Invited Article

Principles of Effective Message Design:
A Review and Model of Content and Format Features

Joseph N. Cappella [1] and Yue Li [1]

[1] Annenberg School for Communication, University of Pennsylvania

Corresponding to

Joseph N. Cappella

3620 Walnut St., Annenberg School for Communication, University of Pennsylvania, Philadelphia, PA 19104-6220, USA

Email: joseph.cappella@asc.upenn.edu

ABSTRACT

In order to advance the scientific basis for message design, theories of belief, attitude, and intention change focusing on the importance of arguments must be joined with theories that deal more with a message's executional (or format) features. Previous summaries of the literature on message effectiveness are reviewed. They provide the fact base needing explanation. They are therefore useful but fail to provide an explanatory mechanism for integrating message content and format elements. This paper takes steps in this direction arguing that processing and resource allocation theories (Lang, 2006; Stephenson & Southwell, 2006) can be integrated with theories of belief change (Petty & Cacioppo, 1986) to advance message effects theory and research. The mechanism employed generalizes from the mediational processes of the elaboration likelihood model, namely ability and motivation, arguing that message formatting features themselves affect ability and motivation. Specific predictions for the interaction of message format features and argument strength are derived through their impact on ability and motivation. Recent research reporting interaction between format features and argument strength is described in the context of the model's predictions. Implications of the model for cumulating knowledge about message effects and guiding future research are explored.

KEYWORDS

message design, persuasion, effects, influence

Communication campaigns are effective when their messages reach the targeted audience and are comprehensible, engaging, sticky and produce acceptance (Parvanta et al., 2013). In short, they are persuasive (McGuire, 1999). But if their study is to be useful, the components of messages including their content and how content is executed through text, audio, and visual media must be identified and generalized beyond a specific instance. To find that a specific form of a specific message is more effective than that of some other form or other specific message is not only theoretically uninteresting, it is a seriously

inefficient approach to the study of message effectiveness (Cappella, 2006). Our starting premise is that research on effective messages must be theoretical in that some psychologically reasonable principles generating potentially effective messages must guide message selection and design.

A single application aimed to remedy a serious problem affecting an at-risk public is not without justification, but principled design and testing driven by viable cognitive-emotional principles is potentially both efficient and practical. As communication scientists, our interests must be centered squarely on theoretically generalizable components of messages and their empirical verification and replication, not on simply creating a message that works to achieve its end in one fixed context never to be re-deployed. This manuscript offers steps toward a theoretical account of message design in both its content and execution.

The components of messages that are our theoretical objects must be able to be manipulated as a part of the design process. That is, message components should be based on intrinsic message features rather than message effects (O'Keefe, 2003). On one hand, message effects are influenced by the intrinsic message features. On the other hand, if the message component is not an objective feature of the message but is instead a less replicable or manipulable subjective or intuitive feature, then it cannot be designed in or out of a message in a principled way. Too, the ability to accumulate knowledge about message effectiveness requires comparability to allow cumulation. Employing objective message features facilitates knowledge cumulation.

Objective research on subjective message features certainly can and has been conducted but a message designer cannot translate a subjective feature into a concrete element of a message. An example may help to make this clear. Whether a message has an explicit statement of the claim, support, and warrant (Munch et al., 1993) can

be assessed in an objective way but whether the support and warrant offer strong arguments for the claim depends on the target audience's cognitive response to the specific support and warrant (Eagly & Chaiken, 1993; Petty & Cacioppo, 1986). The former pair (support and warrant) is an objective feature of the message able to be described in a principled, well-defined way while the latter, undoubtedly more important to effective persuasion (Johnson et al., 2005), is not. A message designer can include explicit claims, support and warrants or not as needed but cannot be guided by a principle that says "include strong arguments" without being told the exact content of those strong arguments or a set of principles through which such arguments can be designed. If the strength of an argument can only be assessed by obtaining the cognitive responses, pro and con, from members of the target audience, then such a definition is subjective, not objective, and, importantly, not able to be designed into or out of a message without a lot of prior testing for each topic and context.

So our second premise directs that research focuses on the objective features of effective messages so that results can be the basis for effective message design and not simply principles that are unable to be put into practice. That said, the model offered below will sometimes have to relax the principle of objective message features in order to allow the most powerful features of messages to be included in theorizing. When necessary, strategies allowing subjective features to be "objectivized" in message effects research will be offered or at least provide a promissory note and empirical method for moving from the subjective to the objective catalogued.

The study of effective—that is persuasive—messages has a long and distinguished history dating at least to the writings of Aristotle (1924) who sought to describe all the available means of persuasion categorized into the domains of ethos, logos and pathos. Overviews of the components of effective messages have been numerous and

extensive but they have also been disjointed and lack theoretical integration (Cappella, 2006). The consequence of such disjointed treatment of aspects of message content and format is the inability to design messages coherently because the relationship among message features has not been conceptualized or appropriately operationalized. In what follows, an approach to conceptualizing the relationship between core aspects of message content (primarily argument strength) and a variety of formats for presenting that content suggesting an explanatory mechanism through which format and content can interact to produce non-obvious predictions.

OVERVIEWS OF THE FEATURES OF EFFECTIVE MESSAGES

There is a substantial literature on the features of persuasive messages. However, there is no single overview chapter, article, or volume (edited or otherwise) that brings all the literature together in a theoretically coherent way. A brief synopsis of some of the extant summaries tells the research community what the literature does and does not achieve.

Handbooks and Overviews

Many of the wide-ranging reviews of attitude change and persuasion treat messages in some way. For example, Eagly and Chaiken (1993) treat message design issues only in terms of their participation in extent psychological theories of attitude formation or change. The translation to message implications is indirect at best. Forays such as Albarracín, Johnson, and Zanna (2005) do have explicit chapters about persuasive communication but less about objective message features (Johnson et al., 2005). The *Handbook of Persuasion* (Dillard & Pfau, 2002) dedicates five of 34 chapters to message features, two of which are about language and

one about nonverbal behaviors of persuasive sources. The thirty chapters of the *Handbook of Health Communication* (Thompson et al., 2003) has one chapter on "health message design strategies" (Murray-Johnson & Witte, 2003). Keller and Lehmann (2008) provided the basis for the CDC's earlier project on automatic message evaluation for health campaigns. In the *Sage Handbook of Persuasion: Developments in Theory and Practice* (Dillard & Shen, 2013), one chapter emphasizes message features including content, structure, and style (Shen & Bigsby, 2013). However, it does not examine how these components interact to affect outcomes in large part because the empirical literature does not. The classic edited volumes and handbooks do not ignore message effects but give it less direct treatment than it deserves given that messaging is a crucial vehicle through which the public interest can be advanced.

Summaries of the Effects of Message Features

Most of the summaries of the literature fall into this category and the number of features studied extensively is itself quite broad. Some reviews are quantitative (aka meta-analytic, Allen & Preiss, 1998) while others are narrative in form. Researchers interested in the fact base for the effectiveness of objective message features have a cornucopia of summaries from which to select. Michael Allen has been a guru of meta-analytic approaches to message (Allen & Preiss, 1998) and media effects (Preiss et al., 2007). The early meta-analyses reviewed studies on fear-arousal (Mongeau, 1998), one-sided and two-sided messages (Allen, 1991; O'Keefe, 1999), language intensity (Hamilton & Hunter, 1998), distraction (Buller & Hall, 1998), the sleeper effect (Allen & Stiff, 1998), rhetorical questions (Gayle et al., 1998), explicit and implicit conclusions (Cruz, 1998), among other topics.

Many of these topics have been revisited and

extended in subsequent meta-analyses and narrative reviews. Kumkale and Albarracin (2004) have updated the sleeper effect findings. Others have examined "door in the face" and "foot in the door" strategies (Feeley et al., 2012; O'Keefe & Hale, 1998), metaphor (Brugman et al., 2019; Sopory & Dillard, 2002; Van Stee, 2018), testimonial assertion evidence (Reinard, 1998), explicit justification (O'Keefe, 1997, 1998, 2002b), inoculation (Banas & Rains, 2010; Szabo & Pfau, 2002), humor (Eisend, 2009, 2011; Saucier & Walter, 2021; Walter et al., 2018), response and self-efficacy (Bigsby & Albarracín, 2022; Casey et al., 2009), speech dysfluencies (Carpenter, 2012), effective use of objective risk statistics (Gigerenzer et al., 2007), one-sided and two-sided messages (Eisend, 2006, 2007; Grewal et al., 1997) among other topics.

Some of these more rational elements of messages have been balanced by reviews of emotional appeals and narrative formats. The centrality of fear appeals in persuasion led to an important meta-analysis of the effectiveness of fear and efficacy (Witte & Allen, 2000) updated to include some additional factors (de Hoog et al., 2007). Later meta-analyses have provided insights into the effectiveness of fear appeals. While they have been found to have consistent positive effects on attitudes and behavioral intentions (Tannenbaum et al., 2015), fear appeals are inconsistently effective for behaviors (Carey et al., 2013; Tannenbaum et al., 2015). The effects of fear appeals tend to be stronger when the messages include high-efficacy statements (Peters et al., 2013; Tannenbaum et al., 2015) and recommend one-time instead of repeated behaviors, and when they are directed at female audiences (Tannenbaum et al., 2015).

Guilt as a mechanism of persuasion has attracted scholarly attention. O'Keefe's early assessments (2000, 2002a) laid the groundwork for understanding the consequences of guilt appeals on persuasive outcomes. Boster et al. (2016) found that guilt is an effective means to increase compliance, while Xu and Guo (2018) have provided evidence that guilt has generally positive effects in changing attitudes and intentions.

Beyond fear and guilt, the landscape of emotions in persuasion is rich and varied. Recent studies have explored the persuasiveness of nostalgia (Cheng & Yan, 2023) and anger (Walter et al., 2019). For a comprehensive understanding of how discrete emotions affect persuasion, the work of Nabi (1999) serves as a valuable review.

The importance of narrative forms as a vehicle for persuasive messages has captured researchers' attention in general (Braddock & Dillard, 2016; Green & Brock, 2000, 2002). More targeted research has examined the persuasive effects of narratives in specific domains, such as health communication (Kreuter et al, 2007; Shen et al., 2015) and stigma reduction (Zhuang & Guidry, 2022), and among various populations such as African American women (Ballard et al., 2021). Narratives are especially effective with counter-attitudinal audiences as they are found to generate less resistance than non-narratives (Ratcliff & Sun, 2020).

Much of the comparisons between narratives and non-narratives contrast narratives with statistical evidence. However, meta-analyses present a mixed picture regarding their relative effectiveness in persuasion. While some meta-analyses suggest that statistical evidence is more persuasive than narratives (Allen & Preiss, 1997) or equally effective (Xu, 2023), others found that narratives have a stronger impact on changing beliefs (Braddock & Dillard, 2016), attitudes (Reinhart, 2006), intentions, and behaviors (Oschatz & Marker, 2020). Further complexity is added by the role of moderating factors. Various meta-analyses have examined factors, such as emotional engagement (Freling et al., 2020), temporal effects (Oschatz & Marker, 2020), and types of outcomes (Zebregs et al., 2015), that may cause the differential impacts of narrative and statistical evidence on attitudes, intentions, and behaviors. Exemplars (personal anecdotes or

cases) have been widely evaluated (Bigsby et al., 2019; Krämer & Peter, 2020; Zillman & Brosius, 2000) as has the question of when exemplars will be more effective than base rate statistical information (Allen & Priess, 2011).

Message framing is a very broad concept (Cappella & Jamieson, 1997; Entman, 1993) that loses its utility as a message design feature unless constrained. Most have focused on gain and loss framing in part because this is one of the few aspects of framing that can fairly claim to preserve informational equivalence across the frames (Sher & McKenzie, 2006). O'Keefe and collaborators have conducted several meta-analyses which question the effectiveness of gain and loss frames (O'Keefe & Jensen, 2006, 2007, 2008, 2009; O'Keefe & Nan, 2012; O'Keefe & Wu, 2012). Later research has joined the conversation with some finding no significant difference in persuasiveness between the two framing types (Ainiwaer et al., 2021; Xu & Huang, 2020) while others finding small but significant persuasive advantages in favor of either gain-framed messages (Gallagher & Updegraff, 2012; Kyriakaki, 2007; Waheed, 2023) or loss-framed messages (Akl et al., 2011).

Beyond examining the persuasive power of these framing types, further studies have delved into the underlying mechanisms through which gain-framed and loss-framed messages become (in)effective (Nabi et al., 2020) and the boundary conditions of likely effectiveness (Hull, 2012; Latimer et al., 2007; McDonald et al., 2021; Penţa & Băban, 2018). More recent research has geared towards other types of framing, such as temporal framing (Chew et al., 2023; Huang & Xu, 2022; Wang et al., 2023).

Tailoring is not a feature of a persuasive message but rather is an approach to crafting persuasive messages to insure that manipulated elements of the message such as its spokesperson, topic, level of complexity and so on match those of the specific receiver. Tailoring is not targeting but is targeting carried to its logical extreme, where the person and their characteristics are targeted. Much of the applied work in health communication for prevention, screening, treatment, and post-treatment quality of life employ tailored messaging (Kreuter et al., 2000). The approach has been shown to be effective in inducing engagement and liking with the message (Briñol & Petty, 2006; Hornikx & O'Keefe, 2009), creating successful outcomes (Huang & Shen, 2016; Krebs et al., 2010; Lustria et al., 2013; Rimer & Kreuter, 2006; Wanyonyi et al., 2011), and being able to deployed on a large scale (Rothert et al., 2006). Further research has explored the conditions under which tailoring is more and less effective (Noar et al., 2007).

In Sum

There is a huge empirical base of work on persuasive messaging in the form of more qualitative summaries and overviews and more quantitative meta-analyses. These are the grist for theoretical frameworks which could direct research to new predictions and organize existing findings. Perhaps the overarching conclusion from these summaries of message effects is that when persuasive theories are discussed, the theories give short shrift to how messages might be designed to take advantage of the usual "psycho-logic" of the audience thereby treating message design as virtually orthogonal to the audience's psychological processes of attitude, belief and behavioral change. The second overarching conclusion from meta-analytic summaries is that message effects are usually treated as main effects on the audience perhaps moderated by some audience characteristics. Very little research examines interaction effects between core message features such as argumentative content (e.g., high threat or high-quality arguments) and delivery of content (i.e., executional features such as narrative forms). It is the combination of message features that allows movement to the next level of message effectiveness.

THEORIZING THE DESIGN OF EFFECTIVE MESSAGES

Message Analysis

Any persuasive message employing text, video, and audio components engineered to be effective for learning or persuasion will be informationally dense and can be conceptualized for analysis in an infinite number of ways (Cappella, 2006; Lang et al., 2006). This means that message features are inexhaustible in principle. The goal in message analysis is to identify fruitful avenues where analysis and subsequent synthesis can guide the art of message creation away from fruitless (and even deleterious) designs and toward approaches which can utilize the audience's psychological tendencies and predispositions in service of beneficial persuasive outcomes.

We analyze messages into their format and content components. The latter refers primarily to the strength of the argumentative appeals made in the message (Petty & Cacioppo, 1986; Zhao et al., 2011). Argument strength is privileged as the key to message content in part because reviews of the literature (Johnson et al., 2005) and large-scale studies (Park et al., 2007) indicate its predictive value in message acceptance. Format refers to the way that content is delivered, not to the content itself, so that two messages delivered with different formats but the same content are informationally equivalent (Sher & McKenzie, 2006).

Advancing a Theory of Message Effects

Although there is no overarching theory of message effects, some theories treat a wide range of message characteristics in terms of their persuasive consequences. Lang's limited capacity model of motivated mediated message processing (LC4MP, Lang, 2006; Lee & Lang, 2015), prospect theory (Kahneman & Tversky, 1979), the activation model of information exposure (AMIE, Donohew et al., 1980; Harrington et al., 2003; Stephenson & Southwell, 2006), and the elaboration likelihood model (ELM, Petty & Cacioppo, 1986) each has broad scope and applicability to a variety of message characteristics.[1]

The ELM has focused extensively on argument strength as a key predictor of persuasive outcome with a variety of audience and context factors moderating the level of a receiver's ability and motivation to process the message. AMIE and LC4MP are primarily about attention and cognitive processing of mediated messages. Their focus is on a wide variety of message features that can enhance or reduce processing of message content. The limitation of these theories is not in what they do but in what they don't do—namely address the "acceptance" component of the persuasive message processing. That is not their intent and so this limitation is not a fault. They contribute to understanding persuasive effects with the addition of components of acceptance (McGuire, 1999) via integrating the belief change models such as the ELM with the processing models of AMIE and LC4MP (Cappella, 2006). We turn to this integration next.

Integrating AMIE, LC4MP, and ELM

The model we propose extends the ELM to include the impact of message features identified by AMIE and by LC4MP with these features, in turn, affecting ability and motivation. Here is the reasoning. The ELM makes basic assumptions about the importance of an audience's ability and motivation when processing a message. When ability and motivation are both elevated,

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[1] Prospect theory is a general theory with broad implications about important aspects of messages, but it has not systematically evaluated messages per se for their characteristic features covered by prospect theory. In this sense it is a broad theory certainly in how it has been applied but differs from the other three theories in that it has not concerned itself with messages factors in and of themselves.

central processing of message content occurs and persuasion depends on the audience's cognitive responses—positive thoughts toward the message's advocacy when the arguments are strong and negative thoughts when the arguments are weak. Ability and motivation are very often manipulated in ELM studies via stable characteristics of the target audience. For example, audiences knowledgeable on the topic will have higher levels of ability to process content centrally; audiences low in need for cognition will have lower levels of motivation to process content centrally. ELM's predictions often employ factors predictive of ability and motivation that are stable characteristics of the audience, even though this is not a requirement of the theory.

The ELM is open to any elements in the persuasive setting that could affect ability and motivation, stable or more transient. There is nothing in the theory which prohibits the introduction of other factors in the persuasive setting—including message factors—that could affect ability and motivation even though these are transient and local effects.

Both LC4MP and AMIE are theories about attentional mechanisms and the elements of messages that affect the allocation of cognitive processing resources. Each identifies a number of very specific message features that can affect ability and motivation separately and simultaneously. In the case of AMIE, the factors have been detailed as a general construct with numerous specific features, overall called "message sensation value" (MSV, Stephenson & Palmgreen, 2001; Stephenson & Southwell, 2006). In the case of Lang's theory, the message factors that could affect ability and motivation to process have been identified as "information introduced" or I^2—both visual I^2 (Lang et al., 2006) and audio I^2 (Lang et al., 2007).

Figure 1 presents a simple model of message effectiveness employing core assumptions from the ELM along with hypothesized effects from message features expected to influence motivation and/or ability from AMIE and from LC4MP. Our model extends the ELM refocusing on executional message features as predictors of ability and motivation to process.[2] Messages are assumed to be able to be separated into content features (primarily argument quality) and executional or delivery features carrying the content (e.g., gain-loss frames or narrative-expository approaches). Content and executional features are predicted to interact with the direction of the interaction—that is the model's predictions—depending on the executional features' effect on ability and motivation.

The ELM's standard predictions still operate in this extended version: if ability and motivation are elevated, then argument scrutiny occurs such that strong arguments yield favorable thoughts and effective outcomes; if ability and motivation are elevated, weak arguments yield unfavorable thoughts with ineffective, possibly boomeranging outcomes. If either ability or motivation is depressed due to executional features (distraction, lack of comprehension, over arousal), then argument scrutiny is lowered with peripheral message features more predictive of effects (interesting story, high production values, interesting metaphors). The key prediction is that argument strength and executional features interact but the direction of the effect depends on the impact of the specific message feature on ability and on motivation.

The model is mute on how multiple executional features interact with argument strength unless they all work in the same direction. For example, age appropriate MSV with engaging narrative both increase motivation without suppressing

ability. Alternatively, excessive levels of MSV with an engaging narrative might work at cross purposes enhancing motivation while depressing ability through over arousal.

In short, the proposed model fits generally accepted accounts of persuasion, offers unique and complex predictions regarding the interaction of message features, and is open-textured in inviting hypothesis creation for the interaction of any executional feature with argument strength. It also provides a framework for organizing accumulating evidence of main and interaction effects on message impacts on belief, attitude as well as behavioral intention and behavior.

Elaborating the Role of LC4MP

In Lang's theory, the allocation of cognitive processing resources to messages depends on a complex set of factors including arousal value of the topic, motivations of the audience (appetitive and aversive), goals of the receiver, and characteristics of the messages being processed (Lang et al., 2006). Although recent research in neuroscience advocates for updating the conceptualization of cognitive processing resources—from the "resource pie" to an approach that describes cognitive resources as large-scale, dynamic, hierarchical (Fisher et al., 2018)—the core idea that message complexity and motivational activation interact to affect resource allocation does not change.

Message characteristics which place greater and lesser demand on the audience are tapped, in part, by the construct of Information Introduced (or I^2), a measure applied to the message's content and format. I^2 focuses first on the number of camera changes in video texts and then what happens immediately afterwards: emotion change; new central object; relatedness of scenes; object change; distance; perspective; and form change. When I^2 is too high and the audience's

Figure 1. *A Model of Format Features and Argument Strength on Perceived Effectiveness (an Indicator of Persuasiveness) Operating through Ability and Motivation*
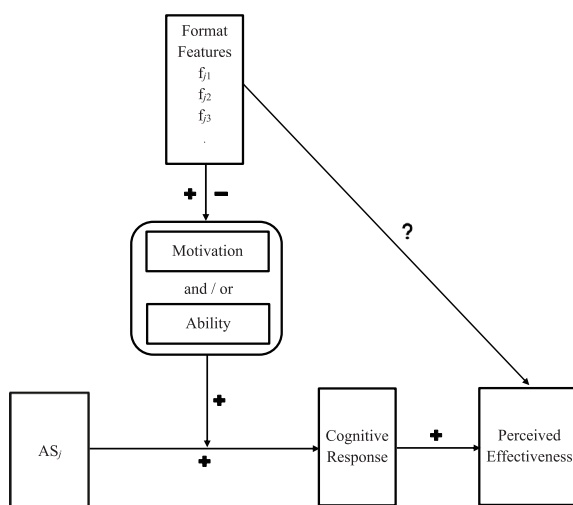
Note. AS_j denotes the argument strength of message *j*. The format features of message *j* may vary, and they are indicated as $f_{j1}, f_{j2}, f_{j3},$ etc.

capacity to process is not extended by goals or other (non-message) motivational demands, capacity to process might be exceeded. Results show clearest indication of cognitive overload when with increasing I^2 there is an accompanying reduction in recognition memory (Lang et al., 2006). However, this effect is moderated by the presence of arousing stimuli in the message which have the tendency to elevate allocated cognitive resources so that initial small increases in I^2 do not necessarily lead to drop-off in recognition unless other factors operate as well. Later LC4MP theoretical updates have implied that "cognitive overload" could potentially be a misleading term (Lee & Lang, 2015). Instead, the phenomenon seemingly underway here is a resource allocation process that reallocates resources from the primary task to the secondary task, which is reflected in diminished performance on the primary task and enhanced performance on the secondary task (Fox et al., 2007).

The bottom line here is that I^2 offers a set of message characteristics that can affect message elaboration by activating or reducing resource allocation and elaboration. Lang et al. (2007) has extended I^2 from the visual to the auditory domain with similar results. Audio attention-getting features (also called orientation-eliciting structural features, OESFs), can be a new voice, change of voice, sound effect or silence onset that did not occur with a camera change. These changes prompt codes for being new, unrelated, emotional, different in emotion, or different in form and are defined as placing information demands on audiences. Recent research in the field of multisensory integration has consistently found that resource allocation is separable for auditory and visual messages at the perceptual level but not at the cognitive level (Alais et al., 2006; Fisher et al., 2018; Koelewijn et al., 2010). Fisher et al. (2018) accentuate the distinction between perceptual processing and cognitive processing as one of the key updates of LC4MP, relating the curvilinear relationship in perceptual

processing to the inverted-U relationship in LC4MP and associating the five dimensions of I^2 with the difficulty of perceptual processing. Both visual and auditory messages can modulate resource allocation either collectively or separately in a curvilinear way.

The exact form of the interaction between formatting features, such as I^2, and argument strength is complex to specify and so the linkage is listed as sometimes positive and sometimes negative. The LC4MP explanation suggests that at very high levels of I^2 capacity limits can be exceeded with elaboration of the argument becoming depressed rather than enhanced because ability would be reallocated to secondary tasks from the primary task. So, one prediction from the model of Figure 1 is that there will be a curvilinear relationship (an inverted-U specifically) between I^2 and argument strength on message effectiveness. Interactions between format and content operating through ability and motivation are hypothesized, but the exact form of the interactions will depend on the specific formatting features under consideration and their deployment within a message context. Guidance for the exact form of the effect is found in LC4MP and its variants as well as in AIME.

Elaborating the Role of AMIE

The AMIE model also deals with attention to messages. AMIE was designed in response to adolescents at-risk for drug use (Donohew et al., 1980), namely high sensation seekers (Zuckerman, 1994), and to a particular problem, namely insuring attention to anti-drug messages. The model has clear implications beyond this context and Stephenson and Southwell (2006) draw them out.

Attention is used in two different senses in AMIE. The first is attention as in selective exposure to some messages rather than others. This sense helps researchers to deal with the message factors that might operate to "break through the clutter"

that is the modern media experience. The second sense of attention is "attention given exposure." That is, once the message is selected, are cognitive resources given over to the message as it unfolds? For example, studies using "eyes on screen" (aka eye-tracking) as a measure of attention given exposure can indicate visual attention to a message if not the allocation of cognitive resources (Lorch et al., 1994).

One of the substantial contributions of AMIE is its inclusion of message factors—executional ones primarily—that enhance the likelihood that the message is selected for viewing and that viewing would be sustained. Messages with high sensation value (high MSV) would receive greater attention than those of less sensation value especially among those with sensation-seeking personalities (Harrington et al., 2003; Morgan et al., 2003).

Some Specific Two and Three Way Interactions

Audience Dispositions, I^2, and Argument Strength. Another complexity affecting the interaction between formatting features (MSV and I^2) and argument quality is found in audience differences. Consider a specific example of some features of I^2. In adolescent audiences, high in sensation seeking, fast-paced videos are assumed to be attention-getting (Morgan et al., 2003) and some evidence supports this claim (Donohew et al., 1991, Lorch et al., 1994). However, the finding has been challenged (Southwell, 2002) and adult audiences might find excessively fast-paced persuasive ads difficult to handle lowering their ability to process the message's content. The consequence might be a lower ability to process and less elaboration of central content for adults in contrast to adolescents. In the case of a general adult population, the effect of strong arguments might be depressed while that of weaker arguments might remain the same or even be elevated.

The point is that an interaction effect between

a type of message feature and argument strength on message effectiveness emerges through the mechanism of the feature's impact on ability and motivation but the direction of the effect may depend on the character of the audience and its predilections, the intensity of the demand, current goals, and the extent to which capacity limits have been reached. Simple audience differences in preference for sensational messages are compounded when the variety of audience predispositions is expanded to include approach and avoidance tendencies (Shen & Dillard, 2007) and motivational focus (Higgins, 2012) which can clearly affect motivation in the latter case and preference for specific types of appeals in the former case.

MSV × Argument Strength. MSV describes a set of message features that can function independently and in combination to attract attention. The features are derived from theoretical underpinnings in sensation seeking personality (Zuckerman, 1979; Zuckerman & Kuhlman, 2000) and are presumed to elicit sensory, affective and arousal responses (Everett & Palmgreen, 1995; Harrington et al., 2003; Palmgreen et al., 1991). These structural features include formal video features (e.g., cuts, edits, special visual effects, unusual colors, slow and fast motion, and intense moments), formal audio features (e.g., saturation, sound effects, music, slow and fast voices), and presentational styles (e.g., act out versus talking head, surprise/twist ending, narrative form, Morgan et al., 2003).

Despite the theoretical claims that MSV will help sustain attention thereby increasing cognitive elaboration, other evidence suggests some conditions under which messages high in MSV will reduce the effectiveness of strong arguments. For example, Kang, Cappella, and Fishbein (2006) reported interactions between argument strength and MSV such that for high-risk adolescents, messages high in MSV undermined the effectiveness of ads with strong arguments. Also, behavioral and brain data has indicated that

adults viewing anti-smoking ads have reduced recall of scenes when the ads are high in MSV than low and that low MSV ads activate regions of the brain associated with endogenous attention more than high MSV ads do (Langleben et al., 2009; see also Wang et al., 2013 for behavioral consequences).

Although the jury of research findings agrees that MSV and argument strength interact, it is not clear whether MSV will necessarily enhance elaboration or undermine it and under what conditions. So, we hypothesize the presence of interaction effects between MSV and argument strength but the direction of effects remains unspecified as a research question. For example, Myers (2014) delivered HPV messages that varied in vividness and in argument quality (AQ) showing that vividness enhanced perceived effectiveness only when AQ was low, not when it was high. Research will need to examine the full range of potential MSV scores to ascertain whether MSV produces the kind of curvilinear (inverted-U) relationship between MSV and argument strength that would account for the complex findings from previous work and would also be consistent with theoretical predictions from related constructs such as I^2.

Narrative × Argument Strength. So far the constructs of information introduced I^2 and MSV have been treated as a coherent set of indicators made up of individual components some of which, such as editing cuts, are very specific and well-defined while others are broader and more complex such as narrative form. To illustrate the problem with hypothesizing directional interaction effects with more complex features of messages, consider the example of narrative form (an element of MSV) usually contrasted with expository formats. A substantial body of research indicates that narrative forms can enhance persuasion by reducing counterarguing (Green & Brock, 2000) and in turn inviting belief change consistent with the narrative even when the changes are implicit rather than

explicit (Green, 2006). Narrative forms have been shown to enhance behavior change even when the behaviors are as difficult as quitting smoking (Durkin et al., 2009) perhaps through a mechanism such as enhanced engagement with the message's content (Kim et al., 2012). Given other findings indicating that narrative content is better recalled than is content from expository formats (Graesser et al., 2002), the obvious prediction is that narrative formats will increase cognitive engagement with the narrative enhancing elaborative processing of central content—the core argumentative appeals of the message.

However, narratives are complicated in that the narrative content may be consistent with or inconsistent with the core persuasive theme of the message. Certainly, a coherent narrative will have the core persuasive theme carried by the narrative arc itself and not operate at odds with the narrative structure. Such coherence—a kind of redundancy between narrative structure and persuasive theme—is a necessary condition for increased elaboration of core content when presented in a narrative format. Otherwise, attention to the narrative structure could be a distraction from the core content undermining the audience's ability to engage in elaborative processing. An interaction effect between narrative form and argument strength would emerge through the mechanism of ability and motivation whether the narrative is coherent or not but the direction of the interaction will depend on subtleties of the narrative and the persuasive theme.

So, narrative can enhance or undermine elaborative processing depending on the narrative's coherence with most narratives being well designed to, in fact, be coherent. For example, Krause and Rucker (2020) manipulated stories (with facts vs. facts alone) and AQ (high and low) in three studies. Weak arguments enhanced product attitudes when stories were present but lessened those attitudes when strong arguments were employed. The story could have undermined the impact of

facts. When Schreiner et al. (2018) used stories in both conditions of high and low narrativity, the high narrativity stories enhanced the impact of high-quality arguments but lowered that of low-quality arguments. Had measures of ability and motivation been employed, the variation in the two narrative studies might be able to be explained.

The model of Figure 1 would predict that coherent narratives enhance elaborative processing and incoherent ones would undermine such processing. A similar effect structurally obtains with humorous appeals are a part of persuasive messaging and can interfere with processing of strong arguments if the humor fails to reinforce the core ideas in high quality arguments (Cline & Kellaris, 1999). Importantly, the model offers an explanatory basis for the prediction through the intervening variable of ability. With ability lower as would be the prediction for an incoherent narrative, audience members would move to other features to guide their processing with the presence of narrative form a preferred form in general in contrast to expository. A main effect of narrative form as a peripheral cue affecting message effectiveness would also be hypothesized.

Exemplars. The role of exemplars (Zillman & Brosius, 2000) and examples (vs. base-rate statistics, Allen & Priess, 2011) would function very much as narrative formats do. Such formats can be more engaging, enhancing the motivation of audiences to process content but, if distracting in that the anecdotes are insufficiently redundant with the core persuasive theme or create simple distractions for other reasons, then ability would be impaired and peripheral processing would takeover.

Implicit-Explicit Conclusions. Message formats such as implicit-explicit conclusions (Allen & Preiss, 1998) and the positioning of strong and weak arguments (Allen & Preiss, 1998) would exhibit their impact on message effectiveness through ability. Martin et al. (2003) manipulated the explicitness of conclusions (implicit vs. explicit) and argument quality (high vs. low) in messages about cellular phones. They found a 3-way interaction with need for cognition (NFC) such those high in NFC showed favorable attitudes with implicit, high-quality arguments versus other. If conclusions are left implicit but the audience is unable to draw the inference because it is too obscure, too subtle or the audience's prior knowledge in the domain is insufficient, then ability would be lowered and elaboration depressed.

Metaphor. The role of metaphor as a persuasive format (Sopory & Dillard, 2002) can be understood in a similar way. Metaphors that are innovative but comprehensible can enhance motivation to process and, in some cases, enhance connections among implied associations increasing the ability to process the information in the message. Too, there is a delight in processing a well-crafted metaphor that can enhance the ability to understand a persuasive message. These conditions on metaphor will enhance elaborative processing and the importance of the argumentative appeals in predicting outcomes. But metaphors can be clichéd, or exceedingly subtle or obscure, depressing the ability to process the core content. As with narrative processing (and exemplars and humor), topical relevance is crucial as well. Employing metaphors as linguistic devices rather than as vehicles to communicate core content can draw processing resources into the wrong arenas depressing ability to elaborate argumentative appeals.

Tailoring. Message tailoring has received a huge amount of attention in the health communication literature as a way to present potentially persuasive material (Noar et al., 2007; Rimer & Krueter, 2006). As Briñol and Petty (2006) argue, tailored messages are likely to enhance both ability and motivation to process message content. Motivation is enhanced because the content is presented as more directly relevant to the receiver's needs and interests while ability is enhanced potentially

when the information offered is adjusted to the informational inadequacies of the targeted individual. So tailored arguments that are strong could readily produce more favorable thoughts than untailored strong arguments; tailored weak arguments might boomerang enhancing negative thoughts even more than untailored weak arguments.

Gain and Loss Framing. Gain and loss framing should be considered a format feature because in any well-designed study the gain and loss versions will be informationally equivalent. Consider a hypothetical study of sunscreen protection in which gain and loss versions of an argument about maintaining youthful looking skin are manipulated. A different study could focus on gain and loss formats concerning skin cancer. The two studies would employ very different arguments— youthful looking skin and protection against cancer—which might vary in argument strength and perceived personal risk. If the model of figure 1 is correct, then the effects of gain and loss frames should affect argument strength through ability and motivation. But some framings of issues are more difficult to comprehend than others: "Use sunscreen to have youthful looking skin throughout your life" versus "Avoiding sunscreen can increase the chances that your skin will lose its youthful look too early in later life." Complex linguistic constructions can undermine ability to process the core argument.

The most recent understanding of the possible effects of gain and loss framing is that they are moderated by subjectively perceived risk of the behavior and not simply by the riskiness of the behavior itself (e.g., detection of illness is high risk and prevention of illness is low). So personal risk status and vulnerability can affect the motivation to process the message centrally or peripherally which in turn affects the importance of argument strength as a predictor of acceptance. Hull's (2012) findings on HIV testing showed that gain frames are most effective with low risk women while loss frames increased intentions to screen with high risk women. The risk was not their objective risk for HIV but their felt (or subjective) risk. Importantly, these effects were mediated through elaborative processing.

Emotion. The model of Figure 1 does not appear to give a central role to emotion, an obviously important factor in persuasion and theories of persuasion since Aristotle. In fact, the role of emotion is buried in the model in two ways. First, both MSV and I^2 include elements of emotional intensity as a part of the process of coding video and audio features. MSV includes intense moments explicitly as a code focusing on an evocative representation of an event or a scene. I^2 codes for emotion changes in both its video and audio versions. While the original LC4MP model does not provide a clear prediction on when and how the coactivation of the appetitive and aversive systems affects resource allocation and processing outcomes, later theoretical advances (Fisher et al., 2018) propose that traditional emotional dimensions, such as arousal and valence, play a domain-general role in message processing. Specifically, emotions modulate the relative salience of objects in message processing, leading to different prioritization of neural or behavioral responses to stimuli. Empirical research further supports this domain-general role of emotions by showing that emotions can "spill over" from one message to the next (Yegiyan, 2015). In short, emotion change has the capacity to draw attention (demands on processing resources) to the emotional elements of the unfolding message, leading to increasing the competitiveness of certain cognitive and behavioral responses while diminishing others.

Emotion is hidden in a second way in the model. Emotional appeals are arguments in that they offer reasons for a proposed outcome in a persuasive message. In this sense an emotional appeal participates in the message and in the model of Figure 1 as part of the argument. For example, fear is not simply a state of arousal, it is also the result of some event in the environment

or potential situation in a persuasive message that is the basis for the fearful reaction. Personal threat that is severe coupled with potential vulnerability to the threat (Carpenter, 2010) can create a fearful reaction providing a reason and motive to avoid the threat. The message's argument is a combination of severity and susceptibility of the threat creating a fearful response either through a rational assessment of the threat or an emotional reaction or both. Any emotional appeal is an attempt to link an intended persuasive outcome to an emotional condition to be approached or to be avoided. These connections are kinds of arguments for the outcome that will vary in strength for a given situation or target audience.

So, emotion can function as a part of the argument in a persuasive message, varying in strength, or as a format feature intensifying arousal, approach and avoidance during message processing through strong images or language, or emotionally evocative sounds of various kinds. Of course, format features with the capacity to intensify emotional states can act as a distractor drawing processing resources away from the core content either through overstimulation or through inviting cognitive focus on irrelevancies. Without doubt, emotional aspects of the message play a crucial role in message effects but our conceptualization invites us to think about them as a part of the message's core argument and / or its format. Operationally researchers might want to measure more cognitive elements as susceptibility and severity as well more psychophysically grounded elements such as arousal and approach-avoidance. Our model suggests that these components may interact through ability and motivation affecting cognitive reactions to the message.

A few studies have explicitly manipulated emotion and argument quality. Turner et al. (2020) reports two studies manipulating AQ, anger intensity and efficacy related to student protests. Strong anger with high quality arguments was particularly effective versus other conditions but only when efficacy was also high. Lang and Yegiyan (2008) tested 24 PSAs on a variety of health risk topics finding that those with elevated AQ and high arousal scores were more effective. When arousal was low, AQ had little impact on perceived effectiveness for emotionally positive PSAs but a complex association for emotionally negative PSAs. Lee et al. (2013) manipulated anti-smoking PSAs with smoking cues (present, absent) and at different levels of AQ (high and low). The presence of smoking cues is a strong approach stimulus for smokers in this study often producing craving responses. The authors found that negative effects of smoking cues on efficacy to quit and quit intentions were especially strong with high AQ messages.

These findings and hypotheses about the role of emotion in affecting the impact of AQ on targeted audiences is speculative largely and in need of organizing, explanatory constructs such as ability and motivation.

Other Features. Many other message features can be considered within the framework of the model of Figure 1. In any new case, not considered so far, the researcher would trace the impact of the message feature as operationalized on ability and motivation to determine whether the feature is likely to enhance the processing of central content—that is the core arguments being made—or instead to invite peripheral processing, perhaps of the message's format features as indicative of its persuasiveness. For example, one plausible explanation of the effectiveness of high message sensation value anti-marijuana messages is not the strength of their arguments but of the appeal of their production values to high risk (primarily high sensation-seeking) youth (Palmgreen et al., 2001).

CONCLUSION

The role that specific content and format features of messages play in affecting attitudes,

intentions, and behaviors is a core issue in the study of persuasion and media effects in a variety of contexts. A great deal of research has been conducted over several decades on both format and content features of messages. Some theoretical work has also guided, summarized and offered explanatory accounts of targeted, but limited, message components. No comprehensive theory has sought to integrate a wide range of format and content features so that their combined effects can be anticipated. The work of this paper and its proposed model is to advance thinking about how message features might combine to increase their effectiveness.

The model presented in this paper seeks to incorporate a wider range of format and content features than has previously been considered by other models, arguing that the arguments a message makes are central to message acceptance and that formatting features can affect the processing of this central content through their impact on ability and motivation. While ability and motivation can abide in the predispositions of the targeted audience and in the contexts within which persuasive messages operate, it is no less true that elements of the message itself can also impact the ability-motivation mechanism as well. Formatting features will not only affect elaborative processing of content but can themselves have direct effects on persuasive outcomes especially when ability or motivation is impaired and peripheral features are taken as indicators of message persuasiveness.

The proposed model works in combination with empirically sound, well documented existing theories such as the ELM, AMIE and LC4MP and so extends previous persuasion theorizing in new directions not through replacement but through extension. We look forward to tests of the model and modifications in the face of empirical findings.

Two distinct advantages accrue when the mechanisms of the model of Figure 1 are employed to predict the consequences of combining specific message format and content features. The first is that format features are transient local conditions that affect message processors through ability and motivation which in turn are the key predictors of elaborative processing. As format features are considered in connection with content, their impact can be predicted by understanding the way that they affect ability and motivation. The model's mechanisms in turn invite measuring ability and motivation as a part of the process of message pretesting and later in the evaluation of message interventions' success or lack. So the explanatory model helps to guide prediction and thinking about message effects, specifically combinations of message elements.

Second, when message content is made "peripheral" in terms of its persuasive impact because ability or motivation is low, then peripheral features of the message become more important as the ELM predicts. One set of peripheral features that has received little or no consideration are the non-content features of the message such as its narrative or expository style, its use of exemplars and anecdotes (Zillman & Brosius, 2000), its sensation value (appealing to some audiences but not others) and so on. The effects of format features then serve not just as predictors of ability and motivation but also as peripheral cues with potential direct effects on message persuasiveness when central content is downplayed.

Identifying mediators of message effectiveness aids in theory testing and knowledge accumulation. An "entomology" of message effects by topic, target audience, and message feature is impossibly complex as message features are infinite in number and an entomological showcase does not explain how messages work and fail unless we also know how they work and fail. Explanatory theories are practical precisely because they unearth the mechanisms through which causal forces work—message etiology replaces message entomology—allowing the study of unanticipated

message features and combinations through the same mechanisms and accumulating descriptive knowledge—the entomology—through categories broader than the success or failure of individual messages.

A variety of objections can be raised to the model of Figure 1 and the mechanisms behind it. One assumption made at the outset of this paper was that message features to be considered should be objective so that findings could cumulate and be deployed by message fabricators. Subjectivity and intuition make this difficult. Argument strength—a central feature of the proposed model—is notorious for being unable to be determined in advance and only able to be assessed by testing proposed arguments with members of the target audience. So this element of the model, given its prominence, appears to be a serious flaw.

Just as there is no general theory of message effects, there is no theory and very little research guiding us into objective features of strong (and weak) arguments even within specific domains. The little research that exists is promising for moving the study of AQ to more objective ground. This work has shown that desirability of an argument's claim rather than its truth value is linked to strength (Johnson & Smith-McLallen, 2006), that the presence of elaboration in the form of support and warrants yields more highly rated arguments (Munch et al., 1993), that evidence in the form of explicit premises and quantitative specificity is associated with more persuasive arguments (O'Keefe, 1997); that arguments that explain in a story-form are more effective (Kuhn, 2001) than simple accumulations of evidence; that threats and susceptibility are strong candidates for high quality arguments (O'Keefe, 2012); and that novel arguments are evaluated as stronger than other types (Morley, 1987; Morley & Walker, 1987) while also seen as less accurate.

These limited findings are suggestive of directions for additional research into the objective base for stronger and weaker arguments. The thematic approaches are particularly useful for message design because they allow specific genres of arguments to be deployed in a specific context and avoided in others. However, there is no reason to believe that effective themes in one arena (e.g., smoking cessation) will also be effective in other domains (e.g., safe sex practices). Part of the reason, of course, is that there is no explanation for the reasons for certain themes to be stronger or weaker. It is a significant challenge for research seeking more objective bases for strong arguments to not simply identify themes or processes (e.g., use an explanatory story) but to offer causal, explanatory accounts for extant effective themes.

Consistent with the general claims of Johnson et al. (2005), our own work on effective messages has indicated the centrality of argument strength in accounting for perceptions of message effectiveness (Kang et al., 2006; Lee et al., 2011, 2013). The model of Figure 1 gives argument strength a position of importance with good reason. Nevertheless, message effects research has a serious challenge in seeking to understand the bases for strong and weak arguments both in terms of their content and structure.

Despite the challenges of building a model of message effects that allows predictive consequences, has some generalizability, and provides linkage to well-developed, empirically sound existing theory, the venture is not just important but even necessary. Communication research in service of the public good has never been more necessary or needed as the retired head of NIH Francis Collins told the research community as he left office (Simmons-Duffin, 2021). One of the painful lessons of the COVID pandemic was that communicating with the public was a challenge that at times bordered on disaster. It's not that researchers did not have the tools to conduct new research. It was that they did not have enough pre-existing knowledge about messaging to be nimble in crafting communications that met the rapidly changing needs of the moment. Such knowledge would

have been theory-based and cumulative, not topic specific, time- and target-bound. There is nothing so practical as a good theory.

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About the Authors

Joseph N. Cappella (Ph.D., Michigan State University, 1974) is the Gerald R. Miller Emeritus Professor of Communication at the Annenberg School for communication at the University of Pennsylvania. He is a Fellow of the International Communication Association and its past president, a distinguished scholar of the National Communication Association, and recipient of the B. Aubrey Fisher Mentorship Award. His research has been funded by several governmental agencies in the United States including NSF, NCI, NIDA, and the FDA.

Yue Li (Ph.D., The Ohio State University, 2023) is a post-doctoral Fellow at the Annenberg School for Communication at the University of Pennsylvania. Her research is centered in computational communication research in the political and health arenas. It has appeared in *Human Communication Research, Journal of Medical Internet Research*, among others.