

TESTING THE EFFECTS OF EXCITATION FROM VIOLENT  
ENTERTAINMENT MEDIA ON  
PERSUASION

by

GYROMAS WESTLEY NEWMAN

KIMBERLY L. BISSELL, COMMITTEE CHAIR

SHUHUA ZHOU  
JASON E. BLACK  
ANDREW C. BILLINGS  
JAMES D. LEEPER

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## ABSTRACT

This study examined the effects of excitation from entertainment features on persuasion. The overlap of entertainment and persuasion dates back to oral cultures, and entertainment features in contemporary persuasive messages are common. However, there is a lack of research that empirically addresses the persuasive effects of residual excitation, which can result from entertainment features. The purpose of this study was to test whether or not residual excitation from a violent entertainment media stimulus could make participants more prone to persuasion from fallacious arguments containing appeals to emotion (emotional arguments). Additionally, this study explored how residual excitation from the same stimulus could affect persuasion from non-fallacious arguments containing minimal appeals to emotion (rational arguments). Responses to rational and emotional arguments were compared in a pre-post design. Drawing on ancient Greek concepts of entertainment features, emotion, and persuasion as well as contemporary psychology of entertainment theory, this study posited that arousal phenomena such as the excitation transfer effect could affect persuasion and tested this notion using a 2x2 within-subject design. Participants' heart rates and skin conductance responses were used as measures of excitation. The test arguments were fictional trial closing defense arguments. Participants were asked to imagine themselves on the jury and rate how likely they would be to acquit or convict the defendant based on the evidence they heard in each defense argument. Results indicated that after watching the violent Omaha Beach invasion scene from the film, *Saving Private Ryan*, participants, contrary to prediction, had less physiological excitation than

before watching and were persuaded significantly more by rational than emotional arguments. However, participants tended to be more persuaded by rational than emotional arguments throughout the study (both pre and post-stimulus). Although emotional argument persuasion did increase slightly after the stimulus, this increase was not statistically significant. Thus, the stimulus and the resulting deficit of physiological excitation seemed to have little effect on persuasion. Additionally, the observed calming effect of the stimulus suggests the dominant notions about the excitatory effects of violent cinematic media may need to be reevaluated. Other implications, limitations, and potential research directions are also discussed.

## DEDICATION

This dissertation is dedicated to the memory of my grandmothers, Frieda M. Green and Marguriette Newman-Davis, both of whom were instrumental in my academic success, and to the memory of my program committee chair, Gary A. Copeland, who was a great help during the preliminary stages of this project.

## LIST OF ABBREVIATIONS AND SYMBOLS

$df$	Degrees of freedom
$F$	$F$ statistic
$p$	P value
$R^2$	R squared: Data explained by regression model
$\eta_p^2$	Partial eta squared: Effect size
$B$	Beta: Standardized coefficient
$t$	Computed value of $t$ test
$<$	Less than
$=$	Equal to
EDA	Electrodermal activity
ECG	Electrocardiogram
HR	Heart rate
SCR	Skin conductance response

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## Entertainment Features, Excitation, and Persuasion

*Most people probably do not consider arousal from media exposure to be pronounced enough to warrant any attention, and hence they do not expect it to affect their behavior. Dismissing such arousals as trivial, the individual will tend to attribute any accumulating residues not to the preceding communication events [which are, in this instance, mediated messages] but to the new stimulus situations in which he finds himself. Moreover, by virtue of their very “unreal” and symbolic (possibly-fantasy encouraging) content, communication messages are generally not related to the person’s real and immediate problems and concerns. This should further encourage misattribution of accruing arousal and hence make the person all the more vulnerable to transfer effects in his postcommunication behavior. (Tannenbaum & Zillmann, 1975, p. 187)*

This opening quote provides the rationale for the application of excitation transfer theory to the study of mediated stimuli, and past media research has lent much credence to Tannenbaum and Zillmann’s words. For example, Card and Dahl (2011) noted that there is an increase in domestic violence after major televised sporting events, especially after an unexpected loss, which supports the idea that residual excitation from what one may see on the television can affect his perception of and behavior during communication events which are totally unrelated to the initial stimuli. Other studies have suggested that post-game aggressive behavior is also attributed to alcohol consumption (e.g., Wood, McInnes, & Norton, 2011); however, residual excitation was still noted as a contributing factor. But what has been done with this theory (excitation transfer) and persuasion? From an empirical perspective, there has been little effort to test these concepts together.

As the literature review will illustrate, the current trend in persuasion studies is to attempt to create various models of persuasion based on variables such as personality attributes and personal relevance of message. While such studies are obviously useful and do take the role of

arousal into account in persuasive situations, they generally obtain the arousal data from self-report measures alone. Hence, such studies do not provide adequate understanding of the actual physiological processes involved in arousal that can be key variables in argument perception and persuasion.

The concept of using entertainment features (dramatic elements, humor, etc.) to induce arousal (i.e., excitation) and affect persuasion is nothing new. It has a lineage that reaches back to the Sophists of ancient Greece, and though entertainment features are often included in a variety of persuasive messages today (e.g., speeches, advertising and educational programming), contemporary scholarly investigation into the interplay of entertainment features and persuasion lacks empirical evidence. The tenacity of the pairing of entertainment features and persuasion through time and in various cultures and the persistence of this phenomenon in persuasive messages today suggests that entertainment features and the excitation they can potentially induce have some effect on persuasion. However, this interplay has yet to be fully explained. Additionally, little has been done to account for the effects of residual excitation from entertainment media on post-exposure persuasive messages. In a time characterized by a vast expansion of new, more vivid, and interactive entertainment media, much of which is violent and sensationalized, such questions of excitation effects on attitude and perception are particularly relevant.

This study has applications in a number of practical and theoretical communication subfields. The driving idea behind this study borrows largely from classical rhetoric, which emphasized the elicitation of emotion from the audience through speech for the purpose of persuasion. In other words, classical rhetoricians understood that people who were emotionally

aroused tended to think less critically about what they were told; hence, they were more susceptible to being persuaded by bad arguments (i.e., arguments that lacked sound logical structure). However, this study has applications far beyond testing classical rhetorical concepts. Some subfields in which this study can be especially relevant are, but are not limited to, interpersonal communication, advertising, television/film, political communication, media effects, and contemporary rhetorical studies.

Drawing from a historical/classical perspective as well as on rhetorical and social scientific theoretical integration, this study examines the effects of residual excitation induced by violent entertainment media on the perception of external, post stimulus rational and emotional arguments through the theoretical lens of Zillmann's (1971) excitation transfer theory. In short, the objective of this study is to determine if left-over excitation can, in fact, make one more accepting of logically flawed, emotional arguments (this is not to argue that emotional arguments are logically flawed by default, but for the purpose of this study, emotional appeals were intentionally used to disguise fallacious arguments).

Emotional arguments by their nature tend to incite excitation, but this study takes this further by attempting to boost participants' excitation by exposing them to the stimulus, cinematic violence, before some arguments (both rational and emotional) and comparing responses to those arguments encountered in states of lower excitation (pre-stimulus rational and emotional arguments). The purpose of this deliberate provoking of excitation is to replicate the higher levels of excitation that one may experience when encountered with an argument that one finds especially moving or has close personal relevance as well as to explore how residual

excitation from an unrelated stimulus may provide an opportune moment to present a persuasive message, particularly a message with entertainment features.

This study, however, is not an all-inclusive test of entertainment features (which are manifested as emotional appeals in this study), excitation, and persuasion. Although it is new and full of potential, this study provides only a limited examination into what could become a broad field of study with multiple applications in both theoretical and applied communication. Hence, this study seeks to serve as both a foundation and a catalyst for future psychophysiological testing of the role entertainment features and excitation in the persuasion process. The point of this study is not to suggest some kind of “magic bullet” theory of persuasion but rather to shine a light on a facet of modern, popular American culture, which though it might affect much of people’s daily lives, remains largely unexplained.

## **LITERATURE REVIEW**

The literature review consists of four main sections (with multiple subsections). The first reviews the classical rhetorical/philosophical perspectives on the relationship between entertainment features, excitation (i.e., physiological excitation for the purpose of this study), and persuasion. The second addresses the relevant literature from contemporary rhetorical scholars on this relationship. The third section reviews the relevant empirical/social scientific research in this area, and finally, the fourth section, drawing on the previous three sections as well as other relevant theoretical literature, synthesizes the theoretical foundation for this study. In addition to providing a solid theoretical justification for this study, together, these sections not only illustrate the tenacity, scope, and veridicality of the relationship between entertainment features, emotional excitation, and persuasion but also lend support to general heuristic value of the potential theoretical contributions of this study.

### **Entertainment Features Defined**

Aristotle (trans. 1981) posited that epic poetry, dithyrambic poetry, tragedy, comedy, and music are quite similar in that all are “in general, imitations,” that is, a symbolic representation of something (1447a). Obviously, poetry, tragedy, comedy, and music have entertainment value. Each one provides a means for telling stories and, in this sense, can be viewed as having a dramatic quality (Aristotle, 1447a-1456a). Likewise, each has the potential to elicit an excitatory response.

Aristotle (trans. 1981) argued that people derive pleasure from viewing imitations because they learn through imitation (1448b). Additionally, Aristotle posited that poetry,

comedy, and tragedy (i.e., forms of imitation through speech) not only evoke emotion through plot but also through diction (1456b). In other words, rhythm, sight, sound, and plot can work together to elicit excitatory responses and impact how audiences can derive pleasure from such imitations.

When many people today think of entertainment, however, they may think of the term as referring to the pleasurable passing of time; however, this is not how the term *entertainment features* is operationalized in this study. For this study, entertainment features denotes those features of a communication event that have the potential to elicit a measurable physiological, excitatory response. Such features may be found in face-to-face speech or in cinematic (or other mediated) events. As the literature will address, these features may be used for learning, for persuasion, or for strictly pastime. However, the over-arching significance of entertainment features (what connects those in cinema to those in actual speech) is they can influence persuasion by affecting one's emotional and cognitive state. This study functions by exposing participants to rational and emotional arguments (which arguably contain entertainment features) and then using the violent cinematic depiction of the Omaha Beach invasion in *Saving Private Ryan* to manipulate excitation intensity (increase it) in order to test whether heightened excitation affects persuasion. Thus, this study uses a specific type of entertainment features for a specific end. However, in order to fully understand the proposed relationship between entertainment features, excitation and persuasion, a robust overview of these variables and how they may interact is necessary. Therefore, the literature presented in this study chronicles the pairing of these concepts from the time of the ancient Greeks through contemporary media studies.

Additionally, a synthesis of contemporary rhetorical and social cognitive theories that examine the relation of entertainment features to persuasion is discussed in the coming sections.

### **The Classical Origins of Entertainment Features in Persuasion**

The use of entertainment to manipulate excitation as a means to persuasion has its roots in orality (i.e., oral culture). Ong (1982) argued that storytelling and rhythmic speech (i.e., entertaining speech) in oral cultures promoted attention and memory. The Sophists were one of the first schools of rhetorical thought to emphasize that speech should employ the interplay of entertainment features and persuasion. Poulakos (1983) argued sophistic rhetoric is a style of rhetoric in which the rhetorician takes into account the most opportune moment (*kairos*) for debate, then artfully presents an appropriate (*to prepon*) argument suggesting what is possible (*dynaton*) with the end goal being not only persuasion or belief (*pistis*) but also aesthetic pleasure (*terpsis*) for the audience (p. 36). Poulakos stated, “The Sophists conceived of rhetoric primarily as *techne* (art) whose medium is *logos* and whose double aim is *terpsis* (aesthetic pleasure) and *pisitis* (belief)” (p. 36). Thus, the Sophists emphasized that rhetoric should have the goal of being persuasive but also pleasurable (which has the potential to elicit excitation through entertainment features) to the audience.

As Connors (1986) noted, the Sophists practiced in a primarily oral culture; therefore, their rhetorical teachings focused on using oral mechanisms. Schiappa (1999) argued, “Once it is realized that [the well-known Sophist] Gorgias’ speeches were composed for oral performance for audiences with aural predilections, it is possible to reconcile the fact of his popularity with the severe treatment his works later received at the hands of critics” (pp. 99-100). In other words, Gorgias’s oratory was often successful among the oral-focused audiences of his time

because the delivery and composition of his arguments drew upon the traditional oral devices of rhythm, poetics, and dramatic storytelling; however, Plato, one of Gorgias's harshest critics, analyzed rhetorical practices based on the standards of a literate culture, not an oral culture. As Connors (1986) explained, by the time of Plato, Greek society had become much more literate than in the time of the Sophists. Had the Sophists taken a more Platonic approach to rhetoric, their rhetoric might have failed with the primarily oral audiences of their time. Noting the persuasive power of the spoken word over the written, Isocrates, one of the later Sophists, stated:

And yet I do not fail to recognize what a great difference there is in persuasiveness between discourses which are spoken and those which are to be read. . . . For when a discourse is robbed of the prestige of the speaker, the tones of his voice, the variations which are made in the delivery, and, besides, of the advantages of timeliness and keen interest in the subject matter; when it has not a single accessory to support its contentions and enforce its plea, but is deserted and stripped of all the aids which I have mentioned. (Isocrates, trans. 1928, 24-26)

Hence, 2000 years before the advent of psychophysiological measures of data collection, Isocrates theorized that the spoken word not only had an excitatory quality that the written word lacked but also affected the listener differently.

Cultural considerations aside, Plato severely criticized the Sophists, not only for their emphasis on aesthetically pleasing speech but also for their focus on possibility, not absolute truth. The Sophists assumed that there was no one, absolute answer to a question, and if there were, there was no way to know it with certainty (Poulakos, 1984). Thus, the Sophists taught the importance of being able to argue an issue from any possible side. Plato, in contrast, argued that every issue had one absolute, true answer that could be known if one diligently sought it.

Regarding sophistic rhetoric, Plato (trans. 1961) harshly stated:

The art of contradiction making, descending from an insincere kind of conceited mimicry, of the semblance-making breed, derived from image making, distinguished as a portion, not divine but human, of production, that presents a shadow play of words—such are the blood and lineage which can, with perfect truth, be assigned to the authentic Sophist. (268d)

This quotation adequately sums up Plato's sentiment toward the Sophists, but not his views on entertainment. Although, Plato did not attack entertainment nearly as explicitly as he did the Sophists, his writings suggest that he generally held a low opinion of commonplace entertainment features such as comedy and poetry. Plato (trans. 1977) argued that the body burdens the soul with "all sorts of fancies and foolishness" (66c) and argued that the soul can think best when it is distracted by "neither hearing nor sight, nor pain nor any pleasure" (65c). Thus, in Plato's view, entertainment was problematic because it distracted the soul from the pursuit of true knowledge.

Arguably, part of Plato's criticism of the Sophists might have been due to his distaste for pleasurable distractions (i.e., entertainment features in general). Noting Gorgias' ornate speaking style, Philostratus (1972 Version), one of the later Sophists, stated:

[Gorgias] was an example of forcefulness to the Sophists and of unexpected expression and of inspiration and of the grand style for great subjects and of detached phrases and transitions, by which speech becomes sweeter than it has been and more impressive, and he also introduced poetic words for ornament and dignity. (I. 9. 2)

In describing Gorgias' style, Philostratus presented the core elements that not only made Gorgias' style sophistic but also made it unpalatable for philosophers like Plato. Philostratus noted that Gorgias' style was founded on "unexpected expression" and "grand style" with ornate, poetic words and phrases which made the speech "sweeter" (i.e., more pleasurable). Here the

interplay of aesthetic pleasure (from entertainment features) and persuasion is evident, and this could be the grounds for Plato's rebuke of the Sophists. Because the Sophists intertwined their arguments with the pleasurable (which could potentially elicit excitement), they were, in Plato's view, intertwining their arguments with built-in distractions that could disguise fallacies. Hence, the tenacity of the ability of entertainment features to induce excitement and affect persuasion is evident. Nearly 2400 years before the technology for psychophysiological testing, philosophers such as Plato suspected that arousing messages could make an audience less critical of the logical structure of the general argument of the message.

Despite Plato's obvious bias against the Sophists, he was on target with his criticism of their aesthetically pleasing rhetoric. It seems to do something to the audience. Segal (1962) stated:

The process of persuasion is thus for Gorgias more complex than a simple conquest of reason by the irrational powers of the *logos*. There is rather a psychic complexity in the emotive action of the *logos*: the psyche participates in and reacts to the artistic composition of the *logos* and thus experiences *terpsis*; it is hence regarded as a perceptive, aesthetically sensitive organ upon which the work of art acts. When the aesthetic stimulus is strong enough, however, as in the case of pleasing vision or a moving speech, the passive aesthetic *terpsis* becomes a powerful impulse which directs the whole course of action of the psyche. (p. 126)

Hence, Gorgias understood that the features of moving speech (e.g., dramatic storytelling) could affect the psyche of the listener and direct how the listener processes and responds to a message. The reaction evoked by entertainment features, as Segal explained, has the capability to override logical thinking when the stimulus is strong enough. This effect of *terpsis* (aesthetic pleasure) is

comparable to the effects of drugs, which is an analogy Gorgias himself made. Gorgias (1972 version) stated:

The effect of speech upon the condition of the soul is comparable to the power of drugs over the nature of bodies. For just as different drugs dispel different secretions from the body, and some bring an end to disease and others to life, so also in the case of speeches, some distress, others delight, some cause fear, others make the hearers bold, and some drug and bewitch the soul with a kind of evil persuasion. (p. 10)

Hence, by Gorgias' account, entertainment features not only have the capacity to override rational thought but also can elicit different reactions (physiological and cognitive) in much the same way as different drugs can.

Echoing Gorgias' statement, Lunceford (2007) suggested that entertainment features in speech (e.g., poetic language and storytelling) could induce physiological responses in the listener. Even Plato's student, Aristotle (trans. 1939) recognized the potential of rhetoric. Aristotle explained that rhetoric consists of three core components, *ethos* (constructing rapport and credibility with the audience), *pathos* (appealing to emotion) and *logos* (rational argument construction); however, Aristotle noted that *pathos* had the potential to exert an excitatory effect on the listener and "cause men to change their opinion in regard to their judgments" (1378a). However, this notion that excitation could affect persuasion did not end with the Greeks but survived well into Roman practices of oratory. The Roman orator Cicero (trans. 1942) stated, "men decide far more problems by hate, or love, or lust, or rage, or sorrow, or joy, or hope, or fear, or illusion, or some other inward emotion, than by reality, or authority, or any legal standard, or judicial precedent, or statute" (pp. 178-9). This statement essentially summarizes what this study seeks to explore.

In sum, by some classical and contemporary rhetorical/philosophical accounts, entertainment features do seem to have the potential to affect the body and mind in ways that can alter one's perception of a message, but this has yet to be thoroughly tested from psychophysiological perspective. This notion that excitation can override rational thought is supported by contemporary empirical evidence and will be further addressed in the empirical and theoretical sections of the literature review.

**Entertainment, religion, and persuasion.** As was the case with classical rhetoric, the acknowledgement, praise, and rebuke of the ability of emotional excitation, especially from entertainment features, to impact persuasion and critical thinking is woven throughout the religious traditions of the past. This consensus among philosophers, past and present, illustrates the tenacity and scope of this purported relationship. Western Christian philosophers generally shared Plato's disapproval of entertainment. Zillmann and Bryant (in press) noted that early Christian philosophers tended to condemn entertainment (e.g., singing, dancing and general gaiety) as an evil distraction from the things of God (p. 2). Echoing Plato, the French Christian philosopher, Pascal (trans. 1958) argued, "The only thing which consoles us for our miseries is diversion, and yet this is the greatest of our miseries. For it is this which principally hinders us from reflecting upon ourselves, and makes us insensibly ruin ourselves" (p. 49). From criticisms such as that of Pascal, it would seem that entertainment features as a means of persuasion would not be found in the early Christian church. However, such harsh criticisms did not exile entertainment from religion all together, and the use of entertainment features to arouse excitation as a means of persuasion is evident even in early Christianity.

The likely reason entertainment features survived in the Judeo-Christian tradition is they can be a means of both learning and persuasion, which are necessary for converting others to the religion. Aristotle (trans. 1981) suggested that people tend to imitate what they see and enjoy or, in Aristotle's words, "find pleasure" (1448b), in viewing and participating in such imitations. In other words, people can be entertained not only by watching others engage in imitations (e.g., watching a play) but also by participating in imitations themselves (e.g., playing a game that requires imitation from participants). Aristotle argued that man "learns his first lessons through imitation, and we observe that all men find pleasure in imitations" (1448b). In other words, representations, (e.g., dramatic imitation, pictures, and stories) allow people to learn about something they otherwise have not experienced, and the process of viewing such representations is usually pleasurable (i.e., entertaining) in itself. Hence, Aristotle's notion of representation through imitation suggested that entertainment can be a way of learning. Obviously, these entertaining representations had a lot of utility in religious contexts in which the goal was to teach abstract concepts (e.g., heaven, hell, salvation) to converts who were largely illiterate.

Although entertainment features (e.g. drama and poetics) may have been discouraged when the ends were pure amusement, these features were often present in sermons and rituals of medieval Christianity. Augustine's (trans. 1958) writings on effective sermons suggest that he shared Aristotle's view on the importance of imitation and representation. Augustine argued that preachers' sermons and lives should be representative of God's goodness, and such representation will invite audience imitation of their examples (4.27.60). Donavin (1996) explained, "The Mauritians agreed to stop killing only when Augustine moved them to weep. High eloquence for Augustine, then, postdates rational proposals for virtuous behavior and

subliminally promotes moral action” (p. 59). It is through potentially excitatory, dramatic rhetorical devices (entertainment features) that Augustine was able to move his audience in this way. Although Augustine’s goal was clearly persuasion, he achieved this persuasion by evoking emotion, and arguably, emotion is evoked through persuasive speech the same way it is evoked in tragedies in which the ends may be strictly entertainment. Thus, this instance could serve as a medieval example of traditionally entertainment-oriented features working to a persuasive end.

Entertainment features, as a means of persuasion, have also been used in other religions, and in contrast to medieval Christianity, which generally confined the mechanisms of entertainment to sermons and rituals, some religions openly promoted entertainment such as drama and rhapsody. As Jerstad (1967) stated:

About the fifth century B.C., the Buddhist religion introduced dramatic elements as an aid to proselytization. During the next few centuries, these elements became more and more prominent until they evolved into complete dramas, presented apart from the purely religious services. They were performed during the fall and spring harvest festivals and were pre-written by priest dramatists, rehearsed, and acted by specially trained clergy. (p. 199)

In this case, drama sprang from religion; however, similar occurrences are evident when examining ancient Greek myths and poems. Lentz (1989) noted that drama and rhapsody were an “integral part of [Hellenistic Greek] society” (p. 44). Because drama and rhapsody are documented as playing such a role in Hellenistic Greek society, some scholars have struggled to understand Plato’s rebuke of poets. Havelock (1986) stated: “When Plato, in his *Republic* and elsewhere, seems to disparage if not outright reject his poetic predecessors, he cannot have meant what he plainly says” (p. 122). Thus, despite criticism from Plato and some Christian philosophers, entertainment mechanisms have a lineage of being, to some degree, almost always

interwoven with religion, be it in sermons, parables, scripture and so forth, and as Jerstad (1967) illustrated, sometimes entertainment (e.g., some dramas) were born from religion.

In short, the assumption that entertainment features and excitation can affect one's perception, rationality, and persuasion seems to be as old as the study of man and human nature itself. As the previous section has illustrated, this assumed relationship is a tenacious phenomenon with a broad scope. However, despite the obvious heuristic value of doing so, relevant contemporary theories have yet to be successfully integrated to fully explain and test this phenomenon. This is why consulting both relevant contemporary social-scientific and rhetorical/critical literature is not only useful but also necessary.

### **Entertainment Features in Contemporary Rhetorical Theory**

The classics of rhetoric support the notion that entertainment features can be a highly effective persuasion tool due to the potential of these features to affect excitation and distract the listener from weak areas in the argument. In short, the literature reviewed thus far not only provides holistic insight into how entertainment features, excitation, and persuasion may work together but also help establish the pairing of these variables as a tenacious phenomenon (i.e., it is evident throughout history). However, contemporary rhetorical scholarship offers a more detailed explanation of how certain entertainment features can function. Thus, an examination of entertainment features from a contemporary rhetorical perspective is useful to fully understand entertainment features, excitation, and persuasion.

Much of contemporary rhetorical scholarship has suggested persuasive and emotional effects of entertainment features, but perhaps none so much as that concerning metaphor and narrative (as the previous literature has demonstrated, there are multiple types of entertainment

features; however, these command attention from both rhetorical and empirical effects/persuasion scholars). The potential of these entertainment features to produce an excitatory response in the listener as well as their aesthetic value have made them choice rhetorical mechanisms not only for the Sophists but also contemporary speech and media. Thus, the following paragraphs will discuss the major effect implications of the rhetorical theories of metaphor and narrative.

The metaphor is an often addressed and powerful entertainment feature in contemporary rhetorical scholarship. The metaphor consists of using a sign for an idea to stand in the place of another, unrelated sign for what is usually an unrelated idea. The metaphor has the potential to be emotionally laden and to evoke an excitatory response, yet, by default, the metaphor requires not only a logical connection between the idea and the substitute idea but also that the audience make that logical connection. However, despite its reliance on logical invention by the rhetor and logical inference by the audience, the metaphor has considerable power to evoke an emotional (excitatory) response in the audience. In defining metaphor, Osborn and Ehninger (1962) stated:

Metaphor is both communicative stimulus and mental response. As stimulus, it is identifying an idea or object through a sign which generally denotes an entirely different idea or object. As response, it is an interaction of two thoughts, or interpretants<sup>15</sup>, one of which springs from the stimulus sign's usual denotation, the other from its special denotation in the given context. This interaction of interpretants provides the basis for the stimulus-response cycle which is metaphor. (p. 226)

Thus, the stand in sign acts as a stimulus for thought (i.e., a search to make a meaningful connection). The completion of that connection between the stand in sign and the usual sign is the response. However, though it functions through rational inference, metaphor often has the potential to evoke the emotional responses.

Reflecting on his scholarly beginnings, Osborn (1989) recalled wondering, “why metaphor could be so moving and illuminating in poetry” (p. 2). Continuing his recollection, Osborn stated, “But if so moving in poetry, I wondered, could it not also be moving in rhetoric? Could metaphor not be incredibly powerful, wonderfully influential, when used by an artist of persuasion?” (p. 2). Through metaphor, a rhetor can add a dramatic, good versus evil overtone to a message.

Weaver’s (1953) and Burke’s (1966) discussion of “god” and “devil” terms were some of the earliest illustrations of how language choice can signify extremes and prompt value judgments (pp. 211-232); however, it was Osborn’s (1967) work that took the examination of metaphor in rhetoric to new heights. Osborn examined “the possibilities of one form of ‘new criticism’” (p. 115), which focused on the verbal construction of images and metaphors. Osborn referred to such metaphors as “archetypal metaphors” (p.115), but noted that he did not coin the term. However, Osborn elaborated extensively on the function of light and dark associations in metaphors and how such metaphors can impact persuasion. Osborn argued, “When speakers wish to place figurative value judgments upon subjects, they will often prefer a light or darkness association” (p. 116). Osborn continued, “Because of a certain universality of appeal provided by their attachment to basic, commonly shared motives, the speaker can expect such metaphors to touch the greater part of his audience” (p. 116). Thus, people tend to gravitate toward making inferences based on light and dark (e.g., good and evil, etc), and speeches that cater to these natural tendencies should, hence, be more effective (i.e., light and dark associations provide the cues for the appropriate cognitive valence of any resulting excitation).

As described by Osborn (1967), archetypal metaphors that play on light and dark depictions have the potential to evoke contrasting emotions (e.g., joy and sorrow, fear and reassurance), and this has powerful implications for their use in persuasive speech. It is no wonder metaphors often appear around vital arguments (e.g., Osborn, 1967; 2009). Additionally, Osborn (2009) suggested that archetypal metaphors may have “cross-cultural applications” (p. 82). The entertainment feature that is the light/dark metaphor allows the rhetor to bring in some of the dramatic elements of story and narrative without actually telling one; however, this is not to argue that metaphor tops the persuasive power of the narrative. Many times, metaphor and narrative go hand in hand (e.g., when a metaphor occurs within a larger narrative or when a narrative functions as a metaphor in itself).

As contemporary rhetorical scholarship has illustrated, narratives have many rhetorical advantages (e.g., Bennett, 1978; Fisher, 1984; 1987; MacIntyre, 1984; McAdams, 1993). Fisher (1984) conceived of humans as “homo narrans,” that is, they are essentially pre-dispositioned to communicate and learn through narratives (p. 1). If Fisher’s assumption is accurate, then it not only lends support to the idea that entertainment features can affect message perception and processing but also suggests that audiences may find messages consisting of entertainment features such as narratives to be more desirable and persuasive than messages consisting of strictly rational appeals (i.e., people may be more persuaded by messages that excite and move them).

The narrative seems to have the power to help people both make sense of the world and alter their world. Echoing Ong (1982), Brochner, Ellis, and Tillmann-Healy (1997) stated that narratives provide “both a way of knowing about and a way of participating in the social world”

(p. 308). Thus, the narrative invites the audience not only to make sense out of a set of experiences but also to participate in, or, in effects research terminology, be “transported,” to that world (see Dal Cin, Zanna, & Fong, 2004; Wang & Calder, 2006; Green, 2008). The narrative experience, which often functions through evoking emotional excitation, can have multiple functions including but not limited to teaching, justifying action, fostering identification, reinforcing social norms, conveying ideologies, and reducing counter-argument (e.g., Ong; Green; Foss, 2009).

Although some rhetorical theories (e.g., metaphor and narrative) imply that entertainment features potentially elicit excitatory responses and affect message processing and persuasion, contemporary rhetorical scholarship has expressed little interest in actually testing these propositions. Although researchers such as Green (2008) have begun moving toward such tests, few of these tests have been executed that accounted for psychophysical reactions. Granted, some rhetorical scholars may consider such testing to be out of the realm of rhetorical scholarship and, thus, best left to social scientists. However, this is not to say that rhetorical scholarship cannot benefit from such findings. Testing the effects of entertainment features from a psychophysiological/information processing perspective could prove fruitful for both rhetoricians and mass communication scholars. Additionally, such testing could aid in the development of more unified, neuro/physiology based theories of communication that could span the field of communication as a whole.

### **Contemporary Scholarship toward Empirical Explanations**

To this point, the classical, religious, and rhetorical lineage of the relationship between entertainment and persuasion has been reviewed, but this literature has offered no empirical

evidence to support this relationship. However, this lineage review does offer evidence that the use of entertainment features in persuasion has tenacity because it has been used among various cultures over time. Hence, the use of entertainment features to elicit excitatory responses and persuasion is a phenomenon and is, therefore, worthy of contemporary study. Classic rhetoricians such as the Sophists, Aristotle, and Cicero all noted the potential of entertainment features to elicit excitation, which in turn, could potentially affect persuasion. Contemporary rhetoricians provided insight into the rhetorical function of the potentially excitatory entertainment features such as metaphor and narrative. The coming pages continue the discussion of entertainment features, excitation, and persuasion but from the perspective of the pertinent empirical literature.

In recent years, there have been several attempts at modeling persuasion (e.g., Friestad & Wright, 1994; Poggi, 2005); however, such studies have often lacked empirical testing from a psychophysiological perspective. In other words, models that take physiological excitation from the message into account are needed. Although there is still much research to be done in this area, some contemporary scholars are answering the call. However, in order to fully understand the contemporary literature concerning entertainment features, excitation, and persuasion, one must understand the core theoretical framework of the psychological side of entertainment features.

Research suggests that the body is more affected by what it perceives than one may think. Miles and Johnson (2007) found that participants tended to be able to detect whether or not a smile was posed (non-enjoyment) or a genuine smile of enjoyment and that the enjoyment smile “facilitated identification of positive words” (p. 259). Brennan and Williams (1995) found that

listeners were able to estimate the speaker's knowledge and metacognitive state based on both verbal and nonverbal cues. However, the body's psychological and physiological responses to communication stimuli are not limited to face-to-face or even real life interaction. As scholars (e.g., Zillmann, 2006a) have noted, media-based representations can have similar effects on the body. Assuming this effect, the literature review will now examine the theories and propositions of how entertainment media can affect the body and put these theories and propositions into a persuasive context.

Today, many respectable news programs are resorting to dramatic sensationalism to attract viewers (Grabe, Zhou, Lang, & Bolls, 2000; Grabe, Zhou, & Barnett, 2001), and more and more public service/ health-related broadcasts are employing entertainment to boost attention and the persuasive effect of the message (Moyer-Guse, 2008, p. 407). For example, Olivier (2007) argued that the entertaining qualities in persuasive documentaries such as *Thank You for Smoking* are "supremely persuasive" (p. 45). Igartua, Cheng, and Lopez (2003) argued that "an efficient way to capture the attention of low involvement audiences is to insert messages within an entertainment context" (p. 513). By "entertainment context," Igartua et al. mean inserting persuasive messages into a larger message in which the main goal appears to be entertainment (e.g., an anecdote or movie). Using a 2 x 2 factorial design, Igartua et al. "attempted to analyze affective behavior and cognitive processes to explain the impact" (p. 513) of fictional short stories that promote HIV/AIDS prevention. Igartua et al. found a positive correlation between the quality of the short story and the stimulation of negative affectivity, cognitive processing, and favorable attitudes toward preventive behavior (p. 513). In other

words, evidence from this study suggests entertainment and entertainment features can subtly promote attention to and positive attitudes toward a message.

One especially powerful facet of entertainment features (e.g., tragedy) in persuasion is their ability to evoke empathy. Zillmann (2006b) noted that empathy (including empathy evoked from cinematic experiences) is thought to have the potential to “inspire supportive action” (p. 151). This notion is reinforced by Bae’s (2008) findings that the ability of an entertainment/educational show about cornea donation to evoke empathy from an audience positively correlated with audience members’ issue involvement and intentions to become donors. Bae stated, “Results confirmed that sympathy and empathy responses operated as a catalyst for issue involvement, which emerged as an important intermediary in the persuasion process” (p. 20). Hence, these results suggest the importance of empathetic, emotional responses in persuasion.

Humor (i.e., comedy) could have significant applications in persuasion because research has suggested humor can have an almost drug-like effect on one’s mental and physiological state. Zillmann (2000) stated that, “Humor can serve as an antidote to gloom” (p. 54). Studies have shown humor to reduce stress hormones in the body (e.g., Berk, Tan, Fry, et al., 1989). In laboratory tests, participants exposed to comedy exhibited a higher pain tolerance than did participants who were not (Cogan, Cogan, Waltz, & McCue, 1987; Nevo, Keinan, & Teshimovsky-Arditi, 1993; Zillmann, Rockwell, Schweitzer, & Sundar, 1993; Weaver & Zillmann, 1994). However, experiments with other genres such as tragedy yielded similar results (cf. Zillmann et al., 1993; Weaver & Zillmann, 1994).

The similar findings with other genres suggest not only the fickleness of excitation but also its ability to affect both psychological and physiological states. If excitation can affect one’s

psychological and physiological states (e.g., distract a person from pain and affect hormone levels in the body), it seems plausible that it could distract audience members from counterarguing a persuasive message and affect their perception of that message. Scholars have found that humor in advertising tends to positively correlate with positive excitement, brand affinity, retention of message, and liking of the advertisement itself (e.g., Ray & Batra, 1983; Holbrook & O'Shaughnessy, 1984; Mitchell, 1986; Edell & Burke, 1986; Aaker & Myers, 1987, Zhang & Zinkhan, 1991; Chung & Zhao, 2003). This notion echoes the Sophists' notion that making a message enjoyable can potentially affect persuasion, possibly through the inducement of excitement.

In concession, the variables in the humorous advertising studies do not constitute persuasion per se (i.e., just because a person likes an advertisement does not mean that person is actually going to purchase the product), but the positive correlation between these variables and humor in advertising suggests a positive relationship between excitement from humor and persuasion might exist. However, this notion requires further testing.

The ability of the narrative to absorb audience members is another entertainment feature that is useful in persuasion, and this tactic is often employed in advertising. Deighton, Romer, & McQueen (1989) stated, "An argument starts to become a story when a plot is introduced" (p. 335). Scholars have argued that dramatic (i.e., narrative-based) advertisements are processed differently from argumentative based ones (e.g., Wells, 1989; Deighton et al.; Wang & Calder, 2006; Moyer-Guse, 2007). Dal Cin, Zanna, and Fong (2004) posited that transportation from narratives may increase persuasion and reduce counterarguing. Further developing this idea,

Green (2008) drew on transportation theory and sought to explain how “narratives and stories can have persuasive effects” (p. 47). In these studies, the concept of transportation refers to the process by which the audience becomes absorbed in the plot of a story or narrative. According to Green, these effects can happen in several ways. Green stated:

First, transportation into a narrative world makes readers less likely to counterargue the message. Individuals who are enjoying the flow of the story should be less likely to interrupt their experience to dispute claims or implications of the narrative. Second, transportation can create emotional responses and connections with characters. Stories that evoke strong emotion are more likely to affect behavior, and are more likely to be passed on to others (for example, Heath et al., 2001). (p. 47)

Although Green was frank in making her claim about the persuasive potential of narratives, she conceded that there are some obstacles that must be overcome to thoroughly test her claim.

While transportation may make the audience more receptive to persuasive messages embedded within the narrative, the interruption of the transportation process (e.g., by television advertisements during an emotional drama program) can result in audience aversion to the message. Wang and Calder (2006) noted a positive correlation between the placement of non-intrusive advertisements within a transportation evoking narrative and advertisement effectiveness but noted a negative correlation between the placement of intrusive advertisements within a transportation evoking narrative and advertisement effectiveness. Echoing these results, Durkin and Wakefield (2008) found that anti-smoking advertisements when placed in programs that elicit intense focus from the audience (e.g., dramas) resulted in “reduced immediate cognitive and emotional impact of the ad and reduced intentions to quit” (p. 667) versus the same advertisements when placed in “non-narrative based programs” (p. 668). Durkin and Wakefield argued that the advertisements placed within a non-narrative program tend to be more effective because non-narratives are less likely to induce a transportation experience. Thus, placing

advertisements within non-narratives is likely to avoid the “negative effects of interrupting a transportation experience” (p. 668).

Perhaps the most puzzling obstacle facing researchers such as Green (2008) is “understanding the neural basis of narrative processing” (Green, p. 48). This issue gets back to the infamous Black Box problem that has plagued communication researchers for decades; however, there is some research that deals with such neural processes. Researchers (e.g., Gray, 1990; Panksepp, 1998; Miron, 2006) have suggested that the neural pathways of the brain are all connected. Panksepp, referring to emotional response stated, “everything ultimately emerges from the interaction of many systems” (p. 147). Therefore, neural processes occurring in one part of the brain can affect processes in another part. For example, as Miron noted, some emotions can override rational thought. Miron stated:

The older/primary emotions, served by neural networks situated deeper in the brain architecture, trigger primitive (automatic and simple) response actions (e.g., fight-or-flight when faced with life threatening danger). There is little that reason (located in the neocortex) can do about such emotions. (p. 346)

Thus, primal emotions seem to be capable, as Lunceford (2007) stated, of “bypassing the ‘logical’ part of the human brain, allowing for unconscious, immediate response” (p. 89).

Therefore, a narrative that evokes such emotions (i.e., intense, excitatory responses) is likely to mute rational thinking in the audience.

Additionally, research has suggested that when aroused, people tend to have difficulty separating the rational from the emotional. In an experimental study designed to test speech listeners’ ability to discern emotional appeals from intellectual ones, Ruechelle (1958) found no significance, suggesting that listeners tend to blur the line between appeals to reasoning and appeals to emotion. Modifying this study to test viewers’ ability to make these distinctions in an

entertainment context (e.g., a movie) could yield additional insight into the way people process persuasive messages when placed in entertainment contexts or presented immediately after before the residual excitation has decayed.

Although they have not been used much in persuasive studies, psychophysiological measures have become increasingly popular in entertainment media studies over the last 10 years. These measures not only provide excellent, real-time measures of arousal but also are great for studying information processing (how the brain processes media content). For example, Anderson, Bryant, Murray, et al (2006) used MRI (magnetic resonance imaging) to study patterns of brain activation while watching violent media, and used Fmri (functional magnetic resonance imaging), which allows for resonance imaging while the participant is engaged in an activity, to examine participants' brain activation while playing video games with varying levels of virtual violence. Anderson, Fite, Petrovich, and Hirsch (2006) used similar measures to study cortical activation in response to a video montage.

In addition to making possible the study of media information processing, psychophysiology provides a robust way to examine emotional excitation and enjoyment from entertainment media. One of the earlier studies in this area was conducted by Lang (1990), who used heart rate data to examine the effects of emotional media content on arousal and attention. Bolls, Lang, and Potter (2001) used heart rate measures combined with EMG (electromyography), which detects subtle changes in facial expressions, to study excitation and valence (i.e., is the arousal positive or negative) to study how arousal and valence can impact memory and attention to radio advertisements. Carpentier and Potter (2007) combined measures of skin conductance and heart rate to study arousal from music, and similarly, Angelini (2008)

used these measures to study arousal from watching sports. The specific psychophysiological measures for this study will be further discussed in the theoretical section and methodology chapter. In sum, the literature in this section provides multiple examples of an empirically observable relationship between excitation from media and changes in cognitive processing as well as tested measures of physiological excitation that can be utilized for the purpose of this study.

### **Theoretical Framework**

As mentioned earlier in the classical origins section, reading an emotional argument affects a person differently from hearing the same argument spoken. As Sparks, Areni, and Cox (1998) argued, audio and audio visual messages affect the listener differently from written messages because the nature of written messages requires the audience to use “systematic processing” whereas audio and audiovisual messages promote the audience to rely on “speaker-related heuristics” (i.e. a speaker’s delivery style and the aesthetics of the delivery) to form opinions (p. 110). Hence, the message has the potential to be much more arousing when presented in an audio-visual format. There are theories and studies, however, that suggest a written emotional message could affect a reader differently from a written rational one if the reader is already in an excitatory state, the core theory of this notion being excitation transfer.

Zillmann began developing excitation-transfer theory in the late 1960’s/ early 1970s, and through the turn of the century, continued to refine it (Bryant & Miron, 2003). Excitation-transfer theory is based largely on Hull’s (1943) notion of residual excitation (i.e., drive theory)

and Schachter and Singer's (1962) two-factor theory of emotion. As Bryant and Miron stated:

Zillmann collapsed and connected Hull's drive theory and Schachter's two-factor theory, which posited an excitatory and a cognitive component of emotional states. In contrast to Hull's hypothesis that excitatory reactions "lose" their specificity under new stimulation, Schachter claimed that emotional arousal is nonspecific, and the individual cognitively assesses the emotion he is experiencing for the purpose of behavioral guidance and adjustment. Zillmann adopted and modified Schachter's view on this. (p. 35)

In other words, excitation-transfer theory is based on the assumption that excitation responses are, for the most part, ambiguous and are differentiated only by what emotions the brain assigns to them.

Zillmann (1971), in positing excitation transfer theory, stated that "Communication-produced excitation may serve to intensify or 'energize' post-exposure emotional states" (p. 431). In other words, left-over arousal from one stimulus can produce a more intense arousal from a second, unrelated stimulus. However, excitation transfer is not limited to face-to-face communication stimuli. As Zillmann (2006a) explained the excitation transfer can occur from an array of stimuli, including cinematic (pp. 225-235). Tannenbaum and Zillmann (1975) argued:

Most people probably do not consider arousal from media exposure to be pronounced enough to warrant any attention, and hence they do not expect it to affect their behavior. Dismissing such arousals as trivial, the individual will tend to attribute any accumulating residues not to the preceding communication events [which are, in this instance, mediated messages] but to the new stimulus situations in which he finds himself. Moreover, by virtue of their very "unreal" and symbolic (possibly-fantasy encouraging) content, communication messages are generally not related to the person's real and immediate problems and concerns. This should further encourage misattribution of accruing arousal and hence make the person all the more vulnerable to transfer effects in his postcommunication behavior. (p. 187)

Thus, entertainment features, whether they occur in public address, interpersonal communication, or on a television or movie screen, elicit excitatory responses in the body

through the same process, and the excitation transfer effect, even if the original stimulus were purely fictional entertainment media, can carryover and affect one's perception and behavior in unrelated, later situations (this arousal is thought to lessen with repeated exposure; e.g., Bandura, 2008).

The excitation-transfer process is not limited to a single emotion (see Zillmann, 1983, 1996, 1998). For example, residual anger resulting from watching a hero being wronged by an adversary may intensify the pleasure one takes from watching the punishment of the adversary. In short, as Zillmann (2006a) stated, "Residual excitation from essentially any excited emotional reaction is capable of intensifying any other excited emotional reaction. The degree of intensification depends, of course, on the magnitude of residues prevailing at the time" (p. 223). Hence, excitation transfer theory hinges on the fickleness of emotions once they are aroused, which is a critical component of this study. If excitation transfer theory is valid, then it raises the question of what effects (if any) could media-induced excitation have on viewers' perception and processing of rational and emotional arguments and, more holistically, on real-world communication events in general that the viewer may encounter immediately or soon after exposure to the arousing media. In other words, the residual excitation from a mediated stimulus (e.g., viewing violence in a movie) could create the sophistic opportune moment (*kairos*) to present the viewer with a persuasive argument (Poulakos, 1983). Hence, the following hypotheses are advanced.

H1: After exposure to arousing media, participants will be persuaded more often by emotional arguments than by strictly rational ones.

H2: Participants will be persuaded more by emotional arguments after watching arousing media than before watching.

H3: Exposure to violent entertainment media will increase excitation.

However, time is critical in the excitation transfer process. Although residual excitation decay varies from person to person based on factors such as bodyweight and fitness level, the first couple of minutes are generally when residual excitation is at its highest. In a study examining the effects of residual excitation on provocation, Zillmann and Bryant (1974) found that residual excitation had decayed to near baseline levels after just six minutes and found a significant reduction in excitation after just 2 minutes (p. 786). Based on Zillmann and Bryant's findings, the following hypothesis is advanced as a check of residual excitation.

H4: There will be some level of residual excitation for three minutes after stimulus exposure (approximately half-way through the post-stimulus arguments).

In a study such as this, which focuses on how residual excitation can affect one's perception of and persuasion from rational and emotional arguments, it is important to control for how rational the participant naturally tends to be. For example, it would seem that a person who generally has a more emotional disposition would be more persuaded by emotional arguments. The notion that personality traits can influence the effect of a message on persuasion has been a robust subject of research for over 50 years (e.g., Hovland & Janis, 1959; Janis & Hovland 1959; Sherif & Sherif 1967; McGuire, 1968; Eagly, 1981; Haugtvedt & Petty, 1992).

As Haugtvedt and Petty stated:

Available research strongly supports the view that the attitudes of high-NC [need for cognition] individuals change as a result of thinking about the merits of the issue-relevant arguments presented in a communication, but the attitudes of low-NC individuals are more likely to change as a result of simple cues in the persuasion context (p. 309).

Hence, based on the extant literature, personality type should be a significant covariate in studies on the effect of excitation on persuasion. Epstein and Pacini's (1999) Rational Experiential Inventory (REI), which is a 40-question survey, provides such a measure. This inventory should provide a control measure for how rational each participant naturally tends to be, which could be a significant intervening variable in this study. In other words, those who naturally tend to be more rational thinkers could be more resistant to any rationality-muting effects of excitation than those who tend to be moderate rational thinkers. Conversely, the effects of arousal could be exaggerated on those who are naturally prone to making more emotionally based, impulsive decisions. However, more important perhaps, is the measure of actual arousal. Hence, the following hypotheses are advanced.

H6: Participants with higher rationality scores will tend to be less persuaded by emotional arguments than participants with lower rationality scores.

H7: Participants will be most persuaded in post-stimulus conditions combining high arousal and emotional argument, and rationality score will be a significant covariate in this relationship.

As Andreassi (2000) explained, heart rate has been used as a physiological measure of detecting changes in emotional arousal (pp. 281-297). The advantage to measuring heart rate is it can be done noninvasively through electrocardiogram (EKG, also called ECG), which consists of attaching small, painless sensors (gelled electrodes) to the arms. Another often used, noninvasive

measure of arousal is electrodermal activity (EDA), also as known skin conductance (Andreassi, p. 191). Together, these measures can provide a more internal look at excitation changes while bringing little to no discomfort to the participant and thereby, reducing any potential confounding effect of a laboratory setting.

In recent years, there have been multiple studies in mass communication focusing on media processing that have used heart rate and skin conductance to study the effects of various media on excitation (e.g. Grabe et al, 2000; Lang, Zhou, Schwartz, Bolls & Potter, 2000; Lang, Shin, Wang, Lee, & Potter, 2005; Carpentier & Potter, 2007; Angelini, 2008). For example, Grabe et al, (2000) used such measures to examine the effects of arousing tabloid news. Hence, although such measures have often been overlooked in the context of persuasion, they are not completely foreign to the study of mass communication.

## **Hypotheses**

In sum, based on the media effects literature, viewing cinematic media (and the entertainment features contained therein) can result in excitation just as real-world stimuli can. Because such mediated stimuli are often fictional or considered trivial, viewers are often unaware of any increase in excitation. This unawareness leads to misattribution, which is necessary for the excitation transfer process. Assuming excitation transfer theory holds true, residual excitation should affect one's perception of post-stimulus communication events. Based on the psychological/neurological literature, once emotions are significantly aroused, especially the older ones that are regulated by the amygdale (which can be triggered by witnessing violence), decision making becomes a much less rational, much more impulsive process. Thus,

individuals experiencing such excitation should be more likely to overlook facts in an argument and base their decisions more on emotion and intuition (i.e., it just feels right).

Assuming this line of reasoning, which is based on the literature, is correct, one can infer the following hypotheses (see Appendix F). Hypothesis one (H1) states: After exposure to violent (arousing) media, participants will be persuaded more often by emotional arguments than by strictly rational ones. If support is found and the introduction of arousing media does affect perception and persuasion, it implies a before/after effect. Hence, this study advances H2, which states: Participants will be persuaded more by emotional arguments after watching violent (arousing) media than before watching. These hypotheses hinge on the support of two other hypotheses, which are: H3, which advances: Exposure to violent entertainment media will increase excitation; and H4, which posits: There will be some level of residual excitation for three minutes after stimulus exposure (long enough for participants to provide answers to at least two of the four arguments and short enough to measure residual excitation before it severely decays).

The literature concerning the excitation transfer process has suggested residual excitation can affect post-stimulus communication perception and behavior. Additionally, based upon the neurological literature, one can assume an inverse relationship between critical decision making ability and excitation intensity. This assumption warrants the inference of H5, which states: Participants with high levels of residual excitation will be persuaded more often by emotional arguments than participants with lower levels.

The literature on persuasion and personality has noted that some people are naturally more rational thinkers than others and such personality traits can affect an individual's

persuasion. In order to help insure the validity of this experiment, it is important to control for how rational participants naturally tend to think. This is the function of H6, which states: Participants with higher rationality scores will tend to be less persuaded by emotional arguments than participants with lower rationality scores. This hypothesis is based on the REI measure discussed earlier in the *Theoretical Framework* section.

Finally, based on the entire literature review and assuming the other six hypotheses, H7, can be advocated. H7 states: Participants will be most persuaded in post-stimulus conditions combining high arousal and emotional argument, and rationality score will be a significant covariate in this relationship. This is the over-arching hypothesis of the study because it brings the other six hypotheses together into one, functional model.

These hypotheses are direct tests of the objective of this study because they work together to detect and test the effects of arousal from mediated entertainment stimuli on persuasion. Together, they function to create a controlled, before-and-after comparison that is easy to interpret.

## METHODOLOGY

### Participants

This study was a 2x2 within-subjects design and consisted of 40 participants (12 male, 28 female) recruited from communication courses at a large, southern university. Because physiological measures (EDA for SCR and ECG for HR) were used to monitor excitation, only one participant could complete the study at a time. Participants' identities and responses remained anonymous. Most participants were between the ages of 19 and 25 (See Appendix G for IRB approval document).

### Definition of Variables

This study consisted of two main independent variables: the type of argument (i.e., rational or emotional) and the presence of violent (arousing) media. Excitation sometimes functioned as a dependent variable and sometimes functioned as an independent (i.e., media affected excitation, but excitation also affected persuasion), but in general, the study is based on a 2x2 pre-post design. The following is a list of the independent variables in this study, including pseudo independent variable of excitation.

**Emotional argument.** The name of this variable is somewhat misleading in that most of the rational arguments also dealt with topics that could be considered emotionally laden (e.g., murder, crimes of revenge). However, unlike the variable of rational argument, the variable of emotional argument denotes a fictional closing court argument which contained heavy appeals to emotion (anger, sorrow, pity, empathy, etc.), but offered little actual exonerating evidence. In

other words, these arguments functioned by asking the jury to convict or acquit based on their feelings toward the situation and the defendant rather than on any actual evidence that the law has or has not been broken (see Appendix A). In other words, the emotional arguments could not be deductively proven using law-based premises. This lack of lawful premises is essentially the core distinction between the rational and emotional argument variables in this study.

**Rational argument.** This was a fictional closing court argument that functioned primarily through providing evidence that the law has or has not been violated and calls the jury to act accordingly (see Appendix B). Emotional appeals were avoided in these arguments as much as possible. Unlike the emotional argument variable, the rational arguments can be deductively proven using law-based premises.

**Baseline excitation.** This was the participant's heart rate (HR) and skin conductance response (SCR) measurements pre-stimulus. Participants took the 40-question rationality section of the Rational Experiential Inventory (see Appendix C) before these measurements were taken, the rationale being that the process of completing the inventory should bring participants to a similar baseline level of excitation.

**Excitation.** This was tonic (long-term) measures of HR and SCR. The reason for the emphasis on tonic rather than phasic activity was excitation is a cumulative process; therefore it is best measured by looking at changes over time, not discrete (individual) responses to a specific stimulus. These measurements were taken throughout the study and the pre-post differences were used to determine residual excitation.

**Residual excitation.** This was any measurable, post-stimulus positive physiological excitation difference from pre-stimulus baseline (post-stimulus measurements were subtracted from the pre-stimulus baselines).

**Arousing media.** For this study, arousing media was a 10-minute clip of a combat scene from the movie *Saving Private Ryan*, which was set World War II Europe. This clip was chosen because it is violent, suspenseful, and fast-paced, which are cinematic qualities that past studies have suggested increase excitation levels.

The key dependent variable in this study was persuasion. Because its variable definition is the same in both cases and has already been defined, it is not defined again in this section. The following is an operational definition for persuasion in this study.

**Persuasion.** Based on a 6-point Likert-type scale, participants rated how likely they would be to convict or acquit the defendant (see Appendix E). These responses were transposed by the researcher into a persuasion rating based on how close participants' responses were to the action requested by the argument, which was in all cases, to acquit. In other words, the closer participants rate their decision to acquitting the defendant, the higher their persuasion (e.g., reporting "Definitely Acquit" was the highest persuasion rating).

The rationality section of the Rational Experiential Inventory measured how rational participants naturally tended to be and was used as a measure of control. These scores were tested as a covariate. The following is an operational definition of the control variable of rationality.

**Rationality.** This was a measure of how rational the participant naturally tends to be. This measure came from the participant's score on the rationality portion of the Rational Experiential Inventory (1 being low rationality and 5 being high; see Appendix C).

### **Materials and Procedures**

The court cases for this study were fictional, and many of them were inspired by or modified from movies or television shows (e.g., *Law and Order* and *A Time to Kill*). The purpose of this was to help insure the arguments sounded believable and provide cues for how the arguments should be delivered (each argument was theatrically read and recorded by the same person). Generally, well-constructed court arguments contain both appeals to emotion and logical syllogism from law-based premises coming together in concert with the speaker's delivery and style to make him or her appear credible, or as Aristotle (trans. 1939) explained, *pathos*, *logos*, and *ethos*. However, for the purpose of this study, the argument structure had to be manipulated. The emotional arguments were stripped of logical structure from law-based premises. This is not to say that the emotional arguments were totally irrational (one could fill in enthymematic premises based upon one's personal code of ethics); however, these arguments were void of any law-based logical argument (e.g., lack of evidence, evidence of mental defect of suspect). In contrast, the rational arguments followed logical syllogisms based on law-based premises; however, appeals to emotion were downplayed in these arguments (granted the subject matters such as murder and rape are by default emotional subjects, so this is not to say the arguments were completely void of all emotion). Participants were asked to respond to each argument as if they were on the jury.

The participants were briefed on the psychophysiological recording procedure and what they would be asked to do during the study in general. Sensors were then attached to participants' arms and fore and index fingers on their non-dominant hand (participants needed their dominant hand for writing). After the sensors were attached and all equipment ready, the participants were asked to complete the rationality section of Epstein and Pacini's Rational Experiential Inventory, Cronbach's alpha .85, mean = 3.12. Upon completion, physiological data collection from participants began. The participants were given (on paper) four randomly presented fictional court case closing arguments (two rational defense and two emotional defense, most of which were modified court arguments from movies) and were asked to read each case and, based only on the information presented in the closing argument, circle whether or not the defendant in each case should be acquitted or found guilty. The participants heard a theatrical reading of the each argument as they read along. Upon completion, participants watched a 10-minute clip of the Omaha Beach combat scene from the movie *Saving Private Ryan*. Immediately after viewing the clip, participants were presented with another group of four randomly presented fictional closing arguments like those presented before the clip and were asked to follow the same instructions as before. Upon participants' completion of responses to the second group of arguments, physiological data collection stopped. Participants were then asked to answer some basic demographic questions (see Appendix D). The sensors were removed from the participant, and the participants were debriefed and dismissed.

Most of the data were analyzed using repeated measures ANOVA and regression models (see Appendix F). Most of the hypothesis tests compared pre-post measurements; however, some hypotheses required examining more specific, time-related variables. For this study, all

continuous variable data fell within an acceptable margin of general normality and equal variance; therefore, parametric statistical tests were used over non-parametric. Alpha was set at .05 for all tests.

## RESULTS

Findings from the present study suggest that some of the predictions related to the effects of viewing violent media may need further investigation or reconsideration. Exposure to the violent, 10-minute Omaha Beach scene from *Saving Private Ryan* resulted in participants being significantly less aroused physiologically rather than more so. Consequently, a number of the hypotheses were inversely or not supported at all. Thus, the findings concerning whether or not physiological excitation affects argument perception and persuasion as hypothesized are inconclusive. These discrepancies between certain hypotheses and actual test results are thoroughly addressed in the Discussion Chapter. Much of this chapter focuses on the results of the hypotheses as they were originally posited. Each hypothesis is addressed individually in terms of results and statistical tests. See tables 1 and 2 for descriptives.

*Table 1.*

**Descriptives Table for Persuasion Repeated Measure Variables**

Variable	Mean	Std. Deviation	N
Pre-stimulus emotional argument 1	3.35	1.82	40
Pre-stimulus emotional argument 2	3.03	1.39	40
Pre-stimulus rational argument 1	4.15	1.37	40
Pre-stimulus rational argument 2	4.20	1.47	40

Post-stimulus emotional argument 1	3.48	1.5	40
Post-stimulus emotional argument 2	3.18	1.57	40
Post-stimulus rational argument 1	4.15	1.27	40
Post- stimulus rational argument 2	4.40	1.03	40

*Notes:* All decimals are rounded to the nearest hundredth.

*Table 2.*

**Descriptives Table for Excitation Repeated Measure Variables**

Variable	Mean	Std. Deviation	N
HR 1	78.17	11.74	40
HR 2	77.67	11.96	40
HR 3	77.67	11.77	40
HR 4	77.74	11.29	40
HR 5	77.04	10.71	40
HR 6	76.39	10.82	40
HR 7	76.51	10.63	40
HR 8	76.92	10.44	40
SCR 1	6.38	3.44	40
SCR 2	5.55	3.49	40
SCR 3	5.85	2.91	40
SCR 4	5.05	3.31	40
SCR 5	4.38	2.47	40

SCR 6	5.23	2.59	40
SCR 7	4.78	2.78	40
SCR 8	5.20	2.76	40

*Notes:* All decimals are rounded to the nearest hundredth.

Hypothesis 1 (After exposure to violent media, participants will be persuaded more often by emotional arguments than by strictly rational ones) was inversely supported. A repeated measures ANOVA comparing responses to all emotional and rational defense arguments indicated that participants were significantly more persuaded by rational defense arguments, mean = 4.23 than by emotional ones, mean = 3.26,  $F(1, 39) = 23.94$ ,  $p < .001$ ,  $\eta_p^2 = .38$  (see table 3).

*Table 3.*

**Repeated Measures ANOVA Table Displaying Main Effects for Persuasion Model**

Effect	<i>df</i>	<i>F</i>	$\eta_p^2$	<i>p</i>
Pre/post-stimulus	39	.601	.02	.443
Argument type	39	23.94	.38	.0001
Argument order	39	.247	.01	.622

Hypothesis 2 (Participants will be persuaded more by emotional arguments after watching violent media than before watching) was not supported. The repeated measures ANOVA model (also used to test H1) indicated that time (e.g., whether the argument occurred pre and post-stimulus) had no significant effect on persuasion,  $F(1, 39) = .6$ ,  $p = .443$ ,  $\eta_p^2 = .02$ ,

and there was no significant interaction between argument type (rational and emotional) and time,  $F(1, 39) = .01, p = .915, \eta_p^2 = .0001$ . Thus, the results indicate that the stimulus manipulation had little to no effect on persuasion.

Hypothesis 3 (Exposure to violent entertainment media will increase excitation) was inversely supported. Two repeated measures ANOVA were conducted to compare the effects of pre and post stimulus conditions on HR and SCR measurements taken during each argument (HR pre-stimulus mean = 77.81; HR post-stimulus mean = 76.71; SCR pre-stimulus mean = 5.71; SCR post-stimulus mean = 4.89). The tests indicated that both HR and SCR measures were significantly lower post-stimulus (HR:  $F(1, 39) = 6.74, p = .013, \eta_p^2 = .15$ ; SCR:  $F(1, 39) = 5.94, p = .019, \eta_p^2 = .13$ ; see table 4 and figures 1, 2).

*Table 4.* This table displays repeated measures ANOVA results for excitation. Because there were two measures of excitation (HR and SCR), one repeated measures ANOVA was conducted for each.

**Repeated Measures ANOVA Main Effects for HR Model**

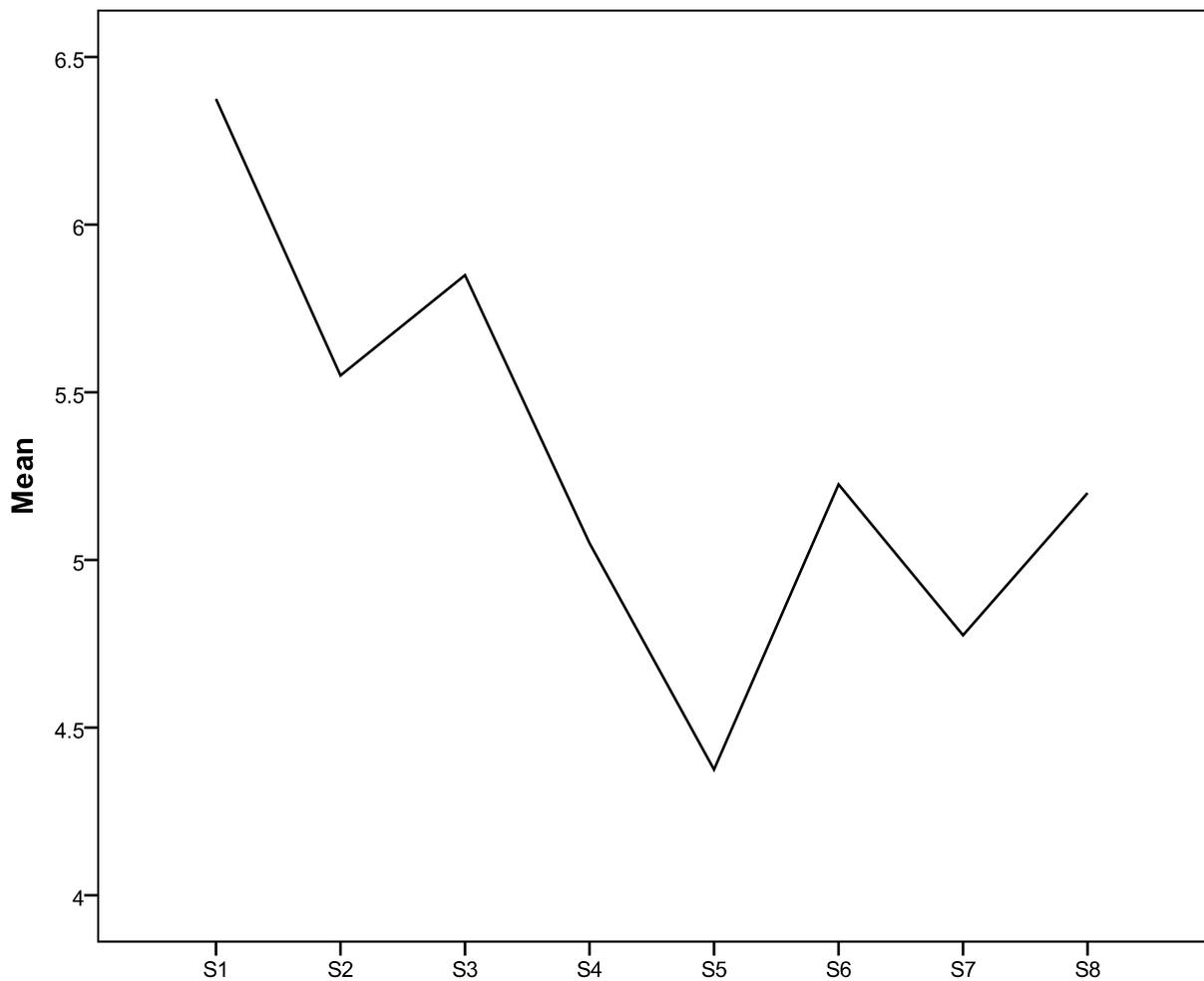
Effect	<i>df</i>	<i>F</i>	$\eta_p^2$	<i>p</i>
Pre/post-stimulus	39	6.74	.15	.013
Argument number	37	1.55	.11	.220

**Repeated Measures ANOVA Main Effects for HR Model**

Effect	<i>df</i>	<i>F</i>	$\eta_p^2$	<i>p</i>
Pre/post-stimulus	39	5.94	.15	.019
Argument number	37	.28	.11	.838

Figure 1. The graph below illustrates the changes in SCR for each argument. The stimulus occurred after argument four.

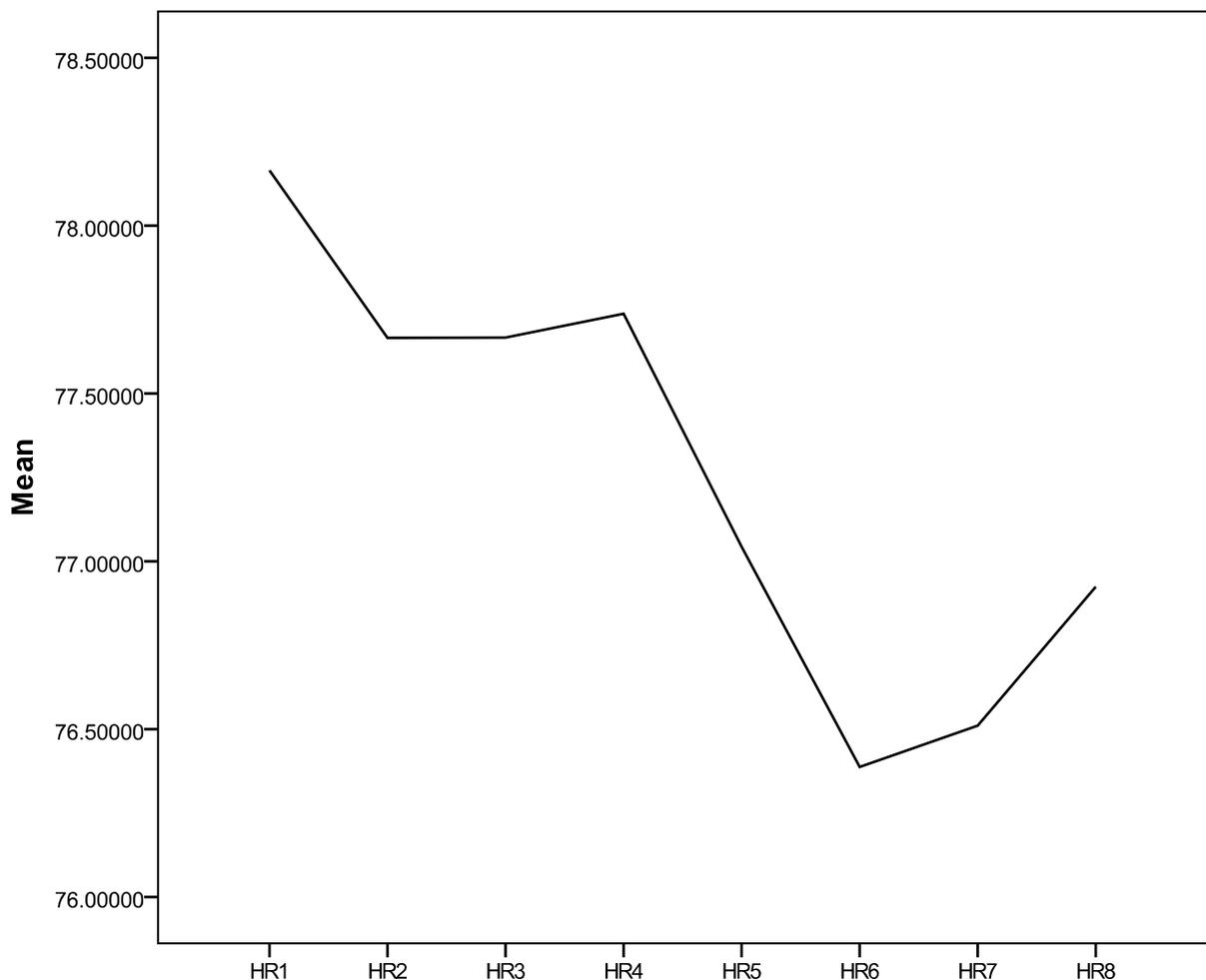
**Means Plot for SCR by Argument**



Notes. Order of argument is on the x-axis (e.g., S1 = SCR for argument 1). The mean number of SCRs for each argument is on the y-axis.

Figure 2. The graph below illustrates the changes in HR for each argument over the course of the study. The stimulus occurred after argument four.

**Means Plot for HR by Argument**



Notes. Order of argument is on the x-axis (e.g., HR1 = HR for argument 1). The mean HR for each argument is on the y-axis.

Hypothesis 4 (There will be some level of residual excitation for three minutes after stimulus treatment) was partially inversely supported, in that there was some deficit of physiological excitation three minutes after the stimulus had ended. A paired sample t-test comparing participants' HRs while listening to defense arguments just before the stimulus to participants HRs while listening to defense arguments approximately three to four minutes after

the stimulus had ended reported that participants' HRs were slightly (but significantly) lower three to four minutes after the stimulus than they were before the stimulus began,  $t(39) = 3.11, p = .003$ , pre-stimulus HR mean = 77.74, three minutes post-stimulus HR mean = 76.34. However, this was not true for SCR; there was no significant difference between participants' SCRs just before the stimulus and those three to four minutes after the stimulus,  $t(39) = -.33, p = .749$ .

Hypothesis 5 (Participants with high levels of residual excitation will be persuaded more often by emotional arguments than participants with lower levels) was not supported. The differences between participants' baseline pre-stimulus and post-stimulus HR and SCRs were compared to post-stimulus emotional persuasion using two simple linear regressions (one testing SCR differences and one for HR differences). The results of both tests indicated no significant relationship between neither SCR nor HR differences and persuasion (HR:  $B = -.23, p = .162, R^2 = .05$ ; SCR:  $B = -.05, p = .779, R^2 = .002$ ). Hence, the results suggest that residual excitation had little to no effect on persuasion. However, as addressed in H3 and H4, the stimulus resulted in a residual deficit of physiological excitation rather than a residual increase. Thus, H5 could not be thoroughly tested given the failed manipulation of residual excitation. This is addressed further in the Discussion Chapter.

Hypothesis 6 (Participants with higher rationality scores will tend to be less persuaded by emotional arguments than participants with lower rationality scores) was not supported. Descriptive data analysis reported that most participants tended to be moderately rational, clustering around 3 on the 5 point scale, mean = 3.12. Four simple linear regressions were conducted to explore the proposed relationship between rationality scores and persuasion from emotional arguments (two regressions for the two pre-stimulus emotional arguments and two for

the two post-stimulus emotional arguments). The results of the regressions for all four emotional arguments indicated no significant relationship between emotional argument persuasion and rationality scores (emotional argument 1:  $B = .16$ ,  $p = .632$ ,  $R^2 = .02$ ; emotional argument 2:  $B = -.17$ ,  $p = .288$ ,  $R^2 = .03$ ; emotional argument 3:  $B = -.10$ ,  $p = .555$ ,  $R^2 = .01$ ; emotional argument 4:  $B = -.28$ ,  $p = .081$ ,  $R^2 = .08$ ).

Finally, hypothesis 7 (Participants will be most persuaded in post-stimulus conditions combining high physiological excitation and emotional argument, and rationality scores will be a significant covariate in this relationship) was not supported. Two multiple regressions were conducted to examine the proposed relationship between residual excitation (post-stimulus SCR and HR differences from pre-stimulus baseline), rationality, and emotional argument persuasion (one regression for each post-stimulus emotional argument). The models were not significant for either post-stimulus emotional argument (post-stimulus emotional argument 1:  $p = .419$ ,  $R^2 = .08$ ; post-stimulus emotional argument 2:  $p = .237$ ,  $R^2 = .110$ ). Hence, the results indicate little to no relationship between residual excitation, emotional argument persuasion and rationality scores in the post-stimulus condition. However, as mentioned previously, there was a residual deficit in excitation rather than an increase; therefore, H7, like H5, could not be thoroughly tested given the failed manipulation of residual excitation.

## **Additional Results**

The number of participants who had seen the entire film was generally equal to the number who had not (21 had; 18 had not; 1 did not respond). However, a post hoc repeated measures ANOVA with a between subjects factor (seen film) indicated that whether or not participants had seen the film before had no observable effect on persuasion  $F(1, 37) = 2.725, p = .107, \eta_p^2 = .07$  (seen film mean = 3.6; not seen film mean = 4.0).

## DISCUSSION

This study examines the effects of excitation from entertainment features in persuasion. The overlap of entertainment and persuasion dates back to oral cultures; however, there is a lack of research that empirically addresses the persuasive effects of residual excitation, which can potentially result from entertainment features. Drawing on ancient Greek concepts of entertainment and persuasion as well as contemporary psychology of entertainment theory, this study posited that phenomena such as excitation transfer can affect persuasion and then tested this notion using a 2x2 within-subject design. Participants were asked to complete the rationality section of the REI to assess individual rationality. They then heard four fictional, randomized closing defense arguments, two of which were rational and two of which were emotional, and were asked to rate how likely they would be to acquit or convict the defendant in each case. Immediately after responding to the fourth argument, participants watched the violent Omaha Beach invasion scene from the film, *Saving Private Ryan*. After viewing, participants were immediately presented with another set of four arguments with the same instructions as the pre-stimulus (pre-film) arguments. Results indicated that after watching the violent scene from the film, participants, contrary to prediction, had less physiological excitation than before watching and were persuaded significantly more by rational than emotional arguments. However, the repeated measures ANOVA model indicated that participants were more persuaded by rational arguments throughout the study. Thus, these results suggest that the stimulus and the resulting deficit in excitation had little effect on persuasion. However, these results, which are discussed in

the following pages, may still have applications in the fields of public relations, advertising, film, journalism, contemporary rhetoric, and so forth.

Despite some discrepancies between the hypotheses and results, the findings of this study are generally in accordance with most of the reviewed literature, though there are a few notions that may need to be reevaluated (e.g., watching violence is sufficient to produce post-viewing residual excitation). As the coming pages address, along with other pertinent issues, the calming physiological effect the stimulus exerted on participants may have been responsible for the majority of the failed hypotheses in that some of the hypotheses could not be tested adequately because a key component of the test (high physiological excitation) was missing. Additionally, this chapter discusses why, in the theoretical context of the reviewed literature, the stimulus could have had such a contrary effect to what was originally predicted. Finally, the chapter concludes by discussing the limitations of this study as well as its overall relevance to the various fields of communication and its implications for future studies.

### **Analyzing the Results in a Theoretical Context**

The literature repeatedly stressed the ability of arousal (excitation) to affect the way the brain processes information, and this was the theoretical groundwork for this study. If excitation could affect one's ability to think rationally by affecting how and in what areas the brain processes information, it should be plausible that excitation could affect persuasion. In short, the theory led to the presumption that excitation would lead an individual to react more strongly (in terms of persuasion) to emotional rather than rational material, but without careful scrutiny, it first appears that this study totally contradicted its founding premise in that the results indicate participants tended to be persuaded more often by rational than emotional arguments throughout

the study. However, consulting the physiological data reveals that participants were actually calmer after the stimulus. Thus, the rejection of H1 and H2 does not necessarily contradict the theoretical underpinnings of this study because the high arousal required for the desired effect was not present.

As stated in the Results Chapter, H1 (After exposure to violent media, participants will be persuaded more often by emotional arguments than by strictly rational ones) was inversely supported, and H2 (Participants will be persuaded more by emotional arguments after watching violent media than before watching) was not supported at all. During no point in the study was there any evidence of high degrees of excitation regardless of the participant or group (i.e., it was not the case that participants were highly aroused at any point during the study). The portion of the study that had the highest level of physiological excitation was the portion that was intended for use as a baseline. Thus, the stimulus had a significant calming effect on a state of excitation that was already generally low to moderate at best. In order to test for the effect on persuasion hypothesized, the excitation gap would need to be much larger. As the literature explained, the intensity of excitation was a key factor in how the brain processes information (e.g., Panksepp, 1998; Miron, 2006; Zillmann, 2006a; Lunceford, 2007). Thus, the findings of this study do not necessarily imply that excitation has little to no effect on persuasion from emotional arguments but rather merely concludes that excitation was never high enough in any point during the study to produce the hypothesized effect to a significant degree. Thus, these results suggest the need for future testing of this purposed relationship in a higher state of excitation.

Another unexpected finding in this study was the lack of a significant relationship between individual rationality scores and emotional and rational argument persuasion.

Participants' individual levels of rationality were hypothesized to have a significant effect on persuasion from emotional versus rational arguments (H6, H7). However, the results thoroughly indicated no significance for rationality scores on persuasion. For H6 (Participants with higher rationality scores will tend to be less persuaded by emotional arguments than participants with lower rationality scores), regression models conducted for rationality scores as a predictor for responses to each emotional argument were used to analyze the data and all yielded no significance. However, these results were not the only evidence for the lack of a significant relationship between rationality and persuasion.

The diagnostics for H7 (Participants will be most persuaded in post-stimulus conditions combining high physiological excitation and emotional argument, and rationality score will be a significant covariate in this relationship) indicated no significant relationship between rationality and persuasion. As noted in the results, multiple regressions for each post-stimulus emotional argument yielded no significance for either model. These findings suggest that an individual's natural tendency of rationality may not affect persuasion to emotional argument as originally hypothesized. However, this hypothesis was intended to be tested in a high excitation context. As previously noted, the lack of significance of the hypothesized relationship between excitation and emotional argument persuasion does not necessarily imply that excitation has no effect on persuasion but rather suggests the need for further testing of these concepts in a context where there is much higher excitation as well as a greater difference between high and low excitation. Future tests of these concepts should reconsider the stimulus material (i.e., not assume that graphic violence is sufficient to produce residual excitation) and thoroughly pretest it.

Finally, the calming effect of the stimulus was the most unexpected outcome in this study. As previously explained, one of the underlying assumptions of this study was that exposure to violent media would result in increased physiological excitation. However, H4, which posited this, was inversely supported. These results are not completely contradictory to the literature; there are some studies that lend support to these results.

As explained in the Literature Review, a number of studies have indicated that some media such as humor/comedy can have a narcotic-type effect on pain (e.g., Cogan, Cogan, Waltz, & McCue, 1987; Nevo, Keinan, & Teshimovsky-Arditi, 1993; Zillmann, Rockwell, Schweitzer, & Sundar, 1993; Weaver & Zillmann, 1994). Other studies have shown humor to reduce stress hormones in the body (e.g., Berk, Tan, Fry, et al., 1989). Studies such as Zillmann et al. (1993) and Weaver and Zillmann (1994) found similar results using other media genres.

In contrast, studies such as Anderson, et al (2006), which used FMRI, have found that watching violent media tended to elicit more intense psychophysiological excitation than watching non-violent (generally these studies were focused on phasic rather than tonic excitation); however, the findings of this study call for new exploration of the effects of viewing such media on participants residual psychophysiological condition. These results suggest that although violence may initially result in more physiological responses during viewing, the residual effects of viewing violent media might mimic the calming effects of genres such as humor. In other words, viewing violence (particularly that depicting true events such as the Omaha Beach invasion) could exert a “sobering effect” on viewers. Some participants’ comments during debriefing support this notion. One participant noted feeling “more like the law is the law” after viewing (i.e., the participant felt more inclined to rational argument persuasion

after viewing than before). Thus, the observed calming effect and preference for rational arguments could be due to the “realness” of the context (i.e., participants know that while the protagonist may be fictional, the battle actually happened), whereas a strictly violence for entertainment value (fictional thriller) type of film may have had a different effect. However, as previously explained, the repeated measures ANOVA indicated participants were more persuaded by rational arguments both before and after the stimulus. Given the unexpected calming effect of the stimulus and the generally low level excitation throughout the study, no conclusion regarding the impact of the viewing violence on persuasion can be made from these results alone. However, these results open up a new area for future research on the effects of violent media. Other variables (e.g., possible excitation from participation anxiety) that may have affected these results are discussed in the limitations.

### **Limitations**

This study fuses theories and methodologies from rhetoric, media effects, and information processing. While this fusion of perspectives provided a new approach to studying an old but tenacious communication phenomenon, it also created a number of problems, many of which only became evident in hindsight. Hence, this study, like all studies, has a number of limitations that should be addressed. A proper pilot study could have eliminated some of these issues, but due to time constraints, the study was not sufficiently piloted.

One limitation of this study is the potential of residual arousal from anxiety about the study itself. During the prep phase of the study (e.g., cleaning skin, attaching electrodes), several participants remarked that it felt like they were about to have blood drawn. This residual excitation could have inflated the baseline physiological excitation numbers early-on in the test.

However, every measure was taken to minimize any such effect. As explained in the Methodology, after electrodes were attached, participants were given the rationality section of the REI, which took most participants around five minutes to complete. This survey served the dual purpose of providing a measure of individual rationality and helping to minimize differences in participants' excitation before the study began. The researcher then gave the participants a verbal description of what would happen throughout the rest of the study (assuring them again the study was noninvasive), followed by a three-minute break in which participants were asked to relax and make themselves as comfortable as possible.

The results for H3 (There will be some level of residual excitation for three minutes after stimulus treatment) indicated that participants were significantly calmer (physiologically) while listening to the argument that occurred approximately three minutes after the stimulus than they were while listening to the argument just before the stimulus. The pre-stimulus measure of excitation for this comparison only included the argument immediately before the stimulus, not the other three in order to help factor out any residual arousal from initial study anxiety. The total time it took for participants to complete a set of four arguments was just under nine minutes. As Zillmann and Bryant (1974) found, moderate residual excitation can decay to baseline levels in as little as six minutes. Thus, by the time the fourth argument began, which was around the seven-minute mark (this seven minutes is in addition to the three minute break participants were given between REI completion and the first argument), any interfering residual excitation should have decayed for most participants. The significant difference between the excitation levels before the stimulus and those three minutes after suggest that it was the stimulus that was responsible for the change in excitation, not the habituation to the test itself or the decay of

residual test anxiety. However, excitation decay varies from person to person, so the possibility of some interference from pre-test residual excitation cannot be completely ruled out, though its interference appeared to be minimal.

Another limitation of this study was the physiological effect of the arguments themselves on participants. As the variable name suggests, emotional arguments hinged solely on emotional appeals, whereas the rational were based on logical, lawfully justified, premises. The arguments were randomly placed in eight different orders, and participants randomly selected one order of arguments. Each argument generally occurred as many times before the stimulus as after. However, despite these measures to control for one argument affecting the results, there are a number of individual or personal factors that each participant brings to the study that are outside of the control of the researcher. For instance, participants who had experienced domestic violence may have been more aroused and more prone to a biased persuasion response when presented with arguments dealing with that subject than other participants who had not. Generally speaking, the distributions looked normal for all data; however, the possibility of personal experience acting as a nuisance variable cannot be ruled out, as such confounds can often go undetected.

Another possible limitation from the arguments is many of them, as stated in the Methodology, were inspired by or modified from movies and television shows. Thus, some participants may have heard a similar version of the argument before. However, participants were told before the study began that all of the arguments they would hear were fictional; thus, whether or not participants believed the arguments were from actual cases, which would have been given away had a participant recognized an argument from television or movies, was not a

factor. However, though unlikely, the possibility cannot be ruled out that some participants had seen the movie or television show containing a similar version of some test argument so many times that the argument had lost most of its effect (i.e., they may have been pre-habituated to the test argument).

As explained in the literature review, the transportation experience (i.e., getting absorbed in the narrative) is thought to affect how one processes information (e.g., Ong 1982; Wang & Calder, 2006; Durkin & Wakefield, 2008; Green 2008; Foss, 2009). Because the stimulus was only a 10-minute portion of a full-length film, the transportation experience of participants could have been greatly reduced, which could have affected not only participants' excitation and residual excitation but also participants' post-stimulus perception of the arguments. The chosen clip included enough context for participants to understand that the events were from the memories of a fictitious, surviving World War II veteran, and at the start of the veteran's flashback, there was text telling the infamous date and location of the battle. Thus, the film was not simply violence with little context. However, because the main goal of the stimulus was to heighten excitation, the majority of the content was devoted to the battle scene, which offered only enough dialog to establish which soldier was the commanding officer/ main protagonist. Through his actions, it is obvious that the soldier is a courageous, good leader, and the situation is graphic enough to invite participants to empathize with the soldier's hardship. However, these are only very basic elements of character and plot development; therefore, the transportation effect was arguably not what it could have been had participants watched the entire film, which arguably could have affected both arousal and persuasion afterwards.

Although the integration of classic rhetorical, media effects, and information processing theories and methodologies provide a new and well-rounded approach to studying excitation and persuasion, this integration also creates problems in that these theories and methodologies are being applied in a context outside the realm of traditional application. For example, psychophysiological (information processing) studies often use HR to monitor subtle changes in excitation during a stimulus such as a 30-second commercial. In such studies, HR measurements may be taken every five seconds and then the differences may be compared, giving the researcher a nuanced view of a participant's physiological responses to the stimulus. This study, however, takes a more global approach to excitation in that it focused not on differences in excitation occurring during each argument or during the stimulus but rather on the excitatory differences between pre and post-stimulus arguments. Although this was arguably a useful and appropriate measure given the global and unprecedented context of this experiment (this study contained about 30 minutes of physiological data, much longer than most information processing studies, and focused on pre- post differences, which is also not typically done in information processing (e.g., Andreassi, 2000), in concession, it was a crude application of physiological measures by current information processing standards. Thus, future studies in the persuasion area using physiological measures may benefit from examining the concepts on more of a micro level.

Zillmann (1971) stressed, excitation has both a physiological and cognitive component, which is what makes the excitation transfer effect possible. This study used HR and SCR as measures of physiological excitation. The physiological responses recorded are, however, essentially general side effects of mental processes, not absolute evidence, which is another

limitation of this study. The changes in excitation could have been due to the stimulus, or it could have been due to an outside distraction. Although every effort was made to control for outside distractions, there is no way to definitively attribute the recorded physiological responses to a specific stimulus with the measures used. Brain imaging techniques such as MRI and Fmri, as used by Anderson, Bryant, Murray, et al (2006) and Anderson, Fite, Petrovich and Hirsch (2006), could have provided more insight into participants' mental processes, which would have yielded both a better understanding of both the cognitive component of the excitation during the study and additional evidence linking the other physiological responses (HR and SCR) to stimuli within the study. Unfortunately, however, the resources for Fmri were not available for this study.

Finally, this study may be limited by issues of sampling. As noted in the methodology, the participants were generally undergraduate communication students, and most of them were female. Thus, the sample comes from a very limited demographic. Additionally, there was a two-fold gender bias. Seventy percent of participants were female (28 of 40), but the stimulus depicted all males. Thus, arguably the male-biased stimulus and female-biased sample could have affected the results. Future studies could benefit from a balanced sample of males and females. The equal groups in such a sample would also allow the responses of males and females to be confidently compared.

### **Conclusions, Implications, and Future Research**

The use of entertainment features in persuasion has a history that dates back over 2500 years. As the literature explained, the Sophists understood the importance of making persuasive speech entertaining and emotionally arousing, and stressed it in their teaching of rhetoric as not

only a means to persuasion but also as an end in itself (e.g., Poulakos, 1983). Throughout history, this use of entertainment features to elicit excitement and affect persuasion has helped shape numerous cultures through the shaping of religion, politics, national identity, and international relations. Thus, the phenomenon of using entertainment features to elicit excitement and affect persuasion is tenacious, and the modern media of today provides a new realm of possible applications.

Contemporary rhetorical theorists have helped explain how entertainment features may function rhetorically but many times they overlook how these features can affect the body and cognitive processes of the audience. This is not to suggest that the approach of this study is superior to or should replace contemporary styles of rhetorical inquiry and criticism but rather to suggest that this study and future ones like it that focus on audience effect could be useful supplements to traditional rhetorical theory in some situations.

Despite the tenacity of these concepts in persuasion, not enough has been done in communication to apply empirical methods to test these concepts. However, contemporary effects studies in persuasion often overlook relevant contributions of rhetorical scholarship. The aim of this study was to examine a classical communication phenomenon through the lens of contemporary media effects and information processing research and provide a foundation for future studies in this area.

Although this study yielded some unexpected results, there are a number of relevant conclusions that can be drawn, as well as multiple implications for future studies. Participants' initial moderate levels of excitement, which can potentially increase cognitive processing, could have been responsible for participants' consistent preference for rational arguments in this study

(e.g., Andreassi, 2000). This notion, however, requires further testing. Future research might provide further insight into the effect of moderate excitation on argument processing and persuasion by comparing participants' persuasion to emotional and rational arguments in a moderate excitation state with that of a high and low state.

There are several areas of inquiry that were not addressed in this study but are relevant to this topic and should be explored by future studies. For example, this study did not measure participants' perceptions of which arguments were rational and which were emotional. Thus, future studies in this area could ask participants to rate each argument as rational or emotional, which would not only provide insight into argument perception but also provide a manipulation check. In terms of theoretical conclusions, this study calls into question that notion that participants may have high residual excitation from exposure to violent media. Based on these results, it may not just be humor and tragedy that can have a narcotic-type effect on variables such as pain tolerance; violence may also exert a similar effect; however, a thorough test of this requires future research.

The stimulus may have been responsible for an indirect effect on persuasion by reducing participants' excitation; however, this notion cannot be confidently advocated from the results of this study alone. Although participants did not acquit significantly more for emotional arguments after the stimulus as posited in H2, the mean for persuasion did increase, suggesting that excitation levels may have some effect on persuasion in a more exaggerated context (i.e., a situation where there is a larger difference between high and low excitation; see table 1). Although this study does not provide strong enough evidence to conclude that viewing cinematic violence can affect persuasion afterwards, these results, as mentioned earlier, provide an area for

future studies on the effects violent media that could warrant the reevaluation of contemporary theories about the effects of violent media as well as contemporary notions about mood management through the media. Finally, this study demonstrated the importance of combining information processing with media effects studies. Although the information processing perspective (physiological data collection) provided excellent insight into how the body reacts physiologically to persuasive messages and media content, it was the media effects tradition of measuring attitude (persuasion) that gave meaning to these observations.

In practical terms, this study has application to various fields of communication such as public relations, advertising, journalism, contemporary rhetoric, and television/film studies in that all of these have the common goal of having or understanding some desired effect on the audience. Many times, this desired effect translates into monetary income; thus, in the business realm of communication, any significant effect is generally an effect worth noting and exploring further. This study provides useful insight not only into how the body can react to certain media but also how excitement from entertainment features can affect message perception and persuasion.

In times of crisis, public relations practitioners as well as journalists sometimes have to communicate with audiences that have high levels of excitement (e.g., after a public crisis situation). This study could provide the foundation for multiple other studies on excitement and persuasion, which could further assist public relations practitioners and journalists in tailoring their messages to the public more effectively.

This study also has applications in advertising, in that advertisers often seek to craft arousing media messages through the use of entertainment features for the purpose of persuading

consumers to buy products. This study examines how media induced excitement can affect persuasion, which, in itself, is useful to advertisers. However, future studies that examine the variables explored in this study in a transportation context could have numerous benefits in advertising in that such studies could not only help advertisers develop more effective messages but also help them place their ads more effectively (cf. Wang and Calder 2006; Durkin and Wakefield 2008).

This research could provide a fresh perspective for rhetorical critics by creating a renewed interest in understanding the function of emotional (excitatory) mechanisms (e.g., entertainment features) in a rhetorical artifact. Additionally, it reinforces the relevance of the classical rhetoric in contemporary communication.

Finally, these research findings beneficial to film/television studies in that it demonstrates how the body reacts to violent cinematic media. Today, entertainment features such as special effects and graphic action scenes are quite popular in television and film; however, the results of this study question whether these things alone are that effective in elevating viewer arousal for the long term. Again, future studies that examine the variables of this study in addition to transportation could be especially useful.

In conclusion, technology, society, and media are rapidly changing, but entertainment features, excitement, and persuasion may be linked just as they were thought to be in the time of the Sophists. Although this study could not to demonstrate all of the hypothesized relationships between entertainment features, excitement, and persuasion, it did demonstrate that fully

understanding this relationship will require future research. Hopefully, this study will be a catalyst for future exploration into a phenomenon that has the potential to affect almost every aspect of people's lives.

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## *Appendix A*

*Notes.* The numbering of arguments is arbitrary.

**Emotional Defense 1.** The defendant before you stands accused of fraud. He falsified information to get insurance money, but before you convict this man, I want you to put yourself in his position. A year ago, his wife, only 29 years old, was diagnosed with non-Hodgkin's lymphoma, a highly treatable cancer if caught early. Fortunately, his wife's cancer was caught at an early stage. However, the defendant was laid off six months before the diagnosis, and his family's insurance coverage, which was provided by his former employer, had expired. After the diagnosis, no insurance company would cover his wife's treatment because they said it was a pre-existing condition. The defendant could not afford to pay for the treatment himself, but how could he watch his wife die when she could likely be saved with proper treatment? Out of options, he falsified his wife's medical records, concealing her cancer diagnosis so she could get health insurance again. Yes fraud is wrong, but is it not also wrong to let someone so young die due to a technicality. Had the defendant not been laid off from work, his wife would have been insured. Now I ask you, what would you have done? Are you willing to let everything you love and hold dear die before your eyes because of bureaucracy? This man was not trying to exploit the system for selfish gains; he was only trying to save his wife. I want you to search your heart. If you don't feel that it is right for this man to go to prison, then you must acquit.

**Emotional Defense 2.** My client stands accused of gunning down two men. The prosecution says the shootings were premeditated, and thus, my client can't be considered insane. But is that the truth? Now I want to tell you a story. This is a story about a little girl walking home from the grocery store one sunny afternoon. I want you to picture this little girl.

Suddenly a truck races up. Two men jump out and grab her. They drag her into a nearby field and they tie her up, and they rip her clothes from her body. Now they climb on, first one then the other, raping her, shattering everything innocent and pure – vicious thrusts – in a fog of drunken breath and sweat. And when they're done, after they killed her tiny womb, murdered any chance for her to bear children, to have life beyond her own, they decide to use her for target practice. So they start throwing full beer cans at her. They throw them so hard that it tears the flesh all the way to her bones, then they pick her up, throw her in the back of the truck, and drive out to a bridge and pitch her over the edge. And she drops some 30 feet down to the creek bottom below. Can you see her? Her raped, beaten, broken body, soaked in their beer, soaked in their semen, soaked in her blood – left to die. If this were your daughter, could you say that you would be in your right mind after you found her? Could you be held accountable for your actions toward the two men who robbed her of her innocence and nearly her life? If not, you should acquit this man.

**Emotional Defense 3.** I ask you, good people of the jury, to put yourself in Mrs. Shields place before you convict her of murder. I want you to close your eyes and imagine putting your 4-year-old son peacefully to bed. Then, you go into the kitchen and begin putting away the dinner and dishes. It's 11:00 at night. Just then you hear the door fling open, and your drunken husband comes stumbling in. He becomes irate that the dinner is put away and no longer hot. He begins screaming at you. His screams turn to hitting, first with his palm, then with his fist. He shows you his revolver and threatens to use it to kill your parents if you ever leave him. The commotion wakes your son. He comes down the hall, sees what's happening, and begins crying. Your husband now begins beating him for getting out of bed. You try to stop him, but he throws you against the wall, knocking you unconscious. When you awake, you find that your abuser has

passed on the couch. You go to check on your son, and find that he has marks and scrapes all over him from being hit with a belt buckle. You put him in the car and order him to stay there. Then, you take your husband's revolver off the table where he left it, and fire one shot between his eyes as he lays there unconscious. Granted, the law says this act does not qualify as self-defense because she was not actively being attacked at the time of the shooting, but if you were in this situation, what would you have done? What else could you do? If you feel in your heart that this was self-defense, you should acquit this woman.

**Emotional Defense 4:** I want you to look at this young man with his whole life ahead of him, one year away from graduating college with a degree in engineering. He has a 3.6 GPA. He's never had any kind of trouble with the law until now. He stands before you charged with murder, but is this really just? Did he actively seek out and kill another person out of malice or for personal gain? No. He made one very bad decision, and had some very bad luck. He went to an end-of-semester Christmas party. There, he had a good time, but drank way more than he should have. Since he seldom drinks, the effects of the alcohol hit him hard. Not realizing the extent of his intoxication, he decided to drive home; after all, he only lived two blocks away. On the way home, he blacked out behind the wheel, swerved into oncoming traffic, and hit a car head on, killing an 18-year-old-woman. Had he crashed into a tree, he would have only received a DUI conviction, carrying with it an overnight stay in jail, a 2,500 dollar fine, and a 90-day license suspension for the first offense. This is a far step from the 25 to life in a federal penitentiary a murder conviction will carry. Yes, this event is tragic. Yes, my client deserves to be punished, but the charge of murder is too much. Before you callously pass judgment, ask yourself, "Have I ever driven when I had too much to drink...even just once?" If the answer is

yes, then this could have been you. I ask you only to be just. Think of what murder really means.

My client is not guilty of that. You have a duty to acquit him of this charge.

## *Appendix B*

*Notes.* The numbering of arguments is arbitrary.

**Rational Defense 1.** Grand arson, it carries no small sentence. Before you convict a man of this crime, you need to review the evidence. It is important to remember, ladies and gentlemen, that the defendant was not the only man who could have such a motive. As mentioned earlier in this case, the victim's firm has a record of suddenly terminating employees. The defendant was not the only person the victim suddenly let go. Within the last two years, there have been ten others. The fact that the defendant was the most recent to have his employment suddenly terminated does not mean that it couldn't have been any of the others. Just because the defendant is the only terminated employee who still has a local address doesn't automatically incriminate him either. Ask yourself, "If I had a motive to burn down my former place of employment, would it not be better for me to move out of town where I would not be as suspect?" Yes, the defendant publicly threatened to get even with the victim when his employment was terminated, but he was upset. We all say things we don't mean when we're upset. The burden of proof falls on the prosecution, and the prosecution has failed to provide such proof. You cannot send a man to prison based on such a shabby case. Other than motive, there is nothing linking the defendant to this crime. There are no witnesses who saw him at or near the crime scene. There were none of the clues found at the crime scene have been successfully linked to the defendant by the prosecution. The evidence provided falls short of proving guilt beyond a reasonable doubt. Therefore, you must acquit.

**Rational Defense 2.** The defendant stands accused of murdering his neighbor, with whom he had been openly feuding for some time. Yes, it's true the defendant has had a sketchy

past and had made threatening remarks to the deceased on several occasions, but saying something is not the same thing as doing it. We all say things we don't mean when we're angry. The defendant is not on trial for being likeable or even for what he had said to his neighbor. He's on trial for murder, and a conviction like murder requires evidence beyond a reasonable doubt. In this case, there is a lack of such evidence. The defendant claims he was out of town at the time of the murder, but has no one to vouch for him. So what about the crime scene? Does it tell a different story? No. There is none of the defendant's DNA at the crime scene. There is no murder weapon. There are no witnesses that say they saw the defendant in town on the day of the murder, and two thorough searches of the defendant's home have yielded nothing linking the defendant to the murder. The prosecution can't even prove the accused was in town at the time of the murder. Therefore, you cannot say beyond a reasonable doubt that the defendant committed this murder. The prosecution clearly does not have a solid case in the eyes of the law. Your only option is to acquit.

**Rational Defense 3.** My client stands accused of the terrible crime of murder. He has confessed to killing his mother in a fit of rage by striking her in the head with a lamp after being told he had to move out. The case would seem pretty cut and dried, were it not for the testimony of Dr. Johnston. To recap, the defendant has always had a history of overreaction and violent outbursts when provoked. However, when given the usual psychological evaluations, such as the one that deemed him competent to stand trial, he appears normal. However, as Dr. Johnston pointed out, this is only because his behavior only becomes out of control when he is provoked. The reason for this, as Dr. Johnston's MRI revealed, is the defendant has an underdeveloped orbital lobe, a brain defect. In healthy adults, the orbital lobe acts as the "brakes" for the

amygdale, which controls the primal emotions such as rage and fight or flight responses. Due to his smaller than normal orbital lobe, the defendant cannot properly evaluate and moderate his responses to arousing events until after his arousal has subsided. The defendant openly expresses remorse for his actions. He loved his mother, but was unable to control himself given his defect. Similar behavior has been observed in patients with brain tumors in the orbital lobe, but the defendant was never diagnosed with a tumor. He never had a reason for an MRI. Thus, his underdeveloped orbital lobe was never noticed, allowing his condition to go undetected until this terrible incident. I urge you to put this young man in a place where he can get the help he needs, but that place is not prison. Your only option is to find the defendant not guilty by reason of mental defect.

**Rational Defense 4.** My client stands accused of robbing a convenience store and shooting the clerk. The prosecution claims to have witnesses, but under closer inspection, as you have seen, their testimony falls apart. Mrs. Holmes, claims to have witnessed the defendant exiting the store across the street from her after the shooting; however, when she was administered an eye exam in this very court room, she failed it. Mr. Singer says while looking out of his living room window, he saw a man of average height and build with brown hair walk into the store in a brown, leather jacket like the one the defendant was wearing when arrested. Mr. Singer then says he went into the kitchen to make breakfast, which took approximately 20 minutes. When he returned to his living room, he reported hearing a gunshot and seeing a man in a brown, leather jacket running out of the store. Mr. Singer claims that it was the same man, but isn't 20 minutes a bit long for a robbery? Aren't there a lot of brown leather jackets out there? Isn't it possible during the 20 something minutes Mr. Singer was away from the window, the

defendant went in to the store, purchased a gallon of milk as he claims, and left before the actual shooter even showed up? Could not the actual shooter have walked wearing a similar jacket in a mere 30 seconds before Mr. Singer returned to his window, which is over 100 yards away from the crime scene? The answer is yes. Police found no gun on the defendant. The witness testimony of the prosecution simply doesn't hold up. There is not enough evidence to prove the guilt of my client beyond a reasonable doubt. Your duty here is simple: acquit!

*Appendix C*

1. I try to avoid situations that require thinking in depth about something.  
Strongly agree    1    2    3    4    5    strongly disagree
  
2. I'm not that good at figuring out complicated problems.  
Strongly agree    1    2    3    4    5    strongly disagree
  
3. I enjoy intellectual challenges.  
Strongly agree    1    2    3    4    5    strongly disagree
  
4. I am not very good at solving problems that require careful logical analysis.  
Strongly agree    1    2    3    4    5    strongly disagree
  
5. I don't like to have to do a lot of thinking.  
Strongly agree    1    2    3    4    5    strongly disagree
  
6. I enjoy solving problems that require hard thinking.  
Strongly agree    1    2    3    4    5    strongly disagree
  
7. Thinking is not my idea of an enjoyable activity.  
Strongly agree    1    2    3    4    5    strongly disagree
  
6. I am not a very analytical thinker.  
Strongly agree    1    2    3    4    5    strongly disagree
  
6. Reasoning things out carefully is not one of my strong points.  
Strongly agree    1    2    3    4    5    strongly disagree
  
10. I prefer complex problems to simple problems.  
Strongly agree    1    2    3    4    5    strongly disagree
  
11. Thinking hard and for a long time about something gives me little satisfaction.  
Strongly agree    1    2    3    4    5    strongly disagree
  
12. I don't reason well under pressure.  
Strongly agree    1    2    3    4    5    strongly disagree
  
13. I am much better at figuring things out logically than most people.  
Strongly agree    1    2    3    4    5    strongly disagree
  
14. I have a logical mind.  
Strongly agree    1    2    3    4    5    strongly disagree

15. I enjoy thinking in abstract terms.  
Strongly agree 1 2 3 4 5 strongly disagree
16. I have no problem thinking things through carefully.  
Strongly agree 1 2 3 4 5 strongly disagree
17. Using logic usually works well for me in figuring out problems in my life.  
Strongly agree 1 2 3 4 5 strongly disagree
18. Knowing the answer without having to understand the reasoning behind it is good enough for me.  
Strongly agree 1 2 3 4 5 strongly disagree
19. I usually have clear, explainable reasons for my decisions.  
Strongly agree 1 2 3 4 5 strongly disagree
20. Learning new ways to think would be very appealing to me.  
Strongly agree 1 2 3 4 5 strongly disagree
21. I like to rely on my intuitive impressions.  
Strongly agree 1 2 3 4 5 strongly disagree
22. I don't have a very good sense of intuition.  
Strongly agree 1 2 3 4 5 strongly disagree
23. Using my gut feelings usually works well for me in figuring out problems in my life.  
Strongly agree 1 2 3 4 5 strongly disagree
24. I believe in trusting my hunches.  
Strongly agree 1 2 3 4 5 strongly disagree
25. Intuition can be a very useful way to solve problems.  
Strongly agree 1 2 3 4 5 strongly disagree
26. I often go by my instincts when deciding on a course of action.  
Strongly agree 1 2 3 4 5 strongly disagree
27. I trust my initial feelings about people.  
Strongly agree 1 2 3 4 5 strongly disagree
28. When it comes to trusting people, I can usually rely on my gut feelings.  
Strongly agree 1 2 3 4 5 strongly disagree

29. If I were to rely on my gut feelings, I would often make mistakes.  
Strongly agree    1    2    3    4    5    strongly disagree
30. I don't like situations in which I have to rely on intuition.  
Strongly agree    1    2    3    4    5    strongly disagree
31. I think there are times when one should rely on one's intuition.  
Strongly agree    1    2    3    4    5    strongly disagree
32. I think it is foolish to make important decisions based on feelings.  
Strongly agree    1    2    3    4    5    strongly disagree
33. I don't think it is a good idea to rely on one's intuition for important decisions.  
Strongly agree    1    2    3    4    5    strongly disagree
34. I generally don't depend on my feelings to help me make decisions.  
Strongly agree    1    2    3    4    5    strongly disagree
35. I hardly ever go wrong when I listen to my deepest gut feelings to find an answer.  
Strongly agree    1    2    3    4    5    strongly disagree
36. I would not want to depend on anyone who described himself or herself as intuitive.  
Strongly agree    1    2    3    4    5    strongly disagree
37. My snap judgments are probably not as good as most people's.  
Strongly agree    1    2    3    4    5    strongly disagree
38. I tend to use my heart as a guide for my actions.  
Strongly agree    1    2    3    4    5    strongly disagree
39. I can usually feel when a person is right or wrong, even if I can't explain how I know.  
Strongly agree    1    2    3    4    5    strongly disagree
40. I suspect my hunches are inaccurate as often as they are accurate.  
Strongly agree    1    2    3    4    5    strongly disagree

*Appendix D*

**Demographic Questions**

**Directions:** Please answer the following demographic questions by circling the answer that best describes you.

What is your age?

**19-24      25-30      31-36      37-42      43 or over**

What is your class rank?

**Freshman      Sophomore      Junior      Senior      Other**

What is your gender?

**Male      Female**

What is your race?

**Asian or Pacific Islander      Caucasian      Hispanic      African American**

**Native American      Arabic      Other**

Have you ever seen the movie *Saving Private Ryan* (excluding the clip you just saw)?

**Yes      No**

*Appendix E*

**Six-Point Persuasion Scale Used with Hypothetical Court Cases**

1. Definitely Convict
2. Clearly Enough Evidence to Convict Beyond a Reasonable Doubt
3. Probably Should be Found Guilty
4. Probably Should be Acquitted
5. Clear Lack of Evidence to Prove Guilt Beyond a Reasonable Doubt
6. Definitely Should be Acquitted

## *Appendix F*

H1: After exposure to violent (arousing) media, participants will be persuaded more often by emotional arguments than by strictly rational ones. (Repeated Measures ANOVA)

H2: Participants will be persuaded more by emotional arguments after watching violent (arousing) media than before watching. (Repeated Measures ANOVA)

H3: Exposure to violent entertainment media will increase excitement. (Repeated Measures ANOVA)

H4: There will be some level of residual excitement for three minutes after stimulus exposure. (Paired Sample T-test)

H5: Participants with high levels of residual excitement will be persuaded more often by emotional arguments than participants with lower levels. (Linear Regression)

H6: Participants with higher rationality scores will tend to be less persuaded by emotional arguments than participants with lower rationality scores. (Linear Regression)

H7: Participants will be most persuaded in post-stimulus conditions combining high arousal and emotional argument, and rationality score will be a significant covariate in this relationship. (Multiple Regression)

## Appendix G

May 16, 2011

Office for Research  
Institutional Review Board for the  
Protection of Human Subjects

THE UNIVERSITY OF  
**ALABAMA**  
R E S E A R C H

Gyromas W. Newman  
Graduate Studies  
College of Communication & Information Sciences  
The University of Alabama

Re: IRB # 11-OR-171 "The Effects of Excitation on Argument Perception"

Dear Mr. Newman:

The University of Alabama Institutional Review Board has granted approval for your proposed research

Your application has been given expedited approval according to 45 CFR part 46. Approval has been given under expedited review category 7 as outlined below:

*(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.*

Your application will expire on May 12, 2012. If your research will continue beyond this date, complete the relevant portions of Continuing Review and Closure Form. If you wish to modify the application, complete the Modification of an Approved Protocol Form. When the study closes, complete the appropriate portions of FORM: Continuing Review and Closure.

Please use reproductions of the IRB approved informed consent form to obtain consent from your participants.

Should you need to submit any further correspondence regarding this proposal, please include the above application number.

Good luck with your research.



152 Rose Administration Building  
Box 870117  
Tuscaloosa, Alabama 35487-0117  
(205) 348-5152  
FAX (205) 348-8882