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The Proposition-Probability Model of Argument Structure and Message Acceptance

CHARLES S. ARENI*

Drawing on aspects of logic, classical rhetoric, psycholinguistics, social psychology, and probability theory, this article develops the proposition-probability model (PPM) of argument structure and message acceptance in which verbal arguments are decomposed into arrays of three types of propositions: (a) product claims, (b) data supporting those claims, and (c) conditional rules specifying the relationship between the data and the claims. The propositions making up a given argument can be stated, entailed, presupposed, conversationally implicated, and/or linguistically signaled. Message acceptance is based on the formation and/or modification of beliefs corresponding to the propositions in a given argument. For purposes of making precise predictions regarding the effectiveness of various argument structures, these beliefs are represented in terms of probabilities associated with each proposition. Several postulates are derived from the PPM, and directions for future research on communication and persuasion are discussed.

Verbal arguments are persuasive messages presented in prose and made up of at least two related propositions, one representing a fundamental claim and the second supporting that claim in some way (Richards 1978; Toulmin 1958). Despite the prevalence of verbal arguments in marketing communications, the academic literature has had surprisingly little to say about why some arguments are more effective than others (McGuire 2000). This is, perhaps, because academic research on persuasion has adopted a limited number of theoretical paradigms over the last three decades, and in each of these, questions as to the underlying characteristics of verbal arguments have generally been given secondary status (Crowley and Hoyer 1994).

In the 1970s, research on advertising and persuasion was largely dominated by multiattribute attitude models (Lutz 1975; Wilkie and Pessemier 1973), wherein persuasion was cast in terms of relationships among message recipients' subjective beliefs and their overall attitude toward the product (Ajzen and Fishbein 1980; Lutz 1975). The usefulness of this perspective for constructing persuasive arguments was limited because the idiosyncratic beliefs of innumerable audience members could not be known in advance much less incorporated into a single message (Eagly and Chaiken 1993; Munch, Boller, and Swasy 1993). Moreover, even if mutual target beliefs could be identified (Fishbein and Ajzen 1975; Lutz 1975), the multiattribute approach had little to

say about how to construct arguments that would compel audiences to accept those beliefs.

The 1980s saw the emergence of the elaboration likelihood model (ELM) of persuasion (Petty, Cacioppo, and Schumann 1983). The ELM adopted an empirical definition of argument quality; an argument qualified as strong (vs. weak) when it elicited predominantly favorable (vs. unfavorable) cognitive responses in pretest experiments (Petty and Cacioppo 1986). Although this approach proved beneficial for identifying conditions under which persuasion is driven by message recipients' scrutiny of relevant information, it was less useful for specifying the underlying characteristics of effective arguments (Eagly and Chaiken 1993).

More recently, researchers conducting semiotic and textual analyses of advertising content have explored the effects of connotative meaning (Mick 1986; Mick and Politi 1989), figurative language (McQuarrie and Mick 1996; Stern 1996), and visual rhetoric (McQuarrie and Mick 1999; Scott 1994a, 1994b). These perspectives have yielded valuable insights regarding the verbal and visual devices used to capture attention, entertain, and ultimately, persuade the consumer. But they are less relevant to the study of argument structure because they address the content of individual propositions rather than the relationships among two or more propositions presented in support of a fundamental claim (Leech 1974; McQuarrie and Mick 1996). However, McQuarrie and Mick's (1996) pluralistic approach to the study of figurative language is noteworthy because it combines aspects of classical rhetoric (e.g., anaphora, hyperbole, irony, etc.) with processes and outcomes typically associated with the information-processing paradigm of consumer behavior (e.g., attention, memory, attitude change, etc.). The

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research discussed below also integrates classical rhetoric and information-processing concepts to develop the proposition-probability model (PPM) of argument structure and message acceptance.

The PPM borrows from classical rhetoric, logic, probability theory, social psychology, psycholinguistics, and sociolinguistics to develop a comprehensive model of argument structure. Verbal arguments in advertising are reduced to arrays of three basic types of propositions—claims, data, and conditional rules—and message acceptance is determined by subjective beliefs corresponding to the propositions in a given argument. In order to derive mathematically precise predictions regarding the effects of argument structure on message acceptance, subjective beliefs are cast in terms of probabilistic relationships among the propositions making up the argument. To illustrate the PPM and establish its relevance to verbal arguments in advertising, several ads from the following magazines are analyzed: *Good Medicine* (August 2000), *Good Taste* (March 2000), *Mother & Baby* (September/October 2000), *Woman’s Day* (July 17, 2000), *Time* (July 17, 2000), *Who* (July 17, 2000), the *Economist* (December 31, 1999), *Life* (January 2000), and *Rolling Stone* (August 2000). These titles are not necessarily representative of the population of Australian magazines; they are simply a convenience sample that allows the PPM to be applied to advertisements for a wide range of goods and services. The PPM, shown graphically in figure 1, is the foundation for several postulates regarding the effects of various argument structures on message acceptance.

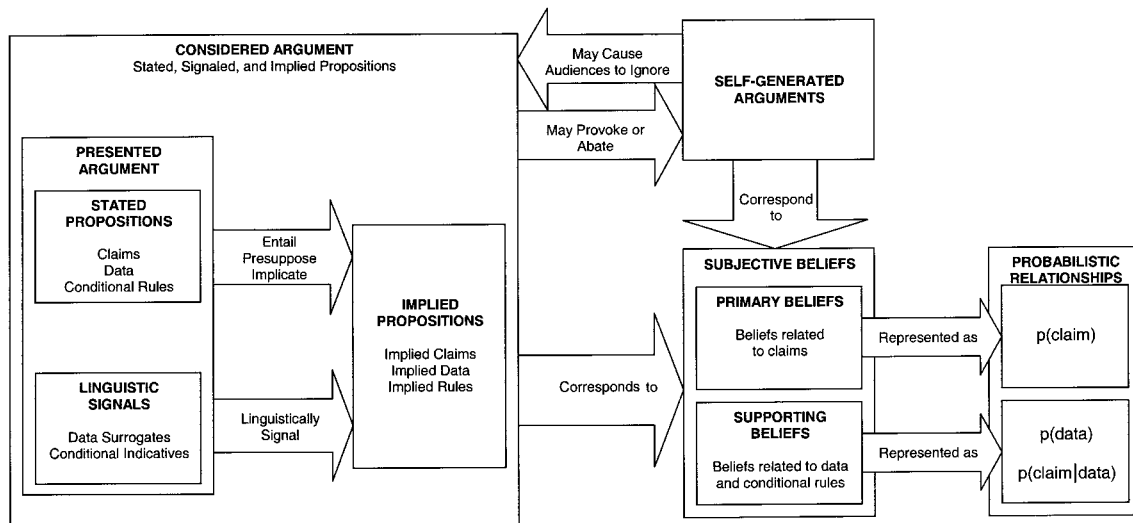
THE PROPOSITION-PROBABILITY MODEL

Before delving into the details of the PPM, it may be helpful to present a brief overview, followed by an illustrative example. As shown in figure 1, the PPM represents verbal arguments in terms of stated propositions, linguistic signals, and implied propositions corresponding to (a) claims—the fundamental proposition that the advertiser would like message recipients to accept as true; (b) data—evidence presented to support the claim; or (c) conditional rules—propositions explaining how the data are related to the claim. The presented argument comprises what is actually stated in the advertising copy; it consists of stated propositions and linguistic signals. The considered argument includes the presented argument plus all propositions entailed, presupposed, conversationally implicated, and/or linguistically signaled by the presented argument. Figure 1 depicts each category of inference as a path between the presented argument and the implied propositions in the considered argument.

Within the PPM, message acceptance can be influenced by self-generated arguments as well as by the presented argument. As depicted in figure 1, the PPM identifies several aspects of argument structure that either provoke or reduce the production of self-generated arguments. It also specifies conditions under which self-generated arguments are likely to dominate the presented argument in driving the acceptance of key claims. Message acceptance is based on the formation and/or modification of beliefs corresponding to

FIGURE 1

THE PROPOSITION-PROBABILITY MODEL



the propositions making up a given argument. The assumption is that message recipients view advertising claims as being probable, likely, possible, very unlikely, hard to believe, and so on, rather than absolutely true or false. In order to derive mathematically rigorous predictions, the PPM represents these subjective beliefs in terms of probabilities corresponding to the propositions making up a given argument.

To illustrate the PPM, consider the copy from a magazine advertisement for Dingo Blue Long Distance service, which states, "And, since we're an on-line company with lower overheads, we'll give you greater savings across the board." This copy states three propositions: (1) Dingo Blue is an on-line company, (2) Dingo Blue offers greater savings than something (unspecified), and (3) Dingo Blue has lower overhead costs than something (unspecified). The copy also implies two more propositions critical for completing the argument: (4) the on-line status is a basis for offering greater savings, and (5) the lower overhead costs are a basis for offering greater savings. These propositions are related conceptually as the fundamental claim (i.e., "greater savings"), data supporting that claim (i.e., "on-line company" and "lower overhead costs"), and conditional rules linking the claim to the data (i.e., "savings due to on-line status" and "savings due to lower costs").

The first two stated propositions are obvious enough, but the third proposition is a downgraded proposition (Leech 1966, 1974); the statement "we are an on-line company," which entails that "we are a company," must be applied to the phrase "with lower overhead costs," in order to create the full proposition. The last two propositions, both implied conditional rules, are conversationally implicated by the claim and data. Moreover, the linguistic signal "since" further invites message recipients to infer the conditional rules by indicating that the data are reasons for accepting the claim (Schiffrin 1987). Note that the relationship between the first (i.e., "on-line") and second (i.e., "lower costs") proposition is ambiguous. Message recipients may infer the conditional rule that on-line companies have lower infrastructure costs than other companies, but this rule is not stated, entailed, conversationally implicated, or linguistically signaled. Moreover, it is not necessary to create a cogent argument, so it has no obvious status within the PPM despite its intuitive appeal.

Ignoring for the moment the ambiguity of the unspecified comparative (i.e., greater savings than other companies?), message acceptance would be determined by the probability associated with the primary belief, "Dingo Blue offers greater savings." This is not to say that message recipients consciously assign probabilities to advertising claims. Rather, they form some notion that claims are definitely, probably, possibly, unlikely, and so on, to be true (Fishbein and Ajzen 1981; Rosenberg 1974), and these subjective beliefs can be represented along a probability continuum for purposes of making precise predictions about the effects of various argument structures on message acceptance (McGuire 1960; Wyer and Goldberg 1970). Along these lines, it would be important to take into account the prob-

abilities associated with the supporting beliefs—"Dingo Blue is an on-line company," "Dingo Blue has lower overhead costs," "On-line companies offer greater savings," and "Companies with lower costs offer greater savings"—in order to better understand the probability associated with the ultimate claim. The PPM is now reviewed in detail and several postulates, summarized in figure 2, are derived from the model.

PROBABILISTIC REPRESENTATIONS OF VERBAL ARGUMENTS

According to the PPM, verbal arguments consist of stated and implied propositions corresponding to claims, data, and conditional rules linking the data to the claim. Within this basic framework, arguments can be represented in terms of probability theory (McGuire 1960; Wyer and Goldberg 1970):

$$p(\text{claim}) = p(\text{claim} \mid \text{data})p(\text{data}) + p(\text{claim} \mid \text{not data})p(\text{not data}), \quad (1)$$

where $p(\text{data}) + p(\text{not data}) = 1$.

That is, the subjective probability the claim is true (i.e., $p(\text{claim})$) can be derived from the probability associated with the data (i.e., $p(\text{data})$) multiplied by the conditional probability linking the data to the claim (i.e., $p(\text{claim} \mid \text{data})$). In an effective argument, the probabilities associated with the rule and the data are close to or equal to one; or in other words, the communicator presents data that are likely to be accepted by message recipients and that strongly imply the claim must also be true. An argument is weak or ineffective when the data supporting the claim are not believable (i.e., $p(\text{data}) < p(\text{not data})$), and/or when the data are irrelevant, or even contrary, to the claim being made (i.e., $p(\text{claim} \mid \text{data}) < p(\text{claim} \mid \text{not data})$).

As noted earlier, the claim could be accepted for innumerable reasons not reflected in the presented argument (Hunt 1991); that is, the claim can be accepted even if the argument is rejected. Self-generated reasons for accepting the claim independently of the presented argument are captured by the second term (i.e., $p(\text{claim} \mid \text{not data})p(\text{not data})$). Figure 1 depicts this as path between self-generated arguments and the primary and supporting beliefs. However, the PPM is primarily concerned with representing the underlying structure of presented and considered arguments. So the second term, though vital for predicting the probability ultimately associated with the claim, is omitted from subsequent mathematical representations of the argument structures typically found in advertising.

Mathematically, the probability corresponding to the claim is constrained by the terms on the right side of equation 1; it follows exactly from these terms. But two assumptions underlying the PPM are that presented arguments change message recipients' preexposure beliefs, and that message recipients are not necessarily logical in adjusting

FIGURE 2
RESEARCH POSTULATES DERIVED FROM THE PROPOSITION-PROBABILITY MODEL

ARGUMENT STRUCTURE AS INTERRELATED PROPOSITIONS
P_{1a} : Presented arguments have little or no impact on primary beliefs when message recipients can accept or reject the claim based on self-generated arguments.
P_{1b} : The more important the topic, the greater the level of certainty that must be achieved before message recipients will ignore presented arguments and accept or reject the claim based on self-generated arguments.
P_{1c} : When message recipients cannot accept or reject the claim based on self-generated arguments, the believability of the propositions comprising the considered argument has a greater impact on message acceptance than the validity of the argument.
P_{2a} : When message recipients are presented with multiple reasons for accepting a claim, they fail to account for conjunctive probabilities among the data. As a result, there is greater acceptance of the claim (i.e., primary belief) than would logically follow from the subjective probabilities associated with the data and the conditional rules (i.e., supporting beliefs).
P_{2b} : For multiple bases arguments, the disparity between the actual primary belief and the primary belief derived mathematically from the supporting beliefs increases with the number of data propositions in the argument.
P_{2c} : For multiple bases arguments, the disparity between the actual primary belief and primary belief derived mathematically from the supporting beliefs increases when message recipients' pre-exposure beliefs suggest that the data are positively correlated.
P_{3a} : When message recipients are presented with hierarchical arguments, they fail to account for conjunctive probabilities among the hierarchically related propositions. Hence, there is greater acceptance of the claim (i.e., primary belief) than would logically follow from the subjective probabilities associated with the data and the conditional rules.
P_{3b} : For hierarchical arguments, the disparity between the actual primary belief and the primary belief derived mathematically from the supporting beliefs increases with the number of levels in the hierarchy.
P₄ : When message recipients can easily discount a rebutting condition, including the rebuttal in an argument increases the probability associated with the claim by increasing the probability corresponding to the main conditional rule.
IMPLIED PROPOSITIONS
P_{5a} : Message recipients are more likely to accept an otherwise questionable proposition when it is presupposed rather than directly stated.
P_{5b} : Message recipients are more likely to accept presupposed propositions when those propositions are embedded in rhetorical questions rather than declarative statements.
P₆ : When the link between data and claims is likely to be plausible to most message recipients, the conditional rule should be stated within a syllogism rather than implied within an enthymeme. But when the link is implausible, the rule should be implied within an enthymeme rather than stated within a syllogism.
LINGUISTIC SIGNALS AS PROPOSITION SURROGATES
P₇ : Causal indicatives foster message acceptance when message recipients are otherwise unlikely to infer the relationship between the data and claim in an argument.
P₈ : Contrary indicatives increase acceptance of the claim by abating or eliminating counter-argumentation when message recipients' pre-exposure beliefs suggest that the claim and data are generally negatively correlated.
P_{9a} : Conditional indicatives are confusing and provoke counter-argumentation when they are inconsistent with message recipients' pre-exposure beliefs, regardless of the true relationship between the two propositions.
P_{9b} : Conditional indicatives foster the acceptance of erroneous beliefs when they are consistent with message recipients' pre-exposure beliefs, but run counter to the true relationship between the two propositions.
P₁₀ : Causal indicatives foster the acceptance of claims supported by propositions containing subjective, ambiguous, and invented language, even when the resulting argument is inherently tautological.
P_{11a} : Hedges increase the acceptance claims derived from inductive arguments containing probabilistic rules, but decrease the acceptance of claims derived from deductive arguments containing absolute rules.
P_{11b} : Pledges increase the acceptance of claims derived from deductive arguments containing absolute rules, but decrease acceptance of claims derived from inductive arguments containing probabilistic rules.

their primary and secondary beliefs. As a result, in many cases the PPM predicts that (a) the pre- and postexposure probability associated with the claim will differ and that (b) the probability ultimately associated with the claim will not necessarily follow from the postexposure probabilities corresponding to the right side of equation 1. In short, although probability theory is logical, message recipients' subjective beliefs are not.

The PPM is capable of capturing (a) deductive arguments as depicted in propositional logic, (b) probabilistic deductive arguments, and (c) inductive arguments. Deductive arguments in propositional logic are characterized by proposi-

tions classified as either true (i.e., $p = 1$) or false (i.e., $p = 0$) (Braine and Rumain 1983; Johnson-Laird and Byrne 1991). This normative approach specifies conditions under which a claim should be accepted versus rejected given the truth of the data and conditional rule, and their relationship to the claim (Revlin and Leirer 1978; Sternberg and Turner 1975). Valid arguments are such that, if the data are true (i.e., $p[\text{data}] = 1$) and the conditional rule linking the data to the claim is true (i.e., $p[\text{claim} | \text{data}] = 1$), then the claim also has to be true [i.e., $p(\text{claim}) = 1$]. Sound arguments are valid arguments that meet the further requirement that the data and rule are true, such that the claim is, in fact,

true (Richards 1978; Skipper and Hyman 1987). The multiplicative relationship between the probabilities associated with the data and the rule captures these definitions of soundness and validity; and, of course, if an argument were sound, the second term on the right side of equation 1 would drop out completely.

This representation also accommodates probabilistic deductive arguments by relaxing the true-false dichotomy in favor of a continuum wherein the data and the conditional rule are associated with probabilities ranging between zero and one. Deductive arguments often involve probabilistic relationships when a census of all relevant populations yields exact marginal and conditional probabilities (Hunt 1991). However, the PPM is concerned with representing subjective beliefs formed after exposure to an argument in terms of probabilities corresponding to the propositions in the argument. This mathematical representation allows for the deduction of the probability that should logically correspond to the claim given the subjective probabilities associated with the terms on the right side of equation 1, without forcing each proposition to be designated as absolutely true or false.

Inductive reasoning follows not from applying a set of mathematically specified rules, but by examining empirical regularities and drawing strong, if not conclusive, inferences about the likelihood of an outcome (Hunt 1991; Richards 1978). Inductive arguments are probable versus improbable rather than sound versus unsound (Mick 1986; Sterrett and Smith 1990). The ultimate strength of the inference depends on the representativeness and/or exhaustiveness of the sample on which these empirical regularities are observed (Hunt 1991; Rosenberg 1974). Inductive arguments are commonplace in advertising and frequently involve language indicating that the conclusion is probable, but not definite, given the conditional rule. This distinction between deductive and inductive arguments found in advertising is critical for understanding some of the advertising tactics suggested by the PPM—a point discussed in greater detail below.

ARGUMENT STRUCTURE AS INTERRELATED PROPOSITIONS

Critical to the PPM is that verbal arguments in advertising can be reduced to various combinations of claims, data, and rules (Jaccard 1980), regardless of their original syntactic representation (Leech 1974; Richards 1978). Numerous argument structures can be expressed in this way, but on the basis of their prevalence in the academic literature, the specific argument structures reviewed below are the (a) enthymeme (Corbett and Connors 1999; Fishbein and Ajzen 1975), (b) the syllogism (Areni and Lutz 1988; McGuire 1960), (c) multiple bases arguments (Jaccard 1980), (d) hierarchical arguments (Richards 1978; Skipper and Hyman 1987), and (e) the jurisprudence model (Munch et al. 1993; Toulmin 1958). Each of these structures, and the corresponding subjective probabilities, are presented in figure 3.

Enthymemes

The enthymeme is the simplest argument found in advertising. It consists of a claim supported by a single data statement (Corbett and Connors 1999). The conditional rule, however, is implied not stated—message recipients must infer the rule to complete the considered argument. This is the common structure of advertisements that substantiate claims by presenting supporting evidence, as in the advertisement for San Remo pasta, which states that:

Today, due to our unique climatic conditions, the durum wheat grown in Australia is amongst the finest in the world.

Here, the stated claim that the durum wheat grown in Australia is among the finest in the world is supported by stated data regarding unique climatic conditions. But the conditional rule linking climatic conditions to the quality of the wheat is implied rather than directly stated. Ignoring for the moment that message acceptance can occur despite rejection of the argument (i.e., $p[\text{claim}] > p[\text{claim} | \text{not data}] p[\text{not data}]$), the propositions making up the argument can be represented in terms of the following probabilities:

$$p(\text{finest wheat}) = p(\textit{finest wheat} | \textit{climatic conditions}) \times p(\textit{climatic conditions}) + \dots \quad (2)$$

The advertiser's intention is that the conditional probability linking the claim to the data is much higher than the probability associated with the claim in the absence of any data; but there is no direct statement that climate affects wheat quality in any way. Message recipients must infer this rule for the argument to make sense. Indeed, some researchers have applied the term enthymeme to any argument involving an implicit proposition, regardless of its specific structure (Corbett and Connors 1999; Hunt 1991). For purposes of illustration, in this and subsequent mathematical representations, implied propositions appear in italic font.

Syllogisms

Logical syllogisms consist of three stated propositions—a minor premise, a major premise, and a conclusion. The minor premise specifies a relation between a subject and a middle term, and the major premise describes a relation between a predicate and the middle term. The conclusion then delineates a valid or invalid relation between the subject and the predicate (Revlin and Leirer 1978; Sternberg and Turner 1975). In terms of the PPM, a syllogism is simply an enthymeme wherein the conditional rule is stated rather than implied; the minor premise presents data, the major premise corresponds to the conditional rule, and the conclusion, of course, represents the claim.

FIGURE 3
ARGUMENT STRUCTURE AS PROBABILISTIC RELATIONSHIPS AMONG PROPOSITIONS

<p>Enthymeme</p>	<p>"And our cutting-edge digital network infrastructure is strategically placed to minimize your communication costs."</p> $p(\text{costs}) = p(\text{costs} \text{location})p(\text{location}) + \dots$ <p>"Today, due to our unique climatic conditions, the durum wheat grown in Australia is amongst the finest in the world."</p> $p(\text{quality}) = p(\text{quality} \text{climate})p(\text{climate}) + \dots$
<p>Sylogism</p>	<p>"Listerine Tartar Control actually reduces the build-up. How does it do that? It's special zinc chloride formulation which has been clinically tested to fight the tartar build-up."</p> $p(\text{reduces tartar}) = p(\text{reduces tartar} \text{zinc chloride})p(\text{zinc chloride}) + \dots$ <p>"With Huggies Newborn nappies, you can both rest easy. Huggies are the most absorbent newborn nappy available, and they keep your baby drier... And the drier they are, the better they sleep."</p> $p(\text{sleep}) = p(\text{sleep} \text{dry})p(\text{dry}) + \dots$
<p>Multiple Bases</p>	<p>"A skin with inflamed acne needs a mask with properties to control sebum. It also needs a mask with an antibacterial ingredient, such as triclosan or tea-tree oil, to reduce bacterial activity, plus anti-inflammatory ingredients, such as balm mint or menthol, to calm inflamed skin. ...Try Dermalogica Anti-Bac Cooling Mask."</p> $p(\text{controls acne}) = p(\text{controls acne} \text{controls sebum})p(\text{sebum}) + \dots$ $p(\text{controls acne}) = p(\text{controls acne} \text{antibacterial})p(\text{antibacterial}) + \dots$ $p(\text{controls acne}) = p(\text{controls acne} \text{anti-inflammatory})p(\text{anti-inflammatory}) + \dots$ <p>"Next time you need to stock up on margarine why not take the healthy option? Ultima Soya Spread is cholesterol free and carries the Heart Foundation's Tick Of Approval. In addition, it contains half the salt of leading margarine spreads."</p> $p(\text{healthy}) = p(\text{healthy} \text{cholesterol free})p(\text{cholesterol free}) + \dots$ $p(\text{healthy}) = p(\text{healthy} \text{Heart Foundation})p(\text{Heart Foundation}) + \dots$ $p(\text{healthy}) = p(\text{healthy} \text{low salt})p(\text{low salt}) + \dots$
<p>Hierarchical</p>	<p>"A very special feature of the NUK Teat is the cleverly designed NUK Vent located on the side of the teat. It allows small amounts of air into the bottle while your baby is feeding. This process of air adjustment prevents the teat from collapsing. And a good thing too, because a collapsing teat may result in your baby swallowing air, which is thought to be a common cause of colic."</p> $p(\text{colic}) = p(\text{colic} \text{swallows air})p(\text{swallows air}) + \dots$ $p(\text{swallows air}) = p(\text{swallows air} \text{collapse})p(\text{collapse}) + \dots$ $p(\text{collapse}) = p(\text{collapse} \text{allows air})p(\text{allows air}) + \dots$ $p(\text{allows air}) = p(\text{allows air} \text{vent})p(\text{vent}) + \dots$ <p>"All Digital 8 models feature analogue audio/video inputs, so you can take your VHS, VHS-C, Hi8 or 8mm format tape libraries and, because digital recordings do not degrade in image quality, digitise them for editing and archiving."</p> $p(\text{archive}) = p(\text{archive} \text{preserve image})p(\text{preserve image}) + \dots$ $p(\text{preserve image}) = p(\text{preserve image} \text{digitise})p(\text{digitise}) + \dots$ $p(\text{digitise}) = p(\text{digitise} \text{analogue inputs})p(\text{analogue inputs}) + \dots$
<p>Jurisprudence Model</p>	<p>"Ninety percent of the population has dehydrated skin. To rehydrate the skin, a humectant-type mask is needed to put back moisture. ...skin lacking in sebum should not be confused with dehydrated skin. Oily-dry skin often occurs with menopause, as the decrease in hormones slows sebum production. ...Try Gatineau Diffusance Creamy Mask."</p> $p(\text{rehydrate}) = p(\text{rehydrate} \text{humectant})p(\text{humectant}) + \dots$ $p(\text{rehydrate} \text{humectant}) = p(\text{rehydrate} \text{humectant})p(\text{lack sebum}) + \dots$ <p>"As you well know, the key to a successful retirement plan is diversity. Spreading your investments, spreads your risks. Which is why an AMP financial planner will analyse your needs and design a plan that incorporates a range of investments."</p> $p(\text{success}) = p(\text{success} \text{diversity})p(\text{diversity}) + \dots$ $p(\text{success} \text{diversity}) = p(\text{success} \text{diversity})p(\text{spread risk}) + \dots$

Arguments in advertising frequently take the form of syllogisms. Consider the original wording in an advertisement for Listerine Tartar Control mouthwash:

Unlike brushing alone, which can't budge the tartar, Listerine Tartar Control actually reduces the build-up. How does it do that? It's special zinc chloride formulation which has been clinically tested to fight tartar build-up.

The propositions making up this syllogism correspond to the following subjective probabilities:

$$p(\text{fights tartar}) = p(\text{fights tartar}|\text{zinc chloride}) \times p(\text{zinc chloride}) + \dots \quad (3)$$

The argument states that the mouthwash "reduces" tartar

buildup and presents the “special zinc chloride formulation” as data to support that claim. However, unlike in the enthymeme, the conditional rule linking the data to the claim is stated explicitly (i.e., “which has been clinically tested to fight tartar build-up”).

This argument is valid. Assuming that “fighting” and “reducing” are the same predicate and that “clinically tested” does not involve any quantifier in propositional logic (i.e., some, many, etc.), then the claim that the product reduces tartar buildup logically follows from the unqualified data and rule. But advertisers construct fallacious arguments that invite message recipients to accept invalid conclusions (Braine and Romain 1983; Johnson-Laird and Byrne 1991). Given the current focus on argument structure, the fallacious arguments discussed here are limited to the Aristotelian errors of accepting claims on the basis of data that denies the antecedent or confirms the consequent of the rule (Braine and Romain 1983; Richards 1978).

Consider the copy from an advertisement for the Nissan Quest:

When kids are cramped or uncomfortable, or just plain bored, they get cranky. They start fighting with each other. . . . The Quest has something for everybody. Standard duel sliding doors. A spacious comfortable interior. The QUEST TRAC Flexible Seating System, which lets you configure the seat in up to 66 different ways. . . . What’s left to fight about?

This argument has the following underlying probabilistic structure:

$$p(\text{not cranky}) = p(\text{not cranky} \mid \text{not bored}) \times p(\text{not bored}) + \dots \quad (4)$$

In terms of logical syllogisms, it implicates the claim (i.e., keeps children from becoming cranky) on the basis of a rule (i.e., cramped, uncomfortable, or bored children become cranky) and data that denies the antecedent of the rule (i.e., the Quest keeps children from becoming cramped, uncomfortable, or bored) (Braine and Romain 1983; Richards 1978). But in terms of propositional logic, the claim does not follow because the rule says nothing about other reasons children might become cranky (i.e., pestering older siblings, hunger, etc.). Assuming the same data (i.e., prevents discomfort and boredom) and claim (i.e., prevents crankiness), for the argument to be logical, the conditional rule would have to be changed to children become cranky only when they are cramped, uncomfortable, or bored. Then denying the antecedent would establish the claim. But propositional logic has difficulty accounting for such semantic details (Johnson-Laird and Byrne 1991; Lakoff 1971). Moreover, in the logical version of this argument the modified conditional rule might provoke message recipients to generate reasons that kids get cranky other than discomfort or boredom (e.g., teasing by older siblings, hunger, moodiness, etc.), thus leading them to reject the stated rule, and ultimately, the claim. Hence, the illogical argument with plausible postulates may be more effective than the corresponding logical argument. However,

the probabilistic representation of the PPM transforms an illogical deductive argument to a probable inductive argument. If boredom and discomfort are major reasons (i.e., 80% of the cases) for children becoming cranky, then a minivan that eliminates these antecedents should significantly lower the probability of crankiness.

Fallacious arguments that assert the consequence, in essence, juxtapose the claim and data in a corresponding logical argument. Consider the copy in an ad for Team Australia Bread:

Eating carbohydrate-rich foods like Team Australia Wholemeal Bread is vital for reaching peak performance.

This argument has the following structure:

$$p(\text{peak performance}) = p(\text{peak performance} \mid \text{carbohydrates}) \times p(\text{carbohydrates}) + \dots \quad (5)$$

Ignoring for the moment the ambiguity of the term “peak performance,” the term “vital” suggests the rule that peak performance is attainable only if one eats foods rich in carbohydrates. The data affirm the consequence that the product is rich in carbohydrates, but this does not establish the implicated claim that eating the product is vital for achieving peak performance because there may be other foods that provide the requisite carbohydrates. To establish that this involves the fallacy of asserting the consequence, just exchange the claim and the data—the result is a valid argument. But in the original argument, the minor premise or data would have to be changed to “Team Australia Wholemeal Bread is the only food rich in carbohydrates,” in order to establish that eating the product is vital for peak performance. The problem, of course, is that message recipients would not be likely to accept this proposition. However, the PPM also accommodates this advertising tactic without characterizing message recipients as “illogical.” If there are relatively few foods that provide the necessary carbohydrates, then although it may not be “vital,” eating the product is still an effective way to achieve peak performance.

Given the previous definition of a sound argument, enthymemes and syllogisms can be rejected on two bases. First, the claim can be rejected because message recipients do not see how it follows from the data and rule; that is, the argument is judged to be invalid. The second basis for rejecting an argument is that the data and/or rule on which the claim rests is judged to be false or, in terms of the PPM, very improbable (McGuire 1960; Wyer and Goldberg 1970). However, previous research suggests that assessments of validity and believability are secondary to a more fundamental scrutiny of the claim itself (Evans 1989). Evans’s research suggests that message recipients initially ignore the presented argument and instead generate their own reasons for accepting or rejecting a claim independently of the stated propositions. If the claim seems plausible on the basis of

these self-generated arguments, then there is no need to assess the believability of the stated propositions or the validity of the argument. Selective scrutiny occurs even when message recipients are instructed to focus on the relevance of the evidence presented to support the claim (Evans, Barston, and Pollard 1983). As depicted in figure 1, selective scrutiny suggests that the primary belief is sometimes determined by self-generated arguments rather than the presented argument. This may explain why it is difficult to develop reliable manipulations of argument quality (see Johnson and Eagly 1989), without resorting to rigorous pre-testing procedures (see Petty and Cacioppo 1986). This suggests the following postulate:

P1a: Presented arguments have little or no effect on primary beliefs when message recipients can accept or reject the claim on the basis of self-generated arguments.

Evans's results are not inconsistent with the sufficiency principle of the heuristic-systematic model of persuasion (HSM), which states that individuals process additional information only when they are uncertain about their current attitudes toward a given topic (Eagly and Chaiken 1993; Maheswaran and Chaiken 1991). Previous research on the HSM suggests that as the importance of the focal issue increases, message recipients must be surer their current position is correct before they will disregard additional information (see Maheswaran and Chaiken 1991). In terms of the PPM, this suggests that as the importance of the topic increases, the range of subjective probabilities requiring scrutiny of the presented argument increases, and message acceptance is less likely to be driven by self-generated arguments. This implies an additional postulate:

P1b: The more important the topic, the greater the level of certainty that must be attained before message recipients will ignore presented arguments and accept or reject the claim solely on the basis of self-generated arguments.

Given the plethora of products available in the marketplace and consumers' relatively limited knowledge of many advertised products, it is likely that many product claims cannot be accepted or rejected on the basis of self-generated arguments. In these cases, it seems reasonable to ask whether message acceptance is driven more by judgments of the believability of individual propositions or by assessments of the validity of the overall argument. There is evidence that message recipients are more likely to accept invalid arguments with believable data and rules compared to valid arguments with implausible data and rules (Evans et al. 1983; Revlin and Leirer 1978). Indeed, Geis (1982) has questioned whether message recipients are ever able to assess the validity of verbal arguments, suggesting that priority should always be given to presenting believable propositions. This implies an addendum to the selective scrutiny postulate:

P1c: When message recipients cannot accept or reject

a claim solely on the basis of self-generated arguments, the believability of the propositions making up the considered argument has a greater effect on message acceptance than the validity of the considered argument.

Multiple Bases Arguments

Enthymemes and syllogisms are arguments containing a single data proposition, but many arguments present multiple data propositions to support a key claim (Jaccard 1980). Multiple bases arguments can be thought of as a series of syllogisms and/or enthymemes, each supporting the same basic claim. For instance, an advertisement for Intel presents multiple data statements to support the focal claim, which is implied by the interrogative sentence:

Why is Intel architecture the world's e-business platform of choice? Because it's technology people trust. Because it continues to strike the right balance between price and performance. Because it consistently offers the greatest choice of leading-vendor hardware and software solutions, and because nobody wants to be stuck with a proprietary system 5 years from now.

The argument in the Intel advertisement corresponds to the following subjective probabilities:

$$p(\text{choice}) = p(\text{choice} | \text{trust})p(\text{trust}) + \dots ; \quad (6A)$$

$$p(\text{choice}) = p(\text{choice} | \text{balance})p(\text{balance}) + \dots ; \quad (6B)$$

$$p(\text{choice}) = p(\text{choice} | \text{solutions})p(\text{solutions}) + \dots ; \quad (6C)$$

$$p(\text{choice}) = p(\text{choice} | \text{not stuck}) \\ \times p(\text{not stuck}) + \dots \quad (6D)$$

The first three statements (i.e., eqq. 6A–6C) represent enthymemes. They present data, leaving the audience to infer the corresponding conditional rules. But the last statement (i.e., eq. 6D) actually presents the conditional rule “nobody wants to be stuck with a proprietary system five years from now,” inviting message recipients to infer the data that Intel does not leave its customers stuck with proprietary systems. Moreover, as noted above, the claim itself is implied rather than stated, so as depicted in figure 1, the domain of implied propositions can be extended to claims and data as well as conditional rules.

Critical to the analysis of multiple bases arguments is how the subjective beliefs corresponding to each of the subarguments in equations 6A–6D are combined. Evidence suggests that message recipients adopt a simple additive rule (Cohen, Chesnick, and Haran 1982). But an additive rule is illogical because it does not account for intersections among

the data. To the extent that the intersections are large, the probability that logically follows from the entire argument is substantially less than that suggested by an additive rule. This disparity between reported and derived primary beliefs increases with the number of subarguments. Moreover, message recipients may fail to appreciate possible correlations among presented data. For example, with respect to the Intel ad, would consumers not trust technology that offers the right balance between price and performance? This implies that the corresponding intersection is larger than that predicted under the assumption of independence. As a result, the disparity between actual primary beliefs and those derived from supporting beliefs is even greater under these conditions. So multiple bases arguments can be very effective despite the limitations of individual subarguments (cf. Alba and Marmorstein 1987; Petty and Cacioppo 1984). This suggests the following postulates:

- P2a:** When message recipients are presented with multiple reasons for accepting a claim, they fail to account for intersections among the data. As a result, there is greater acceptance of the claim (i.e., primary beliefs) than would logically follow from the subjective probabilities associated with the data and the conditional rules (i.e., supporting beliefs).
- P2b:** For multiple bases arguments, the disparity between actual primary beliefs and the primary beliefs mathematically derived from supporting beliefs increases with the number of data propositions in the argument.
- P2c:** For multiple bases arguments, the disparity between actual primary beliefs and the primary beliefs mathematically derived from supporting beliefs increases when message recipients' preexposure beliefs suggest that the data are positively correlated.

Hierarchical Arguments

Hierarchical arguments are made up of five or more propositions containing multiple syllogisms or enthymemes. They are structured such that the claim of one enthymeme or syllogism serves as data for another (Richards 1978; Skipper and Hyman 1987). Consider the advertisement for the Sony Digital 8 Camcorder, which presents the following argument:

All Digital 8 models feature analogue audio/video inputs, so you can take your VHS, VHS-C, Hi8 or 8mm format tape libraries and, because digital recordings do not degrade in image quality, digitise them for digital editing and archiving.

Despite the unusual syntactic arrangement, these proposi-

tions make up a hierarchical argument having the following structure:

$$p(\text{archive}) = p(\text{archive} \mid \text{preserve image}) \\ \times p(\text{preserve image}) + \dots ; \quad (7A)$$

$$p(\text{preserve image}) = p(\text{preserve image} \mid \text{digitize}) \\ \times p(\text{digitize}) + \dots ; \quad (7B)$$

$$p(\text{digitize}) = p(\text{digitize} \mid \text{analogue inputs}) \\ \times p(\text{analogue inputs}) + \dots . \quad (7C)$$

Equations 7A–7C present an argument with implied data and a stated rule, a syllogism, and an enthymeme, respectively. The enthymeme in equation 7A represents the ultimate argument—that Digital 8 models allow consumers to archive previously recorded videotapes. But the data statement in that argument—that Digital 8 models allow consumers to preserve the images of previously recorded material—is actually the claim from the syllogism represented in equation 7B. And, likewise, the data statement from the syllogism in 7B is the claim in the argument exemplified in equation 7C. The probability associated with a sequence of hierarchically related propositions decreases as the number of levels in the hierarchy expands. For example, if the data and rule of a standard syllogism are each associated with a probability of .8, then a probability of at least .64 should logically be associated with the claim. But if two syllogisms are combined such that the claim in the first becomes the data in the second, then even if all independent statements are assigned a probability of .8, the probability logically derived from the argument falls to .8³ or .51.

However, if message recipients fail to take into account intersections among propositions, they will overestimate the probability that the ultimate claim is true (Tversky and Kahneman 1982). So hierarchical arguments having several levels may be effective for the same reason that multiple bases persuade an audience—message recipients fail to take into account the intersections among propositions. The difference is that, in the case of multiple bases arguments, the critical intersections are among ostensibly, though not necessarily, independent data statements, whereas with hierarchical arguments, the intersections are among positively correlated propositions. So the disparity is likely to be more pronounced in the latter case. This suggests the following postulates:

- P3a:** When message recipients are presented with hierarchical arguments, they fail to account for intersections among the hierarchically related propositions. Hence, there is greater acceptance of the claim (i.e., primary beliefs) than would logically follow from the subjective probabilities associated with the data and the conditional rules (i.e., supporting beliefs).

P3b: For hierarchical arguments, the disparity between actual primary beliefs and the primary beliefs mathematically derived from supporting beliefs increases with the number of levels in the hierarchy.

The Jurisprudence Model

Toulmin’s (1958) jurisprudence model is essentially a syllogism with two additional types of conditional rules. The jurisprudence model identifies (1) claims—the fundamental assertions in an argument; (2) data—information supporting an assertion; (3) warrants—rules establishing the relationship between claims and data; (4) backing—statements that verify the relationship between claims and data; and (5) qualifiers and rebuttals—statements that indicate conditions under which the main argument may not hold, as the fundamental components of verbal arguments (Deighton 1985; Munch et al. 1993).

In terms of the PPM, the warrant of the jurisprudence model simply corresponds to the main conditional rule of the argument. Data and claims exactly parallel the data and claims of the PPM. But qualifiers and rebuttals, and backing statements, represent more complicated conditional rules involving three-way contingencies among propositions. Backing statements strengthen the main conditional rule such that the data, if accepted, provide an even stronger basis for believing the claim. Conversely, qualifiers and rebuttals weaken the conditional rule by specifying conditions under which the claim does not hold even when the data are true.

Arguments containing backing and/or qualifiers and rebuttals appear frequently in advertising copy. An ad for AMP Financial Services contains the following copy:

As you well know, the key to successful retirement planning is diversity. Spreading your investments, spreads your risks. Which is why an AMP financial planner will analyse your needs and design a plan that incorporates a range of investments.

This argument can be represented as follows:

$$p(\text{success}) = p(\text{success} \mid \text{diversity}) \times p(\text{diversity}) + \dots; \tag{8A}$$

$$p(\text{success} \mid \text{diversity}) = p[(\text{success} \mid \text{diversity}) \mid \text{spread risk}] \times p(\text{spread risk}) + \dots \tag{8B}$$

The proposition regarding spreading risks is backing. It bolsters the strength of the conditional rule that diversity leads to success by explaining why this is the case. In terms of the PPM, it increases the probability associated with the conditional rule relating success to diversity by presenting yet another contingency. In other words, the argument states that diversity ensures success only when it also spreads risk. Pre-

sumably, the contingency between diversity and success is less pronounced when the risk is not spread,¹ though this proposition is not actually stated.

Now consider the ad for Gatineau Diffusance Creamy Mask:

To rehydrate skin, a humectant-type mask is needed to put back moisture. . . . Skin lacking in sebum should not be confused with dehydrated skin. Oily-dry skin often occurs with menopause, as the decrease in hormones slows sebum production. . . . Try Gatineau Diffusance Creamy Mask.

The underlying structure of the argument can be represented as follows:

$$p(\text{rehydrate}) = p(\text{rehydrate} \mid \text{humectant}) \times p(\text{humectant}) + \dots; \tag{9A}$$

$$p(\text{rehydrate} \mid \text{humectant}) = p[(\text{rehydrate} \mid \text{humectant}) \mid \text{lack sebum}] \times p(\text{lack sebum}) + \dots \tag{9B}$$

This argument contains a qualifier and rebuttal. It specifies a situation in which the conditional rule linking humectant-type masks and rehydration does not hold—when the apparent dehydration is actually due to inadequate sebum production caused by menopause. In contrast to the backing statement, this qualifier and rebuttal indicates that the conditional probability associated with the rule is substantially lower when the contingency regarding slower sebum production holds.

Advertisers would seem to have fairly obvious reasons for including backing statements to strengthen the conditional rule of the ultimate argument. The resulting argument is essentially a specific type of hierarchical argument, and it is likely to be effective for the reasons noted previously. But why would advertisers include statements that lower the probability associated with the main conditional rule of an argument? The ultimate effectiveness of qualifiers and rebuttals in arguments may depend on the inference that if the conditions making up the rebuttal do not hold, then the probability associated with the conditional rule is even higher. In other words, the rebuttal has the effect of allowing most women under the age of 50—presumably the target audience—to discount the probability that their dry skin is due to a lack of sebum. If message recipients cannot possibly be suffering from a lack of sebum, then a humectant-type mask will almost certainly rehydrate their skin. The success of this tactic ultimately depends on the subjective probability associated with the rebutting condition. If it is perceived as being likely, then the inclusion of the rebuttal might actually

¹Namely, $p[(\text{success} \mid \text{diversity}) \mid \text{spread risk}] > p[(\text{success} \mid \text{diversity}) \mid \text{not spread risk}]$.

FIGURE 4

ENTAILED, PRESUPPOSED, AND CONVERSATIONALLY IMPLIED PROPOSITIONS

Entailment	<p>"The most effective way to treat cervical cancer is through early detection. That's why you should ask your doctor for the ThinPrep Pap Test. Australian studies have shown that ThinPrep significantly increases the early detection of abnormal cervical cells compared with ordinary Pap smears." (Entails: The ThinPrep Pap Test is more effective than ordinary Pap smears)</p> <p>"Unlike many other breads and breakfast cereals, Country Life Bakery's Performax Peak Performance Bread has a very low Glycaemic index of only 38. Which is good news because research shows that foods with a low Glycaemic Index are digested and absorbed slowly, providing a sustained release of energy throughout the day." (Entails: Country Life Bakery's Performax Peak Performance Bread is digested and absorbed slowly)</p>
Presupposition	<p>"With so many nutritional benefits, isn't it time you gave Ultima Soya Spread a try?" (Presupposes: Ultima Soya Spread has many nutritional benefits)</p> <p>"It really isn't surprising that our Hanwood vineyard produces such fine wines." (Presupposes: Hanwood vineyard produces fine wines).</p>
Conversational Implication	<p>"Nutri-Grain has a special formulation of things kids need. Rich in carbohydrates, protein, and B group vitamins...it releases energy to the body and helps with the growth and maintenance of healthy muscles." (Implicates: Carbohydrates, protein, and B group vitamins release energy to the body and help with the growth and maintenance of healthy muscles).</p> <p>"If you like the idea of false fingernails, but don't react well to the chemicals they contain, now there is a natural alternative. ...There are more toxins in the fumes and dust of any chemical nail system than in cigarette smoke." (Implicates: The toxins in chemical nail systems cause more negative reactions than those in cigarette smoke)</p>

lower the probability associated with the claim. This suggests the following postulate:

- P4:** When message recipients can easily discount a rebutting condition, including the rebuttal in an argument increases the probability associated with the claim by increasing the probability corresponding to the main conditional rule.

IMPLIED PROPOSITIONS

It would be desirable to account for as many implied propositions as possible in a general model of verbal arguments in advertising. But many of the implied propositions studied in the marketing literature are idiosyncratic and relate to the content of individual claims rather than the structure of the argument supporting a given claim. For example, the claim that "Listerine Tartar Control fights tartar" may convey the pragmatic implication that "Listerine Tartar Control prevents tartar" (Harris 1977; Preston 1977). Likewise, the claim that "With Huggies Newborn nappies, you can both rest easy" contains figurative language—the product lets babies sleep more easily and allows parents to feel assured that their babies are comfortable (McGuire 2000; McQuarrie and Mick 1996). These kinds of inferences, though critical for understanding persuasion tactics in advertising, are due to multiple meanings of specific

words, which result from semantic hierarchies that connect words according to an accumulation of meaning (Cohen and Margalit 1972; Leech 1974); hence, they are ultimately irrelevant to the structure of an argument. Instead, the PPM focuses on implied claims, data, and rules resulting from logical deduction (i.e., entailment) or generally accepted, but implicit, principles of comprehension (i.e., presupposition, conversational implication) (Grice 1975; Leech 1974). Examples of each type of implied proposition are presented in figure 4.

Entailed Propositions

A statement, or a set of statements, entails another unstated proposition if the latter has to be true when the former is true (Leech 1974). Many arguments in advertising have the underlying structure of syllogisms with the conclusion entailed rather than directly stated. Consider the advertisement for Country Life Bakery's Performax Peak Performance Bread:

Unlike many other breads and breakfast cereals, Country Life Bakery's Performax Peak Performance Bread has a low Glycaemic index of only 38. Which is good news because research shows that foods with a low Glycaemic index are digested and absorbed slowly.

The argument has the following underlying structure:

$$p(\textit{digested slowly}) = p(\textit{digested slowly} \mid \textit{low index}) \\ \times p(\textit{low index}) + \dots$$

(10)

The conclusion, that Country Life Bakery's Performax Peak Performance Bread is digested and absorbed slowly, is never actually stated. It is, however, entailed by the propositions that are presented. Entailed propositions represent logical inferences—if message recipients believe the corresponding stated propositions to be true, then it is rational to accept the entailed claim. As a result, it is tempting to speculate that an argument containing an entailed claim closely mimics the effects of a corresponding valid syllogism. But, as discussed in greater detail below, there may be conditions under which it is more effective to state versus entail a given proposition, regardless of its logicity.

Presupposed Propositions

When X presupposes Y, anyone who states X takes the truth of Y for granted (Geis 1982 ; Leech 1974). Unlike entailed propositions, however, there is no logical relationship between the two propositions (Leech 1974). Acceptance of Y does not depend of acceptance of X. For example, the copy of an advertisement for Hanwood Wines states, "It really isn't surprising that our Hanwood vineyard produces such fine wines." This statement presupposes that the Hanwood vineyard does in fact produce fine wines. But message recipients may accept or reject this presupposition regardless of whether or not they find it surprising. However, the intended effect is that the presupposed proposition will be accepted without much scrutiny. Compare the original copy to an alternative format wherein the focal proposition is directly stated: Our Hanwood vineyard produces such fine wines, and it really isn't surprising. Explicitly stating the claim seems to leave it more open to refutation. This brief analysis suggests the following postulate:

P5a: Message recipients are more likely to accept an otherwise questionable proposition when it is presupposed rather than directly stated.

One of the most common instances of presuppositions in advertising is the rhetorical question that contains a hidden assumption (Geis 1982; Leech 1966). Asking a question may unconsciously induce message recipients to consider answers without first challenging the underlying presupposition. For example, consider the copy from an advertisement for Ultima Soya Spread: "With so many nutritional benefits, isn't it time you gave Ultima Soya Spread a try?" The message recipient is automatically drawn to the second clause, which calls for a mental, if not actual, response to the question. There seems to be little opportunity to scrutinize the subordinate clause containing the presupposition. Now recast the copy in declarative form: With so many nutritional benefits, it's time you gave Ultima Soya Spread a try. The claim that Ultima Soya Spread contains "so many nutritional

benefits" now seems more open to scrutiny, because the declarative form lacks the distracting, prompting mechanism. This suggests the following postulate:

P5b: Message recipients are more likely to accept presupposed propositions when those propositions are embedded in rhetorical questions rather than declarative statements.

Con conversationally Implicated Propositions

Con conversationally implicated propositions account for the effectiveness of enthymemes and many other argument structures containing implied propositions. Grice (1975) has identified a number of principles that guide communication between individuals, and Geis (1982) has demonstrated the relevance of these principles for understanding advertising claims. Of critical importance here is Grice's principle of relation, which makes the following prescription—be relevant; or with respect to enthymemes—only present data that are pertinent to the point you are trying to make. In terms of the PPM, Grice's prescription dictates that presenting data conversationally implicates the conditional rule, and it is this principle that allows enthymemes to be transformed into coherent arguments.

The almost automatic nature of conversational implication suggests the following question: When is it more effective to imply rather than directly state a conditional rule? It is interesting to speculate that effectiveness depends on the likelihood that message recipients will accept the proposition if stated explicitly (cf. Harris et al. 1993). To illustrate, consider the copy from an ad for Liquid Plumr:

By combining 2 liquids that activate to form a foam, New Liquid Plumr Foaming Pipe Snake cleans your pipe walls quickly and easily.

This enthymeme leaves the conditional rule that foaming drain openers are effective at eliminating clogs unstated, and there is an intuitive reason for doing so. Why would message recipients accept that foaming has anything to do with the ability of a chemical to dissolve clogs? The rule is not necessarily false, indeed it may have a basis in chemistry, but it is not obvious to a typical consumer having only basic knowledge of chemical reactions. Contrast this with the stated rule in the syllogism corresponding to the Huggies ad.

With Huggies Newborn nappies, you can both rest easy. Huggies are the most absorbent newborn nappy available, and they keep your baby drier. . . . And the drier they are, the better they sleep.

Unlike the implied rule in the Liquid Plumr ad, the stated rule in the Huggies ad has intuitive appeal to most message recipients. Parents of infants or toddlers, presumably the target audience, can attest to the correlation between wet diapers and babies waking up at night, so the rule can be stated rather than implied. Any conclusions drawn from this

analysis are, of course, tentative, but it does suggest an underlying principle: plausible or believable rules should be stated, but less obvious rules are better implied. This principle, which represents a potentially fruitful direction for future research, can be stated formally as:

P6: When the link between data and claims is likely to be plausible to most message recipients, the conditional rule should be stated within a syllogism rather than implied within an enthymeme. But when the link is likely to be implausible, the rule should be implied within an enthymeme rather than stated within a syllogism.

LINGUISTIC SIGNALS AS PROPOSITION SURROGATES

Up until now, the propositions identified in arguments have been either stated or implied via entailment, presupposition, or conversational implication. But underlying the analysis so far have been words and short phrases in the presented argument that signal propositions corresponding to data or rules without actually stating them. As shown in figure 5, these signals can be characterized by whether they signal data versus conditional rules and as to whether they signal a higher or lower subjective probability for the claim.

Conditional indicatives are words or phrases that signal a conditional rule without actually presenting the corresponding proposition (Kutschera 1975; Lakoff 1971). In this sense, they substitute for an explicitly stated conditional rule and facilitate the inference of the corresponding implied rule (Munch et al. 1993; Schiffman 1987). Causal indicatives increase the conditional probability linking the data to the claim. That is, they signal that the presented data increases the likelihood that the claim is true.

Consider, for example, the copy from an advertisement for Lowan MultiFlakes cereal:

For centuries, Asian women have eaten a diet rich in soy foods such as tempeh and tofu. As a result, these women have enjoyed many health benefits not shared by their Western counterparts.

This argument is, in essence, an enthymeme with the following implied rule: Diets rich in soy foods provide health benefits. But the phrase “as a result” facilitates the inference of this proposition; it signals the conditional rule without actually presenting it. For an intuitive grasp of this signaling effect, try reading the copy with the neutral connective “and” in place of the conditional indicative. Message recipients may infer the implied rule in the absence of the indicative because the rule is conversationally implicated via the principle of relation. But the indicative further indicates that the data are the cause of or explanation for the claim, making this inference more likely (Cook 1992; Corbett and Connors 1999). The effectiveness of causal indicatives as quasi-conditional rules is most apparent when message recipients

would otherwise fail to infer the conditional relationship between the claim and data (Munch et al. 1993). More knowledgeable audiences, however, would presumably be in a better position to make these judgments on the basis of experience and expertise, thus ignoring the signaling effects of conditional indicative language. This implies the following postulate:

P7: Causal indicatives foster message acceptance when message recipients are otherwise unlikely to infer the relationship between the data and the claim in an argument.

Contrary indicatives, however, signal that the claim is less likely given the presented data. For example, consider the copy from an ad for Soft Scrub Cleanser:

Soft Scrub Cleanser kills 99.9% of household germs while it cleans and removes stains. Yet, it's as kind as ever to your surfaces.

The word “yet” signals that the claim that the product cleans, kills, germs, and removes stains is less likely given the proposition that “it's as kind as ever to your surfaces.” But why would advertisers want to signal that a claim is less likely to be true given some other proposition in the argument? The answer is perhaps related to the tendency for message recipients to be more persuaded by their idiosyncratic responses to an argument rather than the content of the argument itself (Greenwald 1968; Wright 1980). More specifically, if message recipients' preexposure beliefs associate stain removal with scratched surfaces, then merely stating both propositions invites counterargumentation that both propositions could not possibly be true. The contrary indicative, in essence, acknowledges the implicit theory, and in doing so, abates the tendency of message recipients to counterargue. This suggests the following postulate:

P8: Contrary indicatives increase acceptance of the claim by abating or eliminating counterargumentation when message recipients' preexposure beliefs suggest that the claim and data are generally negatively correlated.

Along these lines, it is interesting to distinguish among (a) the true or accurate relationship between two propositions, (b) message recipients' preexposure beliefs regarding the relationship, and (c) the relationship signaled by the conditional indicatives in the argument. To illustrate, consider an advertisement for Devondale Extra Soft Spread that uses the neutral conjunction “and” rather than including a conditional indicative: “Extra Soft has 25% less fat than margarine, and it's made with real butter.” The conjunction “and” does not signal any conditional relationship between the two points (Schiffman 1987). In terms of probabilistic belief systems, the language signals

FIGURE 5
DATA SURROGATES AND CONDITIONAL INDICATIVES AS LINGUISTIC SIGNALS

	Data Surrogates	Conditional Indicatives
Signal Higher Probability	<p>Pledges Signal: $p(\text{claim with pledge}) > p(\text{claim alone})$</p> <p>"They are also rich in natural monounsaturated fats, which... <i>actually</i> lower your cholesterol." (It is otherwise hard to believe that any kind of fat can lower cholesterol)</p> <p>"The most visible aspect of wireless communication is <i>undoubtedly</i> people talking on their phones..." (It is impossible to generate any reason why this proposition is not 100% accurate)</p> <p>"...to provide <i>proven</i> relief from back pain and other lower body pain" (There are studies that provide evidence showing this proposition is accurate)</p>	<p>Causal Indicatives signal: $p(\text{claim data}) > p(\text{claim alone})$</p> <p>"MD Formulations products contain higher percentages of glycolic acid for maximum results. <i>For this reason</i>, they are available only from skin care professionals who can offer a complete analysis of your skin type and condition." (If a medication contains high dosages of this ingredient, it can only be sold via prescription by a medical specialist)</p> <p>"New Cenovis lozenges contain echinacea or Vitamin C and zinc <i>to help</i> relieve the symptoms of colds and flu" (If a medicine contains echinacea or Vitamin C and zinc, it will relieve the symptoms of colds and flu)</p> <p>"You know that Redwin Sorbelene is a natural moisturiser. You know it has no added colours and no perfumes, <i>so</i> it's gentle on sensitive skin." (If a moisturiser contains artificial colouring and perfume, it will irritate sensitive skin)</p>
Signal Lower Probability	<p>Hedges Signal: $p(\text{claim with hedge}) < p(\text{claim alone})$</p> <p>"Scientists believe phytoestrogens <i>may play a role</i> in balancing or maintaining oestrogen levels in the body" (The key ingredient may not be related to balancing or maintaining oestrogen levels in the body)</p> <p>So, for <i>many</i> men, by having the right hair treatment, hair loss can not only be stopped but regrowth <i>can</i> also occur." (For some, or even most men, treatment will be ineffective)</p> <p>"Consuming a handful of blueberries <i>is said</i> to provide a rich dose of anti-oxidants, as well as many other goodies that <i>can</i> relieve chronic diarrhoea, diverticulitis, Crohn's disease and irritable bowel syndrome" (The proposition is heresy rather than fact) (The product does not necessarily cure, or even relieve, the medical conditions listed)</p>	<p>Contrary Indicatives signal: $p(\text{claim data}) < p(\text{claim alone})$</p> <p>"Tart <i>but</i> sweet." (If something is tart, it is not sweet)</p> <p>"Soft Scrub Cleanser kills 99.9% of household germs while it cleans and removes stains. <i>Yet</i>, it's as kind as ever to your surfaces." (If a cleaner removes stains, it is not kind to bathroom surfaces)</p> <p>"An astonishing 70 per cent of people recently surveyed think tartar can be removed by brushing alone. <i>Unfortunately</i>, removing tartar isn't that easy and it has to be removed by a dental professional..." (If 70% of survey respondents believe something, then it is true).</p>

$$p(\text{less fat} \mid \text{butter}) = p(\text{less fat} \mid \text{no butter}). \quad (11A)$$

The true relationship between the two propositions is difficult to assess without detailed knowledge of the terminology used and the actual product ingredients. Presumably, real butter is an ingredient in the product, but the status of the first proposition is ambiguous. Does this mean compared to all margarines, an average of all margarines, or some unspecified subset of margarines? Moreover, there are dif-

ferent kinds of fats; butter could simply be associated with a harmful fat, whereas typical margarines may contain harmless, or even healthy, fats. Perhaps a more interesting question concerns consumers' preexposure beliefs regarding the relationship between butter and fat content. If message recipients believe that foods made with real butter possess more fat than similar foods made without butter, then, according to postulate 8, a contrary indicative would have the effect of acknowledging this theory, and hence, reducing

counterargumentation. Given the wording of the original advertisement, including a contrary indicative would involve substituting one word: “Extra Soft has 25% less fat than margarine, *yet* it’s made with real butter.” The use of the connective “*yet*” in place of “*and*” signals the following conditional rule, which is likely to be inferred by message recipients anyway:

$$p(\text{less fat} \mid \text{butter}) < p(\text{less fat} \mid \text{no butter}). \quad (11B)$$

Or in other words, the word “*yet*” signals that the statement regarding real butter makes it less likely, or even surprising, that the product has 25% less fat than margarine. If message recipients are likely to invoke the conditional rule represented in equation 11B, then acknowledging this implicit theory with a contrary indicative would, according to postulate 8, have been more effective.

Assuming an implicit theory linking butter to fat content, it would have been confusing if the advertisement had used causal indicative language. The claim that “Extra Soft has 25% less fat than margarine, *because* it’s made with real butter” would seem odd since, according to the implicit theory, real butter should result in more fat. The causal indicative signals the following conditional rule, which directly opposes the implicit theory:

$$p(\text{less fat} \mid \text{butter}) > p(\text{less fat} \mid \text{no butter}). \quad (11C)$$

It is likely that counterargumentation and, as a result, rejection of an argument occurs when conditional indicative language signals a relationship counter to that indicated by message recipients’ preexposure beliefs. Deception and erroneous acceptance of the argument is likely when conditional indicative language is consistent with message recipients’ initial beliefs but runs counter to the true relationship between the two propositions (Cook 1992; Grice 1975; Lakoff 1971). These ideas can be stated as formal research postulates:

P9a: Conditional indicatives are confusing and provoke counterargumentation when they are inconsistent with message recipients’ preexposure beliefs, regardless of the true relationship between two propositions.

P9b: Conditional indicatives foster the acceptance of erroneous beliefs when they are consistent with message recipients’ preexposure belief but run counter to the true relationship between two propositions.

At least one common advertising tactic is related to postulates 9a and 9b. Advertisers frequently invent terms to describe what would otherwise require multiple phrases or sentences to convey (Cook 1992; Leech 1966). Consider, for example, the following claim from an ad for the Toyota Avalon: “Another source of comfort is knowing Avalon is a safe car, thanks to Toyota’s unique Safe-T-Cell.” The

phrase “thanks to” is a causal indicative signaling that the “Safe-T-Cell” is a data statement supporting the claim of safety. But what, exactly, is a Safe-T-Cell? The copy does not elaborate on this point or even mention the feature again. Obviously, it is something that is safe, but to the average consumer this argument reduces to the following: The Avalon is safe because it has some safe thing. Yet, even if message recipients cannot interpret the data further, the argument is likely to foster acceptance of the claim because of the signaling effect of the causal indicative.

The Toyota ad is an apparent, but not necessarily actual, tautology. That is, the Safe-T-Cell could represent a technological innovation—unique to the Avalon—that does indeed make the car safer in the event of an accident. But consider the copy in an ad for KR Darling Downs lunch meat:

The KR Darling Downs Royal Lean shaved range is 97% fat free, finely shaved and full of flavour, giving it great taste that’s smooth and light to eat.

Again, the phrase “giving it” serves as a causal indicative signaling that the first proposition is a data statement to support the second, the fundamental claim. A closer examination reveals three distinct downgraded data propositions—“97% fat free,” “finely shaved,” and “full of flavour”—and three downgraded claims—“great taste,” “smooth,” and “light to eat.” Unfortunately, the exact links between each data statement and each claim are not obvious given the subjective nature of some of these propositions. Under certain circumstances the data statement “97% fat free” could be interpreted as evidence for claiming that the product is “light” (i.e., unlikely to make one flabby), but the term “light” does have other meanings that would not necessarily follow from the data (i.e., easy to digest, low in calories, etc.). The claim of “smooth” is open to innumerable interpretations, making it difficult to trace back to any of the presented data. The data statement “full of flavour” ostensibly establishes the claim of “great taste.” But this is an obvious tautology. Moreover, the data statement “finely shaved” is apparently intended to support the claim that the product is light. Perhaps the correct interpretation of the term “light” is that each slice has less weight because it is shaved thinner—hardly a revelation. But briefly reread the copy. It does seem persuasive, if one doesn’t pause too much to think about the specific propositions. Causal indicatives have the ability to make an array of inherently ambiguous propositions sound like a cogent argument; or in other words, linguistic signals can often dominate the actual content of an argument. This suggests the following postulate:

P10: Causal indicatives foster the acceptance of claims supported by propositions containing subjective, ambiguous, and invented language, even when the resulting argument is inherently tautological.

Unlike conditional indicatives, which substitute for stated

rules, data surrogates signal the existence of evidence, or a lack of evidence, to support a claim without actually presenting any data (Geis 1982). Pledges signal a higher probability for a proposition by suggesting some basis for believing it to be true (Rosenberg 1974). The advertisement for NTT Mobile Communications Network contains an obvious pledge: “The most visible aspect of wireless communications is undoubtedly people talking on their phones.” The word “undoubtedly” signals that the proposition should be accepted with 100% certainty. It implies several reasons for accepting the claim without actually presenting any.

Hedges decrease the strength of a given statement and, hence, signal a lower probability for the proposition. For instance, an ad for Rogaine contains the following copy:

So, for many men, by having the right hair treatment, hair loss can not only be stopped but regrowth can also occur.

This copy contains multiple hedges. The word “many” indicates the inductive nature of the argument and signals that the claim will not be true for every man that uses the product. In addition, the word “can” is twice used as a hedge for the claim regarding stopping hair loss and promoting regrowth. It signals that these benefits result in some but not all cases, again presumably lowering the subjective probability associated with the claim.

But this begs the question, why would advertisers signal that a proposition should not be accepted completely? Part of the explanation mirrors the earlier discussion of contrary indicatives. Advertisers use hedges when they anticipate that message recipients are unlikely to accept an absolute claim. In this sense, hedges may reduce the tendency to counter-argue a given claim (Vestergaard and Schroder 1985). Also, advertisers may wish to avoid making false claims. The hedge achieves this end by leaving open the possibility that the claim is not true (Geis 1982; Rosenberg 1974). However, the academic literature is equivocal as to the overall effect of hedges on persuasion. Some researchers have found that hedges increase message acceptance (Geis 1982; Harris et al. 1993) whereas others suggest that hedges have a negative effect on persuasion (Leech 1966; Sparks, Areni, and Cox 1998). One possible solution to this apparent anomaly concerns the distinction between valid deductive versus probable inductive arguments.

As noted earlier, inductive arguments lead to conclusions that are probable versus improbable rather than absolutely true or false (Richards 1978; Sterrett and Smith 1990). To the extent that message recipients recognize that the conditional rule in an inductive argument is not absolute, the inclusion of a hedge in the claim may actually enhance the credibility of the argument. That is, including a hedge in the claim creates the impression that the advertiser acknowledges the probabilistic nature of the argument, suggesting an honest communicator (Rosenberg 1974), as in the use of the phrase “can help” in the following ad:

Millions of men with erectile dysfunction have enjoyed satisfying sex lives because of Viagra. Viagra improves erec-

tions in up to 4 of 5 men who take it. . . . You may be suffering from erectile dysfunction—and Viagra can help.

When used in the context of an inductive argument, the hedge is effective at signaling the probable nature of the conclusion. The use of more definite language (e.g., “Viagra will *undoubtedly* improve erections”) may well prompt message recipients to take note of the inductive nature of the argument and challenge the absolute conclusion.

Contrast the Viagra copy with the deductive argument for Arnott’s Vita-Weat crackers:

Healthy, satisfying snacks are a great way to restore your ‘get up and go.’ Arnott’s New 100% Natural Vita-Weat Rye are ideal—they’re high in fibre and complex carbohydrates, so you’ll be back on your feet in no time.

This hierarchical argument is essentially deductive, provided message recipients infer the conversationally implicated proposition (i.e., “foods high in fibre and complex carbohydrates are healthy and satisfying”). There is no attempt to qualify the link between complex carbohydrates and energy in any way, so the conclusion logically follows from the data and the claim. In this context, including a hedge in the claim (i.e., “so you *may* be back on your feet”) creates the impression that the advertiser is unwilling to make a stronger statement. This may signal that the argument is based on a false rule (i.e., eating foods high in fiber and complex carbohydrates does not necessarily restore energy) or false data (i.e., Arnott’s Vita-Weat crackers are not high in fiber and complex carbohydrates), both bases for rejecting the argument. This suggests the following postulate:

P11a: Hedges increase the acceptance claims derived from inductive arguments containing probabilistic rules but decrease the acceptance of claims derived from deductive arguments containing absolute rules.

The situation may be reversed for the use of pledges in advertising claims. In the Viagra ad, the use of a pledge (i.e., “Viagra will *undoubtedly* correct the problem”) seems completely unjustified given the inductive nature of the argument. Message recipients have just been told that the product does not work for up to 20% of the men who try it. How will it “undoubtedly” work for them? By contrast, adding a pledge seems to enhance the claim in the Arnott’s ad (i.e., “so you’ll *definitely* be back on your feet in no time”). Here, the pledge has the effect of signaling the advertiser’s confidence in the supporting evidence (Rosenberg 1974). Though somewhat speculative, this reasoning implies the following postulate:

P11b: Pledges increase the acceptance claims derived from deductive arguments containing absolute rules but decrease the acceptance of claims derived from inductive arguments containing probabilistic rules.

IMPLICATIONS AND DIRECTIONS FOR FUTURE RESEARCH

The PPM structure depicts verbal arguments in advertising as made up of arrays of stated and implied propositions corresponding to claims, data, and conditional rules linking data to claims. The basic framework unifies apparently disparate streams of research on the message structure of marketing communications, including (a) one-sided versus two-sided appeals, (b) explicit versus implicit conclusions, (c) statement order effects, (d) the presence versus absence of substantiating evidence, and (e) the presence versus absence of warrants. Within the PPM, research on implicit versus explicit conclusions (Kardes 1988; Sawyer and Howard 1991) corresponds to testing the effects of arguments with implied versus stated claims, respectively. Studies examining the presence versus absence of warrants (Munch et al. 1993) can be recast in terms of evaluating arguments having stated versus implied conditional rules, respectively; and the effects of claim substantiation (Earl and Pride 1980; Golden 1979) can be thought of in terms of comparing arguments with stated versus implied data. Since the PPM allows for any of the propositions making up the considered argument to be stated explicitly versus implied via entailment, presupposition, or conversational implication, it provides a basis for uniting these streams of research and specifying more conceptually precise manipulations of each variable. Statement order effects (Unnava, Burnkrant, and Erevelles 1994) can also be integrated into the PPM framework. Several researchers have examined the effects of linear arguments that flow from data to claim, reverse linear arguments that flow from claim to data, and nonlinear arguments wherein the claim is between the data and conditional rule (see Mortensen 1972). Finally, two-sided appeals can be thought of as instances where arguments contain data intended to lower the probability assigned to the claim (Crowley and Hoyer 1994; Kamins and Assael 1987). The PPM can easily account for this aspect of argument structure and specifies conditions under which this is likely to be an effective tactic (cf. Crowley and Hoyer 1994). So the PPM can account for existing research on message structure in marketing while at the same time providing a comprehensive framework that suggests several new directions for persuasion research.

One of the most promising applications of the PPM concerns tests of argument-driven persuasion within the ELM. The ELM has had an enormous effect in the marketing literature by identifying the processes and conditions under which numerous communication variables influence brand attitudes (see Petty, Unnava, and Strathman 1991). However, as noted earlier, argument quality has largely been defined empirically within the ELM. Several arguments are pretested in pilot experiments; those that elicit consistently favorable cognitive responses are labeled strong arguments, and those that evoke consistently unfavorable cognitive responses become weak arguments (Petty and Cacioppo 1986). Empirical tests of the ELM have consistently shown that argument quality influences persuasion via the central route to per-

suasion (i.e., when message recipients are both motivated and able to process topic-relevant information) (Petty et al. 1983, 1991). However, researchers have criticized the ELM's empirical definition of argument quality for lacking conceptual rigor and obscuring the question of why, exactly, some arguments are more persuasive than others (Areni and Lutz 1988). A somewhat sharper criticism of the empirical definition is that it renders the status of argument quality within the ELM immune to refutation. If the central route to persuasion is driven by message recipients' cognitive responses to external communications (Petty et al. 1983, p. 135), and argument quality manipulations are based on pretested arguments eliciting primarily positive versus negative cognitive responses (Petty and Cacioppo 1986, p. 183), then it is hardly surprising that argument quality influences persuasion via the central route in empirical tests of the ELM.

What is needed is a conceptually rigorous basis for manipulating qualities of verbal arguments independently of the variables within the ELM. The PPM provides many such opportunities. Moreover, many of the research postulates advanced above are consistent with the basic principles of the ELM. For example, in terms of the ELM, linguistic signals may be thought of as peripheral cues that drive persuasion when message recipients lack the motivation and/or ability to consider the details of an argument (Sparks et al. 1998). The PPM also offers a basis for decomposing previous empirical manipulations of argument quality into more fundamental components to explain why the strong arguments were more persuasive than the weak arguments. For example, a preliminary examination of two argument quality manipulations used in previous in ELM research (see Gibbons, Busch, and Bradac 1991; Sparks et al. 1998) indicates that the weak arguments included more hedges than the strong arguments. Depending on other aspects of the arguments, this may in part account for why the strong arguments were more persuasive than the weak arguments. A more systematic analysis of the arguments used in ELM research will likely yield additional differences between strong and weak conditions in terms of the PPM.

At a broader level, researchers have attempted to reconcile verbal arguments as typically constructed in discourse with arguments as represented in propositional logic, only to find that the latter is too restrictive to capture many of the rhetorical devices used in the former (Braine and Romain 1983; McGuire 2000). Three aspects of verbal arguments have been particularly problematic in this regard. First, logic requires all propositions to be absolutely true or false, whereas claims and evidence in verbal arguments are more likely to be judged as plausible or implausible by message recipients rather than absolutely true or false (Fishbein and Ajzen 1981; Rosenberg 1974). Second, arguments in logic require the explicit statement of propositions, while arguments constructed in discourse often imply conclusions or premises without actually stating them (Braine 1978; Braine and Romain 1983). Finally, in propositional logic, conjunctions have limited mathematical definitions that cannot easily capture the denotative and connotative meanings of the con-

nectives used to construct verbal arguments (Johnson-Laird and Byrne 1991; Lakoff 1971). As demonstrated above, the PPM accommodates these three aspects of verbal arguments and, as discussed in greater detail below, has the potential to accommodate additional characteristics of arguments that would pose difficulties for propositional logic. Its probabilistic representation also allows for an assessment of the rationality of message recipients, thus connecting it to decades of research on logic and rhetoric.

Much of the experimental research examining multiattribute models and the ELM has focused on testing hypothesized relationships among theoretical constructs. This has necessitated the creation of messages that accurately map onto key constructs. While this is critical for devising diagnostic theory tests, these mock advertisements have often included claims that are inherently unrealistic: they would never appear in actual advertisements for the focal product. This has, perhaps, distanced much of this academic research from industry copywriting tactics and strategies. However, all of the variables and underlying constructs in the PPM are found, and apparently tactically manipulated, in contemporary advertising, so experimental manipulations are more easily related to actual advertising practices. Moreover, in the process of testing the postulates derived above, academic researchers can indicate how actual advertisements could have been modified to increase acceptance of key claims. For example, if postulate 8, concerning the effect of contrary indicatives, is correct, then the advertisement for Devondale Extra Soft Spread would, indeed, have been more effective if the connective "yet" had been used in place of "and." So the PPM encourages academic research that draws on and, at the same time, offers guidance for advertising copywriting practices.

As noted earlier, the PPM does not account for implied propositions related to multiple interpretations of specific words or phrases. Inferences regarding figurative language (McGuire 2000; McQuarrie and Mick 1996) and pragmatic implications (Harris 1977; Preston 1977) lie outside the purview of argument structure. However, the probabilistic approach may ultimately prove useful for representing these and other nonstructural aspects of verbal arguments. In particular, the variables reviewed above have been characterized as affecting the mean probability that message recipients will accept the fundamental claim. But message recipients' responses to the use of metaphors, allegories, pragmatic implications, and so on, may involve differences in the variances of the corresponding probabilities relative to when literal attribute claims are used (Leech 1974). For instance, it is interesting to speculate that, relative to literal attribute claims, effective metaphors in advertising increase the mean probability associated with the fundamental claim, without influencing the variance of that probability (Cohen and Margalit 1972). In other words, good metaphors are both clear (i.e., lower variance) and effective (i.e., higher mean). Less effective metaphors, however, may suffer from a lack of clarity because of idiosyncratic associations (i.e., higher variance) or consistent but inappropriate associations (i.e.,

lower mean). The probabilistic approach can account for these kinds of effects by specifying the effect of various argument-related variables in terms of first and second moment statistical tests (see Louviere 2001).

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