 1 = female; Met, Emp, Rat = standardized PEP scores; Course = pretest attitudes toward course evaluations; Style is editorial style coded as 1 = empirical, -1 = metaphorical; Metint, Empint, Ratint = interaction terms of PEP score by editorial style.
* $p<.05$. ** $p<.001$.

Table 20

Hierarchical Regression Analyses: Auto Insurance Issue

Supportive Thoughts

Predictor Set	R^2	R^2 Change	Predictor Variable	Beta
A) Demographic Set	.052*	.052*	Age	-.107
			Sex	.101
B) PEP Scores Set	.077*	.025	Met	-.165
			Emp	-.007
			Rat	.183
C) Initial Attitude	.117**	.041*	Auto	-.231**
D) Style	.154**	.036*	Style	.192*
E) Pep-Style Interaction Set	.174**	.020	Metint	-.166
			Empint	-.077
			Ratint	.133

Note. Sex is coded as 0 = male, 1 = female; Met, Emp, Rat = standardized PEP scores; Auto = pretest attitudes toward auto insurance; Style is editorial style coded as 1 = empirical, -1 = metaphorical; Metint, Empint, Ratint = interaction terms of PEP score by editorial style.
* $p<.05$. ** $p<.001$.

Posttest Attitudes

Analyses of Covariance. Analyses of covariance were conducted to examine whether subjects in the experimental condition had lower scores on the posttest attitude measures than subjects in the control condition, indicating attitude change in the direction advocated by the message arguments. These analyses were performed as a check on the effect of history (Campbell & Stanley, 1963) as a potential threat to the internal validity of the study. This was seen as important given the media attention the auto insurance issue had been receiving during the data collection phase of the study.

A 2 (experimental versus control condition) X 2 (male versus female) analysis of covariance (ANCOVA) was performed on each of the two posttest attitude scores with subjects' age and initial attitude scores as the covariates. Although the cell sizes were unequal, the frequencies were distributed proportionally for sex and for condition. Therefore, the issue of nonorthogonality of effects due to unequal cell sizes did not present a problem (Berenson, Levine, & Goldstein, 1983). Results of the test for homogeneity-of-slopes were nonsignificant for the covariates for both issues.

The results of the ANCOVA for the course evaluations issue indicated no significant main or interaction effects. Only the covariate, initial attitude, accounted for a significant proportion of variance, $F(1,251) = 105.31$, $p < .001$. For the issue of auto insurance, both covariates, initial attitude and age, reached statistical significance in accounting for variance. The results of the ANCOVA for this issue also revealed significant main effects for condition, $F(1,251) = 17.69$, $p < .001$, and gender, $F(1,251) = 7.30$, $p < .05$, as well as a significant condition by gender interaction effect, $F(1,251) = 6.03$, $p < .05$. Subjects in the experimental condition had significantly lower posttest attitude scores than subjects in the control group even after controlling for group

differences in the pretest measure (see Table 21). This effect may be attributed to the persuasive impact of the editorials on auto insurance resulting in greater attitude change in the expected direction among subjects in the experimental group. However, subjects' initial attitude scores were on average lower and so less polarized for the auto insurance issue than for the course evaluations issue. As a result, subjects may have been more susceptible to attitude change in response to the persuasive editorial.

Moreover, females' scores were significantly lower than scores for males, particularly in the experimental condition, as females in the control group actually changed their attitude to be more favourable towards setting equal insurance rates for men and for women. Table 21 presents the pretest and unadjusted posttest mean values and posttest means adjusted for the covariates.

Analyses of covariance were also performed on difference scores calculated by subtracting the posttest attitude score from the pretest score for each issue, using age as a covariate. The results for the course evaluations issue revealed no significant differences for either main effect or the interaction term. The covariate, age, was also not significant. Concerning the issue of auto insurance, however, the main effect for condition was found to be significant, $F(1,252) = 4.59$, $p < .05$, as the experimental group experienced greater attitude change ($M = .66$) than the control group ($M = .03$). No gender differences were found, although the interaction effect was significant, $F(1,252) = 5.75$, $p < .05$. The largest mean difference score was observed for females in the experimental group ($M = .74$) and males in the control group ($M = .64$). Males in the experimental group showed only a small amount of change ($M = .29$) whereas females in the control group actually increased their mean attitude score to be more favourable towards equal insurance rates for men and for women ($M = -.12$).

Table 21

Pretest and Posttest Attitudes (Unadjusted and Adjusted)

Attitude Towards Course Evaluations

	Pretest Means	Posttest Means	
		Unadjusted	Adjusted
Experimental Group	5.74	5.37	--
Male (n = 38)	5.74	5.06	5.06
Female (n = 162)	5.76	5.44	5.44
Control Group	6.05	5.76	--
Male (n = 11)	5.98	5.69	5.69
Female (n = 46)	6.06	5.77	5.77

Attitude Towards Auto Insurance Rates

	Pretest Means	Posttest Means	
		Unadjusted	Adjusted
Experimental Group	5.24	4.59	--
Male (n = 38)	5.77	5.47	5.47
Female (n = 32)	5.12	4.38	4.38
Control Group	5.50	5.47	--
Male (n = 11)	6.25	5.62	5.64
Female (n = 46)	5.32	5.44	5.43

A second set of analyses of covariance was performed to examine differences in posttest attitude scores among experimental group subjects as a function of editorial style and trial, controlling for initial attitude. Initial attitude was found to be a significant covariate for the course evaluations, $F(1,194) = 64.26$, $p < .001$, and auto insurance issues, $F(1,194) = 75.63$, $p < .001$. No other effects were significant, indicating that subjects did not change their attitudes more in response to one editorial style than the other or in response to the first rather than the second editorial they read. These findings confirmed the expected results.

Hierarchical Regression Analyses. A series of hierarchical multiple regression analyses was subsequently undertaken to examine the influence of the PEP scores on posttest attitudes as a function of editorial style. The same set of variables was entered into the regression equations as in the previous regression models (i.e., age and gender, initial attitude, PEP scores, editorial style, and three interaction terms). Separate regression equations were computed for each issue with posttest attitude scores as the criterion variables. Zero-order correlations between the PEP scores, demographic variables, and pre- and posttest attitude measures are presented in Table 22.

The results of the regression analyses are presented in Table 23. The residuals appeared satisfactory in terms of normality, linearity, and homoscedasticity. For the issue of course evaluations, as each variable set was entered into the equation, only initial attitude resulted in a statistically significant R^2 value. As variables were entered subsequently, R^2 did not increase significantly. In this model, the standardized regression coefficients or beta weights for sex and initial attitude (PreAtt Course) reached statistical significance and accounted for about 28% of the variance, collectively. For the issue of auto insurance, the demographic variable set yielded a

Table 22

Demographic, Personality, and Attitude Measure Intercorrelations

	Age	Sex	Style	PreAtt Course	PostAtt Course	PreAtt Auto	PostAtt Auto	Met	Emp	Rat
Sex	.07	--								
Style	-.00	-.05	--							
PreAtt Course	-.00	-.01	-.07	--						
PostAtt Course	.00	.11	-.01	.49**	--					
PreAtt Auto	.13*	-.19**	.07	-.00	-.11*	--				
PostAtt Auto	-.03	-.30**	-.04	-.15*	-.13*	.51**	--			
Met	.15*	-.07	.02	.12*	.07	.06	.11*	--		
Emp	.04	-.05	.07	.12*	.04	.05	.04	.53**	--	
Rat	.19**	.05	.10*	.17**	.06	.04	-.02	.66**	.75**	--

Note. Sex is coded as 1 = male, 2 = female; Style is editorial style coded as 1 = empirical, 2 = metaphorical; PreAtt Course, PretAtt Auto = pretest attitude scores; PostAtt Course, PostAtt Auto = postest attitude scores; Met, Emp, Rat = Standardized scores on the PEP scale.
*$p<.05$. **$p<.001$.

significant R^2 value. Initial attitude was the only other predictor set which resulted in a significant increase in the R^2 value. Inspection of the standardized regression coefficients indicated that sex and initial attitude (PreAtt Auto) also reached statistical significance. As expected, initial attitudes were strong predictors of posttest attitude scores for both issues. As well, females felt more strongly than males that students should have access to course evaluations and that auto insurance rates should not be equal for men and women.

Overall, the results of the regression analyses indicated that subjects' initial attitude scores and subject gender were the best predictors of posttest attitudes for both issues. Subjects were not differentially influenced by one particular style of editorial, and, contrary to prediction, their epistemic style scores did not appear to interact with the style of the editorial to affect posttest attitude scores. These results fail to provide support for Hypothesis 3.

Message Style Salience Check

The internal validity of the present investigation, and hence the conclusions which may be drawn from the study, depends, to some extent, upon the salience of the editorial style. That is, how capable were subjects of correctly identifying the epistemic style of the editorial as either empirical or metaphorical? As part of the posttest data collection phase of the present study, subjects were asked to complete a brief form indicating their judgment of the editorial style of the editorials they had just read. Definitions of each of the three styles were provided.

Table 23

Hierarchical Regression Analyses: Posttest Attitudes

Attitude Towards Course Evaluations

Variable Set	R^2	R^2 Change	Predictor Variable	Beta
A) Demographic Set	.012	.012	Age	-.003
			Sex	.135*
B) PEP Scores Set	.019	.007	Met	.077
			Emp	.020
			Rat	-.109
C) Initial Attitude	.265**	.247**	Course	.499**
D) Style	.266**	.001	Style	.019
E) Pep-Style Interaction Set	.275**	.009	Metint	-.119
			Empint	-.039
			Ratint	.082

Attitude Towards Auto Insurance

Variable Set	R^2	R^2 Change	Predictor Variable	Beta
A) Demographic Set	.092**	.092**	Age	-.074
			Sex	-.181*
B) PEP Scores Set	.107	.015	Met	.132
			Emp	.026
			Rat	-.139
C) Initial Attitude	.325**	.218**	Auto	.494**
D) Style	.328**	.003	Style	-.055
E) Pep-Style Interaction Set	.341**	.019	Metint	-.066
			Empint	-.022
			Ratint	.046

Note. Sex is coded as 0 = male, 1 = female; Met, Emp, Rat = standardized PEP scores; Course = pretest attitudes toward course evaluations; Auto = pretest attitudes toward auto insurance; Style is editorial style coded as 1 = empirical, -1 = metaphorical; Metint, Empint, Ratint = interaction terms of PEP score by editorial style.
* $p<.05$. ** $p<.001$.

Overall, 76.5% of the subjects correctly identified the empirical editorials as reflecting the empirical epistemic style (77% at Trial 1 and 76% at Trial 2). Sixty-one percent of the subjects correctly labelled the metaphorical editorials as metaphorical (57% at Trial 1 and 65% at Trial 2). Subjects were slightly better at correctly identifying the metaphorical editorials when they were presented second rather than first. These findings suggest that subjects were better able to distinguish the metaphorical from the empirical editorials than to recognize the metaphorical editorials as reflecting the metaphorical style. Errors were typically made in wrongly labelling the editorials as rational, particularly the metaphorical editorials.

As shown in Table 24, further results indicated that nearly twice as many subjects correctly identified the metaphorical editorial on auto insurance as identified the corresponding editorial on course evaluations when Trial 1 and Trial 2 were combined, 81% versus 41%, respectively. This finding suggests that greater credence concerning the relationship between epistemic style scores and editorial style may be given to the results obtained from the issue of auto insurance than course evaluations. Approximately the same number of subjects were able to correctly label the empirical editorials on the two issues.

Finally, while the overall chi-square tests revealed no significant differences in the endorsement proportions of the subjects by PEP profile, inspection of the distribution of frequencies indicated that the MRE group was somewhat better at correctly identifying the metaphorical editorials than the ERM group and less likely to erroneously label the empirical editorials as metaphorical. On the other hand, the ERM group was slightly less accurate in identifying the empirical editorials than the MRE group, tending to label the empirical editorials as rational more frequently than the MRE subjects.

Table 24

Identification: Hits and Misses

Editorial	Style Identified	Order of Presentation	
		First	Second
Empirical/ Course Evaluation	Empirical	78%	74%
	Rational	16%	24%
	Metaphorical	6%	2%
Metaphorical/ Course Evaluation	Metaphorical	36%	46%
	Rational	51%	50%
	Empirical	12%	5%
Empirical/ Auto Insurance	Empirical	76%	80%
	Rational	20%	18%
	Metaphorical	4%	2%
Metaphorical/ Auto Insurance	Metaphorical	78%	84%
	Rational	14%	8%
	Empirical	8%	0%

These findings should be interpreted with caution, however, as it is possible for subjects to have been influenced in the expected direction by the editorial style and at the same time to be unable to correctly label the epistemic style reflected in the editorial as either empirical or metaphorical (Nisbett & Wilson, 1977).

To examine this possibility, a four-way analysis of variance was performed on each of the dependent measures. Variables included in the analyses were style, issue, trial, and hits. The fourth, dichotomous, variable (hits/misses) was created with hits defined as "correctly identified the editorial style" and misses defined as "incorrectly identified the style." Hits and misses were based on subjects' judgments of the editorial style as reported on the manipulation check completed at the end of the study. The results indicated significant main and interaction effects for the style, issue, and trial variables, as reported previously. No significant effects were found for the hits variable on any of the dependent measures with the exception of the Evaluation Scale. Subjects' Evaluation Scale scores were slightly higher $F(1,383) = 4.67$, $p < .03$, for the "misses" ($M = 4.45$) than the "hits" ($M = 4.25$), although the difference was only moderate.

Summary of Results

In order to facilitate a clearer perspective on the main findings of the study, a brief summary of the results is presented. Two sets of major analyses were performed: (a) analyses of variance examining the effects of three independent variables on the dependent measures and (b) hierarchical regression analyses addressing the relationship between subjects' epistemic style scores and the criterion measures as a function of the message style after controlling for relevant variables.

The results of the analyses of variance indicated that subjects were influenced by the characteristics of the editorial, i.e., issue, style, and trial. These effects were particularly evident for the Evaluation Scale, i.e., ratings of how persuasive, interesting, informative, convincing, and effective the editorial was and the rating of its overall quality. Subjects rated the editorials on auto insurance higher on the Evaluation Scale than they rated the editorials on course evaluation. As well, subjects preferred the empirical to metaphorical editorials and the second editorial they read to the first. On the Involvement Scale and thought listing task, generally weaker, though statistically significant effects were found. Subjects rated the auto insurance editorials higher on the Involvement Scale than the editorials on course evaluations and preferred the second editorial to the first. Moreover, a greater proportion of supportive to total thoughts was generated for the empirical than the metaphorical editorials and for the second editorial they read than the first.

Subjects' posttest attitude scores were not affected by the style or trial variable in the analyses of covariance. However, subjects in the experimental group did tend to change their attitudes more to be less in favour of equal auto insurance rates for men and women (the position taken in the editorial) than subjects in the control group. No such effect was observed for subjects' attitudes towards student access to course evaluations.

Regarding the regression results, the style variable accounted for a significant proportion of variance in the Evaluation Scale scores when the issues were combined and when analyzed separately. This finding is consistent with the analysis of variance results. For the Involvement Scale, subject characteristics (age, sex, epistemic style scores, initial attitude) yielded significant regression coefficients. Younger subjects

reported being more involved in the two editorials, presumably because they were more in favour of having access to course evaluations and equal auto insurance rates for men and women, while older subjects reported less involvement in the editorials. In support of the research hypotheses, metaphorical subjects reported more involvement in the metaphorical than empirical editorials when the analyses examined the two issues in combination and each issue separately.

The findings reported so far indicated that subjects' scores on the Evaluation Scale appeared to be influenced more by characteristics external to the subject (issue, style, and trial) and the Involvement Scale score appeared to be affected more by intrinsic characteristics (age, sex, and style scores) as well as by the interaction between the relevant message and personality characteristics. Subjects' posttest attitude scores were affected primarily by their pretest scores, which, along with sex of subject, yielded significant regression coefficients.

The regression results for the thought listing score as criterion variable indicated that initial attitudes were the important variables in the equation yielding significant beta weights for all three regression equations. As well, the style of the editorial yielded a significant beta weight for the auto insurance issue and when the issues were combined. This finding is consistent with the analysis of variance result indicating that subjects generated more supportive thoughts in response to the empirical than to the metaphorical editorials. As well, the metaphorical score by message style interaction approached statistical significance.

Lastly, the relationship among the set of dependent variables was noteworthy. Posttest attitudes were significantly associated with the proportion of thoughts generated but not with the Evaluation or Involvement Scales. The Evaluation and

Involvement Scales, however, particularly the former, were significantly related to the thought listing measure.

CHAPTER 4

DISCUSSION

Recent studies on individual differences and persuasion have demonstrated the need to consider the relationship between receiver characteristics and message variables. Persuasive information that is theoretically consistent in style or content with a salient dispositional characteristic has been shown to enhance the impact of a message by increasing the person's ability or motivation (Petty & Cacioppo, 1986a, b) to process the information. This effect has been demonstrated with a number of personality characteristics including legalistic versus religious self-schemata (Cacioppo et al., 1982), high versus low self-monitoring (DeBono, 1987; DeBono & Harnish, 1988), and certainty-uncertainty orientation (Sorrentino, Bobocel, Gitta, Olson, & Hewitt, 1988),

The purpose of the present study was to examine the role of epistemic styles (Royce & Powell, 1983) in influencing responses to persuasive editorials that were either consistent or inconsistent with the individual's characteristic style of acquiring knowledge or approach to reality. The following discussion focuses first on the significant main effects for style, issue, and trial reported in the present study. The limitations these findings present for interpreting the results will then be considered, followed by a review of the test of the main hypotheses and the implications of these results.

Reconciling the Main Effects: Style, Issue, and Trial

Despite the fact that the editorials used as stimulus materials in the present study were developed to be equivalent on relevant dimensions and differed only slightly in pilot studies, results indicated significant and unexpected differences. Subjects in general preferred the empirical to metaphorical editorials. Subjects also preferred the auto insurance editorials to editorials on course evaluations and the second editorial they read to the first.

The finding that subjects preferred the empirical to metaphorical editorials is contrary to the research on persuasion and metaphorical versus literal information which found metaphorical messages to be more persuasive (see Appendix A). Perhaps subjects in the present study, as university students, were more accustomed than a non-student population to processing empirical (or rational) rather than metaphorical style information. University students are typically taught to develop an analytic, even sceptical orientation to thinking and to understand information in terms of "getting the hard facts." In fact, it is a stronger test of the hypothesis that, despite this general tendency to prefer empirical to metaphorical editorials, metaphorical subjects still felt more involved in the style-consistent editorials.

Moreover, subjects may have been indicating which style they felt was more appropriate for the particular context in which the information was being presented. The messages were presented to them as like editorials they might find in a newspaper or magazine. Subjects may have judged the metaphorical messages as too anecdotal or impressionistic for a newspaper or magazine editorial format and the fact-based empirical arguments as more appropriate in such a context. Further studies could examine the effects of message context on judgments of metaphorical and empirical

arguments. Perhaps people are more amenable to metaphorical arguments presented in other contexts such as in a courtroom or classroom presentation or in a newspaper or magazine advertisement rather than in an editorial.

Subjects' preference for the auto insurance as opposed to the course evaluations issue is somewhat easier to understand. First, at the time of data collection, the issue of automobile insurance rates had been receiving considerable attention in the media as extensive changes to the present system of determining rates based on gender were being considered by government. Subjects may have been primed to read material on this topic and their preference may have been a reflection of the timeliness of the issue. Second, the issue of auto insurance rates has more far-reaching implications for most of the subjects in the study than the issue of access to course evaluations. These two factors are suggested as contributing to subjects' preference for the auto insurance rather than the course evaluations editorials.

Another effect that consistently emerged in the present study was that subjects preferred the second editorial they read to the first. This trial effect may have been due to a less conservative use of the Evaluation and Involvement rating scales for the second editorial than for the first. The task of responding to the editorials may have been so unfamiliar to the subjects that they were more uncertain or cautious in their responses to the first editorial. They may have used the first editorial to become acquainted with the procedures.

In addition to rating the second editorials higher than the first on the Evaluation and Involvement Scales, subjects also tended to report more supportive thoughts for the second than the first editorial. Perhaps responding with lower ratings on the first editorial led subjects to generate fewer supportive thoughts. The

correlations between the Involvement and Evaluation Scale ratings with the thought listing task were statistically significant, particularly for the Evaluation Scale. Therefore, a cause-effect relationship may have emerged. The analyses performed in the present study, however, do not address this hypothesis directly.

Main Hypotheses: Test of the Relevant Interactions

The central hypotheses of the present study were that subjects would prefer and be more susceptible to the epistemic style-consistent as opposed to the style-inconsistent editorials. The results of the present study provide partial support for these hypotheses. On the Involvement Scale, significant metaphorical score by message style interactions emerged for editorials on both issues, reflecting the fact that subjects accustomed to processing information in a metaphorical way felt that the metaphorical editorials were more involving to read and easier to think and make judgments about than the empirical editorials. Metaphorical subjects felt more strongly and were more certain about their feelings on the issues when they were presented in a metaphorical rather than an empirical style. Finally, metaphorical subjects generated more message-supportive than unsupportive thoughts in response to the metaphorical editorial on the issue of auto insurance than to the corresponding empirical editorial, although the effect was only marginally significant. These results provide support for the central hypothesis, suggesting that metaphorical people have a preference for reading metaphorical rather than literal or empirical information. This preference may be attributed to their greater ability, as compared to empirical subjects, to process metaphorical arguments, as predicted by Royce's notion of epistemic styles. Because the metaphorical editorials were consistent with their characteristic mode of

acquiring knowledge, it is suggested that metaphorical subjects were better able to access their own personal style of processing information, allowing them to become more involved in reading the editorial than empirical subjects.

Unfortunately, however, contrary to prediction, the empirical score by message style interactions on the Involvement Scale were not significant. High empirical subjects were not more involved in reading the empirical than the metaphorical editorials. Three possible explanations are suggested for the lack of a significant empirical by message style interaction. First, it could be argued that metaphorical editorials are more involving for everyone than empirical editorials. Second, it may be that metaphorical people tend to invest or involve more of themselves in processing the editorials than do empirical people. Third, it is possible that metaphorical editorials, unlike empirical editorials, are more involving but only for those individuals who have a preference for processing this type of information.

The results of the present study tend to support the latter interactionist alternative. Metaphorical editorials were found to be no more involving for the subjects as a whole than empirical editorials, and metaphorical subjects were no more likely to involve themselves in the editorial, regardless of the style, than were empirical people. In fact, the results of the multiple regression analyses indicated that a high rational style score was significantly associated with a high Involvement score and a greater proporition of supportive thoughts. Rational subjects may have been more involved in reading the editorials (regardless of the editorial style) than subjects with a low rational score because of the rational basis underlying the arguments of the editorials. Indeed, when asked to indicate which style each editorial reflected, subjects as a whole tended to err in categorizing the editorials as rational, suggesting that the

underlying rational premise of the editorials was highly salient for the respondents, particularly for the rational subjects.

In further support for the interactionist alternative, as opposed to the simple effects explanation, the novelty of the metaphor, coupled by their greater familiarity with this style of information, may have been more engaging for metaphorical subjects than the empirical editorials were for the empirical subjects. Empirical information may not have had the same engaging quality for empirical subjects that metaphorical editorials were found to have for the metaphorical participants.

Despite the fact that metaphorical subjects found the metaphorical editorials more involving than the empirical editorials, however, they did not generate significantly more supportive thoughts or change their attitudes more in response to metaphorical editorials. Empirical subjects also did not respond any differently to the style-consistent editorials on these measures. Therefore, no support was provided for the second or third hypotheses advanced in the present study.

Affective and Cognitive Response Tendencies

Interpretation of these results may be facilitated if subjects' responses to the editorials are conceptualized as either affective or cognitive in nature. Although speculative in the absence of hard evidence, such a distinction provides a useful conceptual framework for understanding the study's findings. The Evaluation Scale and thought listing measure appear to reflect a cognitive response pattern whereas the Involvement Scale appears to reflect an affective or motivational response to the message arguments. Posttest attitudes may be conceptualized as affective responses which are influenced by one's cognitions.

The data suggest that the Evaluation Scale and thought listing measure were affected to a large extent by characteristics of the editorial such as message style, issue, and order of presentation, that is, situational cues. In responding on the evaluation items (how persuasive, interesting, informative, effective the editorial was), subjects appear to have maintained an objectivity or personal distance from the editorials rather than incorporating aspects of themselves in their judgments. Subjects also appeared to maintain the same objective distance when asked to list the cognitive thoughts they had while reading the editorials. Subjects did not report more supportive thoughts for the style-consistent editorials. Rather, subjects' thoughts were more supportive of the empirical than the metaphorical editorials and more supportive of the second editorial they read than the first. When completing these dependent measures, it is argued that subjects were rating the editorials for their content and substance, that is, for the editorial's "information value" (Raynor & McFarlin, 1986), conceptualized as a cognitive response. The correlation coefficient between the thought listing task and the Evaluation Scale was also more than twice as large as the correlation between the thought listing measure and the Involvement Scale score, providing further evidence that these responses were cognitive in nature.

The Involvement Scale, on the other hand, seemed to be more a function of various personal or dispositional characteristics including age, sex, epistemic style scores, and initial attitudes. Thus, older subjects were less involved in reading the editorials than younger subjects. Males were more involved in reading the editorials on access to course evaluations than females. In responding on these items, subjects seemed to be saying, "Given who I am, how do I feel about this editorial?"

Moreover, with respect to supporting the study's hypotheses, one's epistemic style profile influences information processing to the extent that an affective response component is assessed. When completing the Involvement Scale items for the metaphorical editorials, metaphorical subjects were rating the editorials for their enjoyment level or "affective value" (Raynor & McFarlin, 1986), given that these individuals were inherently comfortable in comprehending this type of information. This interpretation must be tempered by the lack of an effect for empirical subjects, however. Empirical subjects did not rate the empirical editorials as more involving than they rated the metaphorical editorials. Therefore, empirical subjects' reaction to the empirical editorials did not appear to involve an affective response tendency.

It must also be cautioned that this explanation for the significant metaphorical by message style interaction not be taken to imply that the epistemic style construct is more closely linked, in theory, to the affective than to the cognitive dimension. Indeed, Royce (1975a, b) defines epistemic styles as having linkages to both the affective and the cognitive dimensions of the personality structure (see Figure 1). The relationship between personal epistemic style and message style on the Involvement Scale provides empirical support for the link between epistemic style and the affective system. The lack of an effect for the Evaluation Scale, however, fails to provide empirical support for the link between epistemic style and the cognitive system. Epistemic styles did not appear to interact with the message style to influence how the person responds on a cognitive level to the editorial.

Posttest attitudes toward each issue were affected primarily by initial attitudes and subjects' gender rather than by the particular message variables. Therefore, it would seem that influences on posttest attitudes were essentially internal

(dispositional), suggesting an affective component. Furthermore, subjects exposed to the persuasive editorials changed their attitude on the issue of auto insurance more than the subjects who were not exposed to the editorials. Therefore, as a group, subjects in the experimental condition found the auto insurance editorials sufficiently persuasive to change their views accordingly. The change in attitude may be conceptualized as resulting from a change in the person's knowledge structure or world view (e.g., accommodation of an existing schema) suggesting that cognitions mediate attitude change (Cacioppo, Harkins, & Petty, 1981). Consistent with the cognitive response literature (Petty, Ostrom, & Brock, 1981; Cacioppo & Petty, 1981), subjects who generated more supportive than unsupportive thoughts to the editorials also held posttest attitudes that were consistent with the position taken in the editorials, even after controlling for initial attitudes. This finding provides further evidence that subjects' attitudes were affected by their cognitions. Lastly, it is interesting to note that, according to the regression results, subjects who initially favoured equal auto insurance rates for men and women (a position opposite to that taken in the editorials) reported being more involved in the auto insurance editorials. This greater involvement may have contributed to subjects changing their attitudes on this issue (see Appendix N).

Another explanation may be advanced for the attitude change effect. As a group, subjects' attitudes about the auto insurance issue were less polarized than their attitudes about access to course evaluations. Therefore, it can be argued that, as a result, they would have been more likely to change their attitudes on this issue in response to counterattitudinal information (cf. Cacioppo et al., 1982). The next section will consider the study's findings within the context of the existing literature.

Studies by Cacioppo et al. (1982), Sorrentino et al. (1988), DeBono (1987) and DeBono and Harnish (1988), like the present research, clearly demonstrate that recipients' salient personal characteristics affect how they respond to style-consistent and style-inconsistent messages. In previous studies, however, the style-consistent messages were typically rated as more persuasive and convincing, and subjects generated more supportive to unsupportive thoughts in response to the style-consistent editorial. Moreover, in past studies, greater attitude change (in the expected direction) was evinced by subjects exposed to the style-consistent as opposed to style-inconsistent messages. According to the cognitive-affective distinction, these responses may be characterized as cognitive in nature or as influenced by cognitions as in the case of attitude change.

In the present study, the response pattern was more complicated than indicated in past literature. The interaction effect between the dispositional variable and the message characteristic emerged only when subjects responded to the editorials on the Involvement Scale, characterized as affective in nature. No support for the hypotheses was found for subjects' cognitive responses. Participants did, however, change their attitudes in response to the editorials on one particular issue--auto insurance--perhaps reflecting cognitive level responses to the editorials' content (i.e., issue), though not as a result of the personality by message style interaction.

These findings suggest that an individual differences approach to information processing should encompass both cognitive and affective responses to persuasive information. This view is consistent with the position taken by Raynor and McFarlin (1986) who assert that "many cognitive and information-processing theories are conceptually imbalanced in that they tend to ignore the role of affect" (p. 316).

Raynor and McFarlin stress the role of values in the relationship between motivation and the self-system. Two values postulated to be important are information and affect, the former relating to the cognitive functioning of the personality and the latter to the emotional functioning. This notion has also been examined empirically by Sorrentino and his colleagues (Sorrentino & Hancock, 1988; Sorrentino & Short, 1986).

Within the context of Raynor and McFarlin's position, it can be argued that metaphorical subjects were more involved in reading the style-consistent editorials which validated their personal epistemic style, resulting in the fulfillment of an achievement-related motive: "I know I am good at understanding metaphorical information and this task confirms this for me." Raynor and McFarlin (1986) conceptualize the achievement-related motive as "primarily concerned with affective consequences of success and failure" (p. 341).

Within the context of a certainty-uncertainty orientation (Sorrentino & Hewitt, 1984; Sorrentino & Short, 1986; Sorrentino, Short, & Raynor, 1984), metaphorical subjects responded like the certainty-oriented individuals, tending to prefer self-confirming or self-validating to incongruent information. Moreover, subjects as a group responded on the posttest attitude measure like the uncertainty-oriented individuals in response to the auto insurance editorials, changing their views in the light of new disconfirming information. However, because certainty and uncertainty-oriented individuals likely cut across the range of metaphorical, empirical, and rational style profiles suggested by Royce, examining the possible interactions (e.g., metaphorical-certainty, empirical-certainty, metaphorical-uncertainty, empirical-uncertainty) would provide interesting insights into the functional roles (affective versus information values) served by self-confirming and self-disconfirming information in both style (epistemic styles) and content (pro- and counterattitudinal information).

These findings also have implications for Royce's theory of epistemic styles and personality. Royce argued that

> confirming feedback from the environment increases the probability that the world view in question is an adequate representation or image of reality. Conversely, to the extent that there is disconfirming feedback, changes in world view are required (Royce, 1974, p. 173).

Given that (1) the editorials in this investigation were presenting information that disconfirmed subjects' representations of reality, (2) what a person knows about an issue is capable of affecting his/her attitude toward that issue, and (3) the development of a world view is inextricably linked to a person's dominant epistemic style, the primary empirical question addressed in the present study was, "Is the probability of changing a person's attitude increased if the disconfirming information is presented in such a way as to complement the individual's personal epistemology or approach to reality?" The data from the present study suggest that the answer to this question is no, since subjects' attitudes toward the issues did not change in light of the style-consistent, though disconfirming evidence. The study's findings suggest, however, that epistemic styles, when taken in conjunction with style-consistent or style-inconsistent information, can affect what we like (as indicated by the Involvement Scale) but not what we think. If, as some research suggests (Fiske & Taylor, 1984), cognition shapes affective responses to new stimuli, such as when fitting new information to existing knowledge structures, metaphorical subjects might have said (in response to the metaphorical editorials), "I liked this editorial despite the fact that the information did not convince me to change my attitude." If the sequence is reversed so that affect precedes cognition, the self-statement might have been, "I liked this editorial, but not enough for me to change my view on the issue". Again, these results are consistent with Raynor and McFarlin (1986), who maintain that while affective and informative

values "are conceptualized in parallel fashion they may operate orthogonally" (p. 322) and with Royce's notion that epistemic styles have linkages with affective as well as cognitive dimensions of personality.

Limitations of the Present Study and Recommendations for Future Research

The findings of the present study indicate that a person's epistemic style does mediate processing of style-consistent and style-inconsistent information, but only for metaphorical profiles. At the same time, the data also indicate that certain editorials were preferred to others, regardless of the individual's epistemic style. Clearly, this latter finding limits the interpretation of the results. However, while the confounding effects of these variables could have been avoided, by presenting subjects with one rather than two editorials, for example, they do suggest certain interesting implications for conducting persuasion research with regard to the presence of content (issue) and context (style) effects.

Second, the interpretation of the findings as affective and cognitive responses rests upon the interpretation of the principal components analyses of the eleven rating items. Certainly, confirmation of the two-factor structure is required with another sample. Moreover, it could be argued with equal validity that the two derived factors reflect constructs other than evaluation and involvement. For example, the items on the second factor may reflect a comprehensibility dimension, i.e., a cognitive (gaining new information) rather than an involvement factor. However, consistent with the argument put forth in this thesis, it may also be argued that the ability to comprehend the editorial may be understood as a response to the editorial which may, in turn, lead to an affective state, i.e., arising from an achievement-related motive as defined by

Raynor and McFarlin (1986). Again, this argument leads to the same conclusion--that the second factor, whether labelled Involvement or Comprehensibility, may be defined as an affective response tendency or as leading to an affective response.

Nonetheless, the proper test of the presence of affective and cognitive responses in information processing situations should begin with an explicit operational definition of these types of responses, and the hypotheses should be stated a priori. As Raynor and McFarlin (1986) and Sorrentino and colleagues (Sorrentino & Hancock, 1988; Sorrentino & Short, 1986) clearly suggest, this would be a fruitful direction for future research in the area of information processing and persuasion.

A final limitation of the study is that the significant interaction effect, interpreted as providing partial support for the central hypotheses, may be a methodological artifact. Metaphorical subjects were more involved in reading metaphorical editorials than empirical subjects. However, metaphorical subjects were defined by virtue of their higher scores on the Psycho-Epistemological Profile (PEP). Specific items on the metaphorical scale allude to a preference for novels, art, literature, and the creative expression of ideas and a desire to have been Shakespeare, That metaphorical subjects expressed a preference for the metaphorical editorials may simply reflect two ways of measuring the same construct, or convergent validity for a preference for metaphorical-style information (Campbell & Fiske, 1959). Had metaphorical subjects also changed their initial attitude toward the issue in response to a style-consistent editorial (or had a behavioural response been assessed), demonstration of the mediating effects of the epistemic style construct would have been achieved. Again, testing a priori individual differences and information processing on cognitive as well as affective responses would serve to correct this shortcoming of the present study.

Future research on the mediating role of epistemic styles on processing style-consistent and inconsistent information should also consider the use of more sensitive or appropriate dependent measures. For example, it would be of interest to have subjects generate their own arguments (pro- or counterattitudinal) on an issue. These extemporaneous arguments could then be content analyzed for the presence of metaphorical/rational/empirical argumentation. Second, the arguments could be presented to people with differing epistemic style profiles to examine cognitive, affective, and behavioural response patterns.

This type of experiment would shed light on the notion that people may actually process any kind of information in terms of their own epistemic style. Whether information is presented in a logical-rational, empirical, or metaphorical style, people may invariably translate or transpose the underlying message into their preferred style to enable them to "think about" the message's veridicality. If so, it would not make that much of a difference how the information is presented, only how facile the person is in translating the information to one particular style. Empirical people may transpose the metaphor to their own style in order to judge the persuasiveness of the message just as metaphorical people may translate the empirical information into a format with which they feel more comfortable. To test this notion empirically would provide further insights into the conceptual relationship between Royce's epistemic style construct and information processing activities beyond what was examined in the present investigation.

In conclusion, the present study contributes to the literature on personality and message style interactions by demonstrating how epistemic styles (Royce & Powell, 1983) serve to mediate the processing of style-consistent and style-inconsistent

information. However, support for Royce's concept of psycho-epistemology as an information processing mechanism remains tentative in light of the inconsistent findings of this investigation. While metaphorical subjects reported more involvement in the metaphorical than empirical editorials, empirical subjects did not report a higher level of involvement in the empirical than metaphorical editorials. As well, no significant interactions were observed for any of the other dependent variables. More precise or appropriate methods for assessing preference for different styles of information would serve to clarify some of these inconsistencies.

Second, the study's findings were presented as suggesting that information processing responses include both affect as well as cognition, drawing on the work of Raynor and McFarlin (1986) and Sorrentino (Sorrentino & Short, 1986). Such a conceptualization represents a new direction for the social cognition movement which until recently has tended to focus exclusively on cognitive processes (Fiske & Taylor, 1984). Moreover, this interpretation appears to be consistent with Royce's systems theory of personality, specifically with respect to the relationship between epistemic styles and the cognitive and affective dimensions.

REFERENCES

Anderson, C. C. (1964). The psychology of the metaphor. *The Journal of Genetic Psychology, 105,* 53-73.

Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist, 44,* 1175-1184.

Berenson, M. L., Levine, D. M., & Goldstein, M. (1983). *Intermediate statistical methods and applications: A computer package approach.* Englewood Cliffs, NJ: Prentice-Hall.

Berlyne, D. E. (1960). *Conflict, curiosity and arousal.* New York: McGraw-Hill.

Bertalanffy, L. von. (1955). General systems theory. *Main Currents in Modern Thought, 11,* 75-83.

Billow, R. M. (1977). Metaphor: A review of the psychological literature. *Psychological Bulletin, 84,* 81-90.

Bobrow, D. G., & Norman, D. A. (1975). Some principles of memory schemata. In D. G. Bobrow & A. Collins (Eds.), *Representation and understanding: Studies in cognitive science* (pp. 131-149). New York: Academic Press.

Bowers, J. W., & Osborn, M. M. (1966). Attitudinal effects of selected types of concluding metaphors in persuasive speeches. *Speech Monographs, 33,* 147-155.

Bruch, M. A., Kaflowitz, N. G., & Berger, P. (1988). Self-schema for assertiveness: Extending the validity of the self-schema construct. *Journal of Research in Personality, 22,* 424-444.

Cacioppo, J. T., Harkins, S., G., & Petty, R. E. (1981). The nature of cognitive responses to persuasive appeals. In R. E. Petty, T. M. Brock, & T. C. Ostrom (Eds.), *Cognitive responses in persuasion* (pp. 31-54). Hillsdale, NJ: Erlbaum.

Cacioppo, J. T., & Petty, R. E. (1980). Sex differences in influenceability: Toward specifying the underlying processes. *Personality and Social Psychology Bulletin, 6,* 651-656.

Cacioppo, J. T., & Petty, R. E. (1981). Social psychological procedures for cognitive response assessment: The thought-listing technique. In T. V. Merluzzi, C. R. Glass, & M. Genest (Eds), *Cognitive assessment* (pp. 309-342). New York: Guilford Press.

Cacioppo, J. T., Petty, R. E., & Sidera, J. A. (1982). The effects of a salient self-schema on the evaluation of proattitudinal editorials: Top-down versus bottom-up message processing. *Journal of Experimental Social Psychology, 18,* 324-338.

Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait multimethod matrix. *Psychological Bulletin, 56,* 81-105.

Campbell, D. T., & Stanley, J. C. (1963). *Experimental and quasi-experimental designs for research.* Chicago, IL: Rand McNally.

Campbell, P. N. (1975). Metaphor and linguistic theory. *Quarterly Journal of Speech, 61,* 1-12.

Canfield, A. A. (1980). *Learning styles inventory manual.* Ann Arbor, MI: Humantics Media.

Chaiken, S. (1979). Communicator physical attractiveness and persuasion. *Journal of Personality and Social Psychology, 38,* 1387-1397.

Chaiken, S. (1980). Heuristic and systematic information processing and the use of source versus message cues in persuasion. *Journal of Personality and Social Psychology, 39,* 752-756.

Chaiken, S. (1987). The heuristic model of persuasion. In M. P. Zanna, J. M. Olson, & C. P. Herman (Eds.), *Social influence: The Ontario symposium* (Vol. 5, pp. 3-39). Hillsdale, NJ: Erlbaum.

Chaiken, S., & Eagly, A. H. (1976). Communication modality as a determinant of persuasion and message comprehensibility. *Journal of Personality and Social Psychology, 34,* 605-614.

Chaiken, S., & Eagly, A. H. (1983). Communication modality as a determinant of persuasion: The role of communicator salience. *Journal of Personality and Social Psychology, 45,* 241-256.

Chaiken, S., & Stangor, C. (1987). Attitudes and attitude change. *Annual Review of Psychology, 38,* 575-630.

Cialdini, R. B., Petty, R. E., & Cacioppo, J. T. (1981). Attitude and attitude change. *Annual Review of Psychology, 32,* 357-404.

Cohen, J. (1960). A coefficient of agreement for nominal scales. *Educational and Psychological Measurement, 20,* 37-45.

Cohen, J., & Cohen, P. (1983). *Applied multiple regression/correlation analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.

Cook, T. D., & Flay, B. (1978). The temporal persistence of experimentally induced attitude change: An evaluative review. In L. Berkowitz (Ed.), *Advances in experimental and social psychology* (Vol. 11, pp.1-57). New York: Academic Press.

Cook, T. D., Gruder, K. M., Hennigan, K. M., & Flay, B. (1979). History of the sleeper effect: Some logical pitfalls in accepting the null hypothesis. *Psychological Bulletin, 86,* 662-679.

Corbett, E. P. J. (1965). *Classical rhetoric for the modern student.* New York: Oxford University Press.

DeBono, K. G. (1987). Investigating the social-adjustive and value-expressive functions of attitudes: Implications for persuasion processes. *Journal of Personality and Social Psychology, 52,* 279-287.

DeBono, K. G., & Harnish, R. J. (1988). Source expertise, source attractiveness and the processing of persuasive information: A functional approach. *Journal of Personality and Social Psychology, 55,* 541-546.

Dervin, B. (1981). Mass communicating: Changing conceptions of the audience. In R. E. Rice & W. J. Paisley (Eds.), *Public communication campaigns* (pp. 71-87). Beverly Hills, CA: Sage.

Diamond, S. R., & Royce, J. R. (1980). Cognitive abilities as expressions of three "ways of knowing". *Multivariate Behavioral Research, 15,* 31-56.

Diamond, S. R., Royce, J. R., & Voorhees, B. (1981). The factor 'fulfillment model' and the concept of multivariate personality type. *Personality and Individual Differences, 2,* 181-189.

Dunn, R. (1984). Learning styles: States of science. *Theory Into Practice, 23,* 10-19.

Eagly, A. H. (1981). Recipient characteristics as determinants of responses to persuasion. In R. E. Petty, T. M. Ostrom, & T. C. Brock (Eds.), *Cognitive responses to persuasion* (pp. 173-195). Hillsdale, NJ: Erlbaum.

Eagly, A. H. (1988). Social influence research: New approaches to enduring issues. In M. P. Zanna, J. M. Olson, & C. P. Herman (Eds.), *Social influence: The Ontario symposium* (Vol. 5, pp. 271-285). Hillsdale, NJ: Erlbaum.

Eagly, A. H., Wood, W., & Chaiken, S. (1978). Causal inferences about communicators and their effect on opinion change. *Journal of Personality and Social Psychology, 36,* 424-435.

Edwards, A. L. (1985). *Multiple regression and the analysis of variance and covariance* (2nd ed.). New York: W. H. Freeman.

Edwards, K. (1990). The interplay between affect and cognition in attitude formation and change. *Journal of Personality and Social Psychology, 59,* 202-216.

Feldman, R. S. (1985). *Social psychology: Theories, research and application.* New York: McGraw-Hill.

Festinger, L. (1950). Informal social communication. *Psychological Review, 57,* 271-282.

Festinger, L. (1957). *A theory of cognitive dissonance.* Stanford, CA: Stanford University Press.

Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention and behavior: An introduction to theory and research.* Reading, MA: Addison-Wesley.

Fishbein, M., & Ajzen, I. (1981). Acceptance, yielding and impact: Cognitive processes in persuasion. In R. E. Petty, T. M. Ostrom, & T. C. Brock (Eds.), *Cognitive responses to persuasion* (pp. 339-359). Hillsdale, NJ: Erlbaum.

Fiske, S. T., & Taylor, S. E. (1984). *Social cognition.* New York: Random House.

Freedman, J. L., Carlsmith, J. M., & Sears, D. O. (1970). *Social psychology.* Englewood Cliffs, NJ: Prentice-Hall.

Friedman, P., & Alley, R. (1984). Learning/teaching styles: Applying the principles. *Theory Into Practice, 23,* 77-81.

Greenwald, A. G. (1968). Cognitive learning, cognitive response to persuasion and attitude change. In A. G. Greenwald, T. C. Brock, & T. M. Ostrom (Eds.), *Psychological foundations of attitudes.* New York: Academic Press.

Guralnik, D. B. (Editor in Chief). (1970). *Webster's new world dictionary* (2nd ed.). Toronto, Canada: Nelson, Foster & Scott.

Henson, K. T., & Borthwick, P. (1984). Matching styles: A historical look. *Theory Into Practice, 23,* 1-9.

Himmelfarb, S., & Eagly, A. (1974). *Readings in attitude change.* New York: Wiley.

Hovland, C. I., & Janis, I. L. (1959). *Personality and persuasibility.* New Haven, CT: Yale University Press.

Hovland, C. I., Janis, I. L., & Kelley, H. H. (1953). *Communication and persuasion.* New Haven, CT: Yale University Press.

Hovland, C. I., Lumsdaine, A., & Sheffield, F. (1949). *Experiments on mass communication.* Princeton, NJ: Princeton University Press.

Hovland, C. I., & Weiss, W. (1951). The influence of source credibility on communication effectiveness. *Public Opinion Quarterly, 15,* 635-650.

Insko, C. A., Turnbull, W., & Yandell, B. (1974). Facilitative and inhibitive effects of distraction on attitude change. *Sociometry, 37,* 509-528.

Janis, I. L., & Feshbach, S.(1953). Effects of fear-arousing communications. *Journal of Abnormal Social Psychology, 48,* 78-92.

Janis, I. L., & Feshbach, S. (1954). Personality differences associated with responsiveness to fear-arousing communications. *Journal of Personality, 23,* 154-166.

Jepson, C., & Chaiken, S. (1986, August). *The effects of anxiety on systematic processing of persuasive communications.* Paper presented at the annual meeting of the American Psychological Association, Washington, D. C.

Johnson, B. T., & Eagly, A. H. (1989). Effects of involvement on persuasion: A meta-analysis. *Psychological Bulletin, 106,* 290-313.

Johnson, B. T., & Eagly, A. H. (1990). Involvement and persuasion: Types, traditions, and the evidence. *Psychological Bulletin, 107,* 375-384.

Kagan, J. (1965). Information processing in the child. In P. Mussen, J. J. Conger, & J. Kagan (Eds.), *Readings in child development and personality.* New York: Harper Row.

Katz, D. (1960), The functional approach to the study of attitudes. *Public Opinion Quarterly, 24,* 163-204.

Katz, D., McClintock, C., & Sarnoff, I. (1957). The measurement of ego defense as related to attitude change. *Journal of Personality, 25,* 465-474.

Keppel, G. (1982). *Design and analysis: A researcher's handbook* (2nd ed.). Englewood Cliffs, NJ: Prentice-Hall.

King, G. A., & Sorrentino, R. M. (1988). Uncertainty orientation and the relation between individual accessible constructs and person memory. *Social Cognition, 6,* 128-149.

Kirk, R. E. (1982). *Experimental design: Procedures for the behavioral sciences* (2nd ed.). Monterey, CA: Brooks/Cole.

Lasswell, H. D. (1948). The structure and function of communication in society. In L. Bryson (Ed.), *The communication of ideas* (pp. 37-51). New York: Harper.

Leventhal, H. (1970). Findings and theory in the study of fear communications. *Advances in Experimental Social Psychology, 5,* 119-186.

Lieppe, M. R., & Elkin, R.A. (1987). When motives clash: Issue involvement and response involvement as determinants of persuasion. *Journal of Personality and Social Psychology, 52,* 269-278.

Lindquist, E. F. (1953). *Design and analysis of experiments in psychology and education.* Boston, MA: Houghton Mifflin.

Littlejohn, S. W. (1983). *Theories of human communication* (2nd ed.). Belmont, CA: Wadsworth.

Maccoby, N. (1980). Promoting positive health behavior in adults. In L. A. Bond & J. C. Rosen (Eds.), *Competence and coping during adulthood.* (pp. 195-218). Hanover, NH: University Press of New England.

Maccoby, N., & Alexander, J. (1980). Use of media in lifestyle programs. In P. O. Davidson & S. M. Davidson (Eds.), *Behavioral medicine: Changing health lifestyles.* (pp. 351-370). New York: Brunner/Mazel.

Markus, H. (1977). Self-schemata and processing information about self. *Journal of Personality and Social Psychology, 35,* 63-78.

Markus, H., & Kunda, Z. (1986). Stability and malleability of the self-concept. *Journal of Personality and Social Psychology, 51,* 858-866.

Markus, H., & Sentis, K. (1982). The self in social information processing. In J. Suls (Ed.), *Psychological perspectives of the self* (Vol. 1, pp. 41-70). Hillsdale, NJ: Erlbaum.

Markus, H., & Wurf, E. (1987). The dynamic self-concept. *Annual Review of Psychology, 38,* 299-337.

McCrosky, J. C., & Combs, W. H. (1969). The effects of the use of analogy on attitude change and source credibility. *The Journal of Communications, 19,* 333-339.

McGuire, W. J. (1968). Personality and susceptibility to social influences. In E. F. Borgatta & W. W. Lambert (Eds.), *Handbook of personality theory and research* (pp. 140-162). Chicago, IL: Rand-McNally.

McGuire, W. J. (1969). Attitudes and attitude change. In G. Lindzey & E. Aronson (Eds.), *The handbook of social psychology* (2nd ed., Vol. 3, pp. 136-314). Reading, MA: Addison-Wesley.

McGuire, W. J. (1972). Attitude change: The information processing paradigm. In C. G. McClintock (Ed.), *Experimental social psychology* (pp. 108-141). New York: Holt, Rinehart & Winston.

McGuire, W. J. (1985). Attitudes and attitude change. In G. Lindzey & E. Aronson (Eds.), *The handbook of social psychology* (3rd ed., Vol. 2, pp. 233-346). New York: Random House.

Mesarovic, M. D., Macko, D., & Takahara, Y. (1970). *The theory of hierarchical multilevel systems.* New York: Academic Press.

Middlebrook, P. N. (1980). *Social psychology and modern life.* New York: Knopf.

Milburn, M. A. (1987). Ideological self-schemata and schematically induced attitude consistency. *Journal of Experimental Social Psychology, 23,* 383-398.

Milburn, T. W, & Watman, K. H. (1981). *On the nature of threat: A social psychological analysis.* New York: Praeger.

Millar, M. G., & Millar, K. U. (1990). Attitude change as a function of attitude type and argument type. *Journal of Personality and Social Psychology, 59,* 217-228.

Myers, D. G. (1987). *Social psychology* (2nd ed.). New York: McGraw-Hill.

Nisbett, R. E., & Gordon, A. (1967). Self-esteem and susceptibility to social influence. *Journal of Personality and Social Psychology, 5,* 268-276.

Nisbett, R. E. & Wilson, T. D. (1977). Telling more than we can know: Verbal reports on mental processes. *Psychological Review, 84,* 231-259.

Nunnally, J. C. (1967). *Psychometric theory.* New York: McGraw-Hill. 268-276.

Ortony, A. (1975). Why metaphors are necessary and not just nice. *Educational Theory, 25,* 45-53.

Ortony, A. (1976). On the nature and value of metaphor: A reply to my critics. *Educational Theory, 26,* 395-398.

Ortony, A., Reynolds, R. E., & Arter, J. A. (1978). Metaphor: Theoretical and empirical research. *Psychological Bulletin, 85,* 919-943.

Osborn, M. M., & Ehninger, D. (1962). The metaphor in public address. *Speech Monographs, 24,* 223-234.

Pallik, S. R., Murroni, E., & Koch, J. (1983). Communicator attractiveness and expertise, emotional versus rational appeals and persuasion: A heuristic versus systematic processing interpretation. *Social Cognition,* :2, 122-141.

Papageorgis, D. (1968). Warning and persuasion. *Psychological Bulletin, 70,* 271-282.

Pedhazur, E.J. (1982). *Multiple regression in behavioral research* (2nd ed.). New York: Holt, Rinehart & Winston.

Penrod, S. (1983). *Social psychology* (2nd ed.). Englewood Cliffs, NJ: Prentice-Hall.

Pettigrew, F. E., Bayles, M. A., Zakrajsek, D. B., & Goc-Karp, G. (1985). Compatibility of students' learning and teaching styles on their ratings of college teaching. *Perceptual and Motor Skills, 61,* 1215-1220.

Petty, R. E., & Cacioppo, J. T. (1979). Issue involvement can increase or decrease persuasion by enhancing message-relevant cognitive responses. *Journal of Personality and Social Psychology, 37,* 1915-1926.

Petty, R. E., & Cacioppo, J. T. (1981). *Attitude and persuasion: Classic and contemporary approaches to persuasion.* Dubuque, IO: Wm. C. Brown.

Petty, R. E., & Cacioppo, J. T. (1984). The effects of involvement on responses to argument quantity and quality: Central and peripheral routes to persuasion. *Journal of Personality and Social Psychology, 46,* 69-81.

Petty, R. E., & Cacioppo, J. T. (1986a). *Communication and persuasion: Central and peripheral routes to attitude change.* New York: Springer-Verlag.

Petty, R. E., & Cacioppo, J. T. (1986b). The elaboration likelihood model. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 19, pp. 123-205). New York: Academic Press.

Petty, R. E., Cacioppo, J. T., & Goldman, R. (1981). Personal involvement as a determinant of argument-based persuasion. *Journal of Personality and Social Psychology, 41,* 847-855.

Petty, R. E., Cacioppo, J. T., & Heesacker, M. (1981). Effects of rhetorical questions on persuasion: A cognitive response analysis. *Journal of Personality and Social Psychology, 40,* 432-440.

Petty, R. E., Brock T. M., & Ostrom, T. C. (Eds.). (1981), *Cognitive responses in persuasion* Hillsdale, NJ: Erlbaum.

Polanski, V. G. (1984-1985). Do student-produced metaphors persuade? *Educational Research Quarterly, 9,* 36-43.

Powell, A., & Royce, J. R. (1981). An overview of a multifactor-system theory of personality and individual differences: I. The factor and systems models and the hierarchical factor structure of individuality. *Journal of Personality and Social Psychology, 41,* 818-829.

Raynor, J. O., & McFarlin, D. B. (1986). Motivation and the self-system. In R. M. Sorrentino & E. T. Higgins (Eds.). *Handbook of motivation and cognition: Foundations of social behavior* (pp. 315-349). New York: Guilford Press.

Reinsch, N. L., Jr. (1971). An investigation of the effects of the metaphor and simile in persuasive discourse. *Speech Monographs, 38,* 142-145.

Reinsch, N. L., Jr. (1974). Figurative language and source credibility: A preliminary investigation and reconceptualization. *Human Communications Research, 1,* 75-80.

Rokeach, M. (1968). *Beliefs, attitudes and values.* San Francisco: Jossey-Bass.

Royce, J. R. (1959). The search for meaning. *American Scientist, 47,* 515-535.

Royce, J. R. (1961). The problem of encapsulation. *Journal of Existential Psychology, 1,* 426-441.

Royce, J. R. (1964). *The encapsulated man: An interdisciplinary essay on the search for meaning.* Princeton, NJ: D. van Nostrand.

Royce, J. R. (1967). Metaphoric knowledge and humanistic psychology. In J. F. T. Bugental (Ed.), *Challenges of humanistic psychology* (pp. 21-28). New York: McGraw-Hill.

Royce, J. R. (1973). The conceptual framework for a multi-factor theory of individuality. In J. R. Royce (Ed.), *Multivariate analysis and psychological theory* (pp. 305-407). New York: Academic Press.

Royce, J. R. (1974). Cognition and knowledge: Psychological epistemology. In E. C. Carterette & M. P. Freidman (Eds.), *Handbook of perception (Vol. I): Historical and philosophical roots to perception* (pp. 149-176). New York: Academic Press.

Royce, J. R. (1975a). Epistemic styles, individuality, and world view. In A. Debons & W. J. Cameron (Eds.), *NATO conference on information sciences* (pp. 259-296). Leiden, Holland: International Publishers.

Royce, J. R. (1975b). Psychology is multi-: Methodological, variate, epistemic, world-view, systematic, paradigmatic, theoretic, and disciplinary. In W. J. Arnold (Ed.), *Nebraska symposium on motivation: Conceptual foundations of psychology* (pp. 1-63). Lincoln, NA: University of Nebraska.

Royce, J. R. (1977). Meaning, value and personality. In *Proceedings of the fifth international conference on the unity of the sciences* (pp. 349-366). New York: International Cultural Foundation Press.

Royce, J. R. (1983). Personality integration: A synthesis of the parts and wholes of individuality theory. *Journal of Personality, 51,* 683-706.

Royce, J. R., & Mos, L. (1980). *Manual. Psycho-Epistemological Profile.* Edmonton, Alberta: University of Alberta Printing Office.

Royce, J. R., & Powell, A. (1983). *Theory of personality and individual differences: Factors, systems and processes.* Englewood Cliffs, NJ: Prentice-Hall.

Royce, J. R., & Smith, W. A. S. (1964). A note on the development of the Psycho-Epistemological Profile. *Psychological Reports, 14,* 297-298.

Sampson, E.E., & Insko, C. A. (1964). Cognitive consistency and conformity in the autokinetic situation. *Journal of Personality and Social Psychology, 68,* 184-192.

SAS Institute, Inc. (1985). *SAS user's guide: Statistics*. Version 5 edition. Cary, NC: Author.

Schact, T. E., & Black, D. A. (1985). Epistemological commitments of behavioral and psychoanalytic therapists. *Professional Psychology: Research and Practice, 16*, 316-323.

Schroder, H. M., Driver, M. S., & Streufert, S. (1967). *Human information processing: Individuals and groups functioning in complex social situations*. New York: Holt, Rinehart & Winston.

Smith, L. H., & Renzulli, J. S. (1984). Learning style preferences: A practical approach for classroom teachers. *Theory Into Practice, 23*, 44-50.

Smith, W. A. S., Royce, J. R., Ayers, D., & Jones, B. (1967). Development of an inventory to measure ways of knowing. *Psychological Reports, 21*, 529-535.

Snyder, M. (1974). The self-monitoring of expressive behavior. *Journal of Personality and Social Psychology, 30*, 526-537.

Snyder, M., & DeBono, K. G. (1985). Appeals to image and claims about quality: Understanding the psychology of advertising. *Journal of Personality and Social Psychology, 49*, 586-697.

Sorrentino, R. M., Bobocel, D. R., Gitta, M. Z., Olson, J., & Hewitt, E. C. (1988). Uncertainty orientation and persuasion: Individual differences in the effects of personal relevance on social judgements. *Journal of Personality and Social Psychology, 55*, 357-371.

Sorrentino, R. M., & Hancock, R. D. (1988). Information and affective value: A case for the study of individual differences and social influence. In M. P. Zanna, J. M. Olson, & C. P. Herman (Eds.), *Social influence: The Ontario symposium* (Vol. 5, pp. 247-268). Hillsdale, NJ: Erlbaum.

Sorrentino, R. M., & Short, J., C. (1986). Uncertainty orientation, motivation, and cognition. In R. M. Sorrentino & E. T. Higgins (Eds.). *Handbook of motivation and cognition: Foundations of social behavior* (pp. 379-403). New York: Guilford Press.

Sorrentino, R. M., Short, J. C., & Raynor, J. O. (1984). Uncertainty orientation: Implications for affective and cognitive views of achievement behavior. *Journal of Personality and Social Psychology, 46,* 189-206.

Sternthal, B., Dholakia, R., & Leavitt, C. (1978). The persuasive effect of source credibility: Tests of cognitive response. *Journal of Consumer Research, 4,* 252-260.

Strube, M. J., Berry, J. M., Lott, L., Fogelman, R., Steinhart, G., Moergen, S., & Davison, L. (1986). Self-schematics' representation of the Type A and B behavior patterns. *Journal of Personality and Social Psychology, 51,* 170-180.

Tabachnick, B. G., & Fidell, L. S. (1989). *Using multivariate statistics.* New York: Harper & Row.

Tesser, A., & Shaffer, D. R. (1990). Attitudes and attitude change. *Annual Review of Psychology, 41,* 479-523.

Wardell, D. M., & Royce, J. R. (1978). Toward a multi-factor theory of styles and their relationships to cognition and affect. *Journal of Personality, 46,* 474-505.

Watson, D. L., Tregerthan, G., & Frank, J. (1984). *Social psychology: Science and application.* Glenview, IL: Scott, Foresman.

Wheelwright, P. E. (1962). *Metaphor and reality.* Bloomington, IN: Indiana University Press.

Wiesman, R. R. (1985). A model for selecting appropriate textbooks. *Journal of Instructional Psychology, 12,* 86-98.

Winer, B. J. (1962). *Statistical principles in experimental design.* New York: McGraw-Hill.

Wood, W., Kallgren, C. A., & Preisler, R. M. (1985). Access to attitude-relevant information in memory as a determinant of persuasion: The role of message attributes. *Journal of Experimental Social Psychology, 21,* 73-85.

Worth, L. T., & Mackie, D. M.(1987). Cognitive mediation of positive affect in persuasion. *Social Cognition, 5,* 76-94.

Zanna, M. P., Klosson, M., & Darley, J. M. (1976). How television news viewers deal with facts that contradict their beliefs: A consistency and attribution analysis. *Journal of Applied Social Psychology, 6,* 159-176.

Appendix A

Research on Message Styles

The Webster dictionary (Guralnik, 1970, p. 893) defines a metaphor as

> a figure of speech containing an implied comparison, in which a word or phrase ordinarily and primarily used of one thing is applied to another.

Similarly, Corbett (1965) defines a metaphor as "an implied comparison between two things of unlike nature that have something in common" (cited in Ortony, Reynolds, & Alter, 1978, p. 922). Bywater (cited in Anderson, 1964), also adopting a linguistic perspective, defines metaphor as "the application of a word or expression that properly belongs to one context to express meaning in a different context because of some real or implied similarity in the referents involved" (p.53). Approaching the definition from an interactionist perspective rather than a grammatical one, Ortony et al. (1978) noted that a metaphor is characterized by a "eureka" phenomenon as the elements are blended until the new meaning becomes evident. Bowers and Osborn (1966, p. 150) provide a definition of a metaphor which implies an element of individual differences in the ability to comprehend the message (a position consistent with that of the present study):

> a metaphor is defined as a term requiring some effort, however slight...to transfer its denotation from that with which it [is] conventionally associated to that with which it [is] associated in the context of the communications.

In this way, individuals with a metaphorical style would theoretically require less effort to make the necessary transference than individuals with a rational or empirical style.

Awareness of the greater persuasive impact of metaphorical over literal messages dates back to Aristotle (McGuire, 1985). Some contemporary authors (Campbell, 1975; Ortony, 1975, 1976; Ortony et al., 1978; Polanski, 1984-1985; Wheelwright, 1962) maintain that metaphors allow the formulation and recognition of new relationships and are "powerful in their capacity to relate new knowledge to old.

Consequently, they are said to have great pedagogical value" (Ortony et al., 1978, p. 925; see also Osborn & Ehninger, 1962). However, metaphors have also been criticized for clouding one's thinking processes.

> The empiricists, who held that language should adequately mirror the "facts" of the external world, regarded metaphor as a disreputable fiction, one of the "phantasies of the market-place" (Bacon, cited in Anderson, 1964, p. 54)....Bentham (cited in Anderson, 1964, p. 54-55) cautioned that metaphor was a "ruse" lending substance to fiction, which may be used to subvert rational decision and behavior (Billow, 1977, p. 83).

Research comparing a metaphorical with a literal message has found the former to be more persuasive. For example, Reinsch (1971) found that metaphorical tropes inserted into a persuasive message were more effective in changing the opinion of subjects on the issue of wiretapping by law enforcement agencies than were either a message inserted with similes or a literal message on the same topic.

These findings are consistent with a study by Bowers and Osborn (1966). In this experiment, four persuasive messages were prepared. Two of the messages dealt with the issue of protective tariffs and two messages were about government aid to students. As well, one message on each issue was written in a metaphorical style, the other was written in a literal style. Subjects received two messages, one on each issue and one literal and one metaphorical communication.

The results of the study indicated that the metaphorical messages were more effective in changing subjects' attitudes than the literal messages, regardless of issue. However, for the issue of government aid, subjects rated the source of the message lower on competence, trustworthiness, and ingenuity for the metaphorical message than the literal message. For the second issue, subjects rated the source higher for the metaphorical than for the literal message, though the difference was significant only for

the ingenuity measure. These studies support the notion that metaphorical messages have greater persuasive impact on a general audience than empirical messages.

The question remains whether individual predispositions such as an epistemic style characteristic as described by Royce serve in mediating responses to messages written to reflect different epistemic styles. It may be argued that empirical individuals will prefer an empirical message relative to a metaphorical message when presented with both styles. Subjects in these previous studies may have also been more metaphorical than empirical or rational in their own orientation as these investigations were typically conducted by experimenters representing the disciplines of speech communication (Reinsch, 1971), speech and dramatic art (Bowers & Osborn, 1966) and English (Polanski, 1984-1985) and probably using students within these disciplines as their subjects. Royce's epistemic styles have been found to be related to academic major in a way that would support this claim (e.g., Royce & Mos, 1980).

Appendix B

Stimulus Materials

At the end of each term, university students at campuses across the country complete evaluations of their courses and instructors. Some people feel that students should have access to the results of these course evaluations to allow them to make better, more informed decisions about course selection. It seems, however, that having access to course evaluations would only result in problems for students.

According to recent studies, providing students with access to course evaluations would result in a 22 percent increase in students not being able to get courses they wanted. Presently, 34 percent of students reported having difficulty coping with the abundance of information they have to help them decide what courses to take for the next term. In a survey of students, 78 percent reported consulting no less than six sources of information. Commonly consulted sources include university calendars, schedule of available courses, advice from departmental counsellors, the registrar's office, and informal discussions with other students. Empirical evidence indicates that locating the information, making and keeping appointments, and standing in line waiting took an average of 25.4 hours, according to the survey.

These studies found, according to carefully collected statistics, that giving students yet another source of information in course evaluations would result in a 17 percent increase in the time it takes to investigate these sources, bringing the total up to 30 hours. In actual practice, the research indicates that 23 percent of students who used previous course evaluations were delayed by the extra time spent and did not complete their course selection on time and so were not able to register in the courses they wanted. One survey reported that 36 percent of students who had access to course evaluations did make their selections late and failed to get the courses they wanted. Among this group, 43 percent said that they would not use course evaluations again when making course selection decisions.

The methods used in arriving at the course evaluation results may also be doubtful. In a review of randomly selected course evaluations, only 2 percent were listed as poor. Only a few, 12 percent, were in the middle range of fair. However, eight out of every ten courses were evaluated in the range of very good to excellent. It would seem that students are not sufficiently critical in their course evaluations to distinguish between the good and poor courses.

Extensive analysis of the data indicates that not only could making course evaluation results available to students fail in its intended purpose, but, in some cases it could actually be harmful.

At the end of each term, university students at campuses across the country complete evaluations of their courses and instructors. Some people feel that students should have access to the results of these course evaluations to allow them to make better, more informed decisions about course selection. It seems, however, that having access to course evaluations would only result in problems for students.

Based on available information, giving students access to course evaluations would result in more than just the current handful of students suffering as a result of missing course selection deadlines. In choosing between courses, students now say that they are having trouble keeping their heads above water while paddling through a vast sea of information. Commonly consulted sources include university calendars, schedule of available courses, advice from departmental counsellors, the registrar's office, and informal discussions with other students.

The lesson to be learned from having access to course evaluations is like one that occurs in many classrooms. Consider Chris, an already overworked student who is given yet another assignment to add to the pile-up of work to be done before the end of the term. The instructor provides a list of references, and students are free to use as many as they feel they need. Because Chris needs a good mark, all the sources that appear on the list are consulted.

In the end, however, Chris finds that students who used a reasonable number of references were able to write papers that were as good, or better, than the students who, like Chris, tried to consult more sources. Furthermore, the students who wasted their time trying to read everything were more likely to complete their papers late and so be penalized for this. In the same way, in actual practice, students who spend the extra time to review course evaluations in addition to the other sources of information to help them decide what courses to take, are more likely to make their selections later than students who do not use them and so fail to get the courses they want.

The methods used in arriving at the course evaluation results are also doubtful. Course evaluations, like glossy advertisements, seem naturally to lean toward a non-critical attitude and not to reflect student judgment accurately. Like shopping for a new car, advertisements either stress non-essential luxuries or make exaggerated performance claims. Wise shoppers decide exactly what they want and test drive for themselves.

It does not take much stretching of the imagination to realize that not only could making course evaluation results available to students fail in its intended purpose, but in some cases it could actually be harmful.

Complaints have been made about the unfairness and inequality of automobile insurance rates in Ontario. It is true that rates for all drivers, young and old, male and female, with good or bad driving records are not equal. But although the rates are unequal, the present system of setting rates is the most equitable, and so is the fairest.

Based on several recent studies of the insurance industry, total claims for automobile accidents made on insurance companies averaged $12 million per year since 1982, for a total of $72 million for the six year period. This was found to be a 25 percent increase in payments made by insurance companies over the previous six year period. That money must come from somewhere. Indeed, it must come from the funds collected from insurance premiums paid by Ontario drivers.

The studies also found, according to carefully collected statistics, that, in the same period, male drivers were responsible for 54 percent of the accident claims made on insurance companies. In other words, female drivers were responsible for about half of the total number of accident claims filed, just about the same number of claims filed by men. Furthermore, comparisons that consider into this equation the influence of age, came up with basically the same result. One might interpret this evidence to suggest that, since male and female drivers were involved in the same number of accidents, their insurance premiums should also be the same.

However, empirical evidence indicates that the actual amount of the claims made by male drivers was quite different -- 157 percent higher than the amount claimed by women: on average, $650 per claim for women as compared with $1675 per claim for men. Furthermore, on average, male drivers tend to drive cars that cost 30 percent more than the cars driven by women. This pattern has been observed consistently over the past several years. Hence, car repair bills for male drivers were found to be approximately 200 percent higher than repair bills for women, again contributing to the discrepancies in the insurance claims, and so higher automobile insurance rates for male drivers. In determining how automobile insurance rates are to be set, then, the insurance industry must examine the data that have been collected over the past few years and make their decisions accordingly.

The statistics and other empirical evidence that support maintaining the present system of setting automobile insurance rates are evident and cannot be ignored. While the present premium structure appears to be unequal it is equitable and therefore fair.

Complaints have been made about the unfairness and inequality of automobile insurance rates in Ontario. It is true that rates for all drivers, young and old, male and female, with good or bad driving records are not equal. But although the rates are unequal, the present system of setting rates is the most equitable and so is the fairest.

Since 1982, claims for automobile accidents made on insurance companies totalled $72 million for the six year period. This represents a moderate jump in payments that insurance companies had to dish out as compared to the previous six year period. That money must come from somewhere. Indeed, it must come from the funds collected from insurance premiums paid by Ontario drivers. The simple rule is that anyone who drives a car must pay for automobile insurance. Anyone who has an accident can also make a claim on an insurance company.

A parallel can be drawn with the story of the people whose only source of food was their constant supply of Golden Stone Soup. According to the tale, people were each permitted to draw one bowlful of soup from the pot. In return, they were required to drop one golden stone back into the pot where the stone was magically transformed into more soup. In this way, there was always a steady and sufficient supply of food for the people. The cost of one bowlful of soup was one magic stone into the pot. In the same way, the cost of driving is one insurance policy.

It was soon discovered, however, that some people were drawing soup from the pot using larger bowls than everyone else, sometimes twice as large. Therefore, one bowlful of soup was not always equal to one stone. The rule was then changed whereby people pay in proportion to the amount of soup they take. Those who took more now also paid more.

In the insurance business, it was also discovered that while men and women filed the same number of accident claims, that is, everyone was drawing from the pot, the amount of the claims made by the male drivers was up to twice as high as the amount of the claims made by female drivers. In other words, male drivers were drawing up to twice as much from the insurance pot as female drivers, even when the age of the driver was considered. In setting automobile insurance rates, then, all drivers, like all bowlfuls of soup, cannot be considered equal.

The proof that supports maintaining the present system of setting automobile insurance rates is evident and cannot be ignored. While the present premium structure appears to be unequal, it is equitable and and therefore fair.

Appendix C

Student Recruitment Information

STUDENT CHARACTERISTICS STUDY

Information Sheet

Hello. My name is David Day and I am a graduate student in the Department of Psychology. As part of my doctoral dissertation, I am interested in examining characteristics, tastes, and preferences of undergraduate students at the University of Windsor. On the basis of the information that I will be asking you to provide, I will be able to develop a "personality profile" of Windsor students.

In order to construct this profile, I am asking you and other Windsor students to complete various paper-and-pencil questionnaires. Because of the number of questionnaires involved and because they involve a fair amount of concentration, the materials will be completed in two separate sessions.

In the first session, you will be asked to complete two questionnaires. One questionnaire asks for your views on a wide range of issues relevant to Canadian society. The second questionnaire is a general preference survey. The materials for the first session will take approximately 45 minutes to an hour to complete. In the second session, you will be asked to read several brief materials, rate them on a number of dimensions and then fill out several questionnaires. The second session will also take approximately 45 to 60 minutes to complete.

For the second session, I will be contacting you by telephone to arrange a time for you to complete these materials. This will be done about one month after you have completed the first set of materials.

For your participation you will be given two experimental credit points toward your final grade in this course, one point for each session.

Are there any questions?

Appendix D

Consent Form for Session 1

STUDENT CHARACTERISTICS STUDY

Consent Form

I _____ agree to participate in this
(Print your name in full)
study of university students' preferences and evaluations. I understand that all of the information I provide will be kept confidential and will not be revealed to anyone in a way which could identify me. I also understand that Mr. David Day or Dr. Shelagh Towson of the Psychology Department at the University of Windsor will be available to answer any questions I might have.

I understand that my responses to the materials completed in this study will be included in the data analysis and reported anonymously.

I understand that I have the right to request that any information relevant to me not be used and that I may withdraw from the study at any time.

I also understand that I will be contacted by telephone by the experimenter to arrange a time to complete the materials for the second session of this study.

_____ _____
Date Signature

_____ _____
Telephone Number Psychology Instructor's Name

Appendix E

Psycho-Epistemological Profile

STUDENT CHARACTERISTICS STUDY

General Preference Survey

Directions

For each of the following statements, you are to indicate your personal agreement or disagreement on the scale provided on the RED ANSWER SHEET. 'A' means complete disagreement with the statement, 'B' means moderate disagreement, 'C' means neutral, 'D' means moderate agreement, and 'E' means complete agreement.

Here is a sample question:

The Roman Empire fell because of moral degeneration of its rulers.

A	B	C	D	E
O	O	O	●	O

In this example, the person agrees with the statement, but not entirely, so they have filled in the 'D' -- moderate agreement.

Your personal preference alone is required. There are no right or wrong responses. **It is necessary**, however, **that you answer all of the questions.** Be sure to clearly mark the appropriate space for each question. Use a pencil and erase any extra marks. **Trust your first impression.** There is no time limit.

A	B	C	D	E
complete disagreement	moderate disagreement	neutral	moderate agreement	complete agreement

1. A good teacher is primarily one who has a sparkling entertaining delivery.
2. The thing most responsible for a child's fear of the dark is thinking of all sorts of things that could be "out there".
3. Most people who read a lot, know a lot because they come to know of the nature and function of the world around them.
4. Higher education should place a greater emphasis on fine arts and literature.
5. I would like to be a philosopher.
6. A subject I would like to study is biology.
7. In choosing a job I would look for one which offered opportunity for experimentation and observation.
8. The Bible is still a best seller today because it provides meaningful accounts of several important eras in religious history.
9. Our understanding of the meaning of life has been furthered most by art and literature.
10. More people are in church today than ever before because they want to see and hear for themselves what ministers have to say.
11. It is of primary importance for parents to be consistent in their ideas and plans regarding their children.
12. I would choose the following topic for an essay: The Artist in an Age of Science.
13. I feel most at home in a culture in which people can freely discuss their philosophy of life.
14. Responsibility among men requires an honest appraisal of situations where irresponsibility has transpired.
15. A good driver is observant.
16. When people are arguing a question from two different points of view, I would say that the argument should be resolved by actual observation of the debated situation.
17. I would like to visit a library.
18. If I were visiting India, I would be primarily interested in understanding the basis for their way of life.
19. Human morality is molded primarily by an individual's conscious analysis of right and wrong.
20. A good indicator of decay in a nation is a decline of interest in the arts.
21. My intellect has been developed most by learning methods of observation and experimentation.

A	B	C	D	E
complete disagreement	moderate disagreement	neutral	moderate agreement	complete agreement

22. The prime function of a university is to teach principles of research and discovery.
23. A good driver is even tempered.
24. If I am in a contest, I try to win by following a pre-determined plan.
25. I would like to have been Shakespeare.
26. Our understanding of the meaning of life has been furthered most by mathematics.
27. I like to think of myself as a considerate person.
28. I would very much like to have written Darwin's "The Origin of Species".
29. When visiting a new area, I first try to see as much as I possibly can.
30. My intellect has been developed most by gaining insightful self knowledge.
31. I would be very disturbed if accused of being insensitive to the needs of others.
32. The kind of reading which interests me most is that which creates new insights.
33. The greatest evil inherent in a totalitarian regime is alienation of human relationships.
34. Most atheists are disturbed by the absence of factual proof of the existence of God.
35. In choosing a job I would look for one which offered the opportunity to use imagination.
36. In my leisure I would most often like to enjoy some form of art, music, or literature.
37. The kind of reading which interests me most is that which stimulates critical thought.
38. I prefer to associate with people who are spontaneous.
39. In my leisure I would like to play chess or bridge.
40. Most people who read a lot, know a lot because they develop an awareness and sensitivity through their reading.
41. When visiting a new area, I first pause to try to get a "feel" for the place.
42. Many T.V. programs lack sensitivity.
43. I like to think of myself as observant.
44. Happiness is largely due to sensitivity.

A	B	C	D	E
complete disagreement	moderate disagreement	neutral	moderate agreement	complete agreement

45. I would be very disturbed if accused of being inaccurate or biased in my observations.
46. A good teacher is primarily one who helps his students develop their powers of reasoning.
47. I would like to be a novelist.
48. The greatest evil inherent in a totalitarian regime are restrictions of thought and criticism.
49. Most people are in church today than ever before because theologians are beginning to meet the minds of the educated people.
50. The most valuable person on a scientific research team is one who is gifted at critical analysis.
51. Many T.V. programs lack organization and coherence.
52. I like country living because it gives you a chance to see nature first hand.
53. Upon election to Parliament I would endorse steps to encourage an interest in the arts.
54. It is important for parents to be familiar with theories of child psychology.
55. The prime function of a university is to train the minds of the capable.
56. I would like to have written Hamlet.
57. Higher education should place a greater emphasis on mathematics and logic.
58. The kind of reading which interests me most is that which is essentially true to life.
59. A subject I would like to study is art.
60. I feel most at home in a culture in which realism and objectivity are highly valued.
61. The prime function of a university is to develop a sensitivity to life.
62. When playing bridge or similar games I try to think my strategy through before playing.
63. If I were visiting India, I would be primarily interested in noting the actual evidence of cultural change.
64. When buying new clothes I look for the best possible buy.
65. I would like to visit an art gallery.
66. When a child is seriously ill, a good mother will remain calm and reasonable.

A	B	C	D	E
complete disagreement	moderate disagreement	neutral	moderate agreement	complete agreement

67. I prefer to associate with people who stay in close contact with the facts of life.

68. Many T.V. programs are based on inadequate background research.

69. Higher education should place greater emphasis on natural science.

70. I like to think of myself as logical.

71. When people are arguing a question from two different points of view, I would say that each should endeavor to assess honestly his own attitude and bias before arguing further.

72. When reading an historical novel, I am most interested in the factual accuracy found in the novel.

73. The greatest evil inherent in a totalitarian regime is distortion of the facts.

74. A good driver is considerate.

75. Our understanding of the meaning of life has been furthered most by biology.

76. I would like to have been Galileo.

77. My children must possess the characteristics of sensitivity.

78. I would like to be a Geologist.

79. A good indicator of decay in a nation is an increase in the sale of movie magazines over news publications.

80. I would be very disturbed if accused of being illogical in my beliefs.

81. Most great scientific discoveries come about by thinking about a phenomenon in a new way.

82. I feel most at home in a culture in which the expression of creative talent is encouraged.

83. In choosing a job I would look for one which offered a specific intellectual challenge.

84. When visiting a new area, I first plan a course of action to guide my visit.

85. A good teacher is primarily one who is able to discover what works in class and is able to use it.

86. Most great scientific discoveries come about by careful observation of the phenomena in question.

87. Most people who read a lot, know a lot because they acquire an intellectual proficiency through the sifting of ideas.

88. I would like to visit a botanical garden or zoo.

A	B	C	D	E
complete disagreement	moderate disagreement	neutral	moderate agreement	complete agreement

89. When reading an historical novel, I am most interested in the subtleties of the personalities described.

90. When playing bridge or similar games I play the game by following spontaneous cues.

Appendix F

Initial Attitude Survey

STUDENT CHARACTERISTICS STUDY

Attitude Survey

Instructions

I would like to obtain an indication of your attitudes on a number of issues of importance to university students and Canadians in general. There are no right or wrong answers. Some people feel one way about these issues while other people hold a different attitude. I would like to know what you think about these issues.

Please indicate your responses to the following statements by filling in one of the letters ON THE BLUE ANSWER SHEET corresponding to the scale below each statement.

PLEASE DO NOT USE THE H, I OR J CATEGORIES
AND DO NOT PUT ANY OTHER MARKS ON THE ANSWER SHEET.

IT IS VERY IMPORTANT THAT YOU RESPOND TO EVERY ITEM.

(1) I do not approve of artificial means of birth control because of the health risks involved.

```
      A----B----C----D----E----F----G
Strongly          Neutral          Strongly
Disagree                             Agree
```

(2) I think that computers and other technological advances have helped to improve our lives.

```
      A----B----C----D----E----F----G
Strongly          Neutral          Strongly
Disagree                             Agree
```

(3) Some contraceptive methods injure women's health.

```
      A----B----C----D----E----F----G
Strongly          Neutral          Strongly
Disagree                             Agree
```

(4) Fraternity membership at university usually results in severe limitations on the originality and productivity of those who join them.

```
      A----B----C----D----E----F----G
Strongly          Neutral          Strongly
Disagree                             Agree
```

(5) There is no good reason to make university course evaluations available to students.

```
      A----B----C----D----E----F----G
Strongly          Neutral          Strongly
Disagree                             Agree
```

(6) Poverty is chiefly the result of injustice in the distribution of wealth.

A----B----C----D----E----F----G
Strongly Disagree — Neutral — Strongly Agree

(7) Without sweeping changes in our economic system, little progress can be made in the solution of social problems.

A----B----C----D----E----F----G
Strongly Disagree — Neutral — Strongly Agree

(8) I do not feel I have control over what I do when I use a computer.

A----B----C----D----E----F----G
Strongly Disagree — Neutral — Strongly Agree

(9) I feel that having a computer would help me with my work.

A----B----C----D----E----F----G
Strongly Disagree — Neutral — Strongly Agree

(10) Some governmental or judicial committee is needed to keep obscene literature in check.

A----B----C----D----E----F----G
Strongly Disagree — Neutral — Strongly Agree

(11) Abortions should be made easily available to all women.

```
        A----B----C----D----E----F----G
Strongly          Neutral          Strongly
Disagree                             Agree
```

(12) University fraternities provide important social opportunities for many people.

```
        A----B----C----D----E----F----G
Strongly          Neutral          Strongly
Disagree                             Agree
```

(13) Local residents have good reasons to resist the location of mental health facilities in their neighbourhoods.

```
        A----B----C----D----E----F----G
Strongly          Neutral          Strongly
Disagree                             Agree
```

(14) Birth control is morally wrong in spite of its possible benefits.

```
        A----B----C----D----E----F----G
Strongly          Neutral          Strongly
Disagree                             Agree
```

(15) Human progress demands free speech and a free press.

```
        A----B----C----D----E----F----G
Strongly          Neutral          Strongly
Disagree                             Agree
```

(16) Birth control for the purpose of family planning contributes to the happiness of a marriage.

```
        A----B----C----D----E----F----G
Strongly          Neutral          Strongly
Disagree                            Agree
```

(17) I favour different automobile insurance rates for men and for women.

```
        A----B----C----D----E----F----G
Strongly          Neutral          Strongly
Disagree                            Agree
```

(18) Mental health facilities should be kept out of residential neighbourhoods.

```
        A----B----C----D----E----F----G
Strongly          Neutral          Strongly
Disagree                            Agree
```

(19) The question of whether university fraternities exist or not is petty and unimportant.

```
        A----B----C----D----E----F----G
Strongly          Neutral          Strongly
Disagree                            Agree
```

(20) University course evaluations should not be made available to students under any circumstances.

```
        A----B----C----D----E----F----G
Strongly          Neutral          Strongly
Disagree                            Agree
```

(21) Abortion is acceptable to avoid bringing unwanted children into an overpopulated world.

A----B----C----D----E----F----G
Strongly Disagree — Neutral — Strongly Agree

(22) I feel that parents should give their children correct sex information to protect them from false and harmful teaching.

A----B----C----D----E----F----G
Strongly Disagree — Neutral — Strongly Agree

(23) Automobile insurance rates that are based on gender represent a form of discrimination.

A----B----C----D----E----F----G
Strongly Disagree — Neutral — Strongly Agree

(24) Large incomes should be taxed more than they are now.

A----B----C----D----E----F----G
Strongly Disagree — Neutral — Strongly Agree

(25) I favour student access to previous university course evaluations.

A----B----C----D----E----F----G
Strongly Disagree — Neutral — Strongly Agree

(26) Whenever I use something that is computerized, I am afraid I will break it.

A----B----C----D----E----F----G
Strongly Disagree — Neutral — Strongly Agree

(27) I feel that it is highly desirable for parents to give children all the information that the parents have about sex.

A----B----C----D----E----F----G
Strongly Disagree — Neutral — Strongly Agree

(28) I do not like using computers because I cannot see how the work is being done.

A----B----C----D----E----F----G
Strongly Disagree — Neutral — Strongly Agree

(29) Morality varies so much with different places and times that any form of censorship has no place in society today.

A----B----C----D----E----F----G
Strongly Disagree — Neutral — Strongly Agree

(30) I feel that parents are the only ones who can give their children the right attitude regarding information about sexual matters.

A----B----C----D----E----F----G
Strongly Disagree — Neutral — Strongly Agree

(31) Censorship of sexual or violent material is needed because people are unable to judge for themselves.

```
        A----B----C----D----E----F----G
Strongly          Neutral          Strongly
Disagree                             Agree
```

(32) An abortion is O.K. if the fetus is known to be deformed.

```
        A----B----C----D----E----F----G
Strongly          Neutral          Strongly
Disagree                             Agree
```

(33) I believe that measures should be taken to bring automobile insurance rates for men and women to a more equal level.

```
        A----B----C----D----E----F----G
Strongly          Neutral          Strongly
Disagree                             Agree
```

(34) Locating mental health facilities in residential neighbourhoods does not endanger local residents.

```
        A----B----C----D----E----F----G
Strongly          Neutral          Strongly
Disagree                             Agree
```

(35) Nobody has the right to dictate to me what I can read.

```
        A----B----C----D----E----F----G
Strongly          Neutral          Strongly
Disagree                             Agree
```

(36) The sooner university fraternities cease to exist the better.

A----B----C----D----E----F----G
Strongly Disagree — Neutral — Strongly Agree

(37) I feel university students should have access to course evaluations to help them make decisions about what courses to take.

A----B----C----D----E----F----G
Strongly Disagree — Neutral — Strongly Agree

(38) I feel that if children receive sex information at too early an age, it will encourage them to engage in sex prematurely.

A----B----C----D----E----F----G
Strongly Disagree — Neutral — Strongly Agree

(39) Men and women drivers should be charged approximately the same rates for automobile insurance.

A----B----C----D----E----F----G
Strongly Disagree — Neutral — Strongly Agree

(40) As far as possible, mental health services should be provided through community-based rather than hospital-based facilities.

A----B----C----D----E----F----G
Strongly Disagree — Neutral — Strongly Agree

(41) Any woman should be entitled to an abortion if she wants one.

```
        A----B----C----D----E----F----G
Strongly          Neutral          Strongly
Disagree                             Agree
```

(42) The government ought to provide financial support to those who can't find work.

```
        A----B----C----D----E----F----G
Strongly          Neutral          Strongly
Disagree                             Agree
```

(43) People should be free to do whatever they wish about birth control.

```
        A----B----C----D----E----F----G
Strongly          Neutral          Strongly
Disagree                             Agree
```

(44) I feel that different automobile insurance rates for men and for women are acceptable given that there are far more male drivers on the road than female drivers.

```
        A----B----C----D----E----F----G
Strongly          Neutral          Strongly
Disagree                             Agree
```

(45) I believe that children will acquire sex information soon enough without their parents giving it to them.

```
        A----B----C----D----E----F----G
Strongly          Neutral          Strongly
Disagree                             Agree
```

(46) University students should be entitled to have access to previous course evaluations.

A----B----C----D----E----F----G
Strongly Disagree — Neutral — Strongly Agree

(47) I oppose all abortions under any circumstances.

A----B----C----D----E----F----G
Strongly Disagree — Neutral — Strongly Agree

(48) The best therapy for many mental patients is to be part of a normal community.

A----B----C----D----E----F----G
Strongly Disagree — Neutral — Strongly Agree

(49) The non-fraternity student is missing one of the most important aspects of university life.

A----B----C----D----E----F----G
Strongly Disagree — Neutral — Strongly Agree

(50) A person should be allowed to keep as large an income as he or she can accumulate.

A----B----C----D----E----F----G
Strongly Disagree — Neutral — Strongly Agree

Appendix G

Demographic Questionnaire

STUDENT CHARACTERISTICS STUDY

Demographics Questionnaire

The following information is required for statistical purposes.

Please indicate your

Age: _____ Sex: _____

Marital Status: _____

Academic Major: _____

Thank you for your participation.

Appendix H

Information Sheet for Session 2

Introduction

Although the mass media constitute an important source of information for the general public about the daily events of the world, people respond differently to media information. Some people respond favourably to the things they see and read in the media, while other people respond less favourably.

As part of the Student Characteristics Study, I would like you to rate two media-like editorials. The editorials you will be asked to read are like those you might find in a newspaper or magazine. I would like to know how <u>you</u> respond to this type of information.

You will be asked to rate the editorials in a number of ways, for example, easy to read, well written, and so forth.

You will first read one editorial, complete the rating forms for it, read the second editorial and complete a second set of rating forms. After that you will complete several additional questionnaires.

Please be as honest as possible.

If you have any questions please ask them now.

Appendix I

Consent Form for Session 2

Consent Form

I _____ agree to participate in Session 2
(Print your name in full)
of this study of university students' preferences and evaluations. I understand that all of the information I provide will be kept confidential and will not be revealed to anyone in a way which could identify me. I also understand that Mr. David Day or Dr. Shelagh Towson of the Psychology Department at the University of Windsor will be available to answer any questions I might have.

I understand that my responses to the materials completed in this study will be included in the data analysis and reported anonymously.

I understand that I have the right to request that any information relevant to me not be used and that I may withdraw from the study at any time.

_____ _____
Date Signature

Appendix J

Editorial Rating Form

STUDENT CHARACTERISTICS STUDY

Editorial Rating Form

Please complete the following questionnaire by CIRCLING the number on each scale that best represents your response.

DO NOT PUT YOUR CIRCLE IN THE SPACE BETWEEN THE NUMBERS.

How persuasive is the editorial?

```
      1-----2-----3-----4-----5-----6-----7
not at all                              very
persuasive                           persuasive
```

How interesting is the editorial?

```
      1-----2-----3-----4-----5-----6-----7
not at all                              very
interesting                         interesting
```

How informative is the editorial?

```
      1-----2-----3-----4-----5-----6-----7
not at all                              very
informative                         informative
```

How effectively does the editorial make its point?

```
      1-----2-----3-----4-----5-----6-----7
not at all                              very
effectively                         effectively
```

How easy is it to think about the message arguments?

```
      1-----2-----3-----4-----5-----6-----7
    very                                 very
  difficult                              easy
```

How easy is it to make judgements about the message arguments?

```
      1-----2-----3-----4-----5-----6-----7
    very                                 very
  difficult                              easy
```

How involved were you while reading this editorial?

```
      1-----2-----3-----4-----5-----6-----7
not at all                             very
 involved                           involved
```

How convincing are the arguments presented in the editorial?

```
      1-----2-----3-----4-----5-----6-----7
not at all                             very
convincing                         convincing
```

On the following scale how would you rate the overall quality of this editorial?

```
      1-----2-----3-----4-----5-----6-----7
very poor                           excellent
```

How strongly do you feel about the issue you have just read about?

```
        1-----2-----3-----4-----5-----6-----7
not at all                                very
 strongly                              strongly
```

Some people are very certain about their feelings on the issue you have just read about. Other people see the issue as a difficult one to reach a decision on. Would you say that you are more like those who are very certain, or that you are more like those who see this issue as a difficult one to reach a decision on?

```
        1-----2-----3-----4-----5-----6-----7
difficult to                           easy to
reach decision                    reach decision
```

Appendix K

Thought Listing Task - Instructions and Response Sheet

STUDENT CHARACTERISTICS STUDY

Listing Your Thoughts

Instructions

I would like to know what you were thinking while you were reading the editorial. You might have had ideas that were favourable or unfavourable to the content of the message, relevant or irrelevant to the content. Any case is fine; simply list what it was that you were thinking while reading the editorial.

The next few pages contain the forms I have prepared for you to use to record your thoughts and ideas. Simply write down the thoughts you had while reading the editorial in the boxes on the following sheets. Please put only one idea or thought in a box. You should try to record only those ideas that you were thinking during the presentation of the editorial. Please state your thoughts and ideas as concisely as possible, a phrase is sufficient. IGNORE SPELLING, GRAMMAR AND PUNCTUATION.

You will be given 3 minutes to write your thoughts. I have deliberately provided more space than I think people will need to ensure that everyone will have plenty of room to write the ideas they had during the presentation of the editorial. Please be completely honest and list all of the thoughts you had.

DO NOT TURN TO THE NEXT PAGE UNTIL INSTRUCTED TO DO SO.

PLEASE LOOK UP TO INDICATE THAT YOU HAVE FINISHED READING THESE INSTRUCTIONS.

Please list one thought per box.

_____

_____

_____

_____

_____

_____

_____

_____

Appendix L

Posttest Attitude Survey

STUDENT CHARACTERISTICS STUDY

Attitude Survey

Instructions

Because your own views on the two issues you have just read about may have influenced your judgements of the editorials, I would like to obtain a measure of your attitudes at this time. There are no right or wrong answers. Some people feel one way about these issues while other people hold a different attitude. I would like to know what you think about these issues.

Please indicate your responses to the following statements by circling one of the numbers on the scale below each statement.

BE SURE NOT TO CIRCLE BETWEEN THE NUMBERS ON THE SCALE.

IT IS VERY IMPORTANT THAT YOU RESPOND TO EVERY STATEMENT.

(1) I favour student access to previous university course evaluations.

1-----2-----3-----4-----5-----6-----7
Strongly Disagree — Neutral — Strongly Agree

(2) I feel university students should have access to course evaluations to help them make decisions about what courses to take.

1-----2-----3-----4-----5-----6-----7
Strongly Disagree — Neutral — Strongly Agree

(3) There is no good reason to make university course evaluations available to students.

1-----2-----3-----4-----5-----6-----7
Strongly Disagree — Neutral — Strongly Agree

(4) University students should be entitled to have access to previous course evaluations.

1-----2-----3-----4-----5-----6-----7
Strongly Disagree — Neutral — Strongly Agree

(5) University course evaluations should not be made available to students under any circumstances.

1-----2-----3-----4-----5-----6-----7
Strongly Disagree — Neutral — Strongly Agree

(6) I believe that measures should be taken to bring automobile insurance rates for men and women to a more equal level.

```
      1-----2-----3-----4-----5-----6-----7
Strongly                Neutral              Strongly
Disagree                                       Agree
```

(7) I favour different automobile insurance rates for men and for women.

```
      1-----2-----3-----4-----5-----6-----7
Strongly                Neutral              Strongly
Disagree                                       Agree
```

(8) Automobile insurance rates that are based on gender represent a form of discrimination.

```
      1-----2-----3-----4-----5-----6-----7
Strongly                Neutral              Strongly
Disagree                                       Agree
```

(9) Men and women drivers should be charged approximately the same rates for automobile insurance.

```
      1-----2-----3-----4-----5-----6-----7
Strongly                Neutral              Strongly
Disagree                                       Agree
```

(10) I feel that different insurance rates for men and for women are acceptable given that there are far more male drivers on the road than female drivers.

```
      1-----2-----3-----4-----5-----6-----7
Strongly                Neutral              Strongly
Disagree                                       Agree
```

Appendix M

Message Style Salience Check

Please answer the following questions.

(1) In general terms, I would describe the information presented in the **first editorial** as (check one):

(a) Empirical _____
(presenting information that uses fact-based data and empirically derived findings to provide support for the message arguments.

(b) Rational _____
(presenting information that uses logically coherent and cohesive arguments and systematic reasoning to provide support for the message arguments).

(c) Metaphorical _____
(presenting information that uses metaphors, metaphorical expressions and analogies to illustrate the main points and provide support for the message arguments).

(2) The main argument presented in the **first editorial** is:

_____

_____

(3) In general terms, I would describe the information presented in the **second editorial** as (check one):

(a) Empirical _____

(b) Rational _____

(c) Metaphorical _____

(4) The main argument presented in the **second editorial** is:

_____

_____

Appendix N

Personal Relevance

Although not included as an independent variable in the present study, the personal involvement or personal relevance of an issue has been found to have a direct impact on one's cognitive appraisal of a persuasive message and on subsequent attitudes toward that issue. Research has found that increasing the personal relevance of an issue tends to increase message-relevant thinking and thereby invokes central route (Petty & Cacioppo, 1986a) or systematic (Chaiken, 1987) processing of information. This chain of events would lead to greater attitude change according to self-persuasion explanations to the attitude change process (Petty & Cacciopo, 1981).

It would be of interest to examine the relationship between personal involvement and subjects' responses to the editorials, in the present study, in light of this research. In order to achieve this objective, subjects were classified into two groups, high involvement and low involvement, according to a median split on the Involvement Rating Scale. Ninety-one subjects were in the high involvement group (47.2%, M = 5.7) and 102 subjects were in the low involvement group (52.8%, M = 3.9). Analyses included four-way analyses of variance (style X issue X trial X involvement) with the Evaluation Scale and proportion of supportive to total thoughts as dependent variables, analyses of covariance on posttest attitudes, and hierarchical regression analyses with level of involvement entered as a "dummy" variable (coded as 0 = Low Involvement and 1 = High Involvement).

The results of the four-way analyses of variance indicated that, as expected, subjects in the high involvement condition rated the editorials more positively on the Evaluation Scale (M = 4.9) than subjects in the low involvement condition (M = 3.8), $F(1,370) = 84.55$, $p < .001$. Subjects in the high involvement group also generated significantly more supportive thoughts (M = .34) than subjects in the low involvement condition (M = .25), $F(1,370) = 5.10$, $p < .03$.

In addition, a significant three-way interaction between issue, style, and involvement was obtained for the Evaluation Scale, $F(1,370) = 5.53$, $p < .02$, and the supportive thought measure, $F(1,370) = 6.56$, $p < .01$. These effects indicated that across the high and low involvement conditions, subjects, as expected, responded more favourably to the empirical than metaphorical editorials, particularly on the issue of auto insurance.

The results of the analyses of covariance indicated that level of involvement had no effect on experimental subjects' posttest attitude scores. The regression analyses confirmed the findings of the ANOVAs and ANCOVAs concerning the effect of level of involvement on these dependent measures. The findings, in general, support the results of the analyses reported in the present study. Moreover, the pattern of results confirmed the contention made in the present study that the Evaluation Scale ratings and thought listing measure may be conceptualized as cognitive, as opposed to affective, responses to the editorials. As Sorrentino et al. (1988) noted, high personal relevance tends to lead to greater cognitive processing of information. The results of the present set of analyses found that subjects in the high personal involvement condition responded more favourably to the editorials than subjects in the low involvement condition, particularly in response to the empirical as compared to the metaphorical editorials. This would suggest that message style (as a main effect rather than in an interaction term with personal epistemic style) leads to systematic rather than heuristic processing of information.

However, contrary to expectations, level of involvement did not affect posttest attitudes for either issue. In other words, subjects in the high involvement group did not change their attitudes more than subjects in the low involvement condition. This

effect may be due to the *type* of personal involvement observed in the present study. Recent formulations of the involvement variable (Johnson & Eagly, 1989, 1990) indicate that increasing levels of *value-relevant*, as opposed to *outcome-relevant*, involvement "inhibit attitude change, regardless of the quality of the message arguments" (Tesser & Shaffer, 1990, p.509). Clearly, greater attention needs to be given to understanding and delineating the role of personal relevance on information processing and attitude change. The results of the present set of analyses suggest that personal relevance does affect cognitive processing of the message arguments but not posttest attitudes.

VITA AUCTORIS

David Day was born in Toronto, Ontario on March 26, 1957 to Sam and Reva Day. He completed his Senior Matriculation in June 1976 at Sir Sandford Fleming Secondary School. In June 1980 he graduated from York University with a Bachelor of Arts (Honours) Degree in psychology. In September, 1982 he enroled in the Doctoral programme in Applied Social Psychology at the University of Windsor. The Master's Degree was obtained in November, 1984 and the Doctor of Philosophy Degree was obtained in 1990. He is currently employed as the Director of Research and Evaluation at Earlscourt Child and Family Centre in Toronto, Ontario.

David Day is married to the former Jean Szkiba.