The Counterintuitive Influence of Vocal Affect on the Efficacy of
Affectively-Based Persuasive Messages

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Abstract

Three experiments examined the extent to which congruency between affective vocal qualities of speakers and the affective content of persuasive messages influenced attitude change. In Experiment 1, a 2 (attitude basis: affective vs. cognitive) x 4 (persuasive message: fully matched vs. partially matched vs. fully mismatched vs. written passage) between-participants experiment was conducted. Attitude change produced by the fully matched voice-content message did not differ from the written passage condition. However, both the partially matched and fully mismatched voice-content messages generated significantly more attitude change than the written passage. Experiment 2 replicated the findings of Experiment 1 and tested two explanations for the enhanced efficacy of voice-content incongruent messages. Supplementary analyses provide some evidence in support of an attribution explanation as a mechanism to account for these effects. Experiment 3 replicated the prior two experiments and tested four possible mechanisms for the persuasive effects of affective vocal-message incongruence. Analyses once again supported an attribution explanation for the incongruency effect.

Keywords: Attitudes, Persuasion, Voice, Vocal Affect, Attitude Bases, Affect, Cognition.
As the American poet William Carlos Williams (1883–1963) so aptly put it: “It is not what you say that matters, but the manner in which you say it; there lies the secret of the ages.” (Selected Essays, preface; 1954). Indeed, both intuition and empirical evidence support the inference that the vocal qualities used when delivering a message can have a considerable effect on a listener’s perception of its meaning (Cooper & Sorensen, 1981). Although intuitively this concept is well understood, researchers within social psychology have largely ignored the roles of vocal qualities in persuasion. This is particularly surprising given the prevalence of oral communication in day-to-day interactions. Making this all the more curious is the fact that an extensive body of literature has accumulated demonstrating that vocal perception influences the communication process (e.g., see Juslin & Scherer, 2005).

Bearing in mind the multifaceted nature of voice, one prominent feature often evident in oral exchanges is emotionality in the voice. Interestingly, research has documented that as specific parameters of voice change this is reflected by changes in emotionality (Banse & Scherer, 1996; Bänziger, Patel, & Scherer, 2014; Juslin & Scherer, 2005; Scherer, Johnstone & Klasmeyer, 2003). Perhaps not surprisingly, studies have also revealed that people are able to detect comparatively subtle changes in emotion expressed through the voice (Johnson, Ernde, Scherer, & Klinnert, 1986), even in cases where language barriers prevent understanding of the content (Elfenbein & Ambady, 2002; Pell, Monetta, Paulmann, & Kotz, 2009). This is particularly relevant in light of the large body of work supporting the important role played by content-based affect in persuasion (e.g., see Petty, Fabrigar, & Wegener, 2003).

The Role of Affect in Attitude Formation and Change

The expression of emotions allows us to communicate important information to others, which in turn may play a role in influencing their attitudes and/or behavior. Indeed, attitude
researchers have long argued that affect is one of the fundamental types of evaluative information used by individuals when forming or changing their attitudes in response to communications (Forgas, 2010; Olson & Kendrick, 2008; Rokeach, 1968; Zanna & Rempel, 1988). This can be contrasted against a second fundamental type of information, cognition, which reflects an individual’s beliefs about an object’s attributes. Indeed, theorists have long distinguished between attitudes and messages that are predominantly based on affect versus cognition (e.g., Crites, Fabrigar, & Petty, 1994; Eagly, Mladnic, & Otto, 1994).

Moreover, when attempting to change attitudes, communicators often use messages designed either to elicit emotional responses from the recipient or alternatively to convey facts about an object’s attributes. Thus, one traditional distinction made in classifying persuasive messages is whether a message predominantly targets affect or cognition (Becker, 1963; Knepprath & Clevenger, 1965; Ruechelle, 1958). Importantly, attitude theorists have determined that the interplay between the content of a persuasive message (i.e., primarily affective vs. primarily cognitive) and the degree to which an individual’s attitude is based on affect or cognitions plays an important role in determining the success of persuasive appeals (Edwards, 1990; Edwards & Von Hippel, 1995; Fabrigar & Petty, 1999; Haddock, Maio, Arnold, & Huskinson, 2008; Mayer & Tormala, 2010; Millar & Millar, 1990; See, Petty, & Fabrigar, 2008). To date, however, the extensive literatures on attitudes and vocal affect have not been integrated to allow for an investigation of the combined influence of these constructs within the context of persuasive appeals.

The Role of Vocal Affect in the Context of an Affective Persuasive Appeal

If we consider that attitudes as well as messages can be based predominantly on either affect or cognition, this leads to the question of how the emotional aspects of voice might play a
role in the persuasive process. Given that affective messages are specifically designed to elicit an emotional response in the recipient, it makes sense that the emotional aspects of voice should be especially important within this context. Indeed, one can imagine several ways in which the interplay between messages designed to elicit an emotional response in the recipient and the affective vocal cues of the speaker delivering that message might combine to influence persuasion. With this in mind, an important question is how best to conceptualize voice in terms of its emotional qualities. One view adopted by many emotion researchers suggests that emotions can be conceptualized along two orthogonal underlying dimensions: valence and arousal (e.g., Bachorowski, 1999; Bradley & Lang, 2000; Frick, 1985; Owren & Bachorowski, 2007; Pakosz, 1983). As it applies to the persuasion process, this framework highlights the importance of considering the extent to which a speaker’s vocally expressed emotions are congruent with the affective content of the message.

For example, congruency exists when a speaker delivers fear-eliciting content using vocal qualities that reflect fear. In this case, the vocal qualities expressed by the speaker match the message content on both arousal (high) as well as valence (negative). Incongruency can occur in part, such as when voice and message are mismatched on either valence or arousal, or in full, such as when voice and message are mismatched along both dimensions. For example, partial incongruency exists when fear-eliciting content is delivered by a speaker whose vocal qualities reflect either excitement (i.e., matched on arousal yet mismatched on valence), or boredom (i.e., matched on valence yet mismatched on arousal). Full incongruency exists when fear-eliciting content is delivered by a speaker whose vocal qualities reflect contentment (i.e., a mismatch on both valence and arousal).
The focus of the present set of studies is on testing two competing perspectives regarding the interplay between affective vocal cues and an affective message in attitude change. The first perspective suggests that persuasion should be enhanced when the affective content of a message is paired with congruent vocal affective cues and reduced when paired with incongruent vocal affective cues. There are at least two reasons one might expect such an outcome. First, research on emotional contagion has shown that exposure to the emotions of another individual can in some cases elicit similar emotions in oneself (Hatfield, Cacioppo, & Rapson, 1992; Hatfield & Rapson, 2008; Neumann & Strack, 2000). A second possibility suggests that congruency between a speaker's vocal qualities and the content of a message may lead the recipient to conclude that their emotional responses are appropriate, thus providing social validation (Cialdini, 2009; Guadagno, Muscanell, Rice, & Roberts, 2013; Hogg & Reid, 2006). Thus, both theories suggest persuasion may be enhanced by matching the affective vocal cues to the content of an affective message and attenuated when a mismatch between these variables occurs.

Although these predictions have a sound theoretical basis, it is not clear that we should expect such a pattern to emerge in all contexts. For example, when the content of an affective message is comparatively high in intensity, little room may exist for congruent affective vocal cues to enhance the impact of the content. Similarly, subtly contradictory sources of emotion such as voice might not be strong enough to undermine the effects of intense affective content. Accordingly, we might expect emotional contagion and social validation to have little effect in the context of affective messages that are comparatively high in intensity.

Instead, an alternative perspective suggests that within the context of affective messages that are high in intensity, affective vocal cues might enhance persuasion when they are *incongruent* with the affective content of the message. At least four potential mechanisms might
account for such a pattern. One explanation suggests that message recipients may use the
speaker’s vocal cues as a comparison point against which to gauge the intensity of their
emotional responses. For example, a speaker who delivers intense fear-eliciting content using the
vocal hallmarks of boredom may cause the recipient to evaluate themselves as especially afraid
relative to the speaker. In turn, this may enhance the influence of the recipient’s negative affect
and therefore increase attitude change. Conversely, if the same content were delivered using the
vocal hallmarks of fear, the recipient may evaluate themselves as comparatively less afraid
relative to the speaker. In turn, this may undermine the influence of the recipient’s negative
affect and thereby reduce attitude change. The general phenomenon of contrast effects has been
documented many times in the literature for various types of social judgements (e.g., Burger,
1986; Martin, Seta, & Crelia, 1990; Schwarz & Bless, 2007; Wanke, Bless, & Igou, 2001).

A second mechanism suggests that persuasion may be influenced by message recipients’
attributions regarding the source of their emotional responses (e.g., Taylor & Fiske, 1978,
Schwarz, 1990; Wyer, Clore, & Isbell, 1999). For example, if intense, fear-eliciting content was
delivered using the vocal hallmarks of boredom, the source of the recipient’s emotional response
should be relatively unambiguous. For that reason, it seems unlikely that recipients will attribute
their experience of fear to the speaker. Rather, they are more likely to attribute it to the attitude
object described by the content. Thus, recipients’ emotional responses should be perceived as
diagnostic of their target-relevant attitude. Moreover, in light of the speaker’s ostensible
indifference, the recipient may conclude that their experience of fear must suggest they feel
especially negative towards the attitude object. By contrast, if the same content was delivered
using the vocal hallmarks of fear, the source of recipients’ emotional responses may be
somewhat ambiguous. That is, recipients may be unable to determine whether the source of their
emotional response is the vocal qualities conveyed by the speaker or alternatively the attitude object described by the content. Thus, the recipient may perceive their emotional response as non-diagnostic of the attitude object.

A third possibility is that voice-content incongruency may elicit a sense of surprise in the recipient. For example, intense, fear-eliciting content delivered by a speaker who sounded extremely bored would be unexpected because of the atypical nature of this voice-content pairing. This combination may cause the recipient to wonder why the speaker appeared to be indifferent when describing a clearly fear-evoking scenario. Consequently, scrutiny of the message may increase, thereby enhancing processing of the content, which may elicit more attitude change if the message is compelling (Petty, Fleming, Priester, & Feinstein, 2001; Schützwohl & Borgstedt, 2005).

A fourth possibility is that voice-content (in)congruency may influence the recipient’s belief regarding the speaker’s persuasive intentions. For example, a speaker who delivered intense, fear-eliciting content and also sounded extremely afraid may be perceived as explicitly attempting to persuade the recipient regarding how they should evaluate the message. This may elicit reactance, which could lead the recipient to generate counter-arguments and thus engender increased resistance toward the persuasive attempt. In turn, this process could decrease the persuasive impact of the content (Brock, 1967; Hass & Grady, 1975; Lee, 2010). By contrast, if the same content were delivered by a speaker who sounded extremely bored, it is comparatively less likely that the recipient would perceive the speaker as making an explicit attempt to influence their attitude towards the target. As a result, the recipient may be less likely to resist the persuasive attempt by generating counter-arguments. Accordingly, voice-content incongruency may be a relatively more effective means of enhancing persuasion.¹
Although each of the aforementioned processes may play a role in determining how voice-content congruency influences attitude change, it is important to note that one might also expect people to vary in the extent to which they are sensitive to affective voice-content congruency. One factor that may influence this process is whether an individual’s initial target attitude is predominantly based on affect or on cognition. For example, perhaps the interplay between content and affective vocal cues has an especially pronounced effect on individuals whose attitudes are predominantly based on affect because these individuals are already comparatively sensitive to affective cues. By contrast, individuals whose attitudes are predominately based on cognition may be relatively insensitive to affective cues and thus less susceptible to the effects of vocal affect on persuasion. Indeed, research investigating the matching/mismatching effects of attitude bases with the affective/cognitive content of a message has generally found that congruency between an individuals’ attitude bases and the type of persuasive message results in greater attitude change (Edwards, 1990; Fabrigar & Petty, 1999; Haddock, et al., 2008; Mayer & Tormala, 2010; See, et al., 2008; but see Millar & Millar, 1990 for an exception).

**Overview of the Present Research**

In three studies, we investigated how the degree of congruency between affective vocal cues and the content of an affective message regulates the success of a persuasive appeal and whether this process is moderated by an individual’s initial attitude base. This question was examined using strongly affective content with affective vocal cues that either fully matched, partially matched, or fully mismatched the emotionality of the content. Because the present studies used a message with highly intense affective content, we expected incongruency to enhance persuasion. Experiment 1 provided an initial test of our hypothesis. Experiment 2 was
conducted to replicate the basic pattern of effects that emerged in Experiment 1 and to investigate whether these effects could be explained by social comparison and/or attribution processes. Experiment 3 was designed to replicate the patterns that emerged in the prior two experiments and to test several additional mechanisms.

**Experiment 1**

Experiment 1 provided an initial test of our hypotheses within the context of a novel attitude object. During the attitude formation phase, a positive attitude was created towards an ostensibly real animal called a lemphur (see Fabrigar & Petty, 1999). The information provided during the formation phase was either predominantly affective or cognitive in nature. During the persuasion phase, participants were exposed to a negative affect-based persuasive message.

**Method**

**Participants and Design**

Two hundred fifty undergraduates were recruited in exchange for course credit. Participants were randomly assigned across a 2 (attitude formation: affective base vs. cognitive base) x 2 (questionnaire order: affective first vs. cognitive first) x 4 (persuasive message type: vocal congruent vs. vocal partially incongruent vs. vocal fully incongruent vs. written passage) between-participant factorial design.²

**Procedure**

**Attitude Formation Phase**

Participants assigned to the affective attitude formation condition were told they would be reading information about a possibly unfamiliar animal called a lemphur and that we wanted to get a sense of their feelings toward lemphurs. First, participants completed an affective-responses scale probing their feelings toward lemphurs. Participants were told that if they were
unfamiliar with the animal, they should answer based on their expectations about lemphurs. In reality, we were not interested in their responses. Instead, the scale served to prime participants’ affective dimension of judgment, thus increasing the likelihood that the emotional passage that followed would create an attitude based on affect.

Participants then read a positive emotional passage describing a person’s encounter with a lemphur by presenting it as a friendly marine animal that frolics with a swimmer. The passage emphasized positive feelings we intended the participant to associate with the lemphur, and thus provided relatively little information about attributes of lemphurs. Lastly, participants completed an attitude scale, and counterbalanced cognitive and affective reaction scales.

Participants assigned to the cognitive attitude formation condition were given similar introductory information and told that we were interested in getting a sense of participants’ beliefs toward the animal. First, participants completed a cognition scale probing their beliefs about lemphurs. Similar instructions were provided as those given in the affective formation condition. This scale was administered prior to the informational passage to prime the cognitive dimension of judgment, thus increasing the likelihood that the passage would create an attitude based on cognition.

Participants then read an informational passage describing positive attributes and nominal facts about lemphurs. The positive information passage was presented as an excerpt from an encyclopedia of marine life. For example, the lemphur was described as an animal that is highly intelligent easily trainable. Lastly, participants completed an attitude scale, and counterbalanced cognitive and affective reaction scales.


**Persuasion Phase**

Participants were assigned to one of four affective message conditions containing a passage developed and validated by Fabrigar and Petty (1999) that elicits negative emotions towards lemphurs. Relatively little information about lemphurs was provided. Instead, to elicit a strong, negative emotional response in the message recipients, the passage graphically described the lemphur hunting, brutally killing, and eating a swimmer.

In the affective vocal congruent condition, participants listened to an audio recording in which the negative passage was combined with vocal qualities that reflected fear, thus matching the message content on both valence (negative) and arousal (high). Participants assigned to the fully vocal incongruent condition listened to the same passage combined with vocal qualities that reflected contentment, thus mismatching the message content on both valence (positive vs. negative) and arousal (low vs. high). Participants assigned to the partial vocal incongruent condition listened to the identical passage combined with vocal qualities that reflected boredom, thus matching the message content on valence (negative) but mismatching the message content on arousal (low vs. high). Finally, participants assigned to the written condition received a text version of the passage used in the audio conditions. The purpose of this condition was to gauge the persuasive impact of the affective vocal qualities relative to the message content. Following the experimental manipulations, participants again completed the attitude scale, and the affective and cognitive reaction scales, which always matched the presentation order in the attitude formation phase.

In a separate pre-testing study, audio versions of the negative persuasion message were pre-tested to confirm that each of the affective vocal qualities conveyed by the speaker was perceived as the intended emotion. Pretesting was done using both open-ended responses, which
allowed participants to spontaneously assign an emotion to the vocal quality heard in the recording, as well as closed-ended responses, which used emotion items based on the 8 octants of the Circumplex model of affect (e.g., Remington, Fabrigar, & Visser, 2000). For the final version of each recording, the intended emotion was the most frequently listed emotion in open-ended responses and the most strongly endorsed emotion in closed-ended responses.

Measures

For each attitude, and affective/cognitive reaction scale item, participants rated the extent to which each word described their responses to the attitude object. Responses were recorded on a 1 (Not at all) to 7 (Definitely) scale, such that higher numbers reflected a more positive response. Overall scores on each scale were computed by reverse coding the negative items, then averaging the scores across all scale items. These scales were previously developed and validated by Crites et al. (1994).

Attitude Scale

Attitudes were measured using an 8-item scale consisting of different words reflecting general and undifferentiated positive or negative evaluation. Half of the words implied positive evaluations (e.g., good, positive), whereas the other half implied negative evaluations (e.g., dislike, undesirable). Reliability was $\alpha = .88$ (Time 1) and $\alpha = .91$ (Time 2).

Affective Scale

The 16-item affective scale required participants to indicate the extent to which 16 different emotions described how the attitude object made them feel. Half of the emotions were positive (e.g., happy, excited), whereas the other half were negative (e.g., tense, angry). Reliability was $\alpha = .84$ (Time 1) and $\alpha = .89$ (Time 2).
Cognitive Scale

The 14-item cognitive scale required participants to indicate the extent to which 14 different traits or characteristics described the attitude-object. Half of the traits were positive (e.g., useful, safe), whereas the other half were negative (e.g., harmful, worthless). Reliability was $\alpha = .86$ (Time 1) and $\alpha = .85$ (Time 2).

Results

Exploration of Attitude Formation Procedures

As expected, pre-persuasion attitudes in the affective ($M = 5.97$) and cognitive ($M = 5.97$) formation conditions were favorable and equivalent across conditions, $t(1, 248) = 0.00, p = 1.00$, partial $\eta^2 = .00$. We next sought to confirm the success of the attitude bases manipulation. In line with prior research (e.g., Fabrigar & Petty, 1999), we computed discrepancy scores to assess the difference between attitude and affect at Time 1, and attitude and cognition at Time 1. This was accomplished by computing the absolute value of the difference between the affect or cognition score and the attitude score. These computations produced scores with a possible range of 0 to 1, with smaller numbers indicating smaller discrepancies (i.e., higher consistency). If an individual’s attitude is predominantly based on affect, the discrepancy between a measure of attitude and affect should be comparatively small. By contrast, if an individual’s attitude is predominantly based on cognition, the discrepancy between a measure of attitude and cognition should be comparatively small. Large discrepancies suggest that the target basis did not serve as the primary determinant of the individual’s attitude. The use of discrepancy scores has a well-established history as a means of assessing structural consistency between measures of attitude, affect, and cognition (e.g., Chaiken & Baldwin, 1981; Chaiken, Pomerantz, & Giner-Sorolla, 1995, Crites et al., 1994; Fazio & Zanna, 1978; Norman, 1975; Rosenberg, 1968).
To test these predictions, a 2 (Type of discrepancy: attitude-affective vs. attitude-cognitive) x 2 (attitude formation: affective basis vs. cognitive basis) mixed-design ANOVA was conducted with the attitude formation condition designated as the between-subjects factor and the type of discrepancy score as the within-subjects factor. Results indicated the main effect of attitude formation condition was not significant, $F(1, 248) = .23, p = .64$, partial $\eta^2 = .00$. However, the main effect of discrepancy type was significant; $F(1, 248) = 5.79, p = .017$, partial $\eta^2 = .02$, indicating that overall, the affective base, ($M = .52, SE = .03$) was less discrepant than the cognitive base, ($M = .62, SE = .04$). Of critical importance was the interaction between attitude formation condition and discrepancy type, $F(1, 248) = 36.44, p < .001$, partial $\eta^2 = .13$. The estimated marginal means associated with this interaction are presented in Figure 1. In line with expectations, a planned contrast of the mean discrepancy scores in the affective formation condition revealed that the attitude-affect discrepancy score ($M = .41, SE = .04$) was significantly less than the attitude-cognition discrepancy score ($M = .75, SE = .05$), $F(1, 248) = 35.64, p < .001$, partial $\eta^2 = .13$. Similarly, a planned contrast of the mean discrepancy scores in the cognitive formation condition revealed that the attitude-cognition discrepancy score ($M = .49, SE = .05$) was significantly less than the attitude-affect discrepancy score ($M = .63, SE = .04$), $F(1, 248) = 6.59, p = .01$, partial $\eta^2 = .03$. Thus, the discrepancy score analyses confirmed that attitude bases were successfully manipulated.

**The Effects of Vocal Qualities and Message Content on Persuasion**

The primary hypotheses regarding persuasion effects were tested in a 2 (attitude formation: affective base vs. cognitive base) x 4 (persuasive message type: vocal congruent vs. vocal partially incongruent vs. vocal fully incongruent vs. written passage) ANCOVA.5 Attitude
at Time 2 was designated as the dependent variable whereas attitude at Time 1 was designated as the covariate. The covariate was not significant, $F(1, 241) = .10, p = .75$, partial $\eta^2 = .00$.

Because an initially favorable attitude was created and the affective persuasive message was negative, lower Time 2 attitude scores indicate greater persuasion as well as more negative attitudes. Recall that prior research (e.g., Fabrigar & Petty, 1999) suggests a matching effect between attitude base and persuasive message-type. Thus, because all participants received an affective persuasion message, we expected a main effect of attitude formation condition reflecting more persuasion for participants whose initial attitude was based on affect versus cognition. As anticipated, persuasion was greater for participants with initially affective ($M = 2.37$) relative to cognitive attitudes ($M = 2.93$), $F(1, 241) = 13.68, p < .001$, partial $\eta^2 = .05$.

Based on the incongruency hypothesis, we predicted a main effect of persuasion passage-type on post-persuasion attitudes. Confirming expectations, this effect was significant, $F(3, 241) = 5.42, p = .001$, partial $\eta^2 = .06$. As a point of comparison, our baseline written passage produced moderately negative attitudes ($M = 2.81$), thus indicating the written content was itself sufficient to substantially change participants initially favorable attitudes. With respect to vocal qualities, the incongruency hypothesis predicted that vocal fear should not enhance persuasion relative to the written passage, and perhaps engender less persuasion. As expected, a planned contrast revealed that attitude change elicited by vocal fear ($M = 3.08$), was non-significantly less than the written passage, $F(1, 241) = 1.64, p = .20$, partial $\eta^2 = .01$. Turning to vocal boredom, the incongruency hypothesis suggests that affective vocal qualities incongruent with the intent of the content should enhance persuasion. As predicted, planned contrasts revealed that vocal boredom ($M = 2.32$), elicited more attitude change than the written passage, $F(1, 241) = 5.31, p = .022$, partial $\eta^2 = .02$, as well as vocal fear, $F(1, 241) = 12.85, p < .001$, partial $\eta^2 = .05$. Finally,
the incongruency hypothesis suggests vocal contentment should also elicit greater attitude change than the written passage. Confirming expectations, a planned contrast revealed that vocal contentment ($M = 2.39$) generated more attitude change than both the written passage, $F(1, 241) = 3.85, p = .05$, partial $\eta^2 = .02$, as well as vocal fear, $F(1, 241) = 10.51, p = .001$, partial $\eta^2 = .04$. Finally, because the incongruency hypothesis suggests that full voice-content incongruency may generate more attitude change than partial voice-content incongruency, a planned contrast was performed to compare the effects of vocal boredom and vocal contentment. No difference was found, $F(1, 241) = .12, p = .73$, partial $\eta^2 = .00$. Overall, these results support the incongruency hypothesis.

Finally, we hypothesized an attitude formation by persuasion passage-type interaction, reasoning that individuals with predominantly affective target-relevant attitudes may be more sensitive to affective vocal cues than individuals with predominantly cognitive target-relevant attitudes. However, no interaction was found, $F(3, 241) = .27, p = .85$, partial $\eta^2 = .00$.

**Discussion**

These data replicated past research (e.g., Fabrigar & Petty, 1995) by demonstrating that individuals with affective (vs. cognitive) attitudes were more responsive to affective persuasive appeals. Importantly, Experiment 1 provided support for the incongruency hypothesis, in that persuasion was enhanced when affective vocal cues mismatched the intent of the content. However, there was no evidence that the magnitude of these incongruency effects were moderated by the basis of initial attitudes.

**Experiment 2**

Although Experiment 1 provided support for an initial test of the incongruency hypothesis, the process by which affective vocal qualities exert their effects remained unclear.
Thus, the goal of Experiment 2 was to begin investigating this question by testing the extent to which two of the four previously hypothesized processes might account for the data. One process suggests recipients may use the speaker as a comparison point against which to judge the intensity of their emotional responses to the lemphur. This was tested by creating a condition immediately following the negative persuasion passage that focused participants’ attention on the extent to which the emotions expressed by the speaker suggested they were afraid. A second process suggests that recipients’ attributions regarding the source of their emotional response may play a role in shaping their attitudes. This was tested by creating a condition immediately following the negative persuasion passage that focused the participants’ attention on the extent to which the lemphur was a frightening creature.

**Method**

**Participants and Design**

Nine hundred ninety undergraduates were recruited in exchange for course credit. Participants were randomly assigned across a 2 (attitude formation: affective base vs. cognitive base) x 2 (questionnaire order: affective first vs. cognitive first) x 3 (focal object: lemphur vs. speaker vs. no object) x 4 (persuasive message type: vocal congruent vs. vocal partially incongruent vs. vocal fully incongruent vs. written passage) between-participant factorial design.

**Procedure**

The passages and procedures used in the attitude formation phase were identical to those used in Experiment 1. Likewise, the passage and accompanying vocal qualities (i.e., audio recordings) were identical to those used in the persuasion phase of Experiment 1. Immediately following the negative persuasion passage, participants were randomly assigned to one of three focal object conditions. In the *lemphur-focus* condition, participants rated the extent to which
they thought the lemphur was a frightening creature. This condition was designed to encourage participants to attribute their fear to the lemphur. In the *speaker-focus* condition, participants rated the extent to which the speaker seemed afraid. This condition was designed to encourage participants to contrast their level of fear with that of the speaker. In the *no-object* condition, neither the lemphur nor the speaker was made salient. Thus, this condition replicated the procedure used in all conditions of Experiment 1. Next, participants again completed the attitude, affective and cognitive scales using identical procedures as in Experiment 1. Finally, two questions were presented that asked participants to rate the extent to which they believed their emotional responses were influenced by the lemphur and by the speaker. The two questions were always presented in the same order (i.e., lemphur then speaker).

**Measures**

**Focal Object**

In both the Lemphur-focus and Speaker-focus condition, responses were recorded on a 1 (*Not at All*) to 7 (*Definitely*) scale.

**Perceived Source of Negative Affect**

Participants rated the extent to which they believed the lemphur influenced the level of fear they experienced. Responses were recorded on a 1 (*Not at All*) to 7 (*Definitely*) scale. Participants also rated the extent to which they believed the emotions conveyed by the speaker’s voice (narrator in written passage) influenced the level of fear they experienced. Responses were recorded on a scale anchored by -3 (Much Less Afraid), 0 (No Effect on Me) and +3 (Much More Afraid).

*Affective Scale*: Reliability for the affective scale was $\alpha = .88$ (Time 1 and Time 2).

*Cognitive Scale*: Reliability for the cognitive scale was $\alpha = .84$ (Time 1) and $\alpha = .85$ (Time 2).

*Attitude Scale*: Reliability for the attitude scale was $\alpha = .89$ (Time 1) and $\alpha = .92$ (Time 2).
Results

Exploration of Attitude Formation Procedures

An investigation of pre-persuasion attitudes in both affective ($M = 5.89$) and cognitive ($M = 5.89$) formation conditions revealed initially favorable and equivalent target-relevant attitudes across conditions, $t(1, 988) = 0.04, p = .97$, partial $\eta^2 = .00$. Next, identical procedures were used to test the attitude bases manipulation as those described in Experiment 1. Results indicated the main effect of attitude formation condition was not significant, $F(1, 988) = 1.89, p = .17$, partial $\eta^2 = .00$. However, the main effect of discrepancy type was significant; $F(1, 988) = 20.02, p < .001$, partial $\eta^2 = .02$, indicating that overall, affect ($M = .59, SE = .02$) was less discrepant with attitudes than cognition ($M = .67, SE = .02$). Importantly, the interaction between attitude formation condition and discrepancy type was significant, $F(1, 988) = 239.06, p < .001$, partial $\eta^2 = .20$. The estimated marginal means associated with this interaction are presented in Figure 2. A planned contrast between the mean discrepancy scores in the affective formation condition revealed that the attitude-affect discrepancy score ($M = .43, SE = .02$) was significantly less than the attitude-cognition discrepancy score ($M = .80, SE = .02$), $F(1, 988) = 200.64, p < .001$, partial $\eta^2 = .17$. Similarly, a planned contrast between the mean discrepancy scores in the cognitive formation condition revealed that the attitude-cognition discrepancy score ($M = .55, SE = .02$) was significantly less than the attitude-affect discrepancy score ($M = .75, SE = .02$), $F(1, 988) = 60.24, p < .001$, partial $\eta^2 = .06$. Thus, the discrepancy score analyses confirmed that attitude bases were successfully manipulated.

The Effects of Vocal Qualities and Message Content on Persuasion

Hypotheses regarding the persuasion effects were tested using a 2 (attitude formation: affective base vs. cognitive base) x 3 (focal object: lemphur vs. speaker vs. no object) x 4
(persuasive message type: vocal congruent vs. vocal partially incongruent vs. vocal fully incongruent vs. written passage) ANCOVA. Attitude at Time 2 was designated as the dependent variable whereas attitude at Time 1 was designated as the covariate. The covariate was significant, $F(1, 965) = 15.32, p < .001$, partial $\eta^2 = .02$.

As in Experiment 1, we expected a main effect of attitude formation condition on post-persuasion attitudes. Confirming expectations, persuasion was greater for participants with initially affective ($M = 2.56$) relative to cognitive attitudes ($M = 3.14$), $F(1, 965) = 57.24, p < .001$, partial $\eta^2 = .06$. There was no compelling basis to predict a main effect of focal object condition and this effect failed to reach significance, $F(2, 965) = 2.56, p = .078$, partial $\eta^2 = .01$.

More important, the expected main effect of persuasion passage-type on post-persuasion attitudes was significant, $F(3, 965) = 3.35, p = .019$, partial $\eta^2 = .01$. Once again, the written passage ($M = 2.96$) elicited negative attitudes towards lemphurs, thus confirming participants initially favorable target-relevant attitudes were successfully changed. Recall that the incongruency hypothesis suggests attitude change elicited by vocal fear should perhaps be less but certainly not greater than the written passage. Indeed, similar to Experiment 1, planned contrasts revealed no difference between the written passage and vocal fear ($M = 2.96$), $F(1, 965) = .00, p = .99$, partial $\eta^2 = .00$. Turning to vocal boredom, as expected, planned contrasts revealed that attitude change elicited by vocal boredom ($M = 2.67$), was greater than the written passage, $F(1, 965) = 7.20, p = .006$, partial $\eta^2 = .01$, as well as vocal fear, $F(1, 965) = 7.30, p = .006$, partial $\eta^2 = .01$. Based on the incongruency hypothesis, vocal contentment should also elicit greater attitude change than both the written passage and vocal fear. Although this pattern emerged in Experiment 1, the current study revealed only a non-significant trend in the expected direction. Planned contrasts indicated attitude change generated by vocal contentment ($M =$
2.80), was no different than the written passage, $F(1, 965) = 2.13, p = .14$, partial $\eta^2 = .00$, or vocal fear, $F(1, 965) = 2.18, p = .14$, partial $\eta^2 = .00$. Finally, as in Experiment 1, a comparison of vocal contentment with vocal boredom revealed no difference between these conditions, $F(1, 965) = 1.50, p = .22$, partial $\eta^2 = .00$.

Turning to the two-way interactions, we originally speculated that an attitude formation by persuasion-passage type interaction might emerge, but found no evidence for this effect in Experiment 1. Similarly, in Experiment 2, this interaction did not emerge, $F(3, 965) = 1.34, p = .26$, partial $\eta^2 = .00$. Of more interest was our predicted interaction between persuasion passage-type and focal object condition. Our speculations regarding the role of contrast and attribution as processes suggest that this interaction should emerge. However, this effect failed to reach significance, $F(6, 965) = 1.70, p = .12$, partial $\eta^2 = .01$. This null result is particularly notable given that an extremely robust sample size of nearly 1000 participants was obtained, thus allocating approximately 82 participants per cell to test the predicted $3 \times 4$ interaction.

The remaining two-way interaction of attitude formation and focal object condition was not predicted. However, this effect was significant, $F(2, 965) = 4.24, p = .015$, partial $\eta^2 = .01$. When initial attitudes were based on cognition, there was little variability in post-persuasion attitudes across focal object conditions. A simple main effects analysis confirmed these means did not differ, $F(2, 965) = .33, p = .72$. In contrast, within the affective attitude basis condition, a simple main effects analysis revealed significant variability in attitudes across focal object conditions, $F(2, 965) = 6.66, p < .001$. Multiple pairwise comparisons with an LSD test indicated that our baseline, no focus group ($M = 2.55$), generated relatively negative attitudes towards the lemphur. Focusing the participant on the speaker led to a marginally significant increase in attitude change ($M = 2.33), p = .096$, whereas focusing the participant on the lemphur led to a
significant decrease in attitude change, \((M = 2.80), p = .049\). Last, the three-way interaction between attitude formation, focal object, and persuasive passage-type conditions was not significant, \(F(6, 965) = .68, p = .67, \text{partial } \eta^2 = .00\).

**Perceived Sources of Affect as Mediators of the Effects of Vocal Qualities on Persuasion**

The manipulation of focal object was our primary method of testing both the contrast and attribution explanations for the voice-content incongruency effects that emerged in Experiments 1 and 2. Unfortunately, the predicted interaction between focal object condition and persuasive passage-type condition failed to reach significance. However, two supplementary questions included in Experiment 2 did allow for an additional approach to testing the attribution explanation. Participants rated the extent to which the emotion expressed by the speaker’s voice influenced the level of fear they experienced and the extent to which they believed the lemphur influenced the level of fear they experienced. These questions test the degree to which participants attributed their emotional responses to the speaker as well as to the lemphur.\(^6\)

In testing the attribution explanation, we investigated whether the relationship between vocal qualities and post-persuasion attitudes was mediated by participant’s attributions of their fear to the speaker and to the lemphur.\(^7\) When conducting these analyses, we excluded the written condition because this group is unable to provide a meaningful baseline against which to compare the influence of the speaker’s voice. Instead, we employed vocal fear as our baseline; first because this allowed us to make direct comparisons between vocal qualities, and second because vocal fear engendered attitude change comparable to the written condition. To test this relationship we created two dummy-coded variables representing assignment to the three vocal conditions. Our first dummy-coded variable was created by coding fear and contentment as 0 and boredom as 1. Our second dummy-coded variable was created by coding fear and boredom as 0 and contentment
as 1. Membership in all three vocal conditions are thus represented across the two variables. Because vocal fear is coded as 0 in both variables, this places it as our baseline of comparison. Thus, when we simultaneously enter the two dummy-coded variables into a regression model, the first coefficient reflects as a comparison between vocal boredom and vocal fear, and the second coefficient as a comparison between vocal contentment and vocal fear. The mediational model tested in this set of analyses is presented in Figure 3. Unstandardized regression coefficients are provided as estimates for each path. Solid lines indicate significant paths whereas dotted lines indicate non-significant paths.

Starting with the left side of the model, we examine the impact of vocal qualities on attributions of participants’ fear to the speaker. As seen in Figure 3, the negative coefficients for both vocal condition dummy variables reveal the predictable finding that, relative to the fearful speaker, participants perceived the bored $B = -2.35$, $p < .001$, and content $B = -1.37$, $p < .001$, speakers as decreasing the level of fear they experienced. More interestingly, paths between both condition dummy variables and perceptions of the extent to which the lemphur caused fear in participants are significant and positive. Thus, relative to a fearful speaker, participants who listened to a bored $B = .35$, $p = .016$, or content $B = .35$, $p = .015$, speaker perceived the lemphur as exerting a greater impact on their level of fear. This fits well with the attribution explanation, which suggests that voice-content incongruency is attributionally unambiguous, thus people should perceive any fear they experience as originating from the lemphur rather than the speaker. In contrast, a fearful speaker is attributionally ambiguous, thus any fear experienced might originate from either the lemphur or the speaker.

The paths in Figure 3 between the perceived sources of affect (the hypothesized mediators) and attitudes provide further useful insights. Interestingly, perceiving the lemphurs $B$
= -.32, \( p < .001 \), as a source of fear has a negative effect on post-persuasion attitudes; in concert with the attribution explanation. Indeed, if the lemphur is the source of participants’ fear, their fear should be seen as diagnostic for evaluating the animal and thus lead to more negative attitudes towards lemphurs. Conversely, the attribution explanation suggests perceptions of the speaker should have a positive effect on attitudes because the more one sees the speaker as the cause of their fear, the less that fear should be seen as diagnostic for evaluating lemphurs.

Interestingly, a weak but significant negative effect emerged \( B = -.05, p = .04 \). Thus, perceiving the speaker as causing one’s fear also resulted in more negative attitudes toward lemphurs. However, this effect was much weaker than the effect found for attributions of fear to lemphurs.

Because all the paths between our condition dummy coded variables and the mediators were significant and both paths between the mediators and post-persuasion attitudes were significant, this suggests that attributions regarding both sources of affect might have served as mediators of the effects of vocal conditions on persuasion. To formally test this, bootstrapping was performed using PROCESS, (Hayes, 2012). Unstandardized indirect effects were computed for each of 10,000 bootstrapped samples using bias-corrected bootstrap 95% confidence intervals (CIs). As expected, attributions of fear to lemphurs did significantly mediate the effects of fear versus boredom, \( B = -.26, 95\% \text{ CI}: [-.393, -.167] \), as well as the effects of fear versus contentment, \( B = -.20, 95\% \text{ CI}: [-.320, -.104] \). Interestingly, attributions to the speaker also significantly mediated the effects of fear versus boredom, \( B = .12, 95\% \text{ CI}: [.006, .251] \), and fear versus contentment, \( B = .07, 95\% \text{ CI}: [.007, .154] \). However, it should be noted that these latter mediational effects were positive whereas the overall effect of the condition dummy variables on post-persuasion attitude was negative. Thus, this second mediational effect actually weakened the overall effects of vocal condition on persuasion.
Finally, we observed a significantly negative direct effect of the fear/boredom $B = -.31$, $p = .01$, dummy variable on attitudes. Thus, the impact of vocal boredom (vs. fear) was not fully explained by the mediators. The direct effect of contentment (vs. fear) $B = -.12$, $p = .28$, was non-significant. Overall, these analyses generally support the attribution explanation for enhanced persuasion as a result of voice-content incongruency: Perceptions of lemphurs as a source of fear mediated vocal condition effects. However, the model suggests additional complexities. The unexplained direct effect of vocal boredom (vs. fear) on attitude change may suggest additional mechanisms for our incongruency effects. Furthermore, incongruency also triggered weaker mediational processes (attribution to speaker) that partially worked against incongruency’s persuasive advantage.

**Discussion**

Replicating Experiment 1 and other prior research, Experiment 2 confirmed that individuals with affective (vs. cognitive) attitudes were more responsive to affective persuasive appeals. Experiment 2 also largely replicated the vocal incongruency effect on persuasion found in Experiment 1, albeit in a slightly weaker form. Similar to Experiment 1, no difference was found when comparing vocal fear with the written passage. Once again, vocal boredom generated significantly more persuasion than the written passage and vocal fear. Although persuasion generated by vocal contentment fell in the expected direction, it was no different than the written passage or vocal fear. In testing the mechanisms proposed by the incongruency hypothesis, our primary analyses did not reveal the expected interaction. However, supplementary analyses provided support for an attribution explanation.
Experiment 3

Beyond replicating the results of the prior two studies, our goal in Experiment 3 was to provide a more comprehensive test of the processes by which these effects may have emerged. This was accomplished by developing measures designed to evaluate each of the four mechanisms hypothesized to explain the relationship between vocal qualities and persuasion using a mediational strategy.

Method

Participants and Design

Seven hundred and seven undergraduates were recruited in exchange for course credit. Participants were randomly assigned across a 2 (attitude formation: affective base vs. cognitive base) x 2 (questionnaire order: affective first vs. cognitive first) x 4 (persuasive message type: vocal congruent vs. vocal partially incongruent vs. vocal fully incongruent vs. written passage) between participants factorial design.

Design and Procedure

The passages, audio recordings, and procedures used in both the attitude formation and persuasion phases were identical to those used in Experiments 1 and 2.

Measures

Affective Scale: Reliability was $\alpha = .88$ (Time 1 and Time 2). Cognitive Scale: Reliability was $\alpha = .84$ (Time 1 and Time 2). Attitude Scale: Reliability was $\alpha = .89$ (Time 1 and Time 2).

Hypothesized Mediators of the Effects of Vocal Qualities on Persuasion

Four mechanisms hypothesized to account for the effects of vocal qualities on persuasion were tested. The presentation order of the measures testing these four mechanisms was
randomized. However, the question order for items assessing each mechanism was fixed and presented in the order described below.

**Attributional Measure.** Experiment 3 used an expanded version of the attributional measure used in Experiment 2 by employing three questions that asked participants to rate the extent to which they believed the lemphy influenced the level of fear, tension, and distress they experienced. Responses were recorded on a 1 (Not at All) to 7 (A Great Deal) scale. Participants also rated the extent to which they believed the emotions expressed by the speaker’s voice (narrator in written passage), influenced the level of fear, tension, and distress they experienced. Responses were recorded on a scale anchored by -3 (Much Less Afraid/Tense/Distressed) 0 (No Effect on Me), and +3 (Much More Afraid/Tense/Distressed). Overall scores on each measure were obtained by averaging scores across all three scales associated with ratings of each target (lemphy vs. speaker). Reliability for the lemphy-focused attributional measure was α = .91. Reliability for the speaker-focused attributional measure was α = .93.

**Contrast Measure.** Participants rated the extent to which they felt afraid, tense, and distressed. Participants also rated the extent to which they believed the speaker (narrator) felt afraid, tense, and distressed. Responses were recorded on a 1 (Not All) to 7 (Definitely) scale. Overall scores on each measure were obtained by averaging scores across all three scales associated with each ratings of each target (self vs. speaker). Self-ratings served as the dependent variable of interest whereas ratings of the speaker functioned as a manipulation check of our vocal quality conditions. Reliability for the self-ratings contrast measure was α = .94.

**Surprise Measure.** Participants rated the extent to which they were surprised by the tone of voice used by the speaker (narrator) on a single item. Responses were recorded on a 1 (Not at all Surprised) to 7 (Extremely Surprised) scale.
**Persuasive Intent Measure.** Participants rated the extent to which they believed the speaker (narrator) was trying to influence their opinion of the lemphur on a single item. Responses were recorded on a 1 (Not at All) to 7 (Definitely) scale.

**Results**

**Exploration of Attitude Formation Procedures**

Consistent with Experiments 1 and 2, an investigation of pre-persuasion attitudes in both affective ($M = 5.89$) and cognitive ($M = 5.99$) formation conditions revealed equivalently favorable target-relevant attitudes across conditions, $r(1, 705) = 0.04, p = .33$, partial $\eta^2 = .00$. Next, we employed identical procedures as those in the prior experiments to test the success of our attitude bases manipulation. Unlike Experiment 1 and 2, the main effect of attitude formation condition was significant, $F(1, 705) = 12.44, p < .001$, partial $\eta^2 = .02$, indicating that participants’ cognitions ($M = .72, SE = .02$) were more favorable than affect ($M = .60, SE = .02$) toward the lemphur. Also different than Experiment 1 and 2, the main effect of discrepancy type was not significant, $F(1, 705) = .41, p = .52$, partial $\eta^2 = .00$. However, critical to the success of our attitude formation manipulation, the interaction between attitude formation condition and discrepancy type was significant, $F(1, 705) = 200.42, p < .001$, partial $\eta^2 = .22$. The estimated marginal means associated with this interaction are presented in Figure 4. A planned contrast between the mean discrepancy scores in the affective formation condition revealed that the attitude-affect discrepancy score ($M = .43, SE = .029$) was less than the attitude-cognition discrepancy score ($M = .77, SE = .027$), $F(1, 705) = 112.78, p < .001$, partial $\eta^2 = .14$. Similarly, a planned contrast between the mean discrepancy scores in the cognitive formation condition revealed that the attitude-cognition discrepancy score ($M = .56, SE = .027$) was less than the
attitude-affect discrepancy score \((M = .87, SE = .03), F(1, 705) = 93.54 \ p < .001, \text{ partial } \eta^2 = .12.\)

This interaction confirms that attitude bases were successfully manipulated.

The Effects of Vocal Qualities and Message Content on Persuasion

Hypotheses regarding the persuasion effects were tested using a 2 (attitude formation: affective base vs. cognitive base) x 4 (persuasive message type: vocal congruent vs. vocal partially incongruent vs. vocal fully incongruent vs. written passage) ANCOVA. Attitude at Time 2 was designated as the dependent variable whereas attitude at Time 1 was designated as the covariate. The covariate was non-significant, \(F(1, 698) = .25, \ p = .62, \text{ partial } \eta^2 = .00.\)

Similar to Experiment 1 and 2, we expected a main effect of attitude formation condition on post-persuasion attitudes. Once again, participants with predominantly affective attitudes \((M = 2.23)\) were more persuaded by an affective persuasive appeal than participants with predominantly cognitive attitudes \((M = 2.96), F(1, 698) = 77.78, \ p < .001, \text{ partial } \eta^2 = .10.\)

Importantly, the expected main effect of persuasion passage-type on post-persuasion attitudes was significant, \(F(3, 698) = 4.68, \ p = .003, \text{ partial } \eta^2 = .02.\) The written passage \((M = 2.78)\) elicited negative attitudes towards lemphurs, thus confirming participants initially favorable target-relevant attitudes were successfully changed. Replicating the effects of Experiment 1 and 2, planned contrasts revealed no difference between the written condition and vocal fear \((M = 2.68), F(1, 698) = .70, \ p = .40, \text{ partial } \eta^2 = .00.\) Importantly, planned contrasts revealed that vocal boredom \((M = 2.36),\) elicited more attitude change than the written passage, \(F(1, 698) = 12.45, \ p < .001, \text{ partial } \eta^2 = .02,\) as well as vocal fear, \(F(1, 698) = 7.23, \ p = .007 \text{ partial } \eta^2 = .01,\) thus replicating the patterns that emerged in Experiment 1 and 2. Although planned contrasts indicated a marginally significant increase in attitude change between vocal contentment \((M = 2.56),\) and the written passage, \(F(1, 698) = 3.51, \ p = .06, \text{ partial } \eta^2 = .01,\) no difference emerged
relative to vocal fear, $F(1, 698) = 1.07, p = .30$, partial $\eta^2 = .00$. The former pattern replicates the effect found in Experiment 1. Finally, planned contrasts comparing vocal contentment with vocal boredom revealed no difference between these conditions, $F(1, 698) = 2.73, p = .10$, partial $\eta^2 = .00$, once again replicating the patterns found in Experiments 1 and 2. Taken together, these results provide a third demonstration of support for the incongruency hypothesis.

Interestingly, contrary to Experiments 1 and 2, the two-way interaction between attitude formation condition and persuasion passage-type was significant, $F(3, 698) = 2.73, p = .043$, partial $\eta^2 = .01$. That this effect emerged is puzzling given its lack of significance ($ps > .25$) in the prior two studies, particularly given the large sample size in Experiment 2. Upon closer examination of the means, the data suggest greater differentiation between our three vocal conditions for participants with predominantly affective relative to cognitive attitudes. This pattern fits with the differential sensitivity hypothesis described earlier. However, unlike the prior two studies, the data revealed large differences in the effectiveness of the written passage across attitude formation conditions. Specifically, whereas highly negative attitudes emerged in the affective condition, attitudes were much less negative in the cognitive condition. Because we have no clear theoretical reason to expect this pattern and it did not emerge in the prior two studies, we are reluctant to impart too much importance to this effect pending replication. However, of more central importance is the fact that the critical persuasion passage main effect that emerged in Experiments 1 and 2 was replicated once again in Experiment 3.

**Testing Hypothesized Mediators of the Effects of Vocal Qualities on Persuasion**

Recall that Experiment 2 provided some evidence to suggest that participants’ attributions regarding the source of their emotional responses may at least partially account for the influence of affective vocal qualities on persuasion. An important goal of Experiment 3 was to replicate this
pattern while also testing several alternative mechanisms. Beyond using a more comprehensive measure of attribution, additional measures were included to evaluate whether contrast effects, surprise, or perceptions of the speaker’s persuasive intent mediated the relationship between affective vocal qualities and post-persuasion attitudes. This was tested for each process using a 2 (attitude formation: affective base vs. cognitive base) x 4 (persuasive message-type: vocal congruent vs. vocal partially incongruent vs. vocal fully incongruent vs. written passage) factorial ANOVA. In each case, one of the four hypothesized processes was designated as the dependent variable whereas persuasive passage-type and attitude basis were designated as the independent variables. The results of these analyses can be found in Table 1. To be considered a viable candidate for additional testing as a mediator, the pattern of the persuasive passage-type means for each process must match the pattern predicted by the incongruency hypothesis.

Table 1.

Initial Test of Each Mechanism as a Mediator of the Relationship between Vocal Qualities and Post-Persuasion Attitudes

<table>
<thead>
<tr>
<th>Measure</th>
<th>F value</th>
<th>P value</th>
<th>Persuasive Passage-Type Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Written</td>
</tr>
<tr>
<td>Attribute-Lemphur</td>
<td>F = 5.08</td>
<td>( p = .002 )</td>
<td>( M = 5.11 )</td>
</tr>
<tr>
<td>Attribute-Speaker</td>
<td>F = 89.71</td>
<td>( p &lt; .001 )</td>
<td>( M = 5.57 )</td>
</tr>
<tr>
<td>Contrast-Self</td>
<td>F = 1.03</td>
<td>( p = .38 )</td>
<td>( M = 4.45 )</td>
</tr>
<tr>
<td>Surprise</td>
<td>F = 6.64</td>
<td>( p &lt; .001 )</td>
<td>( M = 5.14 )</td>
</tr>
<tr>
<td>Persuasive Intent</td>
<td>F = 59.08</td>
<td>( p &lt; .001 )</td>
<td>( M = 6.18 )</td>
</tr>
</tbody>
</table>

*All degrees of freedom for each measure are: Numerator = 3, Denominator = 699.*

As found in Table 1, a significant main effect of persuasive passage-type emerged for both attribution measures, as well as the surprise and persuasive intent measures. However,
because the pattern of the persuasive passage-type means did not match the pattern predicted by the incongruency hypothesis in the case of surprise (surprise should be greatest in conditions where attitude change was most pronounced), further evaluation of this mechanism was not conducted. However, the pattern of means for both the attribution and persuasive intent measures were consistent with the incongruency hypothesis.

**Perceived Sources of Affect as Mediators of the Effects of Vocal Qualities on Persuasion**

Similar to Experiment 2, we first investigated whether the relationship between vocal qualities and post-persuasion attitudes was mediated by participant’s attributions of their fear to the speaker and to the lemphur. The mediation model tested in this set of analyses is presented in Figure 5. Starting with the left side of the model, we examined participant’s perceptions of the extent to which the speaker influenced their level of fear. The data revealed that relative to the fearful speaker, participants perceived both the bored $B = -2.09, p < .001$, and content $B = -1.19, p < .001$, speakers as decreasing their level of fear. Next, we examined perceptions of the extent to which the lemphur influenced participant’s level of fear. As expected, the data indicated that relative to the fearful speaker, participants who listened to either the bored $B = .52, p = .002$, or content $B = .55, p = .001$, speaker perceived the lemphur as exerting a greater impact on their level of fear.

Moving to the paths between the mediators and post-persuasion attitudes, we again find that perceptions of lemphurs as a source of fear $B = -.21, p < .001$, had the expected negative effect on post-message attitudes. This supports the attribution explanation because it suggests that viewing the lemphur as the source of fear was seen by participants as diagnostic for evaluating the animal and in turn led to more negative attitudes towards lemphurs. As in Experiment 2, the path between the speaker as a source of fear $B = -.08, p = .01$, and post-
persuasion attitudes was represented by a significant negative coefficient. Finally, we turn our attention to the direct effect of both condition dummy variables on post-persuasion attitudes. As in Experiment 2, we see that both the fear/boredom $B = -.39$, $p = .004$, and fear/contentment $B = -.11$, $p = .36$, dummy variable had the expected negative effect on attitudes but once again, only the direct effect of the fear/boredom dummy variable reached significance. Taken together these analyses provide further support for the attribution explanation as the underlying process by which persuasion can be enhanced through voice-content incongruence.

Our next step was to formally test whether attributions regarding both sources of affect mediated the relationship between vocal qualities and post-persuasion attitudes while controlling for the effects of persuasive intent. This was tested using bootstrapping procedures performed through PROCESS (Hayes, 2012). Unstandardized indirect effects were computed for each of 10,000 bootstrapped samples using bias-corrected bootstrap 95% confidence intervals (CIs). Replicating Experiment 2 while also controlling for persuasive intent, attributions of fear to lemphurs mediated the effects of fear versus boredom, $B = -.14$, 95% CI: [-.241, -.065], as well as the effects of fear versus contentment, $B = -.12$, 95% CI: [-.212, -.051] on post-persuasion attitudes. Attributions to the speaker also mediated the effects of fear versus boredom, $B = .26$, 95% CI: [.127, .416], and fear versus contentment, $B = .15$, 95% CI: [.075, .249] on post-persuasion attitudes. However, similar to Experiment 2, these latter mediational effects were positive whereas the overall effect of the condition dummy variables on the dependent variable was negative. Thus, this second mediational effect actually served to weaken the overall effects of both vocal conditions on persuasion.
Perceived Persuasive Intent as Mediator of the Effects of Vocal Qualities on Persuasion

Because the pattern of means predicted by the incongruency hypothesis also emerged in the case of persuasive intent, our next step was to test whether this hypothesized process mediated the relationship between vocal qualities and post-persuasion attitudes. As in the prior analyses, unstandardized regression coefficients are provided as estimates for each path. First, we examined the extent to which participants believed the speaker was attempting to influence their opinion of the lemphur. In line with the incongruency hypothesis, the data revealed that relative to the fearful speaker, participants perceived both the bored $B = -2.11, p < .001$, and content $B = -1.45, p < .001$, speakers as having significantly lower persuasive intentions. This pattern conforms to the incongruency hypothesis: perceiving the message source as making an explicit persuasion attempt may elicit reactance, which in turn could provoke counter-arguing and thus reduce attitude change. By contrast, a bored or content speaker should be perceived as making a comparatively weak attempt to persuade the recipient, thus decreasing resistance. These data suggest a pattern consistent with the predictions of the incongruency hypothesis. Turning our attention to the path between the hypothesized mediator and post-persuasion attitudes, we see that persuasive intent has a non-significant effect on participants’ post-persuasion attitudes, $B = -.02, p = .45$. Thus, the data indicate that persuasive intent is not the mechanism driving the effects of vocal qualities on post-persuasion attitudes.

Discussion

Replicating the effects that emerged in Experiments 1 and 2, as well as prior research, Experiment 3 demonstrated that an affective message elicited more persuasion for individuals with initially affective attitudes than cognitive attitudes. More importantly, Experiment 3 largely replicated the effects of voice on persuasion that emerged in Experiment 1 and manifested in a
weaker form in Experiment 2. For the third time, vocal fear elicited a roughly equivalent amount of persuasion as the written passage, and vocal boredom elicited significantly more persuasion than the written passage and vocal fear. However, although the effects of vocal contentment trended in the expected direction, no difference emerged relative to the written passage or vocal fear. Importantly, Experiment 3 replicated the pattern predicted by the attribution explanation that emerged in Experiment 2. Experiment 3 also tested other potential mechanisms including contrast, surprise, and persuasive intent explanations. No evidence was found to support these explanations.

General Discussion

Summary of Findings

Data from three experiments supported our hypothesis that for comparatively intense affective messages, persuasion can be enhanced when a speaker’s affective vocal cues are incongruent with the affective nature of the content of the message. All three experiments suggested that a message designed to elicit fear produced more persuasion when the message was delivered in a bored or content voice. The overall main effect of persuasive passage-type condition was significant in each experiment. Moreover, contrasts comparing the bored voice condition with both the written passage and fearful voice condition were significant in all three studies. Not surprisingly, a meta-analytic combination (weighted by sample size) of these contrasts indicated that overall the bored/written effect ($Z = 4.59, p < .001$, Cohen’s $d = .22$) and the bored/fearful effect ($Z = 4.39, p < .001$, Cohen’s $d = .22$) were significant, although the effect size was comparatively small. Contrasts comparing the content voice condition with either the written message condition or fearful voice condition produced some significant effects in Experiments 1 and 3 but not in Experiment 2. However, the direction of these effects was
consistent across experiments. A meta-analytic combination of these effects suggested that both
the content/written ($Z = 2.62, p = .009$, Cohen’s $d = .13$) and content/fearful ($Z = 2.40, p = .02$,
Cohen’s $d = .13$) effects were significant, but of small magnitude.

Using supplementary mediation analyses, Experiment 2 provided initial evidence to
support the hypothesized attributional mechanism of voice-content incongruency on persuasion. Experiment 3 replicated this pattern and provided a first test of several potential alternative
mechanisms. Evidence did not support a mediating role for any of these competing explanations.

**Implications and Unresolved Issues**

Both intuition and everyday experience suggests that in addition to the content of a
message, the characteristics of the voice conveying that message should have important
implications for processes of both attitude formation and attitude change. Past research in social
psychology, however, has largely ignored the affective properties of voice in the study of attitude
formation and change. The present experiments provide a useful first step in demonstrating that
the affective qualities of voice can play a crucial role in the persuasion process. Beyond
providing an initial demonstration of the effects of vocal affect on persuasion, these studies
highlight that assuming persuasion is enhanced by voice-content congruency is an oversimplified
proposition. Indeed, our data suggest that in certain contexts, the manner in which voice
influences persuasion is actually quite different than intuition would suggest. In some cases
voice-content incongruency enhances the impact of the message whereas voice-content
congruency may provide no advantage relative to the content itself.

Furthermore, the present research suggests that the complex interplay between vocal
qualities and the content of a strongly affective message may influence persuasion by way of an
individual’s perceptions regarding the source of their emotions. In some cases discerning the
source of one’s emotions should be relatively unambiguous. For example, when presented with an affective message delivered via written format, the recipient is likely to attribute their emotional responses to the attitude object described by the content. However, a vocally expressed message permits a much wider range of influences to which a message recipient may attribute their emotional response. In this case, both the attitude object described by the content and the speaker’s vocal qualities are plausible sources of the recipient’s emotions. As our data suggest, vocal qualities incongruent with the intent of a message may reduce the ambiguity surrounding the source of one’s emotions and thus lead the recipient to perceive their response as diagnostic of their evaluation of the target, consequently enhancing attitude change. By contrast, because voice-content congruency affords a degree of ambiguity regarding the source of one’s emotions, this may lead the recipient to perceive their response as less diagnostic of their evaluation of the target and consequently attenuate attitude change.

Although a number of our speculations regarding the impact of vocal affect were supported by the findings, there were other aspects of our findings that differed from our predictions. For example, we suggested the possibility that the effects of vocal affect on attitude change would be more pronounced for attitudes initially based on affect versus cognition. Contrary to expectations, two of three experiments failed to support this conclusion, instead showing that the persuasion incongruency effects were equally robust for both affective and cognitive attitudes. Although significant in Experiment 3, we hesitate to make any claims regarding this effect given its lack of significance in two previous studies and the somewhat difficult to interpret pattern of the means. Moreover, the only change in methodology for Experiment 3 was the inclusion of additional mediator measures. However, presentation of these
additional measures followed the key attitude measure and thus could not have been responsible for the emergence of the interaction effect for post-message attitudes.

There are at least two explanations for why an interaction between attitude bases and persuasive message-type condition did not consistently emerge. First, the notion of differential sensitivity may either be false or so weak as to not appear reliably across experiments. Thus, perhaps having an affectively-based attitude does not clearly translate into increased sensitivity towards vocal affective cues relative to a cognitively-based attitude. Second, the differential sensitivity hypothesis may be correct but only under specific conditions. For instance, our messages involved vocal exemplars of each emotion that were very unambiguous. Thus, difficulty identifying the emotion was unlikely in our studies. If the vocal intensity were reduced such that accurate identification of each emotion was more difficult, perhaps more subtle changes in voice would have a greater impact on affective relative to cognitive attitudes.

Another prediction that was not supported by our findings was our failure to observe an interaction between our manipulation of focal object and message-type condition in Experiment 2. One possibility suggests this interaction failed to emerge because neither attribution nor contrast processes play a role in our observed persuasion effects. Alternatively, our manipulation may have been too weak to influence contrast and attribution processes. This second explanation seems more plausible given that the manipulation was comparatively subtle (e.g., *How frightening is the lemphur? How afraid does the speaker sound?*), coupled with the fact that mediational analyses clearly suggest a role of attribution processes in Experiment 2 and 3.

Another interesting but unresolved question relates to the mediational analyses in Experiment 2 and 3 involving participants’ attributions regarding their sources of fear. The data revealed that participants attributed an increase in their level of fear to the speaker, which in turn
slightly enhanced attitude change. An attribution explanation suggests that this effect should have been reversed. Why speaker attributions increased persuasion is not entirely clear. Perhaps if one sees the speaker’s fear as a valid response to the attitude object, participants’ fear resulting from the speaker should be seen as somewhat diagnostic of the attitude object. On the other hand, fear resulting from the speaker should probably not be seen as equally diagnostic as fear being directly produced by the attitude object itself. This may account for why attitude object attributions had much stronger effects on persuasion than speaker attributions.

Finally, although we believe the current studies provide some interesting and useful insights into the role of vocal affect in persuasion, there are at least two caveats to our findings that should be acknowledged. First, the vocal affect effects we observed, although statistically significant, were comparatively weak in magnitude. Such a finding is not at all surprising given that the message content in the present experiment was quite intense. Thus, although our experiments illustrate that the way something is said does matter, one should not lose sight of the fact that clearly the content of what is said also matters a great deal.

A second caveat to our findings is that we have tested our ideas regarding vocal affect only in the context of a single attitude object and a single affectively-based message. Thus, one might argue that that the present results could be idiosyncratic to the particular emotion used in the persuasion passage or some unique characteristics of the attitude object. Such a possibility cannot be ruled out at this point and is still theoretically interesting in that it illustrates that at least in some contexts attributional processes can govern the interplay between vocal affect and affective content in persuasion. However, if the conceptual framework developed in these experiments is correct, the rationale behind why and how vocal qualities influence persuasion
should translate into similar effects when the content of a persuasive message is intended to elicit different emotions or when used with different attitude objects.

**Future Directions**

As these three experiments are the first of their kind to explore this area of research, there are numerous potential directions one could take when designing future studies. One potentially fruitful direction for future research would be to explore vocal cues for additional emotions not studied in the present experiments, such as excitement and sadness. If the predictions laid out by the incongruency hypothesis are correct, each of these vocal qualities should intensify the impact of the fear-based message used in our experiments. Similarly, demonstrating incongruency effects with messages whose content was designed to elicit strong emotions other than fear would provide additional generalization of our obtained effects.

A second interesting direction for future work would be to manipulate vocal intensity. Considering the wide range of intensity with which emotions can be expressed, it seems likely that proper calibration of the affective strength of the content with the emotional intensity of the voice may play an important role in the persuasion process. In the present experiments, the vocal qualities captured the high end of the intensity spectrum for each emotion. Our rationale was to ensure that recipients could easily identify the target emotion expressed via the speaker’s voice. However, if less intense versions of each emotion were used, perhaps more consistent evidence will emerge to support the hypothesis that affectively-based attitudes are more sensitive to vocal affective cues than cognitively-based attitudes.

Yet another useful line of future research would be to explore the role of vocal qualities at both formation and persuasion. The present experiments only examined the interaction between vocal qualities and attitude bases within the context of the persuasion process.
However, attitudes are oftentimes formed and changed through oral communication. It would be useful to examine how the multiplicity of factors influencing the attitude formation process might regulate the success of persuasive appeals when both processes involve oral communication.

Fourth, recall that when affective messages are comparatively high in intensity, the incongruency hypothesis suggests that little room may exist for congruent affective vocal cues to enhance the impact of the content. Likewise, contradictory vocal cues may lack sufficient strength to undermine the affective responses elicited by the content. In such a context, incongruency effects would be expected to emerge. However, our perspective does suggest that if a moderately affective passage were used, the patterns observed in the present experiments would be reversed such that congruent (incongruent) vocal cues would enhance (undermine) the impact of the message. Exploring this possibility is an important direction for future research.

Finally, although all previous lines of research deal specifically with the role of voice in the attitude formation and persuasion processes, the interpersonal communication process often involves a visual aspect. Similar to voice, facial expressions also provide a rich variety of information that likely interacts in important ways with vocal affective cues to influence attitude formation and change. It would be interesting to examine how varying combinations of facial features, vocal qualities, and message content might interact to regulate the persuasion process.

Taken together, the avenues for research discussed here would greatly increase our current understanding of the interplay between message content and vocal affective cues, thus shedding light on the conditions under which the persuasive impact of a message is either enhanced or diminished based on the degree of congruency between message content and the accompanying vocal cues.
Footnotes

1. The authors would like to acknowledge the contributions of an anonymous reviewer for suggesting this as a possible mechanism to account for the effects of voice-content congruency on attitude change.

2. After listening to each audio recording, raters were provided with 8 questions in which they were asked to evaluate the extent to which the vocal quality heard in the audio recording matched a particular emotion representing one of the 8 octants of the Circumplex model of affect (i.e., active, contentment, excitement, passive, happy, boredom, sadness, and fear). Each octant represents one possible combination of valence and arousal. Ratings were made using a 7-point scale, where 1 represented Not at all, and 7 represented Definitely. Each rater was also presented with an open-ended question in which they were asked to list up to five emotional descriptors that they thought captured the emotion conveyed by the speaker. All raters completed this process for each of the three audio recordings in which the speaker conveyed one emotion per recording (i.e., fear, boredom, or contentment). The presentation order of the 8 questions and the open-ended responses were counterbalanced. To determine whether the vocal quality in each recording sufficiently reflected the target emotion (e.g., fear, boredom, or contentment) the data were subjected to a variety of analyses. To summarize, each vocal quality was deemed acceptable if the results indicated that the average rating for the specific emotion the voice was intended to convey was above the midpoint on the 7-point scale and significantly greater than the ratings assigned to all other vocal qualities for the target emotion. Additionally, to be accepted, the number of descriptors (e.g., fear might also be described as terror, horror, or fright) correctly matching the target octant of the Circumplex model of affect for a particular vocal quality must have significantly exceeded the number of descriptors for the same octant provided for all other vocal qualities (e.g., vocal fear must correctly be described as fear or a synonym significantly more than vocal contentment or vocal boredom is described as fear, and so forth).

3. Because the order of presentation for the affective and cognitive scales was counterbalanced, this variable was originally included in the ANCOVA investigating post-message attitudes and associated analyses for all 3 experiments. As no effects were found, we do not include order as an independent variable in the analyses presented.

4. A second method of testing this effect utilizes a regression analyses. The pattern of effects within each attitude formation condition in this experiment and subsequent experiments matched expectations and was similar to prior research. That is, within the affective formation condition, the affective basis was a significantly better predictor of attitude at Time 1 relative to the cognitive basis. In study 1, although the data revealed the expected opposite pattern within the cognitive formation condition, the difference between coefficients was not significant. However, comparisons across formation conditions provided support for the relative success of our formation manipulation. In studies 2 and 3, the expected pattern emerged within the cognitive formation condition and was significant.

5. There are two common alternative ways this analysis can be conducted. In both cases, the analyses are a 2 x 4 ANOVA. The first designates attitude change scores that assess the difference between a measure of participants initial and post-attitude as the dependent variable whereas attitude formation condition and persuasion passage-type are designated as the independent variables. The second designates a measure of post-attitude as the dependent variable while attitude formation condition and persuasion passage-type are again designated as the independent variables. For purposes of comparison, these analyses were conducted in addition to the ANCOVA presented above. The results of both analyses were highly similar to the ANCOVA in all studies, and thus are not presented.

6. Experiment 2 does not include measures to adequately test the contrast process. A proper test of this theory would require the participant to rate the extent to which he/she experienced fear when listening to the audio recordings. For example, the contrast explanation suggests that when listening to a bored or content speaker, participants should judge themselves as more afraid, which should enhance attitude change. By contrast, when listening to a fearful speaker, participants should judge themselves as comparatively less afraid, which may reduce attitude change.

7. Experiment 2 contained measures that provided an additional means of testing the attribution explanation. This analyses focused only on those participants assigned to the lemphur-focus condition (N = 336). Participants were asked to rate the extent to which they thought the lemphur was a frightening creature. This allowed us to evaluate the extent to which the different vocal conditions influenced how frightening participants perceived the lemphur and whether these perceptions mediated the effects of vocal condition on post-message attitudes. This model employed a
similar strategy to test the hypothesized mediational effects of vocal qualities on post-persuasion attitudes as the model described in the results section of Experiment 2. Confirming expectations, the pattern of effects matched those predicted by the attribution explanation, thus providing further support for the attribution explanation.

8. A further mechanism proposed by a reviewer suggested that participants may perceive the speaker as having privileged knowledge regarding the lemphur. Measures testing this possibility were included in Experiment 3 but omitted from our discussion of the various mechanisms because the rationale on which its predictions were based was not entirely clear to the authors. Nevertheless, this mechanism was included in our analyses. As anticipated, our data indicated the pattern of effects that emerged was not consistent with the pattern as predicted by the incongruency hypothesis.
Figure 1.

Attitude-Affective and Attitude-Cognitive Discrepancy Scores Per Attitude Basis at Time 1.

Figure 2.

Attitude-Affective and Attitude-Cognitive Discrepancy Scores as Per Attitude Basis at Time 1.
Figure 3.

*Attribution Source as a Mediator of the Relationship between Vocal Qualities and Post-Persuasion Attitudes*

Figure 4.

*Attitude-Affective and Attitude-Cognitive Discrepancy Scores Per Attitude Basis at Time 1.*
Attribution Source as a Mediator of the Relationship between Vocal Qualities and Post-Persuasion Attitudes
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Sample Size Determination

For Experiment 1, our sample size determination was based on the generally accepted guidelines that a minimum of 20 participants per cell be obtained. Applying this system to our conceptual framework, which entailed a 2 x 4 interaction, produced 8 cells and a minimum sample size of 160 participants. Data was collected for an entire semester. At the conclusion of the semester we had 250 participants, which produced a more ideal 31 participants per cell. For Experiment 2, the same system was used. In this case, our conceptual framework was a 2 x 3 x 4 interaction, which produced 24 cells and thus a minimum sample size of 480 participants. Data collection took place over three semesters. Because of the more complicated conceptual framework, we sought to collect a minimum of 30 participants per cell to ensure our study was sufficiently powered to detect any effects that might emerge. At the conclusion of the third semester, 990 participants had been collected, thus resulting in 41 participants per cell. Additionally, because there were no missing data on either experiment, all participants were included in the final analyses. For Experiment 3, our sample size was determined by the same systems used in the prior two experiments. Our conceptual framework was identical to that of Experiment 1, thus producing a
2 x 4 interaction and resulting in 8 cells with a minimum sample size requirement of 160 participants. However, because Experiment 3 tested multiple mechanisms, we required a larger sample size to produce sufficient power to detect any effects. Data was collected for two semesters. At the conclusion of the second semester, data from 707 participants had been collected, which produced 88 participants per cell.

Data Checking

For Experiment 1, data was collected for one semester and checked only at the conclusion of the semester at which point we moved forward with our data analyses. For Experiment 2, data was collected for three semesters. Because a sufficient number of participants had been collected at the conclusion of each semester such that determining where things stood made sense, we made the decision to check our data at the end of each semester. For Experiment 3, data was collected for two semesters and checked only at the conclusion of each semester. Following semester two, power was sufficient, thus we moved forward with our data analyses. We have retained all raw data from the research and agree to retain it for confirmation purposes for a minimum of 5 years after publication.
Complete List of Variables and Conditions

Experiment 1:

*Independent Variables:*

Attitude formation condition, Affective/Cognitive questionnaire order, Persuasion passage delivery type.

*Dependent Variables:*

Post-persuasion attitude

*Measures:*

Positive affective and cognitive attitude formation passages, Affective, Cognitive, and Attitude scales, Negative affective persuasion passage.

Experiment 2:

*Independent Variables:*

Attitude formation condition, Affective/Cognitive questionnaire order, Focal object condition, Persuasion passage delivery type.

*Dependent Variables:*

Post-persuasion attitude, Attributions to speaker, Attributions to lemphur.

*Measures:*

Positive affective and cognitive attitude formation passages, Affective, Cognitive, and Attitude scales, Focal object emotion assessment, Negative affective persuasion passage, Source of negative affective response.
Experiment 3:

*Independent Variables:*
Attitude formation condition, Affective/Cognitive questionnaire order, Persuasion passage delivery type.

*Dependent Variables:*
Post-persuasion attitude, Attributions to speaker, Attributions to lemphur, Contrast with speaker, Contrast with lemphur, Persuasive intent, Privileged knowledge, Enhanced processing.

*Measures:*
Positive affective and cognitive attitude formation passages, Affective, Cognitive, and Attitude scales, Negative affective persuasion passage, and questions assessing the following hypothesized mechanisms, including: Attribution, Contrast, Enhanced processing, Persuasive intent, and Privileged knowledge.