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**THE THERAPEUTIC EFFECTS OF CINEMA:  
AN EXPERIMENTAL STUDY OF CATHARSIS THROUGH  
NARRATIVE MEDIA AND CONTEMPLATION**

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by

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## Abstract

Catharsis has been dismissed by behaviorists and media psychologists since the 1970s because the dominant *venting* model has failed to produce empirical support for this construct (Bushman, Baumeister, & Stack, 1999; Geen & Quanty, 1977; Zillmann, 1998). However, the notion of catharsis persists in the Humanities (Belfiore, 1992) and everyday usage. Using a broadened conceptualization, based on the *clarification view* (Halliwell, 1986; Nussbaum, 1986; Oatley, 2011), this research proposed a new catharsis theory and tested its hypotheses using narrative media and a 20-minute self-reflection task. A 4-condition controlled experiment was designed to examine and explore catharsis through mediated human drama in two modes: cinematic and text-based. Results showed that the direct effects of catharsis through media exposure and subsequent introspection were weak. Nonetheless, indirect cathartic effects through cinematic human drama were found in the form of improved general health and psychological well-being. These therapeutic effects were mediated by identification with fictional characters, improvements in self-efficacy in regulating sadness, increases in self-compassion, and the use of particular word categories during contemplation. For the latter, the use of greater insight and discrepancy words indirectly predicted better general health and mental well-being, whereas the use of more certainty and causation words marginally deteriorated health and well-being. This study provides evidence for media-centered cathartic effects and some explanatory mechanisms for their health consequences. Theoretical, research, and practical implications are discussed in light of future catharsis research and in support of nonimmediate or delayed media effects; study limitations and suggestions for follow-up investigations are also offered.

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## Introduction

Perhaps we should return to Aristotle's declaration of tragedy's object...  
and grant redeeming value to tragic drama's capacity  
for honing our empathic sensitivities and for making us cognizant of our vulnerabilities,  
compassions, and needs for emotional wellness.

Dolf Zillmann, 1998, *Does Tragic Drama Have Redeeming Value?*

Despite the commonplace association of movie watching with pleasure-seeking entertainment, the genre of tragedy – and human drama more generally – remains popular in American mainstream cinema. A quick glance at Academy Award winning films of the past 80 years reveals the prevalence of tragic films and human dramas that feature themes of human suffering and narrative endings that are not necessarily conclusive or rosy. The following Best Picture or Most Outstanding Production Oscar winners from the 1930s to the 2000s illustrate the pervasiveness of this somber genre: *No Country for Old Men* (2007), *The English Patient* (1996), *Ordinary People* (1980), *One Flew Over the Cuckoo's Nest* (1975), *Midnight Cowboy* (1969), *On The Waterfront* (1954), *The Best Years of Our Lives* (1946), and *All Quiet on the Western Front* (1930). In entertainment research, the prevailing thesis of Mood Management Theory (Zillmann, 2000), where individuals are conceptualized as pleasure-seekers in their media choices, has been challenged by the paradox of our appreciation of tragedies (Oliver, 1993). Oliver (2008) acknowledged the explanatory power of the Mood Management argument, but also argued the case for our seemingly incongruous

gravitation towards “meaningful entertainment” (p.56) that elicits mixed affect, which includes intense negative emotions. Perhaps individuals turn to poignant entertainment because the cognitive processing of a blend of negative and positive affective states through the stories of human struggle offers benefits to their well-being. In short, cinematic tragedies and human drama may give rise to catharsis.

Viewers who watch tragedies may undergo a healthy cathartic response, especially when the drama moves them to experience powerful negative emotions and shed tears. A human drama of tragic proportions such as *Sophie’s Choice* (1982) – the story of a Holocaust survivor who perseveres in vain to live with the ghosts of her harrowing past – usually depicts the experiences of trauma, suffering, and life transitions through characters who could touch us deeply. According to Aristotle and popular belief, this emotional experience makes us better human beings because it removes the obstacles to “the emotional excellence of the soul” (Belfiore, 1992, p.345). But, does catharsis occur simply as a direct result of these powerful, mediated emotional experiences? Zillmann (1998) reviewed the state of catharsis research in psychology and found no evidence to support the presumed benefits of catharsis. The studies he reviewed examined the short-lived effects of distressing emotions and found primarily contradictory results to the supposed gains in well-being, e.g., greater arousal of tragic emotions led to greater self-reported tension and anxiety. Therefore, this doctoral thesis proposes an empirical study to further examine the therapeutic effects of catharsis through cinematic media using a broadened conceptualization of the Ancient Greek concept.

Defined around 300 B.C. in Aristotle's *Poetics*, the idea of catharsis has been interpreted as “the purgation of pity and terror in theatre audiences” (Scheff, 2007). Its persistence as a quotidian concept (e.g., venting anger is cathartic) has been as tenacious as its controversy in the Humanities and social science research. There is no consensus for its definition in the former (Belfiore, 1992), whereas studies and reviews in experimental psychology – rooted in the work of Breuer and Freud on abreaction – have found no cathartic effect in emotional release or venting (Bushman, 2002; Geen & Quanty, 1977; Zillmann, 1998). However, these conflicting views in both popular culture and academia seemed to have either over-simplified or made empirically inscrutable a complex concept that was never explicated by Aristotle in his surviving works; the *Poetics* elaborated on aspects of plot that elicit tragic emotions, but “*katharsis* is never explained” (Belfiore, 1992, p.338). Taking a broader approach, Halliwell (1987) suggested that catharsis in drama can affect audiences beyond the widespread notion of emotional release to exert influence on their understanding of *the human condition*. Moreover, Belfiore (1992) also argued for a less narrow form of catharsis by including “pleasure, learning, and the physical, cognitive and ethical aspects of the emotions” (p.259). In sum, a modified conceptualization of catharsis that broadens the scope of previous psychological models may offer a more fruitful research direction for measuring the elusive cathartic response. The following section draws primarily from media psychology, biobehavioral health, and the Humanities to review catharsis theories and previous research attempts at measuring this concept. This review ends with a revised definition and framework for media-centered catharsis research.

## Chapter 1

### LITERATURE REVIEW

#### *Previous Catharsis Research*

The overwhelming lack of empirical support for catharsis in media psychology and anger research (Bushman, Baumeister, & Stack, 1999; Lohr, Olatunji, Baumeister, & Bushman, 2007) was likely due to the narrow focus of these studies on “aggression catharsis” (Scheff, 2007, p.100). For example, in catharsis research on the emotions of anger, fear, and sadness, Ordman’s results (as cited in Zillmann, 1998) actually contradicted the catharsis principle. Zillmann (1998) reported that in catharsis research involving anger and fear emotions, exposure to depictions of these emotions promoted rather than assuaged them. Comparable research concerning the emotion of sadness found “higher rather than lower levels of stress” (p.10) in individuals who cried during and after exposure to tragedy. Further, in their review of aggression catharsis, Geen and Quanty (1977) reported that the use of “a simple cause-effect model” (p.4) in Freudian or abreaction-based catharsis research was prevalent; these studies hypothesized that the mere enacting of aggressive behavior would lead to a reduction in aggression. The authors asserted that the cause-effect model of aggression catharsis is the “notion of catharsis most generally employed by psychologists” (p.5), even though existing empirical data did not support it. On the whole, these approaches to catharsis took an unsophisticated stimulus-response perspective whereby either exposure to emotion-eliciting media or “letting off steam” is expected to trigger emotional purgation that relieves tension and aggressiveness. Indeed, the convincing verdict that these purging-based studies presented was the unlikelihood of catharsis through mere exposure to

tragedy or acting-out of aggression (Scheele, 2001). Therefore, catharsis research to date rests on a highly-simplified conceptualization, and empirical evidence for the cathartic effect remains scant.

### *Three Perspectives on Catharsis*

The limitation in catharsis research to date seems to rest on an oversimplification of its theoretical underpinnings. Regardless of this shortcoming, one consensus regarding the cathartic effect is its healing or restorative value (Zillmann, 1998). There is a general tendency to analogize catharsis with medicinal effects due to the dominant psychoanalytic views of Jacob Bernays of the middle to late 1800s (Gobert, 2009). Derived from Aristotle's *Poetics*, Bernay's ideas influenced the early works of Sigmund Freud on hysteria, which shaped subsequent catharsis research in psychology. More recently, catharsis has been commonly understood as “a process that relieves tension and anxiety by expressing emotions” (Nichols & Zax, 1977, p.1). In the Humanities, catharsis is considered remedial and pleasure-giving. As a result of these assorted definitions, any attempt to study catharsis requires a particularly lucid interpretation of its variety of possible meanings. The following section offers three different views of catharsis – the purgation view, the clarification view, and the coping view – and proposes the third interpretation as a basis for revising catharsis theory.

*The purgation view.* The popular, dictionary-referenced definition of catharsis is as follows: “purification or purgation of the emotions (as pity and fear) primarily through art” (catharsis, 2012). The widespread and favored purgation model has been credited to Breuer and Freud's work on curing hysteria via psychoanalytical catharsis (Belfiore, 1992; Gobert, 2009). These early psychoanalysts asserted that catharsis is abreaction. Abreaction is defined as the purging of emotions associated with past

trauma (Scheff, 1979) or “assimilating dissociated emotion” (Kenny, 1997, p.475). In Breuer and Freud's (1964) view, an overwhelming experience, usually a “psychic trauma” (p.3), often cause the patient to repress the associated emotional disturbances that could, in turn, lead to pathological phenomena such as hysterical and epileptic attacks. These symptoms of the suppressed memories of psychological injury must be 'abreacted' by “thoroughly awakening the memories of the causal process with its accompanying affect” (p.4). So, catharsis is initiated when “the forgotten memories were recalled and linked to the anxiety” (Pennebaker & Beall, 1986, p.275). Abreaction-based catharsis continues to inform its recent postulates and practices in psychiatry.

Nichols and Zax (1977) explained catharsis as comprising of two interrelated but largely distinct parts: a cognitive-emotional aspect associated with the work of Breuer and Freud (reviewed above) and a somatic-emotional component associated with “motoric discharge of emotion” (p.8). Though a critic of this view, Cornelius (1997) confirmed the belief in folk psychology and clinical psychiatry that “weeping may bring about some kind of emotional or physical catharsis” (p.303). More recently, a biochemical theory of crying posited that “weeping leads to a decrease in distress or tension because the function of tears is to drain off the toxic byproducts of stress” (Cornelius, 1997, p.304; Gross, Frederickson, & Levenson, 1994). In this theory, healthy emotional venting is enacted through the act of shedding tears, whereas failure to vent emotions will give rise to indirect symptoms, including asthma and bedwetting. On the other hand, in aggression catharsis research, catharsis is defined as a process of “reduction in aggressive arousal brought about through the performance of aggressive

acts” (Geen & Quanty, 1977, p.5). Basically, pent-up frustrations, due to tension-producing provocations, generate arousal in the individual that, in turn, motivates aggression. Upon aggressing, according to this “letting off steam” (p.4) hypothesis, arousal is diminished along with the likelihood of future aggressions. In short, the cause is frustration and the effect is aggressive behavior; the latter presumably relieves or discharges tension. Overall, this somatic-emotional component of the purgation view emphasizes a relief-valve model of emotional release that associates the cathartic effect with less controllable, knee-jerk responses, such as weeping and reacting aggressively.

More recently, a psychotherapy-based theory of catharsis (Scheff, 1979; Scheff, 2007) applied Breuer and Freud's purgation view to catharsis in dramatic entertainment. Emphasizing the difference between emotional discharge and distress, Scheff (1979) used the concept of aesthetic or optimal distancing from aversive emotions, as a means through which the individual could experience cathartic relief. Emotional distress is necessary but not sufficient for catharsis; instead, emotional discharge is considered the key to catharsis. The author suggested that discharge rarely occurs and is often confused with distress, which occurs more frequently. In other words, there is a difference between crying out of despair and crying out of gaining some profound understanding of life events. Further, it was argued that catharsis could occur unintentionally as a therapeutic “slow chipping away at unconscious emotional distress” (Scheff, 1979, p.69). In summary, the purgation model of catharsis in psychotherapy involves the infrequent alleviation of emotional tension either through direct reliving of traumatic memories or indirectly through drama, such as theatrical performances and motion pictures.

*The clarification view.* Making the argument against the involuntary aspects of emotional purgation or venting, Kenny (1997) presented an alternative model known as clarification catharsis, which the author defined as “learning how to love and hate ‘rightly,’ such that our souls undergo a change for the better” (p.478); here, the term “learning” refers to the comprehension of concepts, rather than psychological conditioning, whereas “rightly” indicates motivated reasoning and moral behavior. Clarification refers to a non-instantaneous illumination of the meaning of the emotions of pity and fear that are depicted in tragic drama by way of audience introspection (Gobert, 2009); these drama-induced contemplations foster “a richer self-understanding” (Nussbaum, 1986, p.388) in the context of lived experience. Halliwell (1986) also emphasized self-reflection in clarification catharsis: "tragic katharsis in some way conduces to an ethical alignment between the emotions and the reason: because tragedy arouses pity and fear by appropriate means, it... tends to harmonize them with our perceptions and judgments of the world" (p.201). Golden (1976) also interpreted the Aristotelian concept with a focus on gaining insight through self-reflection: “*katharsis* is the process of separation of soul from body which has as its essential goal the apprehension of true reality” (p.444-445). In short, cathartic clarity emphasizes audience contemplation of their aroused tragic emotions, which, over time, leads to benefits in the form of a deeper understanding of lived reality.

Catharsis as emotional clarification supplies the audience with insights into tragic emotions as a universal human experience that has counterparts in emotional episodes in the real world, outside of drama. Though audiences may not always find the story to be pleasant in tragic dramas, these narratives are meant to have a common



thematic appeal related to the human struggle. The tragic scenarios of a fictional character enable the audience to inductively acquire an awareness of universal human themes, e.g., regarding pain and suffering (Gobert, 2006, p.34, see footnote). Through tragic emotions, the gaining of pivotal plot information at the drama's climax initiates an association with or informs the audiences' knowledge and insights about the universal human experience; through contemplation, this learning process involves the recognition of and comparison between the structure of tragic narratives (i.e., the plot) and real life experiences (Belfiore, 1992). Thus, clarification involves the audience's life experience as a means through which drama informs their understanding of human struggle.

Further, clarification may also give rise to pleasure. Golden (1976) explained that good tragic drama fulfills its function at its conclusion as “the experience of an intellectually pleasant learning process that is concerned with the universal nature of pity and fear in the human condition” (p.447); however, the notion of pleasure in clarification been disputed (Nussbaum, 1986). Belfiore (1992) also associated self-reflection on tragedy as inherently pleasurable: “While the perception of terrible events continues to give pain, the understanding tragedy gives is deeply consoling” (p.347). In sum, the clarification view of catharsis emphasizes the cognitive processing of tragic emotions for attaining a deeper understanding of *the human condition*, with the possibility of a meta-level gratification as an integral part of the contemplation process. Therefore, clarification catharsis is theorized as an insight-gaining psychological phenomenon that can transform audiences into better, more compassionate members of

the human race through potentially pleasurable self-reflections on our common humanity.

*The coping view.* Applying the clarification view to media psychology, this section also broadens the conceptualization of catharsis. In addition, it argues for an empirically testable, media-centered approach to the concept of catharsis that also emphasizes the life experience of mass media users, while downplaying its pleasure-giving assumptions. When Oatley (2011) criticized the purgation view in favor of clarification, he emphasized the latter as a psychologically liberating process with a "straightforwardly cognitive meaning: of clearing away obstacles to understanding" (p.200). These obstacles implicitly refer to the ongoing emotional experiences associated with the life events of individual media users. Catharsis is facilitated when the self-reflecting on tragic drama breaks down the barriers to individuals' understanding of human suffering, i.e., events that give rise to pity and fear. So, the coping view of catharsis focuses on the processing of emotions when tragic drama resonates with individuals' life experiences. Whereas clarification assumes that tragic drama engenders pleasurable contemplations about the common human experience, coping catharsis emphasizes emotion regulation and cognitions that may not necessarily be pleasurable. If the post-viewing activity of contemplation occurs, it is presumably unpleasant or even distressing in the short run, since the notion of coping used here refers to the management of one's emotional life. The coping view of catharsis adjusts the conceptualization of clarification by focusing on the effort to deal vicariously with impediment-like, stressful life episodes, while remaining ambivalent to the pleasure assumption.

The notion of entertainment media use as a form of everyday coping seems to fall within the scope of Mood Management Theory (Zillmann, 2000), but the use of the term ‘coping’ in mood-based media research refers chiefly to short-term effects. In its initial development, Mood Management Theory applied largely to the regulation of transient affective states through the selection of communication messages and competing behaviors, such as sports (Zillmann, 1988). Emotional coping in subsequent media research focuses on immediate responses to media reception through mental and behavioral means, e.g., distracting thoughts and looking away (Till et al., 2011; Wirth & Schramm, 2005). Instantaneous emotional coping seems suitable for investigations of uncontrollable reactions during media exposure to startle-response genres, such as horror films, but not adequate for examining contemplation-focused entertainment. Vorderer and Knobloch (2000) proposed an alternative to these behaviorist-centric media research by calling for the expansion of the concept entertainment into a "multifaceted tool for coping with the shortcomings of life and oneself" (p.65). This alternate proposition aligns with the functions of contemplation-focused entertainment. Thus, the use of the term ‘coping’ in this view of catharsis refers to individuals’ long-term coping with stressful episodes and life events using narrative media. Compared to immediate coping responses, which focuses on optimizing media emotions in the pursuit of pleasure (Till et al., 2011), non-instantaneous coping is motivated by media use for self-betterment. In the coping view, catharsis through media is a form of nonimmediate coping.

At a more fundamental level, both the Theory of Catharsis as Coping and Mood Management Theory are both concerned with media selection and exposure as means of

everyday coping. However, whereas catharsis is conceptualized as noninstantaneous post-exposure processes that promote understanding, mood management is understood as immediate and nonimmediate media-selection behaviors for maximizing the pursuit of pleasure. Using the concept of “telic hedonism” (Zillmann, 2000, p.106), Mood Management Theory applies the hedonistic assumption to the regulation of emotional states in the here and now as well as in the long run. On the other hand, catharsis likely induces distress in the short-term in order to promote the hypothesized clarification and understanding of those upheavals in the long term. Consequently, mood management appears to primarily conceptualize media use as emotional distraction to either curtail bad moods or prolong good moods (Zillmann, 1988). Alternatively, this theory also explains media selection as a form of self-denial in the interest of later gratifications of a higher magnitude (Zillmann, 2000). Thus, a key difference between the two theories lies in the mechanisms through which coping takes place. In short, catharsis and mood management offer different pathways towards media-based coping: the former through long-term insights into human life events and the latter via pleasure-centric diversion or self-denial.

In the psychology of coping, stressful events are handled via cognitive and behavioral responses (Endler & Parker, 1990). Cornelius (1997) suggested that catharsis in tragic drama requires emotional expression, e.g., weeping, under specific “circumstances and cognitive set” (p.320), which could be furnished by the formal aspects of narratives. In other words, the experience of tragic drama under specific situations and states of mind can be cathartic. The research program in expressive writing pioneered by James Pennebaker would suggest that Cornelius's “specific

circumstances and cognitive set” refers to the cognitive processing of life events through the use of language: “[h]ealth gains appear to require translating experiences into language” (Pennebaker, 2000, p.8). In their initial experimental study, Pennebaker and Beall (1986) found long-term health benefits in healthy individuals who wrote about the most upsetting event in their life and disclosed their feelings; consistent with many studies using the purgation view, “short-term increases in physiological arousal” (p.280) were also found. In a follow up study, Greenberg, Wortman, and Stone (1996) found positive health outcomes in healthy female subjects with trauma-presence (i.e., having experienced a past trauma such as physical abuse, parental divorce, etc.) who wrote expressively about an imagined event not connected to their own past. Another parallel line of research called *the social sharing of emotions* posited that emotional events in everyday life, including emotion-evoking stimuli like the movies, precipitate the verbal sharing of those episodes, particularly with intimate others (Luminet, Bouts, Delie, Manstead, & Rimé, 2000; Rimé, Paez, Kanyangara, & Yzerbyt, 2011). Drawing from these studies, catharsis through narrative media could be viewed as a form of nonimmediate, ongoing psychological coping via language-based emotional expression about the self or the imagined life events of others.

#### *Towards a New Catharsis Theory for Media Psychology*

Denounced in the realm of empirical research, the revival of catharsis theory requires a revision of its underlying perspective. In psychology, catharsis theory or the catharsis principle (Bushman, Baumeister, & Phillips, 2001; Zillmann, 1998) is based on the purgation view. Highly negative scholarly reviews and evaluations of catharsis research argued that “the theory is empirically false” (Bushman et al., 2001, p.18) and have called for “a moratorium on catharsis theory and the use of venting in therapy”

(Bushman, 2002, p.725) as early as the 1970s. However, the purgation view has been criticized as “derived meanings” (Oatley, 2011, p.200) lifted from a well-known but vague passage in Aristotle’s *Poetics* that does not accurately capture the concept; catharsis as venting does not correspond with previous sections in *Poetics* that emphasize human learning (Nussbaum, 1986). On the other hand, the clarification view has been argued by scholars in the Humanities (e.g., Belfiore, 1992) as the more accurate interpretation of the intended meaning of catharsis. Based on several surviving works by Aristotle that converged on one general definition, the clarification perspective emphasizes the gaining of deeper knowledge or insights into human life. Nevertheless, the notion of coping via entertainment, rather than intended learning, in the landscape of everyday life stresses and events seems to better capture the media-centered approach to catharsis; drama lovers may choose tearjerkers to have a good cry in solidarity instead of deliberately seeking life lessons in a film. Learning is conceivably a by-product of coping, not its motivating force. Therefore, a new, media-focused catharsis theory should be grounded on the coping view.

In broadening the scope of catharsis, the coping view focuses on the cognitive after-effects of consuming tragic drama. The emotional experience surrounding the cathartic process begins with media exposure, but does not end immediately after exposure. Due to the association between contemplation and tragic emotions, the emotional event provoked by the drama may continue with audience introspections and the sharing of this stirring experience with others. In other words, the evoked pity and fear emotions will likely be continually processed by the viewer for some time instead of disappearing immediately after exposure. Similar features to the outcomes of tragic

emotions can be seen elsewhere in folk and social psychological research on the social sharing and cognitive processing of real emotional episodes. Thus, a new catharsis theory should assume a human propensity to express emotional experiences to others.

*The social sharing of emotion* is defined as the voicing of an emotional episode through a common language to a social other, including a symbolic addressee (Pennebaker, Zech, & Rimé, 2001; Rimé, 2007). Further, more intense emotional incidents have been found to be “more repetitively” shared, and for longer periods of time (Rimé et al., 2011, p.147). This research program has been accumulating evidence globally to demonstrate the ubiquity of the social sharing nature of human emotions: “[a]n overwhelming majority of people report that they discuss their emotions with others, particularly their significant others” (Kennedy-Moore & Watson, 2001, p.198). Researchers have found that sharing one's emotions from recently experienced emotional events – e.g., fear, anger, happiness and to lesser extents guilt and shame – is universal (Rimé, Paez, Kanyangara, & Yzerbyt, 2011; Zech & Rimé, 2005). Additionally, Pennebaker et al. (2001) reported results of cross-cultural studies that revealed similarities in rates of social sharing around the globe, including samples from Japan and India. In short, *the social sharing of emotion* is a commonplace phenomenon of human emotional life that should promote the cathartic process.

In an experiment that used movie stimuli of various levels of emotional intensity, Luminet et al. (2000) successfully facilitated a post-viewing environment to observe the social behavior of participants in sharing their emotions with an accompanying friend. The authors found greater (verbal) social sharing for participants who experienced intense movie emotions, compared to the other conditions of lesser

emotional intensity. Emotions evoked during movie watching have been argued as genuine emotions (Tan, 1996). Fiction can elicit a wide spectrum of emotions from fear and anger to sadness and joy through plot and character portrayals. For example, such genres as the tear-jerker and the horror film are produced to entertain viewers through intensely emotional experiences. So, this natural tendency to share emotions also applies to vicarious emotional events through narrative media that could give rise to catharsis.

In the coping view of catharsis, the benefits from tragic drama arise after individuals have had the opportunity to contemplate and share their emotions. *The social sharing of emotions* bears some conceptual similarities with James Pennebaker's (2000) expressive writing procedure, where individuals who disclose an unpleasant emotional event from their past often display health improvements. Using the notion of writing as thinking, where “[l]anguage externalized in writing seemed to augment intuitive thought to enable language-based reasoning beyond immediate experience” (Oatley & Djikic, 2008, p.12), it is logical to assume that self-reflecting on a drama, e.g., plot and character elements, by composing thoughts on paper or a word processor is also a form of thinking. Nevertheless, the two practices are different in several respects, including their typical dependent measures and their accompanying psychological and social processes. Whereas the dependent variable for the former focused on relief from “the emotional impact of the memory of the shared emotional episode” (Zech & Rimé, 2005, p.271), studies based on Pennebaker's technique have usually measured physical and psychological health effects after the disclosure of highly unpleasant or traumatic events that are not normally shared with others.



Moreover, to socially share emotions typically involves a social other who would normally provide some feedback, either verbal or nonverbal, in response. Expressive writing, on the other hand, does not feature this interpersonal response. Nonetheless, the attribute that both practices have in common is the externalization of emotions. Thus, a new catharsis theory should include a self-reflection component, or a thinking process that promotes this form of self-expression either through verbalized sharing or writing.

Regardless of the difference in these modes of externalizing emotions and thoughts – *social sharing of emotions* or written disclosures – both styles of communication are grounded in emotional expression, which has been repeatedly shown to benefit health. The ongoing research generated by Pennebaker's writing procedure, which tends to focus on the mediators of health outcomes (Pennebaker & Chung, in press), has frequently found improvements in physical health, mental well-being, and general functioning (Pennebaker, Kiecolt-Glaser, & Glaser, 1988; Smyth, 1998; Suedfeld & Pennebaker, 1997). Drawing on the analogy of emotional disclosure as a fever that indicates an underlying illness, Pennebaker et al. (2001) identified both writing disclosure and *social sharing of emotion* as comparable means of psychological coping. Consequently, the process of contemplation in the coping view of catharsis should also give rise to positive health effects. Therefore, a catharsis theory that examines its redeeming value to human life should assess its therapeutic effects via health measures.

There is some evidence that emotional expression may not need to be self-directed to be valuable. The benefits of expressing emotionally about other people's distressing memories have also been documented. A social psychological study based

on expressive writing has reported health benefits after vicarious emotional expression. Greenberg et al. (1996) studied a sample of psychologically normal functioning individuals with past trauma for the effects of emotional disclosure on their physical health; prescreened traumas included “sexual molestation,... violent assault, abandonment by a parent, parental divorce, and witnessing a gruesome event” (p.590). Using a controlled experiment, one of the “treatment” groups imagined and wrote emotionally about a real traumatic event they had not previously experienced, i.e., “imaginary events were preassigned rather than generated by participants” (Greenberg et al., 1996, p.591). Results showed that both the real and imagined-trauma participants were healthier compared to the control group during a 1-month follow up measurement of illness visits to the doctor (Greenberg et al., 1996); the health effects between the trauma groups did not differ significantly. Further, the imagined-trauma participants who reported greater negative mood at posttest also reported improvements in health symptoms at the 1-month follow-up. In general, these results suggested that both trauma groups underwent different emotional experiences during expressive writing. For example, it was less disturbing emotionally to write about an imagined trauma compared to writing on one's own unpleasant memories. In short, these findings indicate that, for individuals with past trauma who have remained resilient, catharsis could occur through indirect emotional experiences that are less painful than the revisiting of one's own life events.

In light of the popularity of somber entertainment, particularly films containing themes of human suffering, a new catharsis theory should encompass vicarious experiences featuring powerful emotions through fictional characters. The appeal of

fiction, including the dark and serious variety, has been said to be motivated by the safety of experiencing intense emotions at an aesthetic distance, away from consequential reality (Scheff, 1981). Results from the imagined-trauma condition in the study by Greenberg et al. (1996) suggest that therapeutic effects can arise in healthy, trauma-present individuals who express themselves emotionally about an imaginary event that has no thematic congruence with their actual past events. In other words, event specificness of the expressive writing topic is likely not necessary for generating measurable cathartic effects. So, it is conceivable that contemplating the scenario of fictional characters who undergo traumatic or intensely stressful events could give rise to catharsis.

Given that film remains one of the most consistently popular forms of mass media of the past 100 years, coupled with the continued adulation for its somber genres, a new catharsis theory should be applicable to an audience population larger than trauma-present individuals. Though research using Pennebaker's writing procedure has often focused on trauma-present participants, the current study includes healthy individuals who do not report a past trauma, i.e., trauma as defined in Greenberg et al. (1996). It is reasonable to assume that a sample of participants from a 4-year American university, mostly college students around the age of 20, would have had some form of intensely stressful experience in their lives thus far, including life transitions (Chung & Pennebaker, 2008). For example, relocating from high school to college life as a freshman can be a highly stressful event as a result of the separation from family members and friends. Pennebaker, Colder, and Sharp (1990) studied a sample of college freshmen by having them write about their recent transition; the authors found health

improvements in those who wrote about their deepest thoughts and feelings on their life transition compared to a control group who wrote on a nonemotional topic. Thus, there is some evidence in support of the viability of generalizing the potential for health benefits in psychologically healthy individuals, regardless of trauma-presence.

Taken together, the psychological research of Rimé and Pennebaker, combined with the observed health benefits in the imagined-trauma group in the study by Greenberg et al. (1996), support the rationale for a coping-based catharsis theory in the consumption of tragic entertainment. Moreover, this theory follows the lead of Oliver (2008) by conceptually situating tragedies and sad entertainment under the wider genre of human drama. Thus, a new catharsis theory is advanced whereby the cathartic process is initiated by fictional human drama to produce, within a 4-week period, physical and mental health improvements after the viewer contemplates its emotional contents. The media stimulus, e.g., a narrative movie, supplies both the emotional upheavals and the story themes for the subsequent activity of self-reflection. Then, a language-based expressive task, e.g., expressive writing, follows the exposure to media stimulus to initiate contemplation, which constitutes the cognitive repercussions of consuming tragic drama. Further, to reflect the more sophisticated interpretation of Aristotelian catharsis called clarification (Belfiore, 1992; Halliwell, 1987), the mechanisms that could explain the cathartic effect are expected in nonimmediate, positive changes in media users' self-perceptions, e.g., self-empathy and self-understanding. In short, this new catharsis theory posits a nonimmediate health effect that results from the arousal of tragic emotions and its accompanying after-effects in the form of contemplation.

To summarize, a new theory of catharsis comprises the following key features: (i) it initiates with the emotional expression or sharing of fictional emotions from a human drama, (ii) its benefits are measurable in terms of physical and psychological health improvements, (iii) the emotional event of interest need not be thematically specific to a person's historical past for benefits to arise, and (iv) the cathartic effect is not limited to trauma-present individuals, but applicable to psychologically healthy individuals in general.

#### *Research Question and Hypotheses*

One novel aspect of this proposed theory is its hypothesized health benefits for individuals who undergo catharsis through tragic drama exposure and written introspections on their tragic emotions. Therefore, a broad inquiry into the main, overarching relationship postulated in this theory is in order. The following research question explores the theorized cathartic effect through exposure to cinematic human drama and self-reflection:

*RQ:* For healthy adults, does expressive writing on tragic emotions give rise to catharsis?

Moreover, the explanatory mechanisms behind the theorized cathartic effect of human drama remain crucial to the understanding of the affective and cognitive processes involved in catharsis. The following section develops a path model for testing hypotheses that attempt to explain the linkages between the instigation of the cathartic process and its resulting health outcomes.

*Health effects of expressive writing.* The imagined-trauma condition in Greenberg et al. (1996) resembled an exposure to a realistic human drama as far as the analogy between the function of the trauma synopsis and the movie plot is concerned.

When the imagined-trauma participants wrote expressively about someone else's distress – given to them in a factual, written summary – they were instructed to identify with the sufferer and be transported into an imagined world: “Now... try to imagine yourself actually experiencing the event you have just read. Let your imagination carry you away from this room and into the traumatic situation...” (p.590). Based on the rationale that ‘fictional trauma’ – whether cinematic or text-based – could facilitate catharsis, both types of narrative media were tested. Exposure to movie-based and text-based human drama were operationalized via the screening of a movie stimulus and the reading of the script-version of the movie, respectively. Whereas the former could supply “fictional trauma” of high emotional intensity, the latter attempted to replicate the experimental condition of interest from Greenberg et al. (1996). Subsequently, an expressive writing task focused on the fictional character was the operational procedure for self-reflection. So, the following health effects are hypothesized:

*H1a*: Exposure to human drama and expressive writing on the drama positively predicts health and psychological well-being compared to non-expressive writing on a non-emotional topic.

*H1b*: Imagining a traumatic event and writing expressively on the trauma positively predicts health and psychological well-being compared to non-expressive writing on a non-emotional topic.

*Identification*. When the imagined-trauma participants in Greenberg et al. (1996) appealed to their imagination during writing, they were engaging in narrative processing. The participants were instructed to write while imagining themselves as the protagonist in a distressing, “real life” situation. The authors' analysis of the

participants' essay contents indicated cognitions on the morality and other judgments of the imagined event and its characters. Further, masked raters evaluated the essay as “contrived, melodramatic, or overly literary” (p.598), i.e., they read like the makings of bad novels. Moreover, the inflictors of harm in these essays were painted as “morally unambiguous” (p.598) villains. In short, the imagined-trauma participants were likely experiencing narrative processing of a simplistic drama by taking the perspective of a lead character in conflict with stressful situations and an antagonist. One of the primary mechanisms for narrative processing is engagement, and the major component of engagement involving character perspective-taking is identification (or empathy). Imagining someone else's trauma and writing about it through perspective-taking could give rise to greater identification compared to simply engaging in the narration, e.g., reading a story. Further, the degree of identification could be further increased by furnishing a second experimental group with a movie stimulus that narrates the drama.

In Busselle and Bilandzic's (2008) narrative processing model, the “deictic shift” (p.262) or mental relocation into the fictional world enables the individual to take on the perspective of characters or storytellers such that their vicarious experience in the story intensifies with this additional involvement with its inhabitants. Cohen (2001) contrasted this deeper level of audience engagement with mere spectatorship by noting its “reception and interpretation of the text from the inside, as if the events were happening to them” (p.245). The imagined-trauma group in Greenberg et al. (1996) were instructed to visualize their vicarious trauma using “factual summaries” (p.590) taken from actual traumas, such that their source material or “text” (Busselle & Bilandzic, 2008) for narrative processing is less rich compared to a cinematic narrative

that uses dialogue, a music soundtrack, and photographic or visual details to generate narration and story structure. In other words, a movie stimulus could enable greater involvement with the make-believe characters and story world compared to relying heavily on one's imagination to visualize and largely invent the narrative of someone else's trauma. Aside from this difference, the imagined-trauma group and the movie group will both complete an expressive writing procedure. Thus, the following hypothesis is proposed:

*H2: Exposure to human drama coupled with expressive writing leads to greater identification compared to imagining a traumatic event and writing expressively about it.*

*The link between identification and self-efficacy.* In a dramatic movie narrative, the protagonist's goals often face seemingly insurmountable conflicts as he or she encounters a series of obstacles in the unfolding drama (Thompson, 1999). Since identification (in media studies) is an empathic psychological process that intensifies "emotional and cognitive connections with a character" (Cohen, 2001, p.251), our engagement in dramatic fiction typically results in emotional upheavals. Using the framework of emotions-as-signals, i.e., emotions as interruptions to our existing goals in order to "guide and shape cognitive processing" (Bargh & Williams, 2004, p.430), these upheavals then cause individuals to appraise and reappraise the narrative situation and the characters before them. This emphasis on emotional arousal is reflected in the most empathy-focused subscale in a recent narrative engagement scale (Busselle & Bilandzic, 2009); this subscale is fittingly called 'emotional engagement.' Though emotions generated through narrative engagement and character identification are



similar to their real world equivalents (Busselle & Bilandzic, 2008), the arousal of emotions through mediated means stands in contrast with its non-mediated counterpart in one notable aspect: the perceived proximity from its instigator. This “distance” between the viewer and the narrative (e.g., a movie) is larger compared to similar emotional events experienced outside the mediated world (i.e., the real world). Despite the intensity of emotions elicited through narrative media, the experience ultimately remains indirect and utterly secure for the reader or viewer.

Scheff (1979) used the term optimal distance or “aesthetic distance” (p.62) to describe this phenomenon of knowing that one remains safe and in control while experiencing a mediated narrative as “both participant and observer” (p.60). We participate emotionally through a process such as identification and use the same faculties of sight and sound employed in the everyday negotiation of reality, which we can and shall return at the end of our engagement with the artwork. Further, we could always put down the book, switch off our screen or simply walk away when the mediated distress becomes uncomfortable or intolerable. Moreover, though the typical viewer knows that the depicted fictional world is distinct from reality, e.g., alien invaders have not destroyed the White House in *Independence Day* (1996), they still need to self-regulate their simulated emotions as an integral part of the entertainment experience. For example, if viewers are overly distressed from the hideous-looking creatures threatening the protagonist in *Alien*, this ‘under-distancing’ (Scheff, 1979) may cause them to close their eyes or internally suppress their fear emotion as a way of modulating their empathic distress. In short, emotional upheavals from identification require continued management through affect regulation.

Greenberg et al. (1996) also cited the safety of aesthetic distance as well as habituation to emotional arousal as means of augmenting “perceptions of control and mastery over... distressing feelings” (p.589) in trauma-present but psychologically healthy participants. However, as was previously developed in this paper, the new catharsis theory is applicable to all healthy individuals who have experienced some life event, including non-traumatic life transitions (Pennebaker et al., 1990). Thus, for individuals who have experienced emotional distress in the past from a stressful life event or one of greater severity, the emotional upheavals that are induced by an artwork at an optimal distance could be perceived as controllable. By experiencing these emotions from human dramas in the safety of aesthetic distance, an individual could feel more able to handle distress in the future. Moreover, the repeated experiences of distress through previous life events and exposure to human drama and expressive writing could also foster habituation to intense emotional arousal. As a result, habituation could render distress as manageable (Greenberg et al., 1996). Consequently, assuming that identification with fictional characters remains one indicator of optimal distance, the self-regulating aspect of identification at a safe distance and desensitization to affective arousal can promote self-efficacy beliefs.

Briefly, self-efficacy provides the basis for human agency (Bandura, 2009); it enables individuals to believe in their capacity to control their self-development and take action to “accomplish the tasks and goals that give meaning, direction, and satisfaction to their lives” (Bandura, 2001, p.4). Self-efficacy beliefs bolster the metacognitive capability called self-reflectiveness – an aspect of agency that enables self-evaluations of motivations, core beliefs and life meanings (Bandura, 2001). During

identification, self-reflection at aesthetic distance permits viewers to become aware of their level of mastery in managing make-believe distress. If the self-management of emotional distress is judged positively, self-efficacy beliefs in emotional regulation will likely increase. A construct called “regulatory emotional self-efficacy” (Bandura, Caprara, Barbaranelli, Gerbino, & Pastorelli, 2003; Caprara et al., 2008) assesses self-efficacy beliefs in controlling negative affect; it also accounts for self-efficacy in handling positive affect, an aspect of this construct that lies outside the scope of the present study. In summary, identification with a fictional character undergoing distressing emotions in a tragic scenario can promote self-efficacy in negative affect regulation. So, the following hypothesis is proposed:

*H3: Greater identification leads to greater self-efficacy in negative affect regulation.*

*Affective self-efficacy as a mechanism for health outcomes.* In their discussions of theoretical implications, Greenberg et al. (1996) named two mechanisms for health effects in the imagined-trauma condition: “enhancing affective regulation and constructing more resilient possible selves” (p.599). To simplify this research project, this thesis focused on the former, and, in particular, its connection to the concept of self-efficacy. The authors explained affective regulation as a form of emotional calisthenics that encouraged a sense of control and acceptance. The underlying process that bolstered this improvement was believed to be “developing perceptions of control and self-efficacy in the context of aversive emotional arousal” (p.599). In short, Greenberg et al. (1996) argued that the development of self-efficacy in controlling vicarious, aversive emotions was an indicator of an individual's improved self-regulation

capability, which in turn led to positive health outcomes. Further, mediational analyses by Bandura et al. (2003) showed a direct link between greater efficacy at regulating negative affect and lower susceptibility to depression. Thus, the following hypotheses are proposed:

*H4a*: Self-efficacy in negative affect regulation positively predicts physical health.

*H4b*: Self-efficacy in negative affect regulation positively predicts psychological well-being.

*Meaningful affect.* Media psychologists have theorized and shown that not all media entertainment appeal to our pleasure-seeking tendencies (Oliver, 1993; Oliver & Bartsch, 2010; Zillmann, 1998). However, individuals also seek out entertainment that can be described as bittersweet, such as human dramas that elicit mixed affective states, i.e., both negative and positive emotions (Oliver, 2008). In entertainment research, where the construct of “enjoyment” has been a dominant dependent variable, Oliver and Raney (2011) have differentiated gratifications linked to hedonic motivations (such as enjoyment) from those associated with insight and a search for meaning. This meaningfulness-seeking motivation (also called *eudaimonia*) – which is mainly an orthogonal construct with respect to pleasure-seeking (Oliver & Raney, 2011) – provides compelling explanation for the seemingly paradoxical gratifications obtained through human dramas, including a broad genre of movies featuring such enduring subgenres as tragedy, the tear-jerker, and the melodrama. Moreover, Oliver (2008) argued that *eudaimonic* motivations foster the desire for media experiences that elicit “greater insight, self reflection, or contemplations of poignancy...” (p.42). In short,

though media entertainment, particularly movies, may commonly be associated with pleasure-seeking, it also satisfies our desire to reflect on life's meanings and gain insights for personal growth.

Exposure to human dramas taps into our desire for meaningfulness. Further, writing expressively about the human drama should further facilitate the individual's desire to contemplate life meanings and gain human insights related to the drama. Therefore, the cumulative experience of exposure to a human drama and contemplation through expressive writing could stir *eudaimonic* motivations, which could be measureable as Meaningful Affect, such as feelings of inspiration, compassion, contemplativeness, and sadness (Oliver & Raney, 2011). So, the following hypothesis is proposed:

*H5: Exposure to human drama leads to greater meaningful affective states when the individual writes expressively about the human drama compared to no expressive writing.*

*The link between meaningfulness and self-compassion.* Oliver and Raney (2011) suggested that *eudaimonic* motivations are expressed in our need for contemplating the broader themes of *the human condition*. Human dramas often portray human connectedness, such as the kindness of strangers in *Tender Mercies*, and the development of familial connections in *Kramer vs. Kramer* (both are Oscar winners). This recognition of shared connectedness encourages not only observations of the pathos and triumphs of others, but could reflect those themes of human frailty onto the self. In other words, if such poignancy can occur in the lives of other human beings, it could conceivably happen to the self. Unlike the pleasure domain, in the realm of

*eudaimonic* motivations, the search for meaningfulness is introspective and encourages self-observation. In the process, self-judgment is changed. For instance, seeing depictions that elicit compassion for a fellow human being could, in turn, give rise to self-compassion. In a clinical psychology example related to pathological grief, Greenberg et al. (1996) cited a type of behavioral therapy where self-empathy is fostered by permitting the patient – instructed to play an observer instead of a participant – to watch an emotionally painful event that could happen to anyone, including him or herself. Consequently, the provocation of meaningful affective states could also give rise to self-empathy or self-compassion.

Neff (2003b) replaced self-empathy, a weakly explicated construct, with self-compassion, which has recently been developed and verified as a reliable and valid scale (Neff, 2003a). The construct of self-compassion comprised of three interconnected components (Neff, 2003b): (i) common humanity, or “seeing one’s experiences as part of the larger human experience rather than seeing them as separating and isolating” (p.89), (ii) self-kindness or kindness and understanding onto the self, and (iii) mindfulness or the acquired skill of giving oneself the mental space to monitor thoughts and feelings as they emerge, unhindered. In short, it is a self-reflexive kind of compassion based on the feelings of connectedness with other human beings. The *eudaimonic* motivations that underpin meaningful affective states could enhance self-compassion when the themes of human connectedness become salient in the individual. These themes can be primed by exposure to a human drama and cognitively processed by contemplating the triumphs and pathos of others. Thus, the following hypothesis is proposed:

*H6: Greater meaningful affect leads to greater self-compassion.*

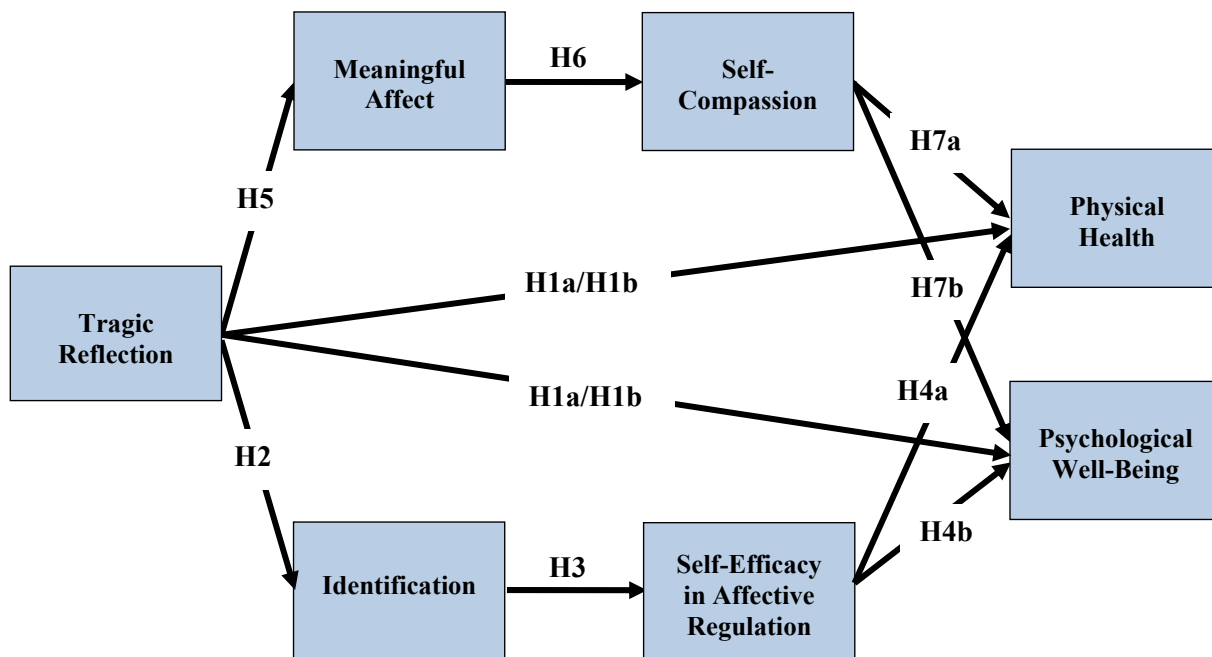
*Self-compassion as a mechanism for health outcomes.* Greenberg et al. (1996) speculated that self-empathy may contribute to the health benefits displayed by their imagined-trauma participants. The authors conjectured that these participants could self-reflect through vicarious emotional pains without the despondency of previous coping failures and the baggage of actual memories. In a different but related line of research, Neff (2003b) proposed the use of self-compassion in the place of self-empathy. Based on Buddhist psychology, self-compassion arose from the assumption that “it is as essential to feel compassion for oneself as it is for others” (Neff, 2003a, p.224). Neff, Kirkpatrick, and Rude (2007) conducted an experimental study to measure the link between changes in self-compassion and psychological well-being. The authors found a positive correlation between self-compassion and mental well-being; increased self-compassion, calculated from the difference between measurements taken 1 week before and 3 weeks after the experiment, were associated with decreases in “self-criticism, depression, rumination, thought suppression, and anxiety” (p.149). Coupled with the speculation by Greenberg et al. (1996) about the benefits of self-empathy, it is likely that increased self-compassion will be associated with improved physical health and psychological well-being. Subsequently, the following hypotheses are proposed:

*H7a: Self-compassion positively predicts physical health.*

*H7b: Self-compassion positively predicts psychological well-being.*

#### *Proposed Model*

Figure 1 summarizes the proposed path model for investigating the hypothesized mechanisms for catharsis; all of the hypotheses introduced above constitute its paths.



**Figure 1** The Proposed Coping-based Model of Catharsis

This path model attempts to test the hypothesized mediators between the independent variable and the health-related dependent variables. Further, since the independent variable for catharsis consists of two essential components – exposure to tragic narrative and its contemplative writing task – it is labeled Tragic Reflection. The proposed model will test the effectiveness of narrative movie stimuli as a means of promoting catharsis after participants have had an opportunity to cognitively process their emotional upheavals. The cathartic effect will be assessed by the dependent measures taken at pretest, posttest, and a follow up measurement. Moreover, this model will enable the comparison of movie-based tragedy with text-based imagined tragedy; both are expected to engage the participants' imagination, but the latter is devoid of external audiovisual cues. In addition, another comparison could be made between movie-exposed participants who are asked to cognitively process their emotional arousal



versus those who are not asked to process their emotions. Taken together, all the hypotheses constitute a coping-based model of catharsis.

*Independent Variable: Tragic Reflection*

The independent variable in this study was expressly constructed to investigate catharsis in an empirically novel way, so an elaboration is needed. The Tragic Reflection variable consists of two components: exposure to narrative media with tragic themes and its accompanying contemplation via expressive writing. Since self-reflection has been incorporated as an essential component of the broadened conceptualization of catharsis in this study, the Tragic Reflection variable features these two components operating in tandem (i.e., exposure to a tragedy and subsequent reflections on the narrative go hand-in-hand). Tragic narration, the first part, is defined as the manner in which the tragedy is narrated or presented to a viewer. In this study, the narration unfolded in two modes – movie or script - which corresponded to more emotional and less emotional presentations of a tragedy. On the other hand, expressive writing, the second part, is a well-established procedure in social psychology experiments where individuals express emotionally about a particular event using written language (Pennebaker, 2000; Pennebaker & Chung, in press).

Tragic Reflection was manipulated into four conditions: Movie+writing, Script+writing, Movie-only, and non-emotional Writing-only (control group). The first two experimental conditions were exposed to human drama and subsequently self-reflected on the drama in a writing task. Next, the Movie-only group watched a human movie without performing any contemplation and, finally, the control group wrote in a non-emotional manner without any exposure to human drama. Overall, Tragic

Reflection was designed as a nominal variable with four discrete levels: Movie+writing, Script+writing, Movie-only, and Writing-only).

## Chapter 2

### METHOD

#### *Overview*

A 4-condition, controlled experiment was conducted with the variable Tragic Reflection as the between-subjects factor; participants were randomly assigned to one of four conditions in the experiment. The four conditions in this study were the four levels of the independent variable: (1) tragic movie narration followed by expressive writing (Movie+writing), (2) tragic script narration followed by expressive writing (Script+writing), (3) tragic movie narration only (Movie-only), and (4) a non-expressive Writing-only control group (Writing-only). The Movie-only condition (i.e., without any writing) was included in this design to enable a direct comparison with movie-based Tragic Reflection (i.e., movie plus writing). Further, in an effort to rule out the idiosyncrasies of a specific film and its peculiar effects, two different movies were used in the three experimental conditions.

Data collection occurred at three time points: Time 1 was an online questionnaire sent to participant via email within one to two weeks of the experiment to collect individual difference variables and baseline dependent measurements. Time 2 was the laboratory experiment session that included a second measurement of the dependent variables. Time 3 was a short, follow-up online questionnaire administered within four weeks of the experimental session; it measured the dependent variables a third time. Next, in order to link the responses from all three time points, an alphanumeric identifier consisting of a series of numbers was generated by each participant – the last four digits of their phone number, the day and month of their birth

and the second alphabet of their last name. After all three sets of data were collected, participants were given a nominal amount of course extra credit and sent a debriefing video. The data used in the statistical analysis were collected between 9<sup>th</sup> September 2011 and 6<sup>th</sup> November 2011<sup>1</sup>.

### *Recruitment*

Participants were recruited from two large, undergraduate courses at Penn State University that were taught by two members of this dissertation committee: a 130-student class in the department of biobehavioral health and a 300-student class in the College of Communications. Participants were recruited by the experimenter in person at the beginning of a class meeting, and prospective participants were sent an email containing a weblink to the first online questionnaire (Time 1). Participants were given about 7 days to complete the first questionnaire. At the end of Time 1, participants had the opportunity to sign up for the experimental session (Time 2). Finally, about 3.5 weeks to 4.5 weeks after the day they completed the experiment, participants were contacted via email again for the opportunity to complete the follow-up online questionnaire (Time 3). The initial recruitment began in early September 2011, between

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<sup>1</sup> It is noteworthy to mention that the final day of data collection for cases used in data analysis occurred three days prior to the potential confounding effect of ‘history’ involving the breaking news of the sudden dismissal of a highly revered Football head coach at Penn State University, Joe Paterno. This event sparked a riot involving university students (Schweber, 2011; Sheinin, 2011). Though it was possible that the discharge of a beloved university celebrity and the ensuing incident of the riot may have affected the emotional life of the student population from which the sample for the present study was recruited, the measures of affective states in this study could not logically have been confounded by this event; data collection was completed a few days before this historical event.

the 8<sup>th</sup> and 13<sup>th</sup>, the experimental sessions occurred between the 21<sup>st</sup> September and 7<sup>th</sup> October, and the follow-up measurement occurred between 16<sup>th</sup> October and 11<sup>th</sup> November.

### *Participants*

Two hundred individuals participated in all three time points of this study. The final sample that successfully completed this 3-part study consisted of 79.5% females ( $n = 159$ ) and 20.5% males ( $n = 41$ ). The average age of the participants was 19.31 years old ( $SD = 1.21$ ). The distribution of undergraduate class standing was as follows: 33% freshman ( $n = 66$ ), 29% sophomore ( $n = 58$ ), 20% junior ( $n = 40$ ), and 18% senior ( $n = 36$ ). On the demographics of race, the majority of participants were White (80%), whereas the other races in the minority in this sample were Asian or Pacific Islander (8%), African American (5%), and Hispanics (4%). Moreover, since the stimulus material featured a narrative involving the death of a teenage child, which could be a confounding variable in individuals' affective and cognitive responses to the story, participants were asked whether they had children; one female participant of age 18 answered yes, but she was included in the final sample because of her child is presumably not a teenager. Further, 3% of participants ( $n = 6$ ) reported being currently involved in psychotherapy, whereas 6% ( $n = 12$ ) reported yes to currently taking drugs for mental health, e.g., anti-depressants. However, since these students were actively enrolled in a college course and presumably normally-functioning, college-competent individuals, they were included in the final sample as well.

### *Stimulus Material*

The stimulus material was either a 15-minute truncated movie or a shortened movie script based on the truncated video narrative. Participants who were randomly

assigned to one of the three experimental conditions (i.e., not the control group) either watched the stimulus video or read the script. The movie scenes for the video were extracted from a DVD-video source. The stimulus videos were edited using Windows Live Movie Maker version 2011 on a PC running Windows 7 OS. Each video was a condensed story adapted from a commercial American film of the past 40 years, i.e., a mainstream Hollywood movie. The 15-minute videos contained scenes from its parent films that were re-edited into a condensed story using explanatory intertitles created by the experimenter; screenshots and audio clips from the movie were also used to improve narrative coherence for the videos. For example, the video adapted from the 2001 film *In the Bedroom* featured seven separate scenes edited together using new intertitles, movie screenshots and movie audio clips. The story abridgements were made by reducing the narrative focus to the viewpoint of one or two lead characters, while preserving the overall narrative arc of the film. Each stimulus video featured one or two lead characters who undergo a traumatic experience, e.g., loss of a loved one. Pre-testing was performed through independent raters to ensure the following basic criteria: (a) the videos were evaluated as tragic narratives and (b) the character in the narrative was rated as having undergone a traumatic life experience. Four truncated videos based on four different award-winning Hollywood movies - *Kramer vs. Kramer*, *The Horse Whisperer*, *In the Bedroom*, *Mystic River* - were created prior to selecting two final stimulus videos.

*Pre-testing stimulus videos.* Independent raters were recruited from colleagues and friends of the experimenter and asked to watch all four videos and complete a questionnaire after each video; the sequential order of the videos' appearance was

randomized using the online questionnaire tool, Qualtrics. Using the ratings of the statement “The story is tragic” on a 7-point Likert scale, pre-testing data showed that two videos, *In the Bedroom* ( $M = 6.41, SD = .71$ ) and *Mystic River* ( $M = 6.56, SD = .63$ ), were judged as more tragic compared to two other videos, *Kramer vs. Kramer* ( $M = 4.76, SD = 1.48$ ) and *The Horse Whisperer* ( $M = 4.88, SD = 1.97$ ). Further, having the statement “The character(s) in the story experienced a traumatic event” rated on a 7-point Likert scale, pre-testing data showed that the video for *Kramer vs. Kramer* ( $M = 5.00, SD = 1.90$ ) was judged as less traumatic compared to the other videos: *In the Bedroom* ( $M = 6.53, SD = .72$ ), *Mystic River* ( $M = 6.56, SD = .81$ ), and *The Horse Whisperer* ( $M = 6.65, SD = .49$ ).

*In the Bedroom* and *Mystic River* were selected as the final stimulus because of the following two rationale: 1) the two movies scored very high mean values and did so consistently for the two close-ended statements on the levels of tragedy and character trauma depicted in the story, i.e., near the maximum score of 7 between the anchors Agree and Strongly Agree, and 2) both stories were thematically similar in several respects, including having a major male character (middle-aged White Caucasian parent) who loses a beloved teenage child, then takes vengeful action against a presumed perpetrator, and, later, ponders his actions in the aftermath of decisive action.

Further, comments from the open-ended questions about each film were used to make slight adjustments to the videos prior to finalizing the stimuli. For example, on a technical level, the soundtracks of the video clips were amplified because several pre-testing comments noted that the movie dialogue and music were sometimes inaudible; on a narrative level, *Mystic River* was re-edited to remove two appearances of the

secondary character of Jimmy's wife (played by Laura Linney) because her presence and dialogue in the story, particularly at the very end, created confusion as to whether the viewer should sympathize with the protagonist, Jimmy, or be angry at him for his implied immorality.

*Final stimulus movies and scripts.* Thus, the final stimulus material for the experimental conditions consisted of two shortened videos or movie scripts based on the Hollywood movies *In the Bedroom* and *Mystic River*, respectively (See Appendix A for the shortened movie scripts). The concept of tragedy was operationalized in the stimuli as the occurrence of a traumatic event and its experiential aftermaths for a suffering protagonist. The human drama in the final stimulus videos involves the grief over the death of a beloved teenage child and the lead character's subsequent action. The videos were edited to feature a relatively clear beginning, middle, and end. The beginning introduces the character and the scenario, the middle depicts the trauma, and the end portrays the aftermath and conclusion of this trauma. The prominent feature of these videos was their tragic, emotion-eliciting content. In short, the video stimuli were shortened Hollywood dramas that retained their over-arching narrative coherence and emphasized their highly emotional moments.

The shortened movie for *In the Bedroom* begins with the intertitles "This is the story of Matt & Ruth Fowler, a doctor & a music teacher. They will experience a life-changing event involving their son Frank" and ends with "Matt & Ruth will live with their loss & heal their wounds together for the rest of their days." In between these opening and close explanatory titles, the edited movie scenes tell the story of a 3-person family broken apart by loss. The son's character Frank is dating a divorced woman (his



girlfriend) who has two young children with her ex-husband. One day, in a heated scuffle at his girlfriend's house, Frank is shot by the jealous ex-husband. The parents Matt & Ruth grieve helplessly. After a futile attempt to obtain justice from the court system, Matt takes the law into his own hands. He kidnaps the ex-husband after his release on bail and kills him using a gun in some deep woods. The narrative ends with Matt in a daze after enacting his revenge; the final scene in the video shows him closely inspecting his finger where a small bandage was recently removed.

The shortened movie for *Mystic River* begins with the intertitles "This is the story of Jimmy Markum, a former hoodlum & store owner who lives peacefully with his wife & children. Jimmy is about to experience a life-changing event involving his daughter Katie" and ends with "Jimmy & his wife kept his secret from the authorities. At the end of this episode, Jimmy is never caught, but he lives with his loss & guilt for the rest of his life." The edited movie scenes between these titles tell the story of a father who becomes devastated and angry after his beloved daughter Katie was shot to death in a mysterious crime scene. Circumstantial evidence leads Jimmy to suspect a neighborhood friend Dave as the killer. Jimmy shoots Dave after forcing a false confession. The next day, the police informs Jimmy of the actual shooters and the fact that his daughter's death was more an accident than murder. The narrative ends with Jimmy regretfully confessing to his wife that his act of revenge was misdirected; the final scene in the video shows a large, religious cross tattoo visible on the back of Jimmy's shirtless body.

Subsequently, a text-based version of the stimuli was created to replicate an experimental condition found in Greenberg et al. (1996) for which the current

experiment was partially designed as a study sequel. However, the text-based stimuli differed slightly from the previous work. The use of a movie script as the text-based stimulus in one of the experimental conditions – instead of a prose-based summary of an actual trauma, as utilized in Greenberg et al. (1996) – was considered a more viable comparison to the competing experimental conditions, which employed movies. The stimulus scripts were a text version of the stimulus movies, where the movie scenes were substituted with written scenes from the actual screenplay obtained from publicly available internet sources. In other words, the stimulus content in the script condition contained both the intertitles used in the stimulus movie and the actual screenplay content that corresponded to the movie scenes, e.g., character dialogue.

Due to additional editing made within each scene to cut down its lengthy running time, the scripts were adjusted accordingly to mimic as much as possible the descriptions and dialogue, particularly the latter, that could be heard in the stimulus movie. Moreover, in the event that the actual movie scene diverges substantially from the screenplay, some effort was made to replicate the movie scene in the stimulus script; in such cases, the scene from the screenplay was used as a secondary source, mainly for dialogue content. Additionally, character names were sometimes changed to reduce the number of proper names for the stories to assist reading comprehension, e.g., in the film *In the Bedroom*, Natalie and Davis, the characters of Frank's girlfriend and the district attorney, were changed simply to “Girlfriend” and “The D.A.”

Further, emotional descriptors were removed, though there were few actual removals made. Sometimes, screenplay descriptions of scenes were modified to remove emotional descriptors. An example of changes to a description went from the original

“Jimmy's loss made him angry. In the next scene, Jimmy expresses anger to his father...” to the revised description “Jimmy suffers from the loss of his eldest daughter. In the next scene, Jimmy interacts with his father...” Following the lead of Greenberg et al. (1996), these movie scripts were intended to be somewhat comparable to the "factual" synopses in the study's imagined-trauma condition, where a realistic story of a traumatic life event was presented to participants as “factual summaries... to allow imaginary-trauma participants to generate their own emotional reactions” (p.590). In sum, the two types of stimulus materials – the movies and the movie scripts – contained human drama, but differed in their level of emotional presentation. The movie viewing is expected to be judged as a more emotional experience compared to reading the movie script.

In addition, a step was taken to discourage participants from skipping the stimulus script during the experimental session. When the movie script appeared before the participant for their reading task, the Continue button did not appear for 300 seconds after participants arrived at the script page. This was intended to prevent participants from moving ahead without reading the script; each participant was given 5 minutes to read the script before they can continue. This change was enacted after one participant approached the experimenter on the very first experimental session to ask for the Continue button, having finished reading the script more quickly than expected. The change from 360 to 300 second delay was enacted beginning with the third session (5:30pm) on the first day of data collection (9/21/2011).

*Pre-testing the writing instructions.* Having finalized the stimulus material, the second component of the independent variable, the writing task, underwent an initial

assessment. This evaluation was crucial because the writing procedure and its accompanying instructions to participants were slightly modified from the typical protocol for expressive writing studies. Four key changes were made to manage the duration of the experimental sessions and to adapt this study to its cinema-centric stimuli. Firstly, the writing task was held in a single day (e.g., Chung and Pennebaker, 2008; Greenberg et al., 1996), but the separate writing sessions that included customary breaks were truncated from three to one sitting without breaks, as a means of simplifying the procedure. However, unlike the 30-minute writing time used in Greenberg et al. (1996), this study used a shorter 20-minute writing task to maintain the experiment's running time from exceeding one hour. Further, extensive instructions were given during the task to help participants structure their responses in a way that potentially minimized the repetition in the focal contents of their writing; this guidance was expected to enable them to more fully explore, imaginatively and emotionally, a complex tragic narrative involving a traumatic event that may give rise to a plethora of affect-related responses. Prior to actual data collection, an initial inspection of these modified writing instructions was conducted.

Thus, a second pre-testing was performed to appraise and refine the instructions for the writing task for the experimental conditions only; the writing instructions for the control group were not expected to be challenging for participants to maintain for the 20-minute span. The basic writing instructions were primarily drawn from Greenberg et al. (1996). This pre-testing used abridged versions of questionnaires constructed for the Movie+writing and Script+writing conditions. Seventeen participants were recruited from two undergraduate classes within the College of Communications at Penn State

University and without randomization, data were collected on participants' opinions on their essays, the movie stimuli presented to them, and the writing task. In this pre-testing questionnaire, the writing sessions were broken into two 10-minute blocks. The first writing block asked for more emotional writing; participants were asked to vicariously express how the characters felt after losing a loved one, as though they were in the characters' shoes. A number of participants felt that they had more than enough time to express their emotions and write about their thoughts and feelings that were brought up by the story.

This pre-testing effort led to revisions in the structure of the writing blocks and the instructions for the writing task. Almost everyone who pre-tested the writing task was waiting for the time to run out in both writing blocks because they were finished with their writing before the continue button appeared to allow them to move forward with the questionnaire. Moreover, several responses complained that the writing task was "too long." Based on this feedback, the structure of the writing blocks was modified into three 7-minute blocks; since the reading of instructions may take a minute or so, the total writing time allotted was approximately 20 minutes. Additionally, an overview was added in the beginning of the writing instructions to inform participants' expectations of the total writing time and the fact that there are three writing blocks with explicit directions.

Briefly, the first writing block instructed participants to focus on their emotional responses to the drama, whereas the second block emphasized the clarifying of those emotions for another 7 minutes. Then, a third writing block, which included a snapshot from the final scene or moment in the story – either a screenshot or a movie script

passage – asked for participants to interpret its meaning in the context of the whole narrative. These instructions were expected to provide participants with additional structure and more specific instructions to continue writing and minimize idling during the experiment. On the other hand, the writing instructions for the control group remained unchanged as two 10-minute blocks, each preceded with a slightly different set of instructions to encourage continued writing for a total of 20 minutes.

*Manipulation check for stimuli.* Overall, the human drama stimuli were checked for their narrative quality and participants' affective responses to the stories. To assess the former, the overall tragic quality and narrative clarity of the stimuli, either the movie or the script, were rated by each participant using the pre-testing statements “The story is tragic” and “The character(s) in the story experienced a traumatic event” on a 7-point Likert scale; based on ratings of the two final movie and script stimuli collapsed together, both level of tragedy ( $M = 6.45$ ,  $SD = .88$ ) and level of trauma ( $M = 6.72$ ,  $SD = .55$ ) were rated very highly, i.e., near the maximum score of 7 between the anchors Agree and Strongly Agree. Moreover, the rating of narrative coherence ( $M = 5.66$ ,  $SD = 1.02$ ) using the statement “The overall story clarity is good” on a 7-point Likert scale, was fairly high, i.e., between the anchors Somewhat Agree and Agree. Thus, the manipulations for narrative tragedy and character trauma appeared effective.

The stimuli were also checked for its capacity to induce negative affect. Previous studies have found that greater negative mood in participants at immediate posttest predicted positive health improvements in the expressive writing group several weeks after the experiment, compared to the control group (Chung & Pennebaker, 2008; Greenberg et al., 1996). As a second manipulation check for the stimuli, the single-

affect adjective item of “sad mood” was compared amongst all four conditions. A one-way analysis of variance (ANOVA) was performed with Tukey post-hoc comparisons to examine the difference in self-reported sad affect measured immediately after Tragic Reflection, i.e., exposure to human drama (except for the control condition) plus the writing task.. This analysis showed that the three experimental conditions – the Movie+writing condition ( $M = 3.80$ ,  $SD = 1.86$ ), the Script+writing condition ( $M = 2.88$ ,  $SD = 1.62$ ) and the Movie-only condition ( $M = 4.17$ ,  $SD = 1.70$ ) – induced greater sad mood compared to the control group ( $M = 1.87$ ,  $SD = 1.30$ ),  $F(3, 196) = 19.46$ ,  $p < .001$ ,  $\eta^2 = .23$ . In short, the manipulation of Tragic Reflection succeeded in making participants sadder compared to the control group, which involved writing on a non-emotional topic.

*Manipulation check for written essays.* Additional manipulation checks were performed on the writing component of Tragic Reflection. The written essays were checked using one objective word use measure, one subjective essay evaluation measure, and one subjective mood measure. The objective assessment was made using word count and word categories used in the essays. The first subjective check was examined using participants’ self-evaluation of how emotional, valuable and meaningful their essays were to them, whereas the second check was made by analyzing the change in fatigued mood after the writing task in all conditions involving the task. The objective measures of word usage was accomplished via the Linguistic Inquiry and Word Count (LIWC) software version 2007 (Pennebaker, Booth, & Francis, 2007); with the exception of the counts of total words used and words used per sentence, this software generates data for each word category as a “percentage of total words” (p.4).

Tausczik and Pennebaker (2010) offered two examples to clarify the word count analysis produced by LIWC: “we might discover that 2.34% of all the words in a given book were impersonal pronouns and 3.33% were auxiliary verbs” (p.27). Overall, these word usage checks verified that participants followed the basic elements of the experiment instructions, i.e., to think reflectively and write on tragic emotions; the third check on fatigued mood also confirmed that each writing task, regardless of study condition, was equally demanding.

Having approximately 20 minutes to write their essay, participants were expected to produce between 200-300 words at minimum; for comparison, each page without figures or tables in this dissertation document contained about 300-330 words. The mean word count for all conditions that collected essay data was 629 words ( $SD = 208$ ). Only two essays contained less than 200 words. A one-way analysis of variance (ANOVA) was performed to examine the difference in essay word count amongst all conditions (except the Movie-only condition, which did not generate essay data). This analysis revealed no difference amongst the Movie+writing, Script+writing, and control group in their essay’s word count,  $F(2, 145) = 1.963$ , n.s. Therefore, the volume of the generated essays exceeded expectation by almost double since the 629-word average covers about 2 pages of text; the writing manipulation succeeded in inducing participants to write a substantial amount of words and sentences, which indicates an attempt to self-reflect using language.

The subsequent manipulation check assessed the characteristics of the essays for evidence that participants in the two experimental conditions (not including the Movie-only condition) self-reflected on the tragic scenarios in the human drama. Independent



counts of participants' use of emotional words and cognitive words were tabulated across all conditions. A one-way analysis of variance (ANOVA) with Tukey post-hoc comparisons was performed to examine the difference in the amount of affect words (both positive and negative emotion words) and cognitive words, respectively. The first analysis showed that participants in the Movie+writing condition ( $M = 7.78$ ,  $SD = 1.44$ ) and the Script+writing condition ( $M = 8.29$ ,  $SD = 1.75$ ) generated overwhelmingly greater amounts of affect words compared to the control group ( $M = 1.45$ ,  $SD = .80$ ),  $F(2, 145) = 363.29$ ,  $p < .001$ ,  $\eta^2 = .83$ . Even though Levene's test of equality of error variances was significant at  $p < .001$ , this mean comparison test was accepted because the cell sizes for the conditions were almost equal: for Movie+writing ( $n = 50$ ), Script+writing ( $n = 50$ ), and the control group ( $n = 48$ ). The second analysis indicated that participants in the Movie+writing condition ( $M = 20.30$ ,  $SD = 2.37$ ) and the Script+writing condition ( $M = 20.96$ ,  $SD = 2.56$ ) generated greater amounts of cognitive words compared to the control group ( $M = 14.41$ ,  $SD = 2.51$ ),  $F(2, 145) = 102.48$ ,  $p < .001$ ,  $\eta^2 = .59$ . To summarize, this manipulation check of affect and cognitive word use further confirmed that the participants responded affectively and cognitively to the stimuli through their writing, as instructed during the experimental session.

Next, participants' subjective ratings of how personal their essays were to themselves were analyzed. A one-way analysis of variance (ANOVA) was performed with Tukey post-hoc comparisons to examine the difference in participants' rating of the statement "my essay revealed my emotions" on a 7-point Likert scale for all conditions (except the Movie-only condition). As expected, this analysis showed that participants in the Movie+writing condition ( $M = 5.54$ ,  $SD = 1.22$ ) and the

Script+writing condition ( $M = 5.22$ ,  $SD = 1.09$ ) rated their essays as more personally emotional compared to those in the control group ( $M = 2.67$ ,  $SD = 1.42$ ),  $F(2, 145) = 77.53$ ,  $p < .001$ ,  $\eta^2 = .52$ . Moreover, a similar ANOVA with Tukey post-hoc comparisons was also performed to check participants' rating of the statement "my writing was valuable to me" on a 7-point Likert scale for all conditions (except the Movie-only condition); unsurprisingly, this analysis indicated that participants in the Movie+writing condition ( $M = 4.90$ ,  $SD = 1.31$ ) and the Script+writing condition ( $M = 4.50$ ,  $SD = 1.45$ ) rated their essays as more personally valuable compared to those in the control group ( $M = 3.58$ ,  $SD = 1.41$ ),  $F(2, 145) = 11.48$ ,  $p < .001$ ,  $\eta^2 = .14$ . Then, a third ANOVA with Tukey post-hoc comparisons was performed to check participants' rating of the statement "my writing was meaningful to me" on a 7-point Likert scale for all conditions (except the Movie-only condition); as anticipated, this analysis revealed that participants in the Movie+writing condition ( $M = 4.82$ ,  $SD = 1.55$ ) and the Script+writing condition ( $M = 4.48$ ,  $SD = 1.57$ ) rated their essays as more personally meaningful compared to those in the control group ( $M = 3.44$ ,  $SD = 1.47$ ),  $F(2, 145) = 10.79$ ,  $p < .001$ ,  $\eta^2 = .13$ . In sum, participants' subjective judgments strongly suggested that their essays were highly personal in the experimental conditions compared to the control group; the expressive writing manipulation was successful.

On the other hand, changes in fatigued mood were measured by taking the difference score from the baseline to the measurement immediately after the experimental manipulation. Five fatigued mood adjectives (e.g., worn-out, exhausted) rated on a 7-point Likert-type scale were averaged at each time point and the Fatigued Mood variable was constructed by subtracting the averaged fatigued mood score at

baseline from its score at post-experiment (Time 2). This analysis showed no difference in Fatigued Mood across all four conditions,  $F(3, 196) = 1.22$ , n.s. In short, all four experimental manipulations, which may feature the watching or reading of a human drama or a writing task, or both, were equally taxing on the mood states of participants.

Overall, the multiple checks made in this section gave the experimenter confidence that the manipulation of the independent variable, which was intended to induce tragic emotions and encourage self-reflection on the fictional drama, was effective and equally effortful for participants across all conditions.

### *Procedure*

Data collection for this study was accomplished in three parts. Time 1 comprised of a 20-minute, self-administered online questionnaire. Next, time 2 was a 30 to 60 minute laboratory experiment that included a second set of questions. Finally, the same participants who have completed the first two parts took a 10-minute self-administered online questionnaire containing follow-up measurements in time 3. Time 1 was necessary to record baseline measurements and to prevent the subsequent laboratory session from exceeding 60 minutes – a threshold to curb participant dropouts. Overall, this three-part arrangement was designed to measure changes in both the dependent variables and some of the mediating variables (e.g., change in self-efficacy), especially at 4 weeks after the experimental manipulation.

*Time 1.* After recruitment, participants were sent an email containing the weblink to the initial online questionnaire. The entire study was visibly entitled “Effects of Media Entertainment,” parts one to three. This questionnaire begins with an informed consent document that informed participants about all three parts of this study. Besides the collection of demographics and individual difference data, participants also

provided an identifier, as explained in the overview of this Methods section. This unique participant identifier was collected at the start of all three parts of the study in order to merge participants' repeated measures at all time points. The baseline measurements for the dependent and mediating variables were measured at time 1. Upon completing the questions in time 1, participants were given an opportunity to sign up for their experimental session using an online scheduler tool.

*Time 2.* The experimental data was collected in a media research laboratory at Penn State University in small groups of up to nine participants at a time. Upon arrival, participants signed in manually on a clipboard as a redundant form of attendance-taking and were escorted to an available workstation (PC) fitted with a headphone with ear covers. During an experimental session, a verbal greeting and general instructions about lab etiquette were given by the experimenter in a white lab coat as a preamble to each session; the experimenter wore the same white lab coat over his regular clothing for all sessions except two afternoon sessions where a substitute experimenter proctored the study. As part of the general lab etiquette instructions (i.e., lab protocol), participants were asked to turn off their cell phones and other electronic devices during the study. Participant compliance was good; only one instance each during three out of forty six sessions did the experimenter hear a telecommunication device audibly vibrating for a brief time; one of those minor interruptions occurred during a single-participant session. Moreover, participants were also informed that the experimenter shall remain visible, but to one side of the research lab during the session so that he is unable to see their responses during the experiment. In addition, late-comers were given the etiquette instructions in the hallway and quietly escorted to their workstation.

Participants were randomly assigned to the experimental condition within design limits, i.e., each session was randomly assigned to one condition and participants signed up for their session without knowledge of the pre-designated experimental condition. The experiment was conducted entirely on workstations that were preloaded with the stimulus material and had ready access to a pre-programmed data collection software, Qualtrics. Each participant was guided through the entire session via this online questionnaire that, depending on study condition, may feature embedded video and writing blocks for performing the writing task. The dependent measures were automatically administered following the experimental task designed in each condition. After completing the questionnaire for time 2, participants were thanked for taking part in the study and told to expect an email from the experimenter within three to four weeks for the opportunity to complete time 3 of this study. All in all, the experiments took 30 to 60 minutes; the control group took about 30 minutes, whereas the Movie+writing condition usually took 60 minutes. Since each session was randomly pre-assigned exclusively to one unique condition, each group of participants underwent the same experimental condition and was not subjected to compensatory rivalry or distracting curiosity over what other fellow participants received.

Participants assigned to one of the three experimental conditions were exposed to one of two human dramas prepared by the experimenter. This strategy was taken to reduce or remove the possibility that effects on participants were caused by the idiosyncrasies of a single film, e.g., a beloved actor, rather than the depicted drama. Participants in the Movie+writing and Movie-only conditions watched the shortened movie for either *Mystic River* or *In the Bedroom*; the movie stimulus was assigned

randomly via the online questionnaire. On the other hand, participants in the Script+writing condition read the shortened movie script for either *Mystic River* or *In the Bedroom*, again randomly assigned via the data collection software. Moreover, the online questionnaire was programmed to enact a time delay before participants could proceed with the subsequent task as a precaution against the skipping of the stimulus exposure component; the conditions involving the movie stimulus were on a 15-minute delay, whereas the condition with the script stimulus was delayed for 5 minutes. In contrast, the control group went directly to the writing task without any exposure to narrative media.

During the experiment, three of the four conditions involved a writing task, which requires further description. At their workstations, participants were given writing instructions that were specific to their pre-assigned study condition or group. Participants assigned to the Movie+writing and Script+writing conditions were exposed to a human drama and instructed to perform a timed writing task. Participants in these two experimental conditions were asked to write for a minimum of about 20 minutes, in three writing blocks of about 7 minutes each, whereas those in the control group were also told to write for 20 minutes at minimum, but in two writing blocks of about 10 minutes each (See Appendix B for the complete writing instructions). Participants in the experimental conditions were told to expect a 20-minute writing task and asked to imagine the traumatic event depicted in the story as vividly and intensely as possible. Then, they were given the first of three specific writing instructions that asked them to focus on their negative emotions when fantasizing about the human drama:

Now, for the next 7 minutes, we want you to explore the full extent of your feelings associated with this traumatic experience by writing them down in the box below. Please write about your thoughts and feelings, including those that may have been brought up by the movie scenes [or scenes from the movie script] you just watched [or read]. In fact, we want you to focus on your most intense feelings. One way of doing this might be to write on one or two of the movie scenes [or scenes] that brought about your most intense feelings. Describe as vividly and fully as possible all of the feelings that you have when you imagine this experience. As you write, sink into your feelings more and more. Do not write about your emotions in general, but rather about how you responded emotionally to the particular events depicted in the movie scenes [or scenes from the script]. One way of doing this might be to write about your thoughts and feelings associated with the separation and loss experienced by the character(s), e.g., emotions associated with the character(s) never being able to see their loved one again.

The second set of instructions emphasized explanation and clarification of the emotions that participants underwent as a result of exposure to the human drama:

We would like you to write for another 7 minutes. You may continue where you left off in terms of describing your thoughts and feelings that have been brought up by the movie [or script]. We would also like you to try to clarify your thoughts and feelings. Try to write about how you make sense of your thoughts and feelings, where you think they come from, and what they mean for you. One way of doing this might be to write about how you think the character(s) should

have dealt with their traumatic events and their aftermath, e.g., holding back strong emotions, losing his/her temper, taking revenge.

Finally, the third set of instructions asked participants to ponder and interpret the story's ending through writing; these instructions are accompanied by either a movie screenshot or a repeated movie script passage from the final story scene of interest:

We would like you to write one last time for 7 minutes. You may continue where you left off in terms of clarifying your thoughts and feelings that have been brought up by the movie [or script]. We would also like you to try to write your interpretation of the meaning of the final scene or moment in the movie [or script]. This scene or moment is pictured [or repeated] above. It features the character Matt Fowler removing a bandage from his finger and looking at it with contemplation. [or It features Jimmy Markum standing slightly hunched and looking out a window, with a large cross tattoo on his back and lower neck, prominently exposed to the viewer.] Consider this scene in relation to the entire story and tell us what you think it means to you as a viewer.

Instructions for the control group were also drawn from Greenberg et al. (1996) and modified into two writings blocks that began with specific instructions on non-emotional, fact-based writing. The first set of instructions for the control group told participants to write about buildings at their university campus:

For the next 10 minutes, we want you to write down as many factual details as you can about the campus. What do the buildings look like and how are they situated in relation to one another? What color are the buildings? Focus on the buildings you frequently come across in your time at Penn State. It is important



that you write down only factual details without describing any opinions or emotions. Describe things exactly the way they are, without elaborating on how you feel about them. Your essays should be as clear, detailed, and objective as possible. Remember, we are interested in facts, not feelings.

The second set of instructions for the control group asked them to write about the people at their university campus:

For the next 10 minutes, we want you to write down as many factual details as you can about the people on campus. What do people look like going about their daily college life? Where do they usually walk or hang out in the daytime? What are they wearing? Focus on the people and exterior locations you frequently come across in your time at Penn State. It is important that you write down only factual details without describing any opinions or emotions. Describe things exactly the way they are, without elaborating on how you feel about them. Your essays should be as clear, detailed, and objective as possible. Remember, we are interested in facts, not feelings.

Each separate set of instructions above – the set of three for the experimental conditions and the set of two for the control – ended with the following clause that was meant to ease participants’ potential anxiety regarding privacy and their time limit during writing; a non-intrusive countdown clock, in time units of seconds, was also visible to participants to handle the latter:

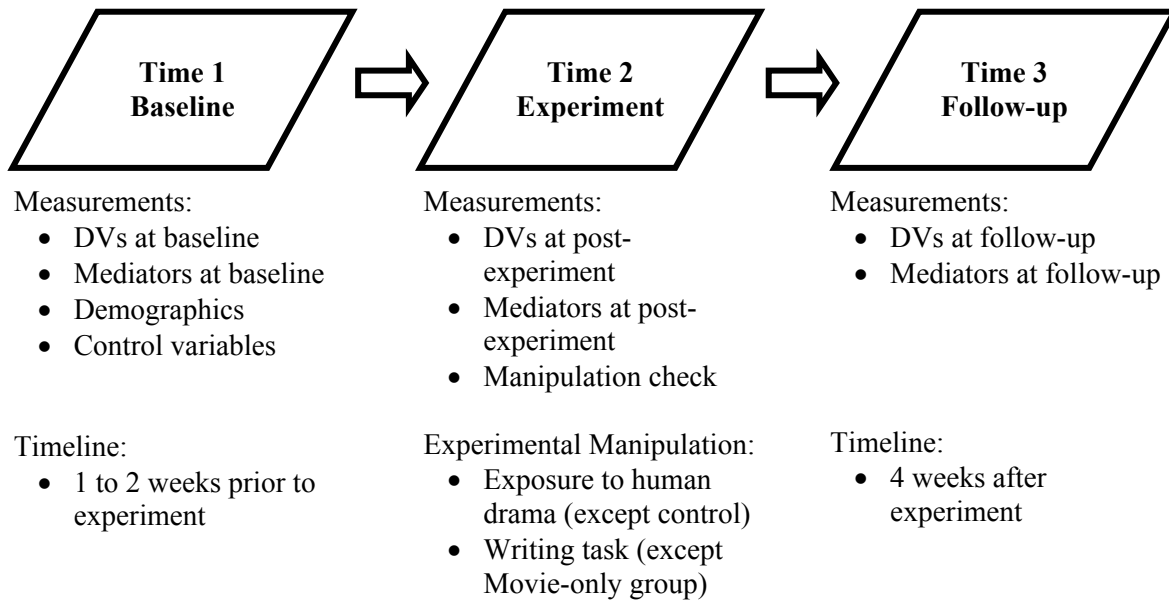
You can repeat yourself as often as you like. All your writing will be completely confidential, so do not be concerned about spelling, structure or grammar. At

"Time: 180" the 'Continue' button will appear to enable you to move on (after approx. 7 minutes), but you may keep writing for another 3 minutes, if you wish. Overall, these instructions did not ask participants to reveal their own personal experiences, but requested that they focus on the experiences of fictional characters in a human drama.

Since this study involved vicarious experiences of other people's life conflicts, it was not expected to present more than minimal mental risks to participants. However, since the stimulus material contained depictions of film characters undergoing trauma or intense stress, which may lead to potential participant discomfort, i.e., characters grieving the death of a loved one, participants were provided with a referral list of counselors and the CAPS hotline (Counseling and Psychiatric Service) if they needed to speak with a trained counselor after undergoing the experiment. Nevertheless, this potential discomfort was unlikely because the experimental task of expressive writing has been found to promote healthy expression of emotions. For example, previous uses of this writing paradigm in psychology research have documented that participants actually enjoyed or appreciated the emotional disclosure or sharing process (Greenberg et al., 1996; Pennebaker et al., 2001).

*Time 3.* The final part of this study was a short, 10-minute online questionnaire that participants self-administered approximately 4 weeks after their experimental session; the experimenter made an effort to time participants' receipt of the weblink to the pre-determined 4-week follow-up period with the 5<sup>th</sup> week post-experiment as the absolute cut-off for time 3's data collection. Dependent measures were taken for a third time and participants were debriefed in a separate debriefing video after the

experimenter determined that no additional set of measurements were required. Figure 2 briefly summarizes the data collection phases and brief procedures for all three parts of this study.



**Figure 2** A Summary of the Three-Part Data Collection Procedure

*Compensation.* Due to the fact that this study featured multiple parts, only cases containing data from all three time points were analyzable for hypothesis testing. Therefore, a specific compensation system was designed and communicated to the participants prior to actual data collection. Participants were offered a nominal extra credit of two points in the class from which they were recruited. The distribution of those points were as follows: half a point for participating in time 1, another half a point for finishing time 2, and an additional one full point (a bonus) for accomplishing all three parts of this study. Generally, the total amount of course extra credit rewards for participation was very small, if not minimal.

### *Mediating Variables*

The measures for the mediating variables in this study comprised of full or slightly revised versions of previously validated scales. All these scales were inspected for measurement reliability and each showed a Cronbach's Alpha of .70 or greater, which is considered adequate for further data analyses (Kline, 2005). There were a total of four mediating variables in the hypothesized path model: two mediators in series for each of the two causal paths from the independent variable to the dependent variables (See Figure 1). In the first causal chain, the mediators were Meaningful Affect followed by Change in Self-Compassion, whereas the second causal path consisted of Identification (or empathy) followed by Change in Self-Efficacy in Regulating Negative Affect. The measurement instruments for these mediators are described below and classified respectively as either posttest mediators or follow-up mediators to differentiate their time of measurement or duration of measurement. Posttest mediators were measured once immediately after the experimental manipulation, whereas follow-up mediators were constructed using change scores of a variable from baseline (time 1 of the study) to the 4<sup>th</sup> week follow-up measurement (time 3).

*Posttest mediator: Meaningful affect.* The variable Meaningful Affect was measured using 10 items selected from Oliver (2008) and the Multiple Affect Adjective Checklist drawn from Zuckerman and Lubin (1965). On a 7-point Likert-type scale of 1 (*not at all*) to 7 (*very much*), participants indicated how much the adjectives (e.g., touched, moved, etc.) described their feelings at the present moment of question administration. The Meaningful Affect scale was computed by taking the average of scores from the 10 selected items measured immediately after the experimental manipulation. The final scale had good reliability ( $\alpha = .86$ ).

*Posttest mediator: Identification.* Identification was measured using 10 items: the 3-item emotional engagement subscale from Busselle and Bilandzic (2009) and 7 additional items selected from Cohen (2001) and Maleckar (2011). In the context of narrative engagement, Busselle and Bilandzic (2009) argued that their emotional engagement subscale largely disentangled the concept of identification from transportation, by focusing on emotional arousal and empathy with characters. Participants responded to 10 statements using a 7-point Likert scale of 1 (*strongly disagree*) to 7 (*strongly agree*); an example statement is “The story affected me emotionally.” This Identification scale was calculated by averaging the scores of the 10 items measured immediately after the entire experimental manipulation. The final scale had excellent reliability ( $\alpha = .90$ ).

*Follow-up mediator: Self-compassion.* Self-compassion was measured using 12 items from the short form of Neff's (2003a) self-compassion scale (SCS-SF). Participants indicated how often they acted with self-compassion via a 7-point Likert-type scale from 1 (*almost never or never*) to 7 (*almost always or always*) on questions such as “In the past 2 weeks, I try to see my failing as a part of the human condition” (p.231); the original 5-point rating scale and its end anchors were modified as needed to enable greater consistency in the rating scales used throughout the entire questionnaire, which mostly featured 7 points. Moreover, the phrase “In the past 2 weeks” was added to the beginning of each statement to instruct respondents to consider more recent thoughts and feelings of self-compassion; this alteration was motivated by the need to measure participants' transformation in their sense of self-compassion within the span of several weeks. At each time point, the SCS-SF scale was an average of item scores,

after performing the required reverse scorings (Raes, Pommier, Neff, & Van Gucht, 2011). The mediating variable used in data analysis was labeled Change in Self-Compassion; this scale was constructed by simply subtracting each participant's score at baseline from the 4<sup>th</sup> week follow-up measurement. The overall reliability of Change in Self-Compassion was tabulated by taking the average of the two reliabilities at follow-up ( $\alpha = .82$ ) and baseline ( $\alpha = .74$ ). The resulting scale had good reliability ( $\alpha = .78$ ).

*Follow-up mediator: Self-efficacy.* Self-efficacy in affective regulation was measured using an 8-item subscale called perceived self-efficacy in managing negative affect, taken from the regulatory emotional self-efficacy scale (RESE-NEG, Caprara et al., 2008). RESE-NEG itself has two second-order factors representing the regulation of despondency/distress (DES) and anger/irritation (ANG). Participants indicated their ability to regulate negative affect using a 7-point Likert-type scale from 1 (*not well at all*) to 7 (*very well*) on questions such as “In the past 2 weeks, how well can you keep from getting discouraged in the face of difficulties?” (Caprara et al., 2008, p.231); as with the self-compassion scale above, its original 5-point rating scale was modified as needed. Moreover, the phrase “In the past 2 weeks” was also added to the beginning of each question to, again, encourage respondents to rate their more recent perceptions of self-efficacy at managing negative emotions. The RESE-NEG scale was calculated by taking the average of all 8 items (Bandura et al., 2003; Caprara et al., 2008). The mediating variable used in data analysis was labeled Change in Self-Efficacy in Regulating Negative Affect; this scale was created by directly subtracting each participant's score at baseline from the 4<sup>th</sup> week follow-up measurement. The overall

reliability of Change in Self-Efficacy in Regulating Negative Affect was calculated by taking the average of the two reliabilities at follow-up ( $\alpha = .88$ ) and baseline ( $\alpha = .88$ ). The final scale had good reliability ( $\alpha = .88$ ).

The second order factor known as self-efficacy in regulating despondency (RESE-DES) was also employed during data analysis, so a separate self-efficacy scale for despondency was constructed and its reliability was examined. This 4-item secondary subscale of RESE focuses on the perceived ability to regulate sadness rather than anger with such items as "In the past 2 weeks, how well can you keep from getting dejected when you are lonely?" The rationale for this new scale was based on the capacity of the stimulus materials for inducing sadness rather than anger; further explanation for the use of this scale can be found in the Results section. This RESE-DES scale was tabulated by averaging all 4 items; its measurement and scale construction were identical to the RESE-NEG scale described above except for its fewer measurement items. This alternate version of the RESE-NEG subscale was turned into a new mediating variable known as Change in Self-Efficacy in Regulating Despondency; its score was calculated by subtracting the baseline from the follow-up measurement. The overall reliability of Change in Self-Efficacy in Regulating Despondency was calculated by averaging the two reliabilities at follow-up ( $\alpha = .84$ ) and baseline ( $\alpha = .77$ ). The final scale for Change in Self-Efficacy in Regulating Despondency had good reliability ( $\alpha = .81$ ).

These two follow-up mediators were repeatedly measured at all three time points. In other words, the degrees of self-efficacy in affect regulation and self-compassion were assessed each time the dependent variables were measured. These

repeated measures were necessary to generate change scores for variables that were expected to exhibit a delayed effect.

In addition, a variable called meta-emotion, or meta-mood (Mayer & Gaschke, 1988), was measured because it may be related to the affect regulation process that may occur during the appreciation of aversive emotions, e.g., “enjoying” a sad film, in media entertainment (Bartsch, Appel, & Storch, 2010). A shortened 7-item meta-emotion scale was used. Participants indicated their level of agreement using a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) on statements regarding how they felt about their emotions in the thinking and writing process during the experiment. Sample statements include “I like this feeling,” and “To me, this feeling was a valuable experience” obtained from A. Bartsch (personal communication, April 26, 2011). The meta-emotion scale was calculated by taking the average of the item scores. The final scale had good reliability ( $\alpha = .86$ ).

### *Dependent Variables*

Since the mid-1980s, the prevalent health-related dependent variables used in previous expressive writing experiments were as follows: self-report physical health (e.g., symptoms checklists), frequency of illness visits (e.g., reports from health centers and doctors’ offices), self-report mental health (e.g., level of depression and anxiety, mood measures), and bio-measures of immune system functioning (e.g., lymphocyte response) (Pennebaker, 1997). These measures indicated improvements in health as inferred by fewer physical symptoms, fewer doctor's visits, lower depression and anxiety, and enhanced immune system response. This study focused on four outcomes: perceived physical health, general health, and two indicators of psychological well-being. Therefore, the dependent variables in this investigation were change scores from



the baseline, at approximately one week before the experiment, to the follow-up measurement taken about four weeks after the experiment; the variables for physical and general health were Change in Physical Symptoms and Change in General Health, respectively, whereas the two variables for mental well-being were Change in Depression and Change in Anxiety.

*Physical health.* In this study, Change in Physical Symptoms was constructed using the Wahler Physical Symptoms Inventory (Wahler PSI). The Wahler PSI is originally a 42-item scale with good reliability as reported in a previous expressive writing study (Swanbon, Boyce, & Greenberg, 2008); the items were obtained from T. Swanbon (personal communication, July 15, 2011). Participants rated the presence and general frequency of these physical symptoms on an anchored 6-point rating scale: 0 (*almost never or never*), 1 (*about once a year*), 2 (*about once a month*), 3 (*about once a week*), 4 (*about twice a week*), 5 (*nearly everyday*). The Wahler PSI could be used to construct various scales, e.g., the average of the symptom scores expressed as a percentage (Frezza, Wachtel, & Gordhamer, 2008) or number of physical symptoms. In this study, the physical health symptom scores at all three time points were calculated using only the ten most frequent symptoms selected based on a study by Chandler (2002); these scores were constructed by taking the arithmetic average and converting it into a percentage. The dependent variable, Change in Physical Symptoms, was created by directly subtracting each participant's score at baseline from the 4<sup>th</sup> week follow-up measurement. The overall reliability of Change in Physical Symptoms was calculated by taking the average of the two reliabilities at follow-up ( $\alpha = .84$ ) and baseline ( $\alpha = .80$ ). The final scale had good reliability ( $\alpha = .82$ ).

The second dependent variable for perceived general health, named Change in General Health, was measured using questions on both physical and mental health. The 8-item short-form health survey or SF-8 (SF-8 health survey, n.d.; Turner-Bowker, Bayliss, Ware, & Kosinski, 2003) is widely used to measure general health via such example questions as “Overall, how would you rate your health during the past 4 weeks?” and “How much bodily pain have you had during the past 4 weeks?”; the former was rated on an anchored 6-point Likert-type rating scale, whereas the other questions were rated on an anchored 5-point Likert-type rating scale (See Appendix C for the full measurement instrument). Each of the eight items in the SF-8 measures a specific health construct (the abbreviated label for each construct appears in parenthesis after the description): (1) general health (SF8GH), (2) physical functioning (SF8PF), (3) role limitations due to physical health problems (SF8RP), (4) bodily pain (SF8BP), (5) vitality or energy (SF8VT), (6) social functioning (SF8SF), (7) mental health or emotional well-being (SF8MH), and (8) role limitations due to emotional problems (SF8RE) (Lefante, 2005; SF-8 health survey, n.d.). In this study, the temporal phrase in these questions was changed to “during the past 2 weeks” for consistency across all variables that were analyzed as change scores from baseline to follow-up. Moreover, the SF-8 items were collapsed during data analysis into a composite scale called Change in General Health; this scale was created by calculating the average of the eight difference scores for each item of the SF-8 between follow-up and baseline measurements. The reliability of Change in General Health was calculated by taking the average of the two reliabilities at follow-up ( $\alpha = .86$ ) and baseline ( $\alpha = .81$ ); this averaging approach produced good final scale reliability ( $\alpha = .84$ ). Further, as a second check, the reliability

based on the eight difference scores was also tabulated, and it showed acceptable reliability as well ( $\alpha = .74$ ).

*Psychological well-being.* Mental health and affective states were also measured. Mental health was measured using two well-established scales; the first measure was the shorter, 10-item Center for Epidemiologic Studies Depression scale (CESD10, Andresen, Malmgren, Carter, & Patrick, 1994); this scale has been verified for good validity and test-retest stability by the same authors. The original CESD featured 20 items (e.g., despondency, loss of appetite) on a 4-point rating scale (Radloff, 1977). In this study, an anchored 4-point rating scale from 1 (*Rarely or none of the time*) to 4 (*Most of the time*) was retained; participants rated the extent to which, in the past week, they have felt an experience related to depression using such statements as “I was bothered by things that don’t usually bother me,” and “I felt lonely”. In this study, the CESD10 scale for each of the three time points was calculated by summing the scores of the items after reverse coding the negatively-worded items (Andresen et al., 1994). Subsequently, the dependent variable labeled Change in Depression was calculated as the difference score between the follow-up and the baseline measurements. The overall reliability of Change in Depression was calculated by taking the average of the two reliabilities at follow-up ( $\alpha = .85$ ) and baseline ( $\alpha = .79$ ). The final scale had good reliability ( $\alpha = .82$ ).

The second measure of mental health was the 6-item state scale of the Spielberger State-Trait Anxiety Inventory (STAI6, Marteau & Bekker, 1992). The STAI6 measured state anxiety by having participants indicate how they felt, e.g., “I feel tense” and “I am worried,” at the present moment on an anchored 4-point Likert-type

scale from 1 (*Not at all*) to 4 (*Very much*). Previously, the STAI6 was found to have acceptable reliability and validity for use in the place of the original scale (Marteau & Bekker, 1992). The STAI6 scale for each of the three time points in this study was calculated by summing the item scores after reversing the negatively-worded statements (Perpiñá-Galvañ, Richart-Martínez, & Cabañero-Martínez, 2011). The dependent variable known as Change in Anxiety was calculated as the difference score between the follow-up and the baseline measurements. The overall reliability of Change in Anxiety was calculated by taking the average of the two reliabilities at follow-up ( $\alpha = .85$ ) and baseline ( $\alpha = .85$ ). The final scale had good reliability ( $\alpha = .85$ ).

Mood states were also measured as supplementary checks during data analysis, including the following subscales of affect: depressed mood, fatigue mood, sad affect, happy affect, and additional single affect items such as angry and irritated moods. The items for this mood states scale were drawn from an adjective checklist found in a short version of the Profile of Mood States (POMS-SF, Shacham, 1983). Curran, Andrykowski, and Studts (1995) found very good psychometric properties for the POMS-SF and its subscales. Only two scales were constructed: Depressed Mood and Fatigued Mood. The affect adjectives were rated using a 7-point Likert-type scale with end and middle anchors on such items as “unhappy” (depressed mood example) and “fatigued” (fatigued mood example). These mood subscales were calculated by averaging the scores of each item, i.e., 8 items for depressed mood and 5 items for fatigued mood. The reliability for the depressed mood subscale was calculated by taking the average of the two reliabilities at post-experiment ( $\alpha = .91$ ) and baseline ( $\alpha = .92$ ). The final depressed mood subscale had excellent reliability ( $\alpha = .92$ ). On the other hand,

the reliability for fatigued mood was tabulated in a similar fashion, at post-experiment ( $\alpha = .82$ ) and baseline ( $\alpha = .83$ ). The final fatigued mood subscale also had good reliability ( $\alpha = .83$ ).

*Control Variables: Life Events and Gender*

Apart from the measurements for the dependent and mediating variables, the individual difference variable called Life Events and Experiences, or, more simply, Life Events, was measured. This variable was assessed to test the potential difference in cathartic responses to human drama as a function of an individual's recent and thematically relevant experiences in a comparable life event. It is conceivable that individuals who have recently lost a loved one may respond with greater emotional intensity to the stimulus material, which features the theme of loss, compared to those who have not encountered such traumatic incidents. Further, an open-ended question labeled Story Similarity to Life Events was also measured to enable participants to disclose any story resemblance between the human drama and their life events. This measure was analyzed to ensure that the themes depicted in the stimulus narrative do not coincide with participants' actual experiences, i.e., the narrative is not event-specific.

The 35-item measure of Life Events was a list of fifteen positive and twenty negative life episodes selected from the College Student Life-Event Scale (Cohen, Kamarck, & Mermelstein, 1983; Cohen & Williamson, 1988), a life event checklist (Suh, Diener & Fujita, 1996), and the life event items used in Greenberg et al. (1996). Life events were measured by asking participants to indicate their experience with a list of life events, both positive (e.g., got engaged) and negative (e.g., death of a close friend) and specify the recency of those experiences on an anchored 7-point scale,

ranging from the *past 3 months to more than 4 years ago* and including a choice for *did not happen*; a score of 0 was possible if the participant did not experience a particular life event. For this variable, this study focused on the presence or absence of negative life events rather than the positive events. In the full sample, there was a relatively equal number of participants without any recent life events that were thematically relevant to the human drama ( $n = 94$ ) compared to those who have had some of these experiences ( $n = 106$ ); participants in the former reported a value of zero (maximum possible score is a 5) on having experienced any of the following five events: victim of a violent crime or assault, family violence, death or life-threatening illness of a close friend, death or life-threatening illness of a close family member, or had a difficult time separating from friends and family.

The variable Story Similarity to Life Events was measured with the following dichotomous single item followed by an open-ended invitation for participants to describe their “similar situation” if they responded *yes*: “In your lifetime, have you experienced a similar situation to the life-changing events depicted in the movie?” Of the full sample of participants, only twenty one participants, or 10% of the full sample, wrote a sentence or two to explain their “similar situation.” The single response evaluated by the experimenter as somewhat similar to the human drama involved the death of a brother who was murdered: “I lost a brother who was extremely close to me. he was also killed. his murder is going to a civil court in the near future. it was unexpected and a very sad event for everyone who knew him. I more so related to Matt and Ruth Fowler the parents” However, his questionnaire responses was not removed because this participant was still relating to the fictional characters by perspective-

taking through his actual parents. The other more typical responses were less direct correspondences between the tragic events in the human drama and the participants' lives, e.g., "A close friend in high school, who I had dated, was killed in a car accident," "My parents always fought when I was growing up," "My dad's friend's son died with whom he was very close with," and "I lost my cousin at a very young age and it changed everything." In short, there was no direct story similarity between participants' life events and the story depicted in the stimuli.

Previous studies have argued for gender differences in the expression of emotions (Greenberg, et al., 1996). In particular, females self-reported greater confidence in expressing liking and affection-related sentiments, as well as the negative emotions of fear and sadness, compared to males (Blier & Blier-Wilson, 1989). It is conceivable that the differences in individuals' willingness and ability to express distress, depending on their gender, may have an impact on the mechanisms that lead to health outcomes, e.g., Change in Self-Compassion. Therefore, it is plausible that the cathartic effects in this study may have been attenuated by the inclusion of approximately 20% male participants who were likely more reserved in their readiness to cognitively process the human drama through emotional expression. Alternatively, the moderation of gender may indeed produce an opposite effect and benefit males because social expectations and norms often discourage the emotional expression amongst males, especially males in the vicinity of adolescence; the experimental manipulation of "tragic reflection" may furnish an infrequent opportunity to experience and process emotional upheavals in a constructive way. Consequently, gender was employed as a control variable in the following analyses.

### *Descriptive Statistics and Checks Prior to Path Modeling*

The items for every mediating and dependent measure were used to create scales to test the proposed hypotheses and explore the research question; these tests were primarily path analyses performed using structural equation modeling. Thus, prior to conducting these analyses, the mediating and dependent variables were first examined for normality and potential outliers using descriptive statistics (See Table 1). All descriptive statistics in this section are tabulated using the final samples as described in the Data Merging and Preparation sub-section found in the subsequent Results section of this paper.

The mean values and standard deviations appeared satisfactory. The mean for Identification was above the midpoint of a 7-point rating scale, but its negative skewness was within an acceptable range. For most variables, minimum and maximum values indicated that participants had a wide range of experiences during this study. The dependent variable, Change in General Health, appeared to have a relatively short range of values when inspecting the minimum and maximum values, but this change score was based on narrower rating scales in its original measures, i.e., seven items rated on a 5-point scale and one item rated on a 6-point scale. On the other hand, the range of possible values for Change in Physical Symptoms, Change in Depression, and Change in Anxiety were larger due to the rules utilized during scale construction, some of which involved the summing of item scores or the conversion of scores into a percentage. IBM SPSS Statistics 19 was used to inspect the criteria for the suitability of data for further analysis. Table 1 shows that the skewness values for all variables of interest for data analysis were acceptable, i.e.,  $skew < |1|$ . The data were also checked for outliers using a z-score criteria, i.e., outliers have  $z > |3.29|$  (Kline, 2005), and inspected for



multivariate normality via Mahalanobis' distance (Arbuckle, 1997); the data were judged as sufficient for both univariate and multivariate analyses. Additionally, descriptive statistics were also inspected for any visible anomalies in the variables of interest for each of the four conditions; the data appeared to be adequate. Table 2 provides a summary of these descriptive statistics.

Next, the means for the variables of interest were inspected for main effects of conditions. A series of analysis of variance (ANOVA) was conducted to compare the means across all four levels of independent variable. These ANOVAs are reported in the right-most columns of Table 2. As expected, the means for Meaning Affect and the word-use variables showed significant differences when comparing the experimental conditions involving a narrative with the Writing-only control condition. The control group was expected to experience a substantive lower amount of meaningful affect compared to the "treatment" groups because the control participants were not exposed to the human drama; they were also expected to use substantively fewer cognitive words, i.e., causation, certainty, discrepancy, and insight words, because they were instructed to be more descriptive rather than thoughtful in their writing task. Further, the remaining main effects were not significant. In short, the variables of interest across all conditions did not exhibit any unanticipated main effects.

As a supplementary check for main effects, a series of analysis of variance (ANOVA) was performed to compare the means for the dependent variables at the final, follow-up measurement, instead of the change score. The variables tested were physical symptoms, general health, depression, and anxiety scores at Time 3 only. There no significant findings in this set of tests. Nonetheless, the ANOVA for the anxiety score at

Time 3 showed a marginally significant difference,  $F(3, 196) = 2.36, p = .07$ . Without running a post-hoc test, it seems likely, by a visual inspection of the means, that the level of anxiety was marginally higher for the Movie+writing condition ( $M = 13.34, SD = 3.70$ ) compared to the Script+writing condition ( $M = 11.24, SD = 3.71$ ), but there were no differences compared to the control condition ( $M = 12.83, SD = 4.71$ ); the range of scores for anxiety at Time 3 range from 6 to 24. This finding is inconclusive on its own, except to suggest that participants in the Movie+writing condition ended up slightly more anxious compared to those in the Script+writing condition. However, with reference to the Change in Anxiety score in Table 2, the change scores for anxiety for these two conditions were not significantly different,  $F(3, 196) = .83, n.s.$  Thus, there were no significant main effects found in the dependent variables at Time 3 across all conditions.

After inspecting for skewness, kurtosis, univariate outliers, multivariate outliers, and main effects of condition, the data were found to be acceptable for path modeling. Subsequently, one additional check for pairwise multicollinearity was made prior to testing the hypothesized models. Bivariate correlations were computed and examined for each of the nineteen variables involved in the path analyses. An extremely high correlation between the overall composite scale of Change in Self-Efficacy in Regulating Negative Affect and its despondency subscale (Change in Self-Efficacy in Regulating Despondency) was expected; both the overall scale and its constitutive subscale were never analyzed together in a single path model. Among the predictor variables, all significant correlations were less than .70, which indicates a low likelihood of multicollinearity with these data (Fidell & Tabachnick, 2003; Kline,

2005). Therefore, path modeling was performed without any changes to the predictor variables. Table 3 displays the zero-order correlations between all variables included in the path analyses.

One final check was made to ensure that participants who predicted the main objective of the study were removed from analysis. Firstly, participants' responses to the statement "If you wish to make a guess about the objective of this study, please tell us below, in your own words" were coded by the experimenter. The open-ended data was coded into a dichotomous scale. Two criteria were employed in the coding. The main criterion for a "yes" (or 1) included the participants' association of three keywords "media," "emotion," and "health"; synonyms for these words, such as well-being were also accepted. Some examples of participants' open-ended guesses are as follows: "How media effects mood and health," "To see if understanding one's own emotions can help relieve stress," and "to look for a relationship between physical/psychological health and connection to movies (what type of movie preferred, how deeply connected to characters, etc.)." As a supplement to the first criteria, participants had to make a connection between the concepts of media and health or emotion and health. The second criteria revolve around participants' speculations about the follow-up mediators by way of a presumed cognitive mechanism that could affect health, such as *downward social comparison*. Examples of responses that fit the second criterion are as follows: "I believe this study may have been done to see if upon seeing someone else's misfortunes do you not see yours as being as bad" and "To determine if people will feel better or worse about their own life situations after viewing a movie about other people's tragic life situations." If a participant's conjecture of the study aim matched either criterion

one or two, they were counted as a "1." A total of 21 participants from the full sample were coded as "1."

After coding was performed, a set of *t*-tests was conducted to check whether there were group differences in the self-reported dependent measures and follow-up mediators at Time 2, Time 3, and the change scores (i.e., Time 3 minus Time 1). None of the *t*-tests were statistically significant. Additional inspection of the data was made to ensure that this analysis was appropriate, especially in light of unequal cell sizes between participants coded as having guessed the study accurately ( $n = 21$ ) and the remaining participants who did not ( $n = 179$ ). Firstly, the sample size for the smaller cell was at least 20, which makes the analysis more credible. Next, all the dependent measures and follow-up mediators were checked for normality and all measures of skewness appeared normal for participants in both groups, i.e.,  $< |1|$ . Therefore, the unequal cell sizes were deemed adequate for *t*-tests and the results showed that participants who successfully guessed the aim of the study were no different from the other participants in their self-reported levels of health and self-perception.

**Table 1** Descriptive Statistics for Mediating and Dependent Variables

Variables	M	SD	MIN	MAX	Skew	Kurt.	$\alpha$
Meaningful Affect	3.30	1.08	1.00	5.80	.00	-.79	.86
Identification	5.27	1.06	1.50	7.00	-.69	.56	.90
Change in Self-Compassion	.06	.80	-3.67	3.00	-.01	3.00	.78
Change in Self-Efficacy (RESE-NEG)	-.03	1.05	-3.13	3.38	-.18	.65	.88
Change in Self-Efficacy (RESE-DES)	.02	1.19	-3.50	3.50	-.12	.32	.81
Meta-Emotion	3.54	1.10	1.00	7.00	-.07	-.07	.86
Change in Physical Symptoms	-3.13	13.25	-42.00	42.00	.10	1.23	.82
Change in General Health	-.11	.63	-2.13	1.50	-.23	.58	.84
Change in Depression	.67	5.25	-14.00	22.00	.71	2.57	.82
Change in Anxiety	.43	4.58	-12.00	13.00	.21	.54	.85
Causation Words	1.74	.88	.00	4.29	.36	.05	.88*
Certainty Words	1.51	.76	.00	4.29	.37	.29	.85*
Discrepancy Words	1.97	1.45	.00	6.27	.57	-.01	.80*
Insight Words	3.15	1.99	.00	7.26	-.24	-1.17	.94*

*Note:* \* denotes binary alpha extracted from Pennebaker, Chung, Ireland, Gonzales, and Booth (2007).

**Table 2** Descriptive Statistics for Variables by Study Condition

Variables \ Study Conditions	Movie+Writing	Script+Writing	Movie-only	Writing Only	F-ratio
Meaningful Affect	3.64 (1.10)	3.23 (1.03)	3.73 (0.89)	2.54 (0.88)	$F(3, 196) = 15.20, p < .001$
Identification	5.47 (1.12)	5.07 (0.98)	5.27 (1.06)	N/A	$F(2, 149) = 1.78, n.s.$
Change in Self-Compassion	0.02 (0.86)	0.04 (0.72)	0.12 (0.66)	0.06 (0.96)	$F(3, 196) = .16, n.s.$
Change in Self-Efficacy (RESE-NEG)	0.05 (1.09)	-0.03 (1.14)	0.01 (0.99)	-0.16 (1.00)	$F(3, 196) = .37, n.s.$
Change in Self-Efficacy (RESE-DES)	0.21 (1.16)	0.09 (1.33)	0.01 (1.06)	-0.25 (1.16)	$F(3, 196) = 1.29, n.s.$
Meta-Emotion	3.67 (1.05)	3.24 (1.18)	3.55 (1.00)	3.69 (1.13)	$F(3, 196) = 1.80, n.s.$
Change in Physical Symptoms	-2.44 (13.29)	-5.16 (12.18)	-2.65 (12.96)	-2.25 (14.71)	$F(3, 196) = .53, n.s.$
Change in General Health	-0.07 (0.68)	-0.15 (0.64)	-0.01 (0.49)	-0.24 (0.67)	$F(3, 196) = 1.23, n.s.$
Change in Depression	0.44 (5.18)	0.36 (4.96)	1.10 (4.88)	0.75 (6.07)	$F(3, 196) = .21, n.s.$
Change in Anxiety	0.68 (4.86)	-0.44 (4.05)	0.62 (4.89)	0.88 (4.47)	$F(3, 196) = .83, n.s.$
Causation Words	2.00 (0.64)	2.24 (0.76)	N/A	0.94 (0.64)	$F(2, 145) = 50.02, p < .001$
Certainty Words	1.71 (0.68)	1.82 (0.71)	N/A	0.98 (0.61)	$F(2, 145) = 22.41, p < .001$
Discrepancy Words	2.79 (1.16)	2.62 (1.16)	N/A	0.44 (0.43)	$F(2, 145) = 86.01, p < .001$
Insight Words	4.30 (0.88)	4.45 (1.18)	N/A	0.60 (0.52)	$F(2, 145) = 283.17, p < .001$

Notes: Means are listed first followed by standard deviations in parentheses. Meaningful Affect, Identification, and Meta-Emotion were variables measured on a 7-point rating scale; Change in Self-Compassion, Change in RESE-NEG and Change in RESE-DES had a possible range of -6 to +6; Change in Physical Symptoms had a possible range of -100% to +100%; Change in General Health had a possible range of approximately -4 to +4; Change in Depression had a possible range of -30 to +30; Change in Anxiety had a possible range of -18 to +18; the word-use variables were automatically generated using the LIWC 2007 software and they represent the percentage of specific word-category used in participant essays (Pennebaker, Booth, & Francis, 2007). For each ANOVA reported above in the right-most column, homogeneity of variance was tested; the assumptions of homogeneous variances were not violated.

**Table 3** Bivariate Correlations for All Variables Considered in the Path Analyses

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	
1. Movie+writing																			
2. Script+writing	-.33**																		
3. Movie-only	-.34**	.34**																	
4. Meaningful Affect	.19**	-.04	.24**																
5. Identification	.13	-.13	.00	.43**															
6. Meta-Emotion	.07	-.16*	.01	.32**	.29**														
7. Change in Self-Compassion	-.03	-.01	.05	-.06	-.04	-.15*													
8. Change in Self-Efficacy for Negative Affect	.04	.00	.02	.02	.11	.00	.37**												
9. Change in Self-Efficacy for Despondency	.09	.03	.00	.02	.14	-.01	.32**	.91**											
10. Change in Physical Symptoms	.03	-.09	.02	.08	.03	.14*	-.07	.00	-.05										
11. Change in General Health	.05	-.03	.10	-.02	.18*	-.01	.21**	.35**	.31**	-.13									
12. Change in Depression	-.03	-.03	.05	.12	.04	.00	-.37**	-.33**	-.32**	.22**	-.38**								
13. Change in Anxiety	.03	-.11	.02	-.02	.01	-.06	-.31**	-.31**	-.30**	.16*	-.23**	.46**							
14. Insight Words	.42**	.47**	n/a	.36**	-.06	-.07	-.04	.11	.17*	-.03	.08	-.05	-.06						
15. Discrepancy Words	.41**	.32**	n/a	.29**	-.09	-.10	.10	.06	.09	-.10	.10	-.11	-.10	.65**					
16. Causation Words	.21**	.41**	n/a	.20*	-.07	-.08	-.13	-.07	.00	-.11	-.10	-.01	.05	.55**	.47**				
17. Certainty Words	.18*	.29**	n/a	.26**	.05	-.01	-.12	.00	.03	-.04	-.01	-.05	-.02	.48**	.45**	.37**			
18. Gender	.06	.09	-.18*	-.04	.15	-.04	.02	.02	-.05	.02	-.01	.01	-.12	.08	.09	.02	.01		
19. Life Events that are Neg., Recent, & Relevant	-.04	-.04	.06	.08	.12	-.05	.00	.01	.01	-.10	.07	-.04	-.05	-.08	-.03	.00	.00	.19**	

Notes: \*  $p < .05$ , \*\*  $p < .01$ .

Movie+writing, Script+writing, and Movie-only were coded as dichotomous variables: 0 = Writing-only control group, 1 = experimental condition. Gender was coded as a dichotomous variable: 0 = males, 1 = female. Life Events that are Negative, Recent & Relevant was coded as a dichotomous variable: 0 = no such life events, 1 = having some life events that are negative, recent, and relevant. n/a denotes correlations that cannot be computed because the variables were not measured.

## Chapter 3

### RESULTS

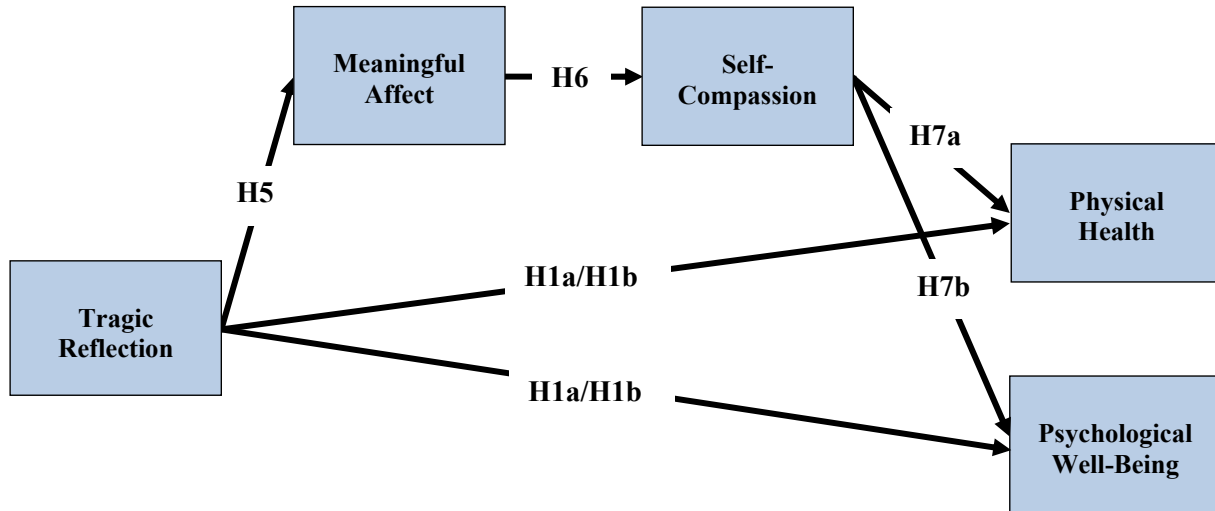
#### *Overview of Data Analysis*

This study was designed to test a theory-guided catharsis model and explore the indirect effects on health outcomes. Posed in the light of a new catharsis theory, the hypotheses and research question determined the data collection and analysis that were employed to generate the results. A total of six path models – which all possessed acceptable to excellent model fits – were constructed to test the seven hypotheses and explore the research question. The findings of this study are reported on the basis of the hypotheses and research question. In addition, all modifications, exploratory analyses, and details regarding the path models are also discussed.

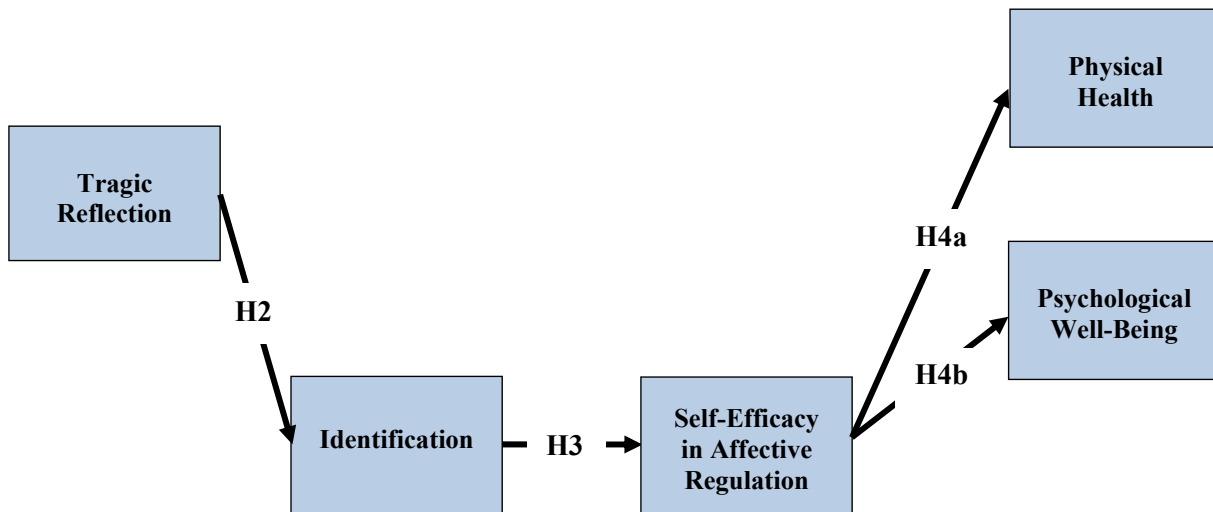
The proposed model for catharsis, which featured all the variables of interest and all of the hypothesized relationships, was analyzed using two separate path models, as shown in Figure 3 and Figure 4. This procedure was motivated by the fact that not all levels of the independent variable were conducive to measure the variable “Identification” in a meaningful way; the control group was not exposed to any human drama, so they were not measured for their level of identification with fictional characters. Since the proposed model comprised two causal chains of mediating variables, the first path model (Figure 3) included only the causal link containing Meaningful Affect and Change in Self-Compassion, which tested the first set of hypotheses (H1a and H1b), the fifth hypothesis, the sixth hypothesis, and the seventh set of hypotheses (H7a and H7b). On the other hand, the second path model (Figure 4) tested the remaining hypotheses i.e., the second, third, and fourth hypotheses, by



modeling the causal link containing Identification and Change in Self-Efficacy in Regulating Negative Affect.



**Figure 3** Path Model for Testing H1a, H1b, H5, H6, H7a, and H7b.



**Figure 4** Path Model for Testing H2, H3, H4a, and H4b.

### *Data Merging and Preparation*

Since data collection was accomplished at three separate time points – corresponding to the three parts of this study – proper data merging was crucial to the

success of data analysis. In IBM SPSS Statistics 19, the data files were merged using the alphanumeric participant identifier that was self-reported at each time point. Cases with missing data were removed; since the dependent variables and some of the mediators relied heavily on change scores between the follow-up and baseline measurements, data analysis was not possible if data was missing from any of the time points. The final number of cases after data merging and clean-up was an even two hundred, or  $N = 200$ .

Additional quantitative data was generated using the Linguistic Inquiry and Word Count (LIWC) text analysis software. LIWC produces data that consists of 80 total word categories or variables. The categories include the following examples: total word counts, e.g., total function words, major categories, e.g., percentage of cognitive process words, and sub-categories, e.g., percentage of insight words. As stated in the Method section, LIWC generates percentage scores for each word category in its dictionary, i.e., the database of words that comprise each word category (Tausczik & Pennebaker, 2010). Since the Movie-only condition did not generate any essays, only one hundred and forty eight essays were extracted from each case and saved as individual text files with participant identifier as the filename in preparation for LIWC's analysis. Once the LIWC analysis is complete – a process that takes a very short computing time – 80 new variables (columns in a spreadsheet) were created for each essay. Later, this word-use data were merged with the full dataset using the identifier variable.

In preparation for the hypothesis testing and exploratory analysis on AMOS version 19, three different datasets were generated using IBM SPSS 19. The first dataset

is the full sample,  $N = 200$ . The second dataset contained a smaller sample of  $n = 152$ , where all cases in the Writing-only condition were removed, whereas the third dataset included a sample of  $n = 148$  in which all cases in the Movie-only condition were removed; the second dataset enabled analyses that used the Identification variable (which were not measured in the Writing-only control group) and the third dataset permitted analysis involving the word-use variables (which were non-existent in the Movie-only group). Moreover, to further prepare the latter two datasets for AMOS 19, dummy coding of the independent variable was performed. For the unchanged full sample, three dummy variables were created to represent the three experimental conditions, respectively: Movie+writing, Script+writing, and Movie-only. The first dummy variable was coded as 1 for cases in the Movie+writing condition and 0 for all other cases. The second dummy variable was coded as 1 for cases in the Script+writing condition and 0 for all other cases, whereas the third was coded as 1 for cases in the Movie-only condition and 0 for all other cases. Cases in the Writing-only condition were coded as 0 for all three dummy variables; in the analyses that utilized the full sample, the Writing-only condition was the comparison category. Next, for the dataset without the Movie-only condition, dummy variables were constructed for the Movie+writing and Script+writing conditions, while the Writing-only condition, again, remained the comparison category. Finally, for the dataset without the Writing-only condition, dummy variables were made for the Movie+writing and Movie-only conditions and the Script+writing condition was the comparison category.

Prior to data analysis, an additional check was performed to inspect for potential differences between the two movies in inducing sadness. Moreover, potential

differences were also examined for the following variables and change scores (with one noted exception): Change in Self-Efficacy in Regulating Negative Affect, Change in Self-Efficacy in Regulating Despondency, Change in Self-Compassion, Change in Physical Symptoms, Change in General Health, Change in Depression, Change in Anxiety, and Meta-Emotion (Time 2 only). The means for these variables were compared using two sets of independent sample *t*-tests. The first test compared the two groups exposed to different movie stimuli, whereas the second test compared group differences after reading the movie script stimuli.

For the groups that watched the two different movies, all *t*-tests were not significant except for two variables: for Sad Affect ( $M_{Mystic\ River} = 4.31$ ,  $SD_{Mystic\ River} = 1.54$ ;  $M_{In\ the\ Bedroom} = 3.67$ ,  $SD_{In\ the\ Bedroom} = 1.96$ ), a marginal difference was found,  $t(100) = 1.86$ ,  $p = .07$ , two-tailed; for Change in General Health ( $M_{Mystic\ River} = -.16$ ,  $SD_{Mystic\ River} = .53$ ;  $M_{In\ the\ Bedroom} = .09$ ,  $SD_{In\ the\ Bedroom} = .62$ ), a significant difference was found,  $t(100) = -2.21$ ,  $p < .05$ , two-tailed. Subsequently, for the groups that read the two different movie scripts, all *t*-tests were not significant except for Sad Affect ( $M_{Mystic\ River} = 3.28$ ,  $SD_{Mystic\ River} = 1.86$ ;  $M_{In\ the\ Bedroom} = 2.48$ ,  $SD_{In\ the\ Bedroom} = 1.26$ ), a marginal difference was found,  $t(48) = 1.78$ ,  $p = .08$ , two-tailed. To summarize, the overall results for Sad Affect showed that *Mystic River* made participants somewhat sadder compared to *In the Bedroom* regardless of the mode of human drama presentation; this finding was not unexpected since both films share some similar themes, but contained many story differences. Moreover, for groups who watched one of the two movies, there was some indication that either randomization failed for the measure of Change in General Health or the group that watched *In the Bedroom* benefitted more compared to

the *Mystic River* group in terms of their general health; since this particular randomization was performed by a computer program (Qualtrics) and, thus, assumed to be less likely to fail, the second explanation seems more likely, i.e., *In the Bedroom* may be more therapeutic towards general health for this sample of participants. Nevertheless, this is far from a conclusive finding since the other self-perception and health variables did not exhibit any difference between the two works of fiction.

#### *Preliminary Analysis of Gender Differences*

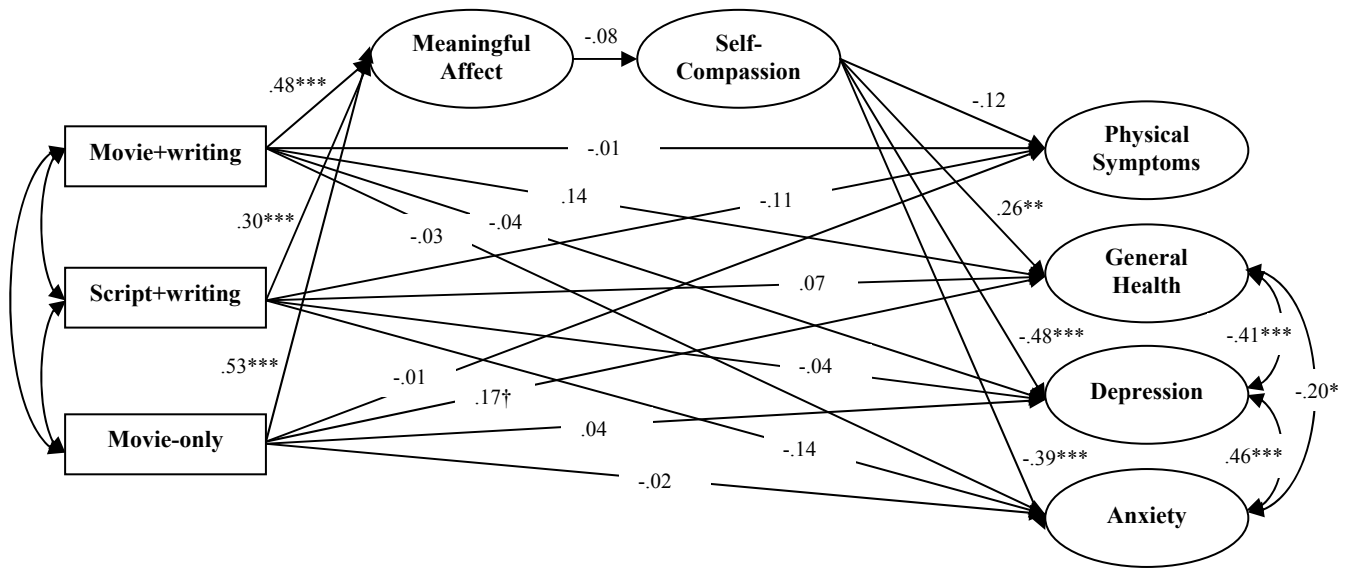
Prior to hypothesis testing, the effects of gender were examined for its influence on the dependent variables and the mediators. The following variables were tested as change scores (with one noted exception): Change in Self-Efficacy in Regulating Negative Affect, Change in Self-Efficacy in Regulating Despondency, Change in Self-Compassion, Change in Physical Symptoms, Change in General Health, Change in Depression, Change in Anxiety, and Meta-Emotion (Time 2 only). The means for these variables were compared using a set of independent sample *t*-tests. All *t*-test results were not significant. Nevertheless, it should be noted that the results of *t*-tests for Identification and Change in Anxiety approached significance. Females displayed a weak trend towards higher levels of identification compared to males;  $M_{male} = 5.00$  ( $SD_{male} = 1.27$ ),  $M_{female} = 5.35$  ( $SD_{female} = .99$ ),  $t(41) = -1.61$ ,  $p = .11$ , two-tailed. For Change in Anxiety, males experienced a marginally greater increase in anxiety over the 4-week follow-up period compared to females;  $M_{male} = 1.51$  ( $SD_{male} = 4.59$ ),  $M_{female} = .15$  ( $SD_{female} = 4.54$ ),  $t(198) = 1.71$ ,  $p = .09$ , two-tailed. These preliminary tests largely showed that gender differences did not substantively affect the dependent variables directly or the mediators that precede them in the path models of interest in the following analyses.

### *Testing the Hypothesized Model*

Data were imported into AMOS 19 to perform the path analyses. Measurement error in the models was accounted for using latent composite variables. The error variance for every endogenous variable was calculated as  $\sigma^2 * (1 - \alpha)$ , where  $\sigma^2$  is the variance (or the square of the standard deviation) and  $\alpha$  is Cronbach's Alpha reliability. After this preparatory work of correcting for measurement error, path analyses with maximum likelihood estimation were performed. Fit statistics were examined to determine how well the data fit the hypothesized model. Then, the significance of each path was examined to test the proposed hypotheses.

Figure 5 provides the path diagram for the model used to test H1a, H1b, H5, H6, H7a, and H7b. The full sample was used and the Writing-only condition was the comparison category for this model when the independent variable was dummy-coded. This model was created to test the direct effects of the independent variable on the dependent variables, and the indirect paths through two mediators, Meaningful Affect and Change in Self-Compassion. The dependent variables comprised of four variables that represent the difference or change in self-reported health between the baseline and the follow-up measurement: Change in Physical Symptoms, Change in General Health, Change in Depression, and Change in State Anxiety. Further, using the modification indices in the AMOS output as a guide, three additional residual covariances were justifiably added amongst the error terms for Change in General Health, Change in Depression, and Change in Anxiety to improve model fit. Covarying these variables was sound for the following reasons: (i) both depression and anxiety are closely related concepts in measurements of mental health; they measure "the debilitating effects of self-judgment" (Neff, 2003a, p.92) and (ii) three of the eight items in the general health

scale (SF-8) contained questions on mental health, e.g., how much have you been bothered by emotional problems (such as feeling anxious, depressed or irritable), which justifies the correlations of general health with depression and anxiety. Overall, the model fit was very good:  $\chi^2 = 14.84$ ,  $df = 10$ ,  $p = .14$ , CFI = .98, RMSEA = .05 (90% confidence interval: .000 - .099), SRMR = .04.



**Figure 5** Path Diagram for Testing H1a, H1b, H5, H6, H7a, and H7b.

Note: †  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

Movie+writing, Script+writing, and Movie-only were dummy-coded as dichotomous variables, respectively: 1 = experimental condition, 0 = all other conditions. The full sample was used, which included all cases in all four conditions. Measurement error was also corrected in this model. Path coefficients are standardized.

The hypothesized paths from the independent variable to the dependent variables were only marginally supported at best. This analysis indicated that there was a positive, but weak, trend from the Movie-only condition to improvement in general health,  $\beta = .17$ ,  $SE = .12$ ,  $p = .07$ . Moreover, there was also a positive trend for the Movie+writing condition in predicting an improvement in general health,  $\beta = .14$ ,  $SE = .12$ ,  $p = .14$  and a trend for the Script+writing condition leading to a reduction in

anxiety,  $\beta = -.14$ ,  $SE = .87$ ,  $p = .12$ . In short, H1a and H1b were not statistically supported, but the data showed a general trend towards a weak causal relationship between Tragic Reflection and improved general health and lesser anxiety.

H5 compared the path coefficients for the movie conditions (Movie+writing and Movie-only) to Meaningful Affect. Both paths were highly significant: for the Movie+writing condition,  $\beta = .48$ ,  $SE = .20$ ,  $p < .001$  and for Movie-only,  $\beta = .53$ ,  $SE = .20$ ,  $p < .001$ . To test if these two paths were significantly different, a chi-square test was used in the following way: first, the paths between the two dummy variables to Meaningful Affect were constrained (i.e., path coefficients = a), then the chi-square fits were compared between the unconstrained and constrained models, and, finally, inspecting the significant difference in fit between these models would show whether one of the path coefficients is greater than the other. During the tabulation of this comparison, the constrained model produced the following fit statistics:  $\chi^2 = 15.06$ ,  $df = 11$ . Using simple arithmetic,  $\Delta \chi^2 = 14.84 - 15.06 = -.22$ ,  $\Delta df = 1$ , and looking up the critical value of chi-square in a table, where 3.84 is the critical value for significance level of .05 at one degree of freedom, these models were found to be not significantly different from each other. In other words, the path coefficients for both movie conditions to Meaningful Affect were not different from each other. Therefore, exposure to human drama did not produce greater Meaningful Affect with or without expressive writing; H5 was not supported.

As a supplementary analysis, the Movie+writing and Script+writing conditions were also compared using the same technique of constraining path coefficients as outlined above. In this additional comparison, the constrained model produced the



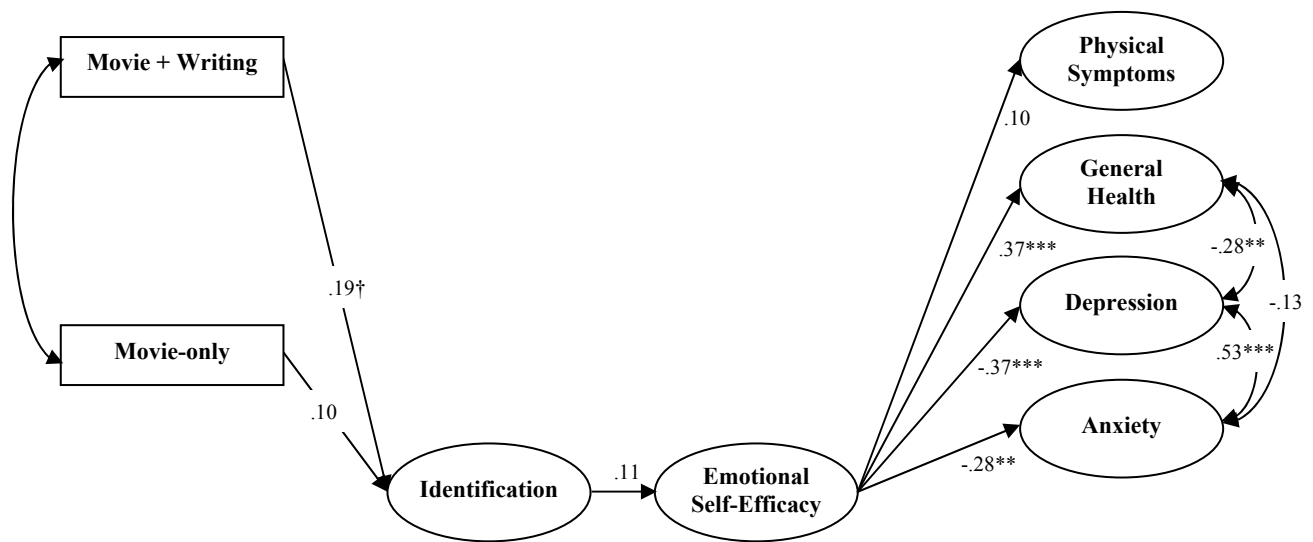
following fit statistics:  $\chi^2 = 19.27$ ,  $df = 11$ . Using simple arithmetic,  $\Delta \chi^2 = 14.84 - 19.27 = -4.43$ ,  $\Delta df = 1$ , and looking up the critical value of chi-square in a table, these comparison models did differ significantly, according to the chi-square distribution, at a significance level of .05. Therefore, the Movie+writing condition had a stronger influence on generating Meaningful Affect compared to the Script+writing condition.

Next, H6 was tested. The path coefficient for Meaningful Affect predicting Change in Self-Compassion was not significant:  $\beta = -.08$ , n.s. Therefore, greater Meaningful Affect did not lead to an increase in self-compassion; H6 was not supported.

However, some support was found for the remaining hypotheses. The paths from Change in Self-Compassion to most of the health measures were found to be significant. The paths to Change in Anxiety and Change in Depression were both in the anticipated direction and highly significant; for anxiety:  $\beta = -.39$ ,  $SE = .50$ ,  $p < .001$ ; for depression:  $\beta = -.48$ ,  $SE = .56$ ,  $p < .001$ . In addition, the path to Change in General Health was also in the hypothesized direction and significant:  $\beta = .26$ ,  $SE = .07$ ,  $p < .01$ . However, the path to Change in Physical Symptoms only showed a weak trend in the expected negative direction,  $\beta = -.12$ ,  $SE = 1.48$ ,  $p = .16$ . In short, Change in Self-Compassion positively predicted psychological well-being, so H7b was fully supported and Change in Self-Compassion positively predicted general health, so H7a was partially supported. The remaining four hypotheses were tested using a separate path model.

Figure 6 provides the path coefficients for testing H2, H3, H4a, and H4b. Cases in the Writing-only condition were not included, so the analysis was of a sub-sample,  $n = 152$ . The comparison category for this model was the Script+writing condition

because the testing of H2 required the comparison between the Movie+writing and Script+writing conditions. This model tested the indirect path through the other two mediators: Identification and Change in Self-Efficacy in Regulating Negative Affect. The dependent variables remained the same as those in the previous model. The overall model fit was acceptable, especially in light of the CFI and RMSEA values:  $\chi^2 = 29.29$ ,  $df = 17$ ,  $p < .05$ , CFI = .91, RMSEA = .07 (90% confidence interval: .020 - .111), SRMR = .07.



**Figure 6** Path Diagram for Testing H2, H3, H4a, and H4b.

Note:  $^\dagger p < .10$ ,  $* p < .05$ ,  $** p < .01$ ,  $*** p < .001$ .

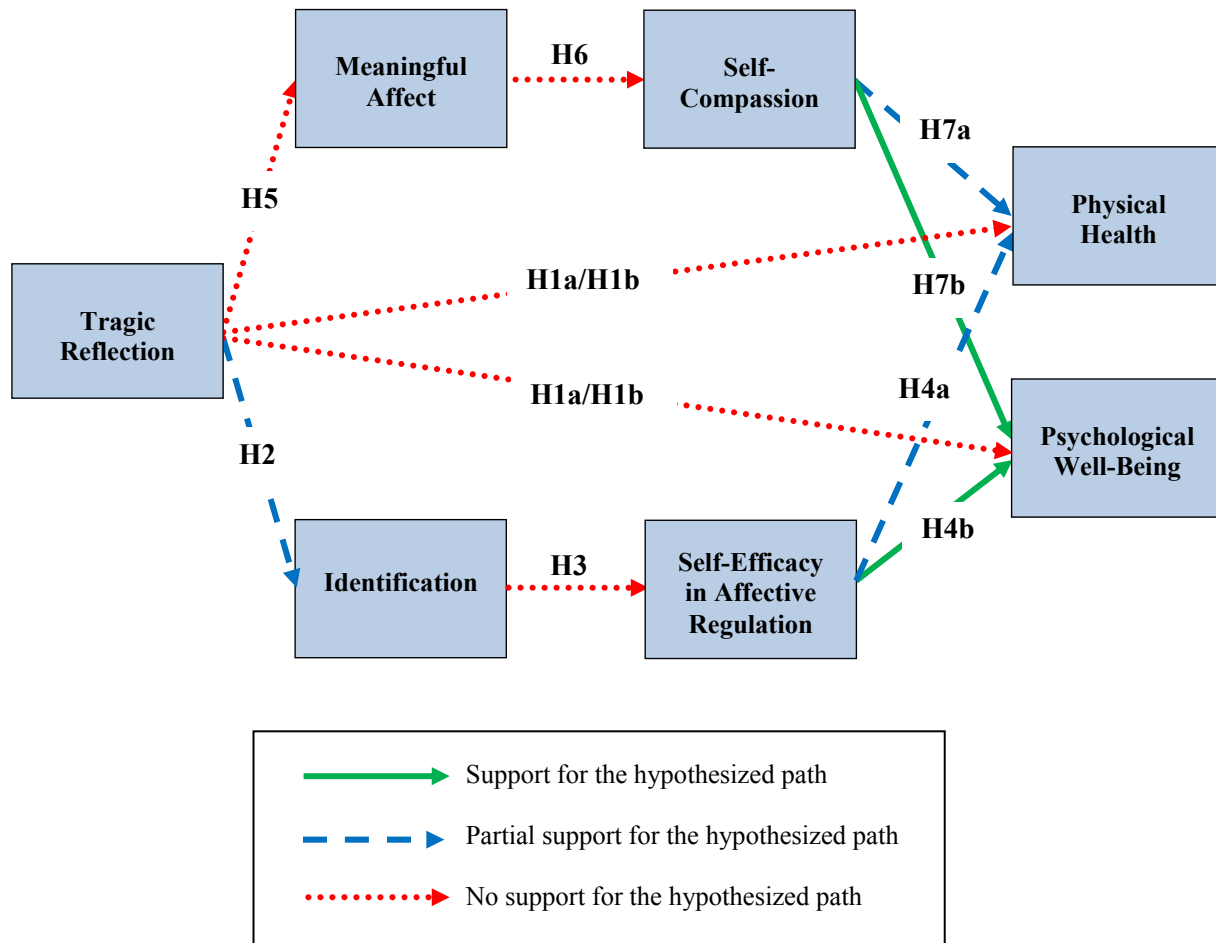
Movie+writing and Movie-only were dummy-coded as dichotomous variables, respectively: 1 = experimental condition, 0 = all other conditions. The sample used in this analysis excluded cases in the Writing-only condition. Measurement error was also corrected in this model. Path coefficients are standardized.

The path from the Movie+writing condition to Identification was marginally significant,  $\beta = .19$ ,  $SE = .21$ ,  $p = .06$ , whereas the path from the Movie-only condition to Identification was not significant,  $\beta = .10$ ,  $SE = .21$ , n.s. Since the exposure to cinematic human drama coupled with the writing task predicted marginally greater levels of

identification compared to imagining a traumatic event via a movie script paired with the writing task (the comparison category for the model), H2 was considered partially supported.

The path from Identification to Change in Self-Efficacy in Regulating Negative Affect was not significant,  $\beta = .11$ , n.s. Consequently, level of identification did not affect self-efficacy in negative affect regulation; H3 was not supported. Further along in this causal chain, the path from self-efficacy to Change in General Health, which also measured physical health, was highly significant,  $\beta = .37$ ,  $SE = .05$ ,  $p < .001$ . However, the path to Change in Physical Symptoms was not significant,  $\beta = .10$ , n.s. In short, Change in Self-Efficacy in Regulating Negative Affect positively predicted improvements in general health, but did not lead to reductions in physical health symptoms; so, H4a was only partially supported. Next, the paths to the mental health measures were both highly significant in the expected negative direction, which meant positive changes in emotional self-efficacy significantly predicted lower depression and lesser anxiety; for Change in Depression,  $\beta = -.37$ ,  $SE = .41$ ,  $p < .001$  and Change in Anxiety:  $\beta = -.28$ ,  $SE = .39$ ,  $p < .01$ . Since Change in Self-Efficacy in Regulating Negative Affect positively predicted both markers of psychological well-being, H4b was supported. A summary of the hypotheses tested can be seen in Figure 7.

Prior to revising the hypothesized models for the ensuing examination of the research question, two supplementary analyses were performed on the initial path models depicted in Figure 3 and Figure 4, respectively. The potential moderating influence of participants' previous experience of negative life events and level of depression prior to the experiment were inspected via multiple group analyses using the



**Figure 7** A Summary of the Hypotheses Tested in the Initial Study Model.

two initial path models. The negative life events variable was dichotomized using the Life Events measure; cases in the low condition experienced 0 to 5 negative events and cases in the high condition self-reported 6-15 negative events, both regardless of recency of event occurrence. On the other hand, the depression variable was dichotomized using the 10-item CESD measure via a median split; cases scoring 17 and below were coded as low on depression, whereas those scoring above 17 were coded as high on depression. The split was not made at a score of 10, which in previous studies signify presence of some depressive symptoms (Andresen et al., 1994), because only one participant scored a 10, while all other scores were 11 and above. In sum, these two

potential moderating variables were both divided into high and low levels in preparation for the multiple group analyses; each level contained approximately 100 cases.

For the negative life events moderator there were no major differences that would substantively alter the results of hypotheses testing. In the following supplementary analyses, group differences were tested by comparing the chi-square fits between the unconstrained and constrained model, whereby a significant difference in the chi-square fit indicates a group difference. For the negative life events moderator, the overall difference in the models' regression weights for the low ( $n = 95$ ) and high ( $n = 105$ ) groups was invariant; for the first initial path model (Figure 3),  $\Delta\chi^2 = 51.61 - 24.95 = 26.67$ ,  $\Delta df = 20$ , n.s., whereas for the second initial path model (Figure 4),  $\Delta\chi^2 = 51.07 - 42.87 = 8.19$ ,  $\Delta df = 7$ , n.s. A closer inspection of individual regression weights via pairwise parameter comparisons using critical ratios showed significant group differences in some of the direct effects of the independent variable on the dependent variables.

The high negative life events group displayed a significantly stronger direct path to Change in General Health from the Movie+writing ( $\beta = .31$ ,  $SE = .16$ ,  $p < .05$ ) and Movie-only ( $\beta = .36$ ,  $SE = .16$ ,  $p < .01$ ) conditions, compared to the low negative events group; the regression coefficients for the latter from Movie+writing ( $\beta = -.07$ ,  $SE = .18$ , n.s.) and Movie-only ( $\beta = -.06$ ,  $SE = .18$ , n.s.) to general health were not significant. Thus, there was some evidence that participants with higher levels of self-reported negative life events showed a significantly greater improvement in general health compared to those with lower negative events, in both movie conditions, i.e., Movie+writing and Movie-only. For the direct effects of the Script+writing condition,

there was a significant group difference on Change in Physical Symptoms, whereby, unexpectedly, the low negative events group exhibited a significantly stronger direct path to reductions in physical symptoms ( $\beta = -.30, SE = 3.88, p < .05$ ) compared to the high negative events group ( $\beta = .12, SE = 3.57, n.s.$ ). Moreover, the path from Change in Self-Efficacy in Regulating Negative Affect to Change in Depression also displayed a group difference, where the high negative events group displayed a significantly stronger reduction in depression ( $\beta = -.45, SE = .67, p < .001$ ) compared to the low negative events group ( $\beta = -.36, SE = .41, p < .01$ ), even though both path coefficients were in the same, negative direction and statistically significant. In sum, this multiple group analysis generally found mixed results with some indication that those with high negative life events may benefit more from movie-based tragic reflection on their general health and experience a stronger impact of improved emotional self-efficacy on lowering depression. On the other hand, those with low negative events may, relative to the high negative events group, improve their health in terms of fewer physical symptoms after text-based tragic reflection.

For the depression moderator, the overall difference in the models' regression weights for the low ( $n = 94$ ) and high ( $n = 106$ ) groups was also invariant; for the first initial path model (Figure 3),  $\Delta\chi^2 = 44.56 - 22.73 = 21.83, \Delta df = 20, n.s.$ , whereas for the second initial path model (Figure 4),  $\Delta\chi^2 = 48.58 - 45.27 = 3.30, \Delta df = 7, n.s.$  A closer look at individual regression weights via pairwise parameter comparisons using critical ratios showed only one group difference: for the direct effect of the Script+writing condition on Change in General Health, the high depression group exhibited a significantly stronger effect ( $\beta = .26, SE = .16, p < .05$ ) compared to the low

depression group ( $\beta = -.14$ ,  $SE = .18$ , n.s.). Thus, participants in the Script+writing condition with higher levels of depression prior to the experiment showed a significantly greater improvement in general health after tragic reflection compared to those with lower depression.

Taken together, these supplementary multiple group analyses suggest that participants who arrived with greater amounts of negative life events and higher levels of depression prior to undergoing tragic reflection may experience a slightly greater direct improvements in their well-being after the experimental manipulation, compared to those with lower levels of these two moderators. However, as a consequence of low group sizes for structural equation modeling (Kline, 2005), these interpretations are made with caution. Overall, the potential moderating effect of amount of negative life events and level of depression prior to the experiment showed only minor group differences when examining the regressions separately and displayed no group difference as a whole.

In the following analyses, the research question investigated for evidence of catharsis by focusing on indirect effects and mediation using revised versions of the hypothesized model. Other strategies included adjusting the hypothesized mediators in the subsequent models and exploring additional potential mediators. For example, variations of the mediating variables (e.g., using only a specific subscale of a measured variable) and other potential mediators that were measured during data collection, but not used in the hypothesized relationships, were systematically examined in the subsequent analyses.

### *Exploring the Research Question via Indirect Effects*

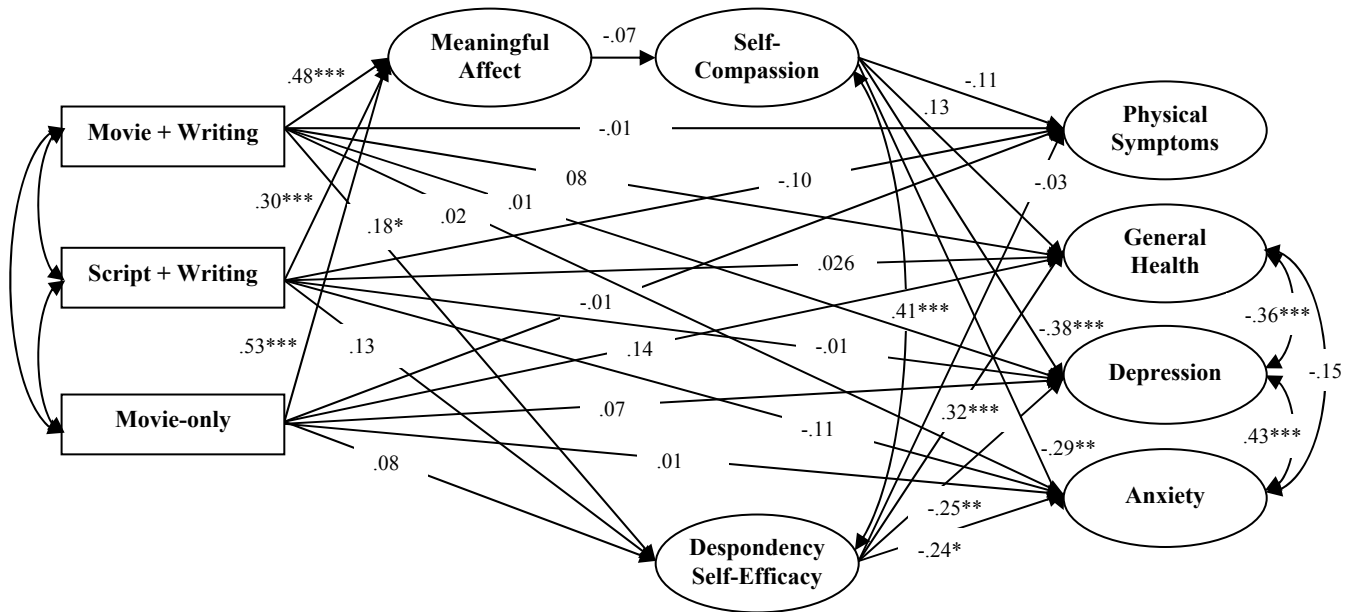
Mediation analyses were performed to further investigate indirect effects of Tragic Reflection on the health outcome variables via the hypothesized mediating variables and other potential mediators. The design for these exploratory analyses used the first hypothesized path model (Figure 3) as a starting point. Multiple mediators, e.g., identification, self-efficacy, meta-emotion, were analyzed in the subsequent models to investigate the indirect effects that could lead to catharsis. The fourth exploratory model tested the indirect influence of categories of words used during self-reflection on health outcomes through self-perception mediators. To ensure that mediation was tested, not only indirect effects, the direct paths from the independent variable to the dependent variables remained intact in every exploratory path model to follow.

#### *The first exploratory model: Meaningfulness, self-compassion, and self-efficacy.*

Figure 8 illustrates the model that explored the mediation and indirect effects for three mediators: Meaningful Affect, Change in Self-Compassion, and a modified mediator called Change in Self-Efficacy in Regulating Despondency. In this model, one mediator was added to the first hypothesized model; Self-Efficacy in Regulating Negative Affect was replaced with its Despondency subscale (i.e., its Anger subscale was dropped). This modification was justified by the fact that a greater degree of regulating despondency (i.e., sadness) was more likely than regulating anger when participants underwent Tragic Reflection; the themes in the stimulus drama involving the death of a loved one should have induced more sadness than anger. To further justify this alteration, an independent sample *t*-test was performed on the affect scores for Sad Mood and Angry Mood at post-experiment; these affect scores were tabulated from a sub-sample of participants who were exposed to the human drama (i.e., the Writing-only group was



excluded). This analysis showed that the mean for Sad Affect ( $M = 3.63, SD = 1.80$ ) was significantly higher than that of Anger ( $M = 2.70, SD = 1.59$ ):  $t(297) = 4.72, p < .001$ . Therefore, the use of the new mediator Change in Self-Efficacy in Regulating Despondency was acceptable.



**Figure 8** First Exploratory Path Analysis and Standardized Coefficients

Note: †  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

Movie+writing, Script+writing, and Movie-only were dummy-coded as dichotomous variables, respectively: 1 = experimental condition, 0 = all other conditions. The full sample was used, which included all cases in all four conditions. Measurement error was also corrected in this model.

The first exploratory model was created to test the mediation and indirect effects of the independent variable on the dependent variables through two causal chains. The first causal chain consisted of two mediators: Meaningful Affect and Change in Self-Compassion. The second causal path featured one mediator: Change in Self-Efficacy in Regulating Despondency. Further, guided by the modification indices in the AMOS output, one additional residual covariance was added between Change in Self-

Compassion and Change in Self-Efficacy in Regulating Despondency; this adjustment improved model fit. Covarying these residuals seemed reasonable because both variables are nonimmediate changes in self-perception that occurs after self-reflection. Overall, the model fit was very good:  $\chi^2 = 15.56$ ,  $df = 11$ ,  $p = .16$ , CFI = .99, RMSEA = .046 (90% confidence interval: .000 - .094), SRMR = .04.

Next, bootstrapping procedures using 2000 bootstrap samples and bias-corrected confidence intervals were employed to test the mediating roles of the three mediators – Meaningful Affect, Change in Self-Compassion, and Change in Self-Efficacy in Regulating Despondency – on the relationship between Tragic Reflection and health outcomes. This analysis revealed a marginally significant mediation, i.e., an indirect effect in the presence of the direct effect between the independent variable and dependent variable, when all three mediators were present in the model. For the Movie+writing condition, the total indirect effects for the three mediators together showed a marginally significant mediation for improvement in general health only:  $\beta = .05$ ,  $p = .07$ . For Script+writing, there was a very weak indication of mediation ( $p = .17$ ). However, it is conceivable that one of the causal chains produced a significant mediation while the other did not, especially since the results for Movie+writing approached the .05 significance level. So, the next set of analyses examined the two causal links separately. The first causal chain examined consisted of Meaningful Affect and Change in Self-Compassion and the second one was a path mediated solely by Change in Self-Efficacy in Regulating Despondency.

The standardized indirect effects from the Movie+writing condition to Change in General Health through Meaningful Affect and Change in Self-Compassion was  $\beta = -$

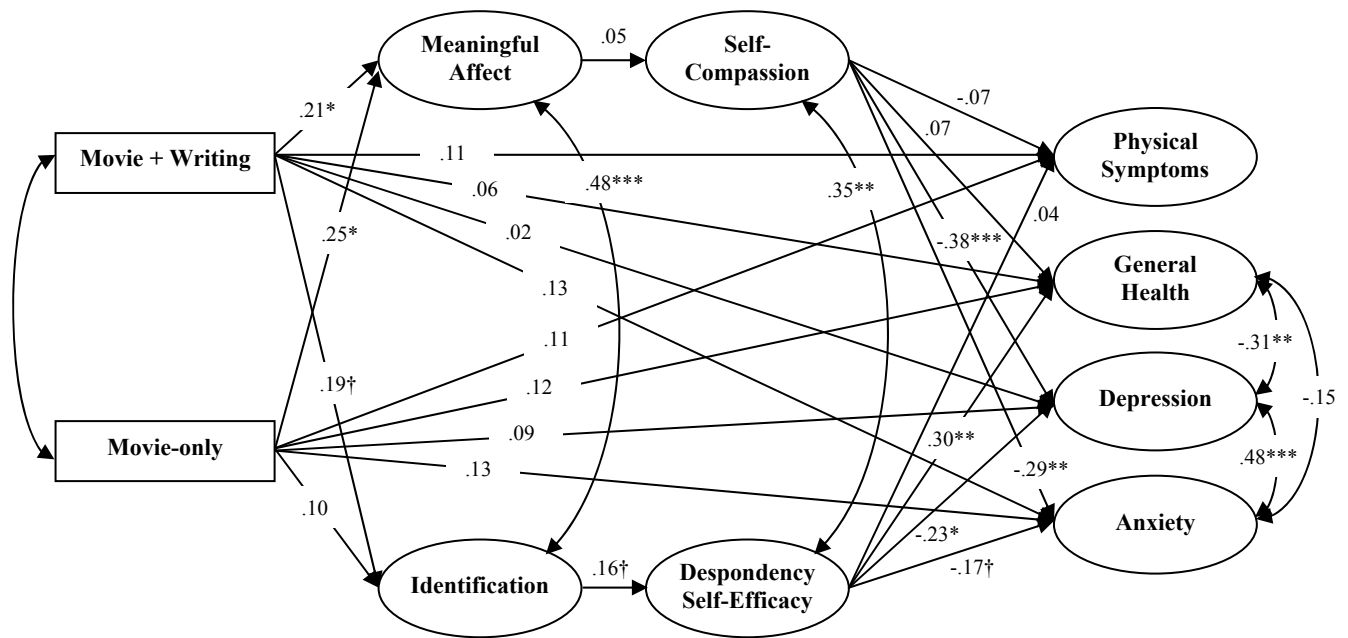
.004, a very low value. The indirect effects through Change in Self-Efficacy in Regulating Despondency was  $\beta = .06$ . This analysis revealed significant indirect effects for only one of the causal chains – the path mediated by self-efficacy:  $\beta = .06, p < .05$ .

Given that the mediation through Change in Self-Efficacy in Regulating Despondency predicted improvements in Change in General Health, the other health outcome variables were also tested using this mediator. Depression, anxiety and physical health symptoms were examined separately through self-efficacy and significant mediations were found for the first two health indicators; for Change in Depression,  $\beta = -.05, p < .05$  and for Change in Anxiety,  $\beta = -.04, p < .05$ . The mediational paths to physical health symptoms were not significant. In short, this analysis revealed significant indirect effects for the self-efficacy mediator on the relationship between the Movie+writing condition and three of the four health outcomes: improved general health, lower depression, and lesser anxiety.

Further, the paths from the Script+writing to the health outcomes through the mediator Self-Efficacy were also examined. This analysis revealed very weak trends in the expected direction for each health outcomes except Change in Physical Symptoms. Moreover, the indirect effects from the Movie-only condition through this causal path were not significant. This suggests that only the Movie+writing condition, compared to the control group, produced an increase in participants' self-efficacy in regulating their despondency, which in turn improved their general health and psychological well-being in the following 4 weeks after the experiment.

*The second exploratory model: Self-efficacy and identification.* Figure 9 displays the model that explored the mediation and indirect effects for all four mediators from

the proposed model: Identification, Change in Self-Efficacy in Regulating Despondency, Meaningful Affect, and Change in Self-Compassion. The focus of the following analyses was on the first two mediators since the indirect effects through the latter two have already been tested. Due to design-inherent issues, cases in the Writing-only condition were not included, so the analysis was of a sub-sample,  $n = 152$ ; the



**Figure 9** Second Exploratory Path Analysis and Standardized Coefficients

Note: †  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

Movie+writing and Movie-only were dummy-coded as dichotomous variables, respectively: 1 = experimental condition, 0 = all other conditions. The sample used in this analysis excluded cases in the Writing-only condition. Measurement error was also corrected in this model.

comparison category was Script+writing. Moreover, guided by the modification indices in the AMOS output, one additional residual covariance was added between Meaningful Affect and Identification to improve model fit. Covarying these residuals was reasonable because both variables are related concepts involving the affective responses of participants to the human drama; empathic experiences with characters in a drama or tragedy involves emotions of mixed valence, so identifying with a character who deals

with his traumatic experience also involves the experience of meaningful affect. Generally, this model can be considered a combination of the two models used to test the hypotheses; of the four exploratory models, this second one most closely approximated the hypothesized model. The overall model fit was acceptable:  $\chi^2 = 27.30$ ,  $df = 17$ ,  $p = .05$ , CFI = .94, RMSEA = .06 (90% confidence interval: .000 - .106), SRMR = .06.

Next, bootstrapping procedures using 2000 bootstrap samples and bias-corrected confidence intervals were employed to test the mediating roles of four mediators on the relationship between Tragic Reflection and health outcomes. This analysis revealed a marginally significant mediation for the Movie+writing condition; the combination of the four mediators produced a marginally significant mediation for improvement in general health only:  $\beta = .01$ ,  $p = .05$ . Further, since there appeared to be very weak indications of mediation for the causal chains leading to the other health measure, it is conceivable that one of these chains led to a significant mediation. Since the causal link featuring meaningful affect and self-compassion have been previously tested, the next set of analyses only examined the causal link containing the identification and self-efficacy mediators.

The standardized indirect effects from the Movie+writing condition to general health through Identification and Change in Self-Efficacy in Regulating Despondency was  $\beta = .01$ . Examining this causal chain separately revealed significant indirect effects for the mediation through identification and self-efficacy:  $\beta = .01$ ,  $p < .05$ .

Given that the mediation through Identification and Change in Self-Efficacy in Regulating Despondency predicted improvements in general health, the other health

outcome variables were also tested for this causal chain. Depression, anxiety and physical health symptoms were examined separately using these two mediators and a significant mediation was found for lower depression only:  $\beta = -.01, p < .05$ . The mediation path to lesser anxiety was only marginally significant ( $p = .08$ ), whereas the path to physical health symptoms was not significant. In short, this analysis revealed significant indirect effects for two mediators arranged in a causal chain – Identification and Change in Self-Efficacy in Regulating Despondency – on the relationship between Movie+writing and improved general health and lower depression. Additionally, the indirect effects for the Movie-only condition to the health measures through identification and self-efficacy were also examined and they were only marginally significant at best at  $p = .10$  or worse. Therefore, Tragic Reflection positively predicted improvements in perceived general health and lower depression within 4 weeks through the two mediators Identification and Change in Self-Efficacy in Regulating Despondency, when the individual experienced a cinematic drama coupled with self-reflection, compared to text-based self-reflection. Moreover, there was also some evidence of weak indirect effects along this causal chain for the Movie-only condition when compared to Script+writing.

Prior to exploring the next model, a multiple group analysis was conducted using this second model. The groups of interest were participants without any recent life events that were thematically relevant to the human drama versus those who have had some of these events, e.g., death or life-threatening illness of a close family member; the control variables portion of the Methods section described these groups in greater detail. The assumption was made that participants in the latter group would respond

with greater emotional intensity compared to the former group during and after the experimental manipulation. This analysis revealed that the two groups were not different from one another. However, the small sample size for these groups make the interpretation of this analysis somewhat questionable. Since this analysis excluded the control group, due to study design-inherent issues, the number of participants without recent and relevant events ( $n = 72$ ) versus those who did experience those events ( $n = 80$ ) were under 100 for each group, which is considered low for structural equation modeling (Kline, 2005) In short, the inadequate sample size of participants exposed to a human drama did not permit the proper analysis of the influence of recent and relevant Life Events on cathartic responses.

*The third exploratory model: Meta-emotion, meaningfulness, and self-compassion.* In previous analyses of the initial model, the hypothesized causal link from the mediators Meaningful Affect to Change in Self-Compassion did not produce a significant path. Reconsidering the rationale for this path, the next exploratory model included a new component that represents reflective evaluation; this new variable, called Meta-Emotion, was tested as the potential missing linkage between Meaningful Affect and Change in Self-Compassion or Meaningful Affect and the dependent variables. Meta-emotion has been defined simply as one's higher-order evaluations of one's primary emotions that "motivate individuals to maintain or change their primary emotions" (Bartsch, et al., 2010, p.169). As a modification of the initial model, Meta-Emotion indicates a component of reflective judgment that occurs after the more immediate emotions (i.e., primary emotions) are experienced during exposure to drama. For example, if a sad movie sequence is seen or read, individuals' meta-emotions may

actually be positive in light of their taste for appreciating somber drama or generally feeling good from the realization that they could sympathize with the plight of others. Therefore, Meta-Emotion was tested as a third mediator between Meaningful Affect and Change in Self-Compassion and also as a second mediator in the presence of one of the other two mediators.

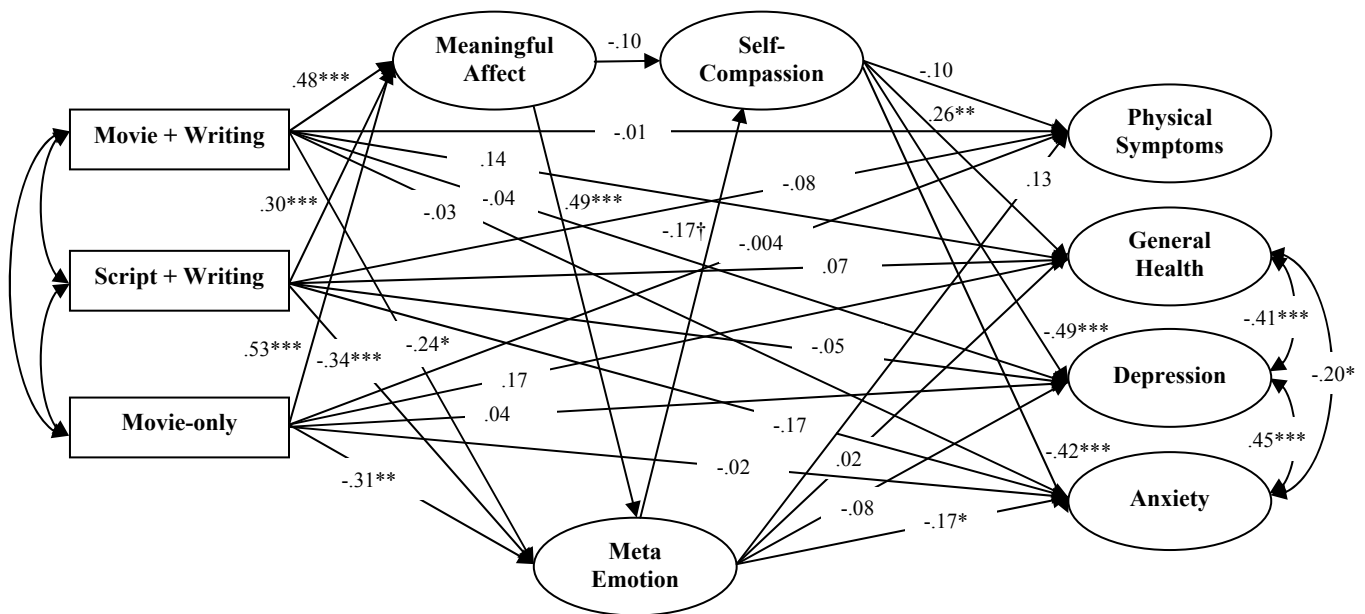
After adding Meta-Emotion into the model, direct paths from the independent variables to Meta-Emotion were also added to improve model fit as suggested by the modification indices from AMOS. This alteration was justifiable because Tragic Reflection, the independent variable, featured the process of contemplation through its thinking and writing task that could facilitate the experiences of meta-emotion. Further, direct paths were also added from Meta-Emotion to the dependent variables because the health outcomes were hypothesized to have occurred only after adequate self-reflection, which could have been instigated by meta-emotions during and after the experiment.

The levels of the independent variable that were tested in the next model were Movie+writing, Script+writing, and Movie-only. The full sample,  $N = 200$ , was used in this exploratory model and the Writing-only condition was the comparison category when the independent variable was dummy-coded. This model (Figure 10) was created to test the mediation and indirect effects of the variable Meta-Emotion in the presence of two other mediators: Meaningful Affect and Change in Self-Compassion. The overall model fit was good:  $\chi^2 = 15.80$ ,  $df = 10$ ,  $p = .11$ , CFI = .98, RMSEA = .05 (90% confidence interval: .000 - .102), SRMR = .04.

As expected, the paths from the independent variables to Meaningful Affect were highly significant; for Movie+writing,  $\beta = .48$ ,  $SE = .20$ ,  $p < .001$ , for



Script+writing,  $\beta = .30$ ,  $SE = .20$ ,  $p < .001$ , and for Movie-only,  $\beta = .53$ ,  $SE = .20$ ,  $p < .001$ . As anticipated, these path coefficients are nearly identical with those in the initial model. Moreover, they showed that the experimental conditions containing exposure to a movie predicted meaningful affect more strongly compared to exposure to a text-based drama in the Script+writing condition. Additionally, the three causal paths from the independent variable to Meta-Emotion also saw significant path coefficients; for Movie+writing,  $\beta = -.24$ ,  $SE = .23$ ,  $p < .05$ , for Script+writing,  $\beta = -.34$ ,  $SE = .21$ ,  $p < .001$ , and for Movie-only,  $\beta = -.31$ ,  $SE = .23$ ,  $p < .01$ .



**Figure 10** Third Exploratory Path Analysis and Standardized Coefficients

Note: †  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

Movie+writing, Script+writing, and Movie-only were dummy-coded as dichotomous variables, respectively: 1 = experimental condition, 0 = all other conditions. The full sample was used, which included all cases in all four conditions. Measurement error was also corrected in this model.

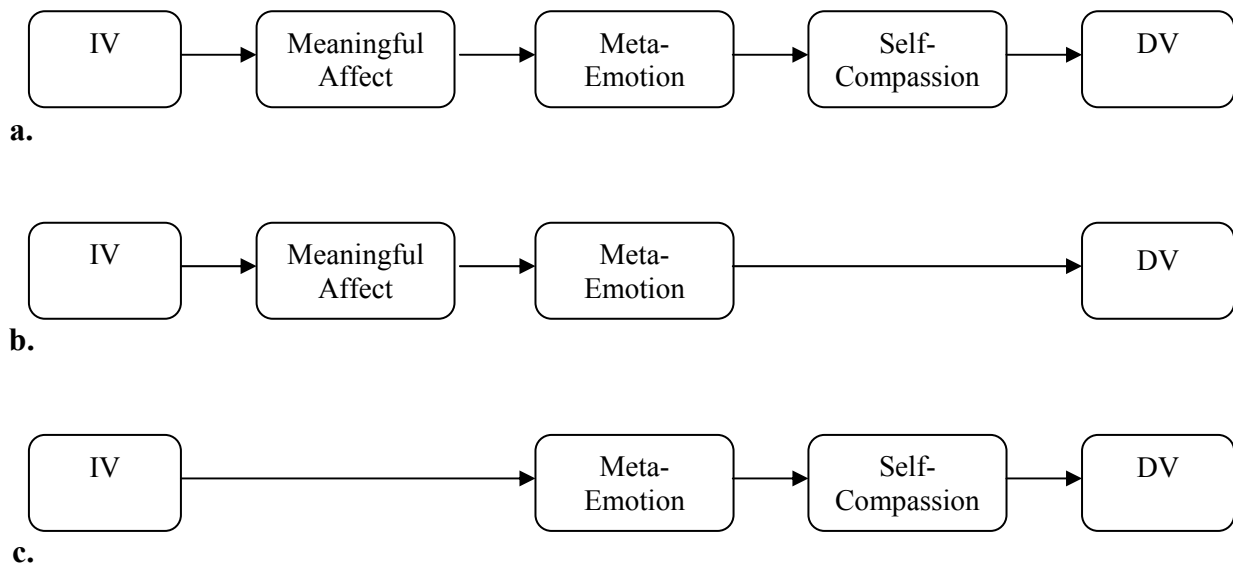
From Meaningful Affect to Meta-Emotion, the path coefficient was also highly significant:  $\beta = .49$ ,  $SE = .09$ ,  $p < .001$ . From Meta-Emotion to Change in Self-

Compassion, the path was marginally significant:  $\beta = -.17$ ,  $SE = .07$ ,  $p = .07$ . It is worthy of note that this path was negative, suggesting that negative evaluations of one's primary emotions or, more simply, unfavorable meta-emotions during the experiment gave rise to positive improvements in self-compassion; on the contrary, favorable meta-emotions of meaningful affect marginally diminished self-compassion. Subsequently, the paths from Change in Self-Compassion to the psychological well-being measures were both highly significant in the anticipated negative direction; for Change in Depression,  $\beta = -.49$ ,  $SE = .57$ ,  $p < .001$  and for Change in Anxiety,  $\beta = -.42$ ,  $SE = .50$ ,  $p < .001$ . Further, the path from self-compassion to general health was also significant, where  $\beta = .26$ ,  $SE = .07$ ,  $p < .01$ . However, the path to Change in Physical Symptoms was not significant,  $\beta = -.10$ , n.s.

For the direct paths from Meta-Emotion to the dependent variables, there was a significant path to anxiety, in the expected negative direction:  $\beta = -.17$ ,  $SE = .34$ ,  $p < .05$ . Further, the path to Change in Physical Symptoms showed a weak trend in the unanticipated, positive direction:  $\beta = .13$ ,  $SE = 1.02$ ,  $p = .13$ . The paths to the remaining two dependent measures were not significant; for Change in General Health,  $\beta = .02$ , n.s. and for Change in Depression,  $\beta = -.08$ , n.s.

The diagrams in Figure 11 illustrate the three causal chains of interest in the next series of tests of indirect effects. Bootstrapping procedures using 2000 bootstrap samples and bias-corrected confidence intervals were employed to test the mediating role of the multiple mediators mentioned above on the relationship between Tragic Reflection and health outcomes. The combination of the three mediators produced a very weak total indirect effect for the Script+writing condition on Change in Physical

Symptoms only:  $\beta = -.03, p = 1.1$ . At this juncture, it is not obvious whether this negative beta weight could be interpreted as evidence of catharsis since there are multiple causal chains at work that may or may not give rise to indirect effects in the expected negative direction. Further, since there was a very weak indication of mediation for the causal chains leading to anxiety from the Script+writing condition, it is conceivable that there are other significant indirect paths to the other health measures aside from the path leading to Change in Physical Symptoms. Consequently, the next set of analyses examined not only the three causal links of interest separately, but also inspected the mediations to the other health measures.



**Figure 11** Diagrams of the Causal Chains of Interest in the Third Exploratory Model.

For the first causal chain featuring Meaningful Affect, Meta-Emotion, and Self-Compassion as mediators (Figure 11a.), none of the indirect paths were significant.

For the second causal chain featuring Meaningful Affect and Meta-Emotion as mediators (Figure 11b.), the paths from the independent variables to Change in Anxiety

were significant; for Movie+writing,  $\beta = -.04, p < .05$ , for Script+writing,  $\beta = -.02, p < .05$ , and for Movie-only,  $\beta = -.04, p < .05$ . In other words, this analysis revealed significant indirect effects for two mediators arranged in a causal chain – Meaningful Affect and Meta-Emotion – on the relationship between all the experimental conditions involving exposure to human drama and lesser anxiety. Further, the indirect effects from the Movie+writing condition to Change in Physical Symptoms through Meaningful Affect and Meta-Emotion was also analyzed and yielded unexpected results; a marginally significant, but positive indirect effect was found,  $\beta = .03, p = .09$ . For the Script+writing condition to Change in Physical Symptoms through the two mediators, the effect was marginal as well,  $\beta = .02, p = .09$ . Next, the same analysis for the Movie-only condition also showed a weak trend towards mediation,  $\beta = .03, p = .11$ . These results suggested a tendency for deterioration in perceived physical health, which is counter-intuitive. The analysis of this causal chain revealed mixed results regarding the cathartic effect through meaningful affect and meta-emotions. On the one hand, Tragic Reflection at all three levels positively predicted lesser anxiety within 4 weeks after exposure through the two mediators, meaningful affect and meta-emotion. Conversely, the same indirect effects also marginally predicted a decrease in physical health at the 4-week follow-up. These mixed results from an exploratory model suggested that meta-emotion is likely not a direct mediator for catharsis. Alternatively, perhaps the cathartic effect involving meta-emotions requires another mediator between itself and the health outcome variables that involved cognitive processes beyond reflective judgments, e.g., changes in self-perception. The next causal chain examined this prospect.

For the third causal chain featuring Meta-Emotion and Change in Self-Compassion as mediators (Figure 11c.), the indirect paths were marginally significant at best. All three indirect paths from the independent variable to Change in General Health showed weak, but positive trends; for Movie+writing,  $\beta = .01, p = .10$ , for Script+writing,  $\beta = .02, p = .13$ , for Movie-only,  $\beta = .01, p = .12$ . Further, the indirect effects through these mediators to depression and anxiety also showed weak trends in the anticipated direction for the Movie+writing condition only; for Change in Depression,  $\beta = -.02, p = .13$  and for Change in Anxiety,  $\beta = -.02, p = .14$ . These analyses arguably support the notion that the mere experience of meta-emotions after undergoing Tragic Reflection is not cathartic without further changes in self-perceptions.

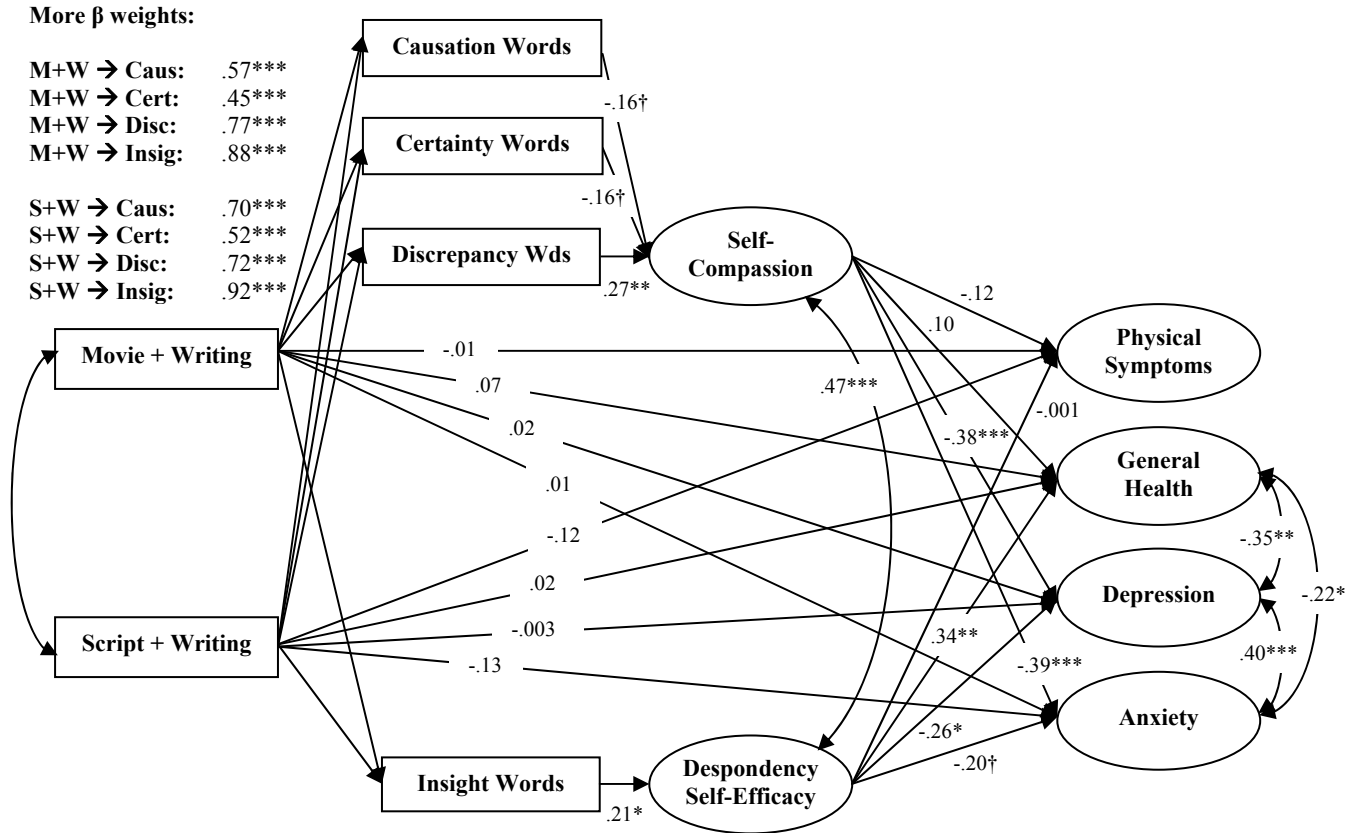
One final analysis was conducted using this model to test whether the three paths from the experimental conditions to Meta-Emotion were significantly different from each other. First, the Movie+writing and Script+writing conditions were compared using the same technique of constraining path coefficients as outlined above; the paths were constrained (i.e., both path coefficients set to “a”), then the chi-square model fits between the unconstrained and constrained models were compared. The constrained model produced the following fit statistics:  $\chi^2 = 17.01, df = 11$ . Using some simple arithmetic,  $\Delta \chi^2 = 15.80 - 17.01 = -1.21, \Delta df = 1$ , and looking up the critical value of chi-square in a table, these models did not differ significantly, according to the chi-square distribution. So, the Movie+writing and Script+writing conditions did not differ as predictors of unfavorable meta-emotion. Moreover, a comparison between Movie+writing and Movie-only using the same approach also revealed no significant

difference in model fit:  $\Delta \chi^2 = 15.80 - 16.47 = -0.67$ ,  $\Delta df = 1$ . In sum, all three conditions, Movie+writing, Script+writing, and Movie-only, did not differ as predictors of unfavorable meta-emotion.

*The fourth exploratory model: Word-use as mediators.* The final exploratory model (Figure 12) investigated the use of specific categories of words during the writing task, e.g., pronouns or emotionally-valenced words, as mediating variables. Since Tragic Reflection involves self-reflection, words in the category of ‘cognitive processes’ were of particular interest. Four sub-categories of cognitive process words were explored: causation words (e.g., because, effect, and hence), certainty words (e.g., always and never), discrepancy words (e.g., should, would, and could), and insight words (e.g., think, know, and consider); further descriptions of these categories could be found in Tausczik and Pennebaker (2010). Causal, discrepancy, and insight words were chosen for analysis because they seem to be directly relevant to the experimental writing task, where participants were instructed to “make sense” of their thoughts and feelings, rationalize their origins and meanings through writing; causal words may be used to explain the source of one’s thoughts and feelings or the story plot, discrepancy words may be used to ponder the possibility of future change in oneself, and the use of insight words imply recognizing concepts or the gaining of understanding. Consequently, this model examined the mediation and indirect effects of six mediators: Causation Word Use, Certainty Word Use, Discrepancy Word Use, Insight Word Use, Change in Self-Compassion, and Change in Self-Efficacy in Regulating Despondency.

Due to design-inherent issues, cases in the Movie-only condition were not included, so the analysis was of a sub-sample,  $N = 148$ . Further, the comparison

category when dummy-coding the independent variable was the Writing-only control group. The overall model fit was excellent:  $\chi^2 = 28.33$ ,  $df = 33$ ,  $p = .70$ , CFI = 1.00, RMSEA = .00 (90% confidence interval: .000 - .048), SRMR = .04.



**Figure 12** Fourth Exploratory Path Analysis and Standardized Coefficients

Note: †  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

Movie+writing and Script+writing were dummy-coded as dichotomous variables, respectively: 1 = experimental condition, 0 = all other conditions. The sample used in this analysis excluded cases in the Movie-only condition. Measurement error was also corrected in this model.

Next, bootstrapping procedures using 2000 bootstrap samples and bias-corrected confidence intervals were employed to test the mediating roles of six mediators on the relationship between Tragic Reflection and health outcomes. This analysis revealed significant and marginally significant mediations for the Movie+writing and

Script+writing conditions on general health. For Movie+writing, the total indirect effects were significant for Change in General Health,  $\beta = .07, p < .05$ , whereas for Script+writing, the total indirect effects were marginal for this dependent variable,  $\beta = .06, p = .11$ . Based on the values of the total standardized indirect effects and their significance values generated in this analysis, it seemed likely that some of the causal chains may produce significant indirect effects while others may not. Subsequently, each indirect path leading to all the health measures, except physical health symptoms, were examined independently. The next set of analyses separately examined the indirect effects across the four causal chains, from Tragic Reflection to the health measures, through each of the four word categories of interest.

Two sub-categories of words used in the writing task were found to have significant indirect effects on the two mental health outcomes, in the anticipated negative direction: discrepancy and insight words. For the first causal chain where Discrepancy Word Use and Self-Compassion were mediators, the paths from the independent variables to depression and anxiety were significant; for Movie+writing to Change in Depression,  $\beta = -.08, p < .01$ , for Movie+writing to Change in Anxiety,  $\beta = -.08, p < .01$ , for Script+writing to Change in Depression,  $\beta = -.07, p < .01$ , and for Script+writing to Change in Anxiety,  $\beta = -.08, p < .05$ . Moreover, for the second causal chain where Insight Word Use and Change in Self-Efficacy in Regulating Despondency were mediators, the indirect effects of Tragic Reflection on depression and anxiety were significant and marginal, respectively, in addition to the significant indirect effects on general health; for Movie+writing to Change in Depression,  $\beta = -.05, p < .05$ , for Movie+writing to Change in Anxiety,  $\beta = -.04, p = .06$ , for Movie+writing to Change in



General Health,  $\beta = .06, p < .05$ , for Script+writing to Change in Depression,  $\beta = -.05, p < .05$ , for Script+writing to Change in Anxiety,  $\beta = -.04, p = .06$ , and for Script+writing to Change in General Health,  $\beta = .07, p < .05$ .

These findings suggest that the different sub-characteristics of the cognitive mechanisms in self-reflection make a difference in facilitating therapeutic effects of Tragic Reflection. Firstly, the attempt to think about and understand the fictional human drama using insight words gave rise to positive changes in emotional self-efficacy and improved mental well-being in the subsequent 4-week follow up; this causal link, which involved greater use of insight words, produced the more robust results for the dependent variables with the additional detection of improvements in general health. Secondly, the tendency to state one's intentions (e.g., 'would') and consider future possibilities (e.g., 'could') through the use of discrepancy words also increased individuals' self-compassion and gave rise to positive changes in mental well-being at follow up; this result aligns itself with self-discrepancy theory (Higgins, Vookles, & Tykocinski, 1992), which has linked self-beliefs (i.e., the interrelations between the actual and ideal selves) with health outcomes (Pennebaker and King, 1999).

The other two causal chains involving the variables Causation Word Use and Certainty Word Use were marginally significant, but, interestingly, indicated negative indirect effects on health outcomes. For the third causal chain where Certainty Word Use and Self-Compassion were mediators, the indirect effects from the independent variable to depression and anxiety were marginally significant; for Movie+writing to Change in Depression,  $\beta = .03, p = .07$  and for Movie+writing to Change in Anxiety,  $\beta = .03, p = .07$ ; for Script+writing to Change in Depression,  $\beta = .03, p = .07$  and for

Script+writing to Change in Anxiety,  $\beta = .03, p = .07$ . Further, for the fourth causal chain where Causation Word Use and Self-Compassion were mediators, the indirect effects of Tragic Reflection on depression and anxiety were also marginally significant; for Movie+writing to Change in Depression,  $\beta = .03, p = .06$  and for Movie+writing to Change in Anxiety,  $\beta = .04, p = .07$ ; for Script+writing to Change in Depression,  $\beta = .04, p = .06$  and for Script+writing to Change in Anxiety,  $\beta = .04, p = .07$ .

These results further suggest that specific sub-characteristics of cognitive mechanisms during self-reflection may also give rise to negative changes in self-compassion and its mental health correlates. In particular, the high usage of certainty words during contemplation, which indicates single-mindedness and strong beliefs in an existing idea, led to near significant deterioration in mental well-being in the following weeks. Moreover, the use of causation words, which signifies a tendency to rationalize and “create causal explanations to organize the participant’s thoughts” (Tausczik & Pennebaker, 2010, p.36), also gave rise to marginally significant decreases in mental health within 4 weeks. Coupled with the findings above for Discrepancy and Insight Word Use, these sets of results make a fairly clear case for the importance of particular aspects of cognitive mechanisms in processing tragic emotions towards mental well-being; a tendency to be flexible with self-perceptions is therapeutic, whereas an effort to remain uncompromising is not beneficial.

In short, compared to the control group, both the Movie+writing and Script+writing conditions promoted improvements in mental health when individuals reflected on the human drama using a greater amount of discrepancy-reducing and insight-gaining cognitions, whereas marginally poorer mental health resulted with

greater focus on certainties and causal explanations for events during contemplation. These indirect effects were applicable across the two different modes of conveying human drama, either movie-based or text-based.

#### *Gender Differences in the Path Models*

The six models above were also examined with female-only samples,  $n = 159$  to 120. The results and interpretations that follow focus only on the larger pattern of findings that emerged from analyzing this female sub-sample. For the second hypothesized model, the path from the Movie+writing condition to Identification became significant,  $\beta = .27, p < .05$ , which provides support for H2 for females only; the full sample produced only a marginally significant path. Moreover, in the interest of scrutinizing the indirect effects, the path from Identification to Change in Self-Efficacy in Regulating Despondency was also inspected and only a very weak trend was found:  $\beta = .14, p = .17$ . Therefore, for female participants, exposure to cinematic human drama coupled with the writing task indeed predicted greater identification compared to imagining a traumatic episode through a movie script plus writing, but this enhancement in empathy did not, in turn, increase future self-efficacy in handling sadness within the same model.

Additional results from these female-only analyses indicated that the indirect effects for the second and third exploratory models (comparable to Figure 9 and Figure 10) were generally weaker such that they were either marginally significant or not significant at all. In the former, the causal links from both the Movie+writing and Movie-only conditions to lower depression through Identification and Change in Self-Efficacy in Regulating Despondency were only marginally significant, whereas this indirect effect was significant using the full sample. Further, the indirect effects to

lesser anxiety were not significant, whereas the full sample yielded a marginal significance. Next, for the third exploratory model, the indirect effects through each of the twelve causal links from the three experimental conditions to all four health outcomes – mediated by Meta-Emotion and Change in Self-Compassion (similar to Figure 10) – receded into the region of non-significance. On the other hand, the fourth exploratory model produced results of indirect effects that did not differ much between the female-only sample and the full sample. One additional finding worth noting is a weak trend towards a deterioration in physical health for female-only participants who exhibited a greater use of Causation Words; this outcome is congruent with the interpretation of results from analyzing the full sample. These weak trends toward greater physical symptoms for the female-only sample were identical for both the Movie+writing and Script+writing conditions,  $\beta = .01, p = .14$ . Taken together, these supplementary results suggest the possibility of stronger indirect health effects for males compared to females after undergoing “tragic reflection.” Nevertheless, these results should be received with caution because the sample size for three of the six path models inspected for gender differences (i.e., the second hypothesized model and the second, third, and fourth exploratory models) were rather low,  $n = 120$  to  $124$ , for structural analysis (Kline, 2005).

### *Summary of Results*

Generally, a number of the hypotheses that made up the initial model were not supported, but the research question, which probed the indirect effects of catharsis, uncovered evidence for catharsis after reflecting on tragic emotions. The following five hypotheses were not supported: H1a, H1b, H3, H5, and H6. The data generally showed very weak trends for the hypothesized direct effects of movie-based Tragic Reflection

(H1a) and text-based Tragic Reflection (H1b) on improved health. Greater identification with fictional characters in the human drama also did not lead to increased self-efficacy in regulating sad affect at the 4-week follow-up (H3). Next, though all three experimental manipulations produced a high level of meaningfulness, there was no significant difference in degree of meaningful affect for individuals who self-reflected on the human drama versus those who did not (H5). Lastly, the positive influence of meaningful affect on self-compassion was also not evident in the hypothesized model (H6).

On the other side, the other five hypotheses were either fully supported or showed partial support. When compared to text-based Tragic Reflection, its movie-based counterpart was a marginally stronger predictor of identification with characters in the human drama (H2). Further, the remaining relationships in the hypothesized model that involved the nonimmediately observed, self-perception mediators found some empirical support in the data. Though a greater self-efficacy at controlling negative emotions did not lead to fewer physical health symptoms, it positively affected general health. Thus, the hypothesized relationship between self-efficacy and physical health was partially supported (H4a). Moreover, the influence of self-compassion on physical health followed a similar pattern of partial empirical support (H7a) where only general health underwent significant improvement, not physical symptoms. Subsequently, the influence of individuals' emotional self-efficacy on psychological health found firm support (H4b). Again, self-compassion saw the same pattern of enhancing mental well-being after 4 weeks (H7b).

The exploratory models revealed compelling evidence for small but significant indirect effects of catharsis via Tragic Reflection. Firstly, cinema-based Tragic Reflection, the highest level of the independent variable, indirectly induced catharsis at 4 weeks after watching and contemplating a human drama. The explanatory mechanisms for cinema-based catharsis were either a greater self-efficacy in handling sad emotions or a combination of character identification with this form of self-efficacy. Moreover, catharsis was also slightly observable after cinema-based Tragic Reflection when mediated by unfavorable meta-emotions and improved self-compassion. Nonetheless, meta-emotion is not likely an effective mediator for catharsis and may actually diminish physical health if reflective judgments on tragic emotions were not followed by positive changes in self-kindness; the potentially negative physical health costs of favorable meta-emotions applies across all levels of Tragic Reflection. Thirdly, the types of cognitive processes that transpired during Tragic Reflection can be indirectly cathartic, where individuals who were flexible in their beliefs benefited in terms of better self-perceptions and well-being, compared to those who contemplated merely to confirm their present beliefs.

The examination of gender differences yielded moderately interesting results. Firstly, the hypothesis that predicted greater levels of identification in “tragic reflection” through cinema compared to reading (H2) was supported for female participants only. In light of the fact that the stimuli in this study used male protagonists who were parents (fathers), greater identification by female participants of typical college age compared to a mixed gender sample appears reasonable. The more noteworthy pattern of results in these analyses of gender differences lie in the potentially greater health effects of “tragic

reflection” on males rather than females. Perhaps the novelty effect of emotional expression and clarification in the experimental manipulation for males may have promoted greater health benefits compared to their female counterparts for whom the socially-sanctioned practices of emotionality are tried and habitual. However, these ancillary results for gender differences, which were based on somewhat low sample sizes, require more substantiation in future studies.

## Chapter 4

### DISCUSSION

This study investigated the potential of human drama in promoting catharsis and some of the explanatory mechanisms behind the cathartic effect. Based on a broadened conceptualization, a new catharsis theory was tested for its capacity to predict health outcomes and explain the psychological processes that underlie catharsis. Due to the controversy surrounding the putative existence of this concept in the field of communication and psychology, the results presented in this study supplied the initial empirical evidence for the cathartic response and its measurability via self-reports. Though a number of the hypotheses posed were not supported by the data, subsequent exploratory models provided intriguing findings that support the indirect effects of Tragic Reflection on health improvements and explain some of the mechanisms behind catharsis. Moreover, the results of these exploratory analyses also called attention to several variables involving cognition that may inform future catharsis research. In this section, the study results are summarized and discussed in the light of general implications, contributions to media psychology, study limitations and caveats, and suggestions for future research.

#### *Summary and Explanation of Hypotheses*

The first set of hypotheses (H1a and H1b) predicted that exposure to human drama – cinematically and via a movie script – followed by self-reflection would give rise to improvements in physical and mental health. Though H1a and H1b were not supported, slight indications of a causal relationship in the hypothesized direction between the independent and dependent variables were found for each of the



experimental conditions. Two of the four dependent measures, Change in General Health and Change in Anxiety, quantified a weak trend towards improvements in health and well-being when the three experimental conditions were compared to the control group; the Script+writing condition yielded a trend towards lesser anxiety within a 4-week period, whereas the Movie+writing and Movie-only conditions produced a positive trend towards better general health within 4 weeks. This finding was not unexpected because the operationalization of self-reflection via the truncated and fiction-based expressive writing was not an exact replication of the typical writing procedure in social psychology research. Only one previous work had applied a shortened (30-minute) writing task (Greenberg et al., 1996) and tested its effects on imagined trauma, i.e., the actual trauma or other people, whereas this study used an even shorter procedure (20 minutes) that was focused on fictional works, i.e., Hollywood movies. In light of the novelty of this study design, the faint evidence of some nonimmediate, but direct health benefits from contemplating tragic drama encouraged further inquiry into the cathartic process, as seen in the exploratory models to follow.

The second hypothesis predicted that self-reflection on a cinematic human drama (Movie+writing) would produce a greater degree of identification compared to contemplating a text-based human drama (Script+writing). This hypothesis received marginal support from the data. An explanation for this result rests on the capacity of the process of reflection in normalizing the level of identification in both modes of conveying a human drama. Thus, despite the presumed capacity of movies in eliciting higher audience empathy, compared to the mere reading of a movie script, the post-

drama writing task could have augmented the individual's identification with the fictional characters after some thoughtful ruminations; eight of the ten identification measurement items referred to the main character(s) rather than the story. Nevertheless, the richer audiovisual nature of cinematic presentations likely provided the Movie+writing group with a more intense narrative experience compared to the Script+writing group, which in turn enabled marginally greater perspective-taking. Overall, Tragic Reflection through cinema facilitated marginally greater character identification compared to reflecting on tragic drama through a movie script.

The third hypothesis linked identification with affective self-efficacy in the positive direction, but that association was not supported. The scores for this self-efficacy variable were initially checked for a possible ceiling effect, but no obvious indicators were found; across all conditions and time points, participants' mean scores ranged from 4.36 to 4.83, which were only one unit above the midpoint of its 7-point rating scale. In short, these participants reported moderate levels of affective self-efficacy in general. Ruling out the likelihood of a ceiling effect, two possible explanations for the lack of empirical support are offered. Firstly, the emotional self-efficacy scale used in this study included the subscales for sadness and anger. Self-efficacy in regulating both despondency and anger were measured using this single variable, which may have weakened its predictive power since participants' responses centered on sadness rather than anger. One of the exploratory models addressed this possibility and produced some significant findings. Secondly, this study theorized the relationship between identification and affective self-efficacy through an intermediate concept known as aesthetic distance (Scheff, 1979) without actually measuring it

directly. In retrospect, the sense of safety and control while engaging a human drama at optimal narrative distance may be a crucial linkage between identification and the development of greater self-efficacy in handling negative emotions, particularly sad affect. These possibilities may explain the lack of evidence for the causal connection between identification with distressed characters and self-efficacy in regulating both distress and anger.

The fourth set of hypotheses (H4a and H4b) predicted a positive relationship between emotional self-efficacy and health benefits; these predictions were partially supported. Positive changes in self-efficacy in regulating negative affect was positively associated with improvements in general health, but not linked to reductions in physical health symptoms. The latter may be explained by the fact that the frequency of physical symptoms among the sample of typically young college-aged participants was relatively low to begin with; the experimental manipulation was not capable of significantly improving the already robust physical health of these individuals. For example, the scores of this physical health variable (in percentage) across every condition and measurement period ranged from 24.54% to 29.88%; these values represent symptoms scores prior to calculating the change score. Nonetheless, the measure of general health did include items that tap into physical health, which qualified the partial support for the causal link between affective self-efficacy and physical health improvements. On the other hand, the benefits of increased self-efficacy towards lower depression and lesser anxiety were fully supported. This finding was expected, especially in light of previous studies (e.g., Bandura et al., 2003) and a study review (Karademas, 2006) that positively linked self-efficacy with mental health. In short, increases in individual's perceived

control of their negative emotions over a 4-week period predicted health improvements, particularly psychological health.

The fifth hypothesis, which posited a competing difference between the Movie+writing and Movie-only conditions on the relationship between Tragic Reflection and meaningful affect, was not supported. Even though both conditions significantly predicted higher meaningful affect compared to the control group, they did not exceed each other in their capacity to arouse meaningfulness. By extension, the inclusion of self-reflection into tragic drama exposure did not enhance meaningful affect above and beyond its induction through cinematic means. One explanation for this finding rests on the possibility that while meaningful affect embodies “the feelings associated with human connectedness and human vulnerabilities” (Oliver, 2008, p.44), reflective cognition on these broad themes of *the human condition* may facilitate insight-gaining without intensifying the affective state. This lack of empirical support for the enhancing effects of contemplation on meaningful affect also suggested that the latter is not as highly influenced by introspection as it is by an external stimulant that depicts human suffering. On the other hand, when compared to the Tragic Reflection via text-based media (the Script+writing condition), the movie conditions did inspire greater meaningful affect. This auxiliary finding further confirmed the emotional impact of cinematic narration compared to reading-based storytelling, particularly in eliciting meaningfulness. Moreover, the means for the variable Meaningful Affect across all conditions and all three time points were just slightly below the midpoint of its 7-point rating scale, ranging from 2.54 to 3.73; this variable seems far off from a ceiling effect as a potential explanation for this non-significant finding. In short, different modes of

storytelling (text versus audiovisual) had an impact on meaningful affect, but not the processing of one's emotional upheavals.

The lack of support for the sixth hypothesis may be related to the non-significant results in the fifth hypothesis; in the former, greater meaningful affect did not predict improvements in self-compassion. As seen in the discussion on the fifth hypothesis, meaningfulness could be intensified by a more emotionally captivating medium (i.e., the movie rather than the movie script) but not by the additional effort of reflecting on the human drama. Thus, the absence of a relationship between meaningful affect and self-compassion may lie in the missing link between the externally-stimulated emotions, e.g., compassion for a fictional character, and self-directed kindness. Whereas compassion may arise from witnessing the tribulations of others, self-compassion “involves being caring and compassionate towards oneself in the face of hardship or perceived inadequacy” (Neff et al., 2007, p.140). So, it is likely that the arousal of meaningful affect via human drama did not promote the introspection of one's own troubles or perceived flaws. Moreover, unlike the instances of self-empathy that were promoted in cases of clinical psychotherapy (Greenberg et al., 1996), the healthy and normally-functioning participants in this study may not carry the necessary psychological baggage, e.g., a similar negative life event or one of comparable emotional intensity, to make the shift from compassion for others to self-compassion. Thus, this non-significant finding suggests the possibility of either an unmeasured link related to soul-searching that arises prior to a change in self-compassion, or the moderation of self-compassion by individual's life events that resonate with the stimulus human drama.

The seventh and final set of hypotheses (H7a and H7b) predicted a positive relationship between increases in self-compassion and health gains. H7a, which predicted physical health benefits, was partially supported, whereas H7b, which expected mental health improvements, was fully supported. A very weak trend was observed for the relationship between improved self-compassion and fewer physical health symptoms in the following 4 weeks after reflecting on the human drama. As discussed in the fourth hypothesis above, the use of a youthful and vigorous undergraduate sample may have been responsible for this apparent floor effect of the physical health variable. Nonetheless, improvements in general health, where half of its self-report items involved physical health, were causally linked to self-compassion. Additionally, it is possible that the abbreviated 20-minute writing session that was further truncated to a single writing session, from the typically three sittings, weakened the potential cathartic effects of Tragic Reflection on physical wellness. On the other side, positive changes to self-compassion strongly predicted lower depression and lesser anxiety. Based on previous works that found correlations between self-compassion and psychological health, including anxiety and depression (Neff, 2003b; Neff et al., 2007), this finding was not unexpected. In sum, enhanced self-compassion over a 4-week period led to better health, especially mental well-being.

#### *Summary and Explanation of Exploratory Models*

After testing the hypothesized model, four other path analyses were conducted to investigate the research question. The design of these exploratory models were based on the first path model (Figure 3) as a starting point and was systematically modified to explore the cathartic effect through various arrangements of multiple mediators. Mediation analyses of four different arrangements of multiple mediators were

performed to evaluate the indirect effects of Tragic Reflection on catharsis. The multiple mediators, not all of which appeared together in one single model, were as follows: Meaningful Affect, Change in Self-Compassion, Change in Self-Efficacy in Regulating Despondency, Identification, Meta-Emotion, and four other word-category variables (i.e., types of words used during written self-reflection).

*The role of emotional self-efficacy and identification in catharsis.*

Contemplating a cinematic human drama, through improved self-efficacy in handling despondency, indirectly gave rise to greater general health, lower depression, and lesser anxiety, compared to the control group. Reflecting on a human drama through cinema resulted in greater capacity at promoting catharsis by way of improving the individual's self-efficacy in handling sad emotions. The narrative impact of cinema has drawn comparisons to an emotion machine (Tan, 1996). Coupled with an opportunity to reflectively process these upheavals, the viewer's sense of control over their future feelings of despondency increased over the course of 4 weeks. Subsequently, this emotional self-efficacy gave rise to health improvements, particularly psychological well-being. In short, contemplating a cinematic human drama is indirectly cathartic through increases in individuals' perceived ability in handling sadness in the coming weeks, compared to the thinking-only control group.

When the variable Identification was included along with the self-efficacy variable in a causal path, contemplating a movie-based human drama, again, indirectly influenced greater general health and lower depression (anxiety was only marginally lower); it is worth noting that the subtle difference between the two operationalizations of affective self-efficacy was significant, where the use of only its despondency

subscale strengthened the indirect effects, particularly the link between identification and affective self-efficacy. This model, which compared movie-based and text-based reflection, showed that the former was more effective in promoting catharsis by virtue of its marginally superior capacity at evoking audience identification. On the other hand, merely watching a tragic movie showed very weak indirect effects to some of the health outcome variables; this observation could be explained by its relatively tenuous link with identification. Overall, this model provided further empirical support for cinema's greater capacity for reflection-focused catharsis, compared to reading and contemplating or movie-watching without subsequent self-reflection on the tragic story.

*The mixed effects of meta-emotion on health outcomes.* Mixed results for the indirect effects of catharsis were obtained through the following multiple mediators: Meaningful Affect, Meta-Emotion, and Change in Self-Compassion. When mediated by Meaningful Affect and Meta-Emotion, Tragic Reflection, regardless of its various intensities, indirectly produced lesser anxiety, but it also marginally increased physical health symptoms in the subsequent 4 weeks. One explanation for these mixed health outcomes is that favorable or unfavorable meta-emotions without any further transformations in self-perceptions in the coming weeks was not therapeutic and could instead have a negative effect on physical health. It was evident from the mediational analyses featuring meta-emotions that this variable did not facilitate catharsis directly. Conversely, there was some evidence that unfavorable meta-emotions promoted a trend towards improved general health, lower depression, and lesser anxiety, but only after individuals developed more empathy and kindness towards themselves. This finding supports the notion of Tragic Reflection as emotional calisthenics because it requires



effort and its effects are nonimmediate; such emotional exercise is capable of generating health benefits if individuals challenge themselves through tragic fiction to change their self-perceptions. In sum, catharsis through mediated human drama can occur if individuals make the effort to reassess and raise their sense of self-compassion.

*The role of word use in catharsis.* The analyses on categories of words used in participants' essays provided some explanation for improvements in self-perceptions and well-being. Specifically, the use of insight words during the process of self-reflection on a tragic story predicted positive changes in participants' self-efficacy in handling despondency in the subsequent weeks after undergoing Tragic Reflection. The use of insight words, such as *think* and *know*, indicated in aggregate the degree to which reflection occurred during the writing task. By using more insight words to process their affective upheavals, participants were likely able to compare themselves favorably against the suffering protagonists in the human drama and gain a greater perceived ability in handling future distressing emotions. In short, the process of comparing oneself with someone less fortunate could improve one's perceived ability in coping with future distress.

Therefore, the theory of *downward social comparison*, which hypothesized that "persons experiencing negative affect can enhance their subjective well-being through comparison with a less fortunate other" (Wills, 1981, p.245), could explain this causal relationship. In a study on sadness-inducing media, Kim (2007) argued that the process of downward social comparison may allow media users to benefit from comparing themselves to media characters; the author suggested that such introspective processes facilitate cognitive learning and "serve as cognitive resources for coping with sadness"

(p.14). Further, reflecting on fictional drama using more insight words also indirectly gave rise to catharsis in the form of improved general health, lower depression, and marginally lower anxiety. Thus, the contemplation of the troubles and suffering of fictional characters, with an emphasis on downward social comparison, is another cognitive pathway to catharsis.

Another indirect link to cathartic responses, as measured solely in improvements to mental health, involves the use of discrepancy words, e.g., *would* and *could*. As a sub-category of cognitive words (Tausczik and Pennebaker, 2010), discrepancy word use suggests not only the occurrence of self-reflection, but an effort to consider the disparity between one's actual self and ideal self. Self-discrepancy theory, which posits that individuals are motivated to attempt to match their self-concept with a desirable ideal state (Higgins, et al., 1992), is applicable to discrepancy word use because the latter represents an attempt to close the gaps in self-beliefs through contemplative verbal expression. Upon experiencing tragic emotions, participants were likely provoked or inspired to reexamine their actual selves against their ideal selves in the context of the story themes of loss and grief. These findings on discrepancy word use corroborated with previous works on the relationship between personality and well-being (Higgins, et al., 1992).

In the present study, a mechanism for the psychological health effects of discrepancy word use was positive change in self-compassion. The results of this exploratory analysis suggest that attempts to reexamine one's self-beliefs through mediated human drama could give rise to greater kindness towards oneself; this is likely due to the media-induced feelings of compassion being mirrored or reflected back upon

the participant via self-contemplation. Moreover, the media characters in the stimulus drama, as is often the case with tragic scenarios, are very unsympathetic toward themselves and show a lack of self-empathy in the face of sorrow. While vicariously feeling compassion for these suffering characters in wretched conditions, participants were likely encouraged to reconsider the discrepancy between the empathy they have for themselves and the self-kindness they ideally would aspire to. In short, when participants pondered the discrepancy in their self-beliefs in the wake of drama-induced emotions, their self-compassion rose, which then led to catharsis in terms of improvements in mental well-being.

On the other hand, there was some indication of an opposite indirect effect on mental health when other types of cognitive words were used, namely those that negatively influenced self-compassion. The use of causation and certainty words during written Tragic Reflection marginally predicted a decrease in self-compassion and, through indirect paths, a decline in psychological well-being in the following weeks. The findings for causation word use diverges from previous findings reported by Tausczik and Pennebaker (2010), where the greater use of causal words were linked to greater health gains. Nevertheless, this difference could be partially explained by the assumption that participants used descriptive causal statements to explain the plot of the drama during their writing; an exercise in logical thinking and comprehension is not likely a cathartic activity. Furthermore, the use of causal words, e.g., *because* and *effect*, and certainty words, e.g., *always* and *never*, are likely signposts of rigid reason-making and the reinforcing of one's beliefs. These cognitive mechanisms are less flexible types of rational thinking compared to insight-gaining and discrepancy-reducing expressions

via language. Reflecting on human drama using causation and certainty words can validate one's existing beliefs about life events, but does not foster positive changes to self-kindness. Subsequently, by focusing on confirming prior viewpoints, participants were unable or unwilling to change their beliefs and remained unsympathetic towards their own selves when negative emotions were aroused. In sum, when participants contemplated a human drama without making an effort towards changing their present beliefs in common humanity and adopting greater self-kindness, psychological health marginally worsened and catharsis did not occur. These findings stand in contrast to the benefits of using more insight and discrepancy words during Tragic Reflection, which enabled individuals to remain mentally elastic and become more resilient.

Taken together, future studies may attempt to optimize the cognitive processing of tragic emotions towards catharsis by encouraging participants to sharpen their self-reflections by focusing more intently on potential insights into lived experience and self-belief discrepancies through the human drama, while minimizing contemplations that express rigid, inflexible viewpoints regarding the drama and its characters. These potential strategies for cathartic reflection may be facilitated by new writing instructions in a future experiment. Alternatively, in light of the speculated health mechanism of “constructing more resilient possible selves” (Greenberg et al., 1996, p.599), an individual difference, such as degree of resilience, may be measured to capture this variable that may motivate the tendency to express a more flexible outlook during tragic reflection. In brief, it is possible that either language choices during expressive reflection or a trait-like variable may be augmenting the processes that lead to catharsis. Yet, these findings should be interpreted with caution since the word use analyses

employed here were based on computer-automated counts of the various categories of words without accounting for sentence context. For example, the tone of an expression or sentence such as “Don’t you think?” may be written to express a sardonic pose rather than explicitly indicate reflective thinking. Nevertheless, the strength of these findings rests on the opposing set of results in the dependent variables as a function of the category of words used during Tragic Reflection. To summarize, when participants used insight and discrepancy words to reevaluate their beliefs about common humanity, their psychological health showed improvements, whereas those who used causation and certainty words to confirm and strengthen their existing beliefs about human life events exhibited marginal declines in their well-being in the following weeks.

#### *Theoretical Implications*

*Nonimmediate media effects.* Previous catharsis research had generally interpreted the focal construct as the purgation of undesirable emotions by the mere provocation of those affective states. In media psychology, Zillmann (1998) also interpreted catharsis as emotional venting, where “all drama that evokes strong aversive emotions is capable of diminishing such emotions outside of drama consumption” (p.5). In the same review, largely contradictory results to the catharsis principle were found in various experimental studies: “[c]ountercathartic consequences were observed instead” (Zillmann, 1998, p.10). In response, this dissertation has endeavored to conceptualize catharsis broadly by taking an alternate perspective based on clarification and insight-gaining. Subsequently, this contemplation-based catharsis study presented evidence for cathartic effects at 4 weeks after drama consumption, in the form of positive health outcomes, particularly increased mental well-being. In light of these findings, the calls to abandon catharsis research (Bushman, 2002) based on the purgation view seems

justified, but not those grounded on alternative conceptual definitions, e.g., clarification. In the present study, reflection-based cognitive processing that involves the transformation of self-perceptions presented empirical evidence for catharsis. Thus, these findings serve as initial demonstrations of the nonimmediate redeeming value of cinema-based tragic drama.

With the exception of some notable theories such as cultivation effects and social learning, media effects research regularly focuses on short-term outcomes. For example, empirical studies in news framing (Tewksbury & Scheufele, 2009), media priming (Roskos-Ewoldsen, Roskos-Ewoldsen, & Carpentier, 2009), and priming-based experiments in media effects (e.g., Shrum, 1997) have measured immediate outcomes of media exposure despite the theorizing of the constructs of interest, e.g., framing, as enduring effects. In the media psychology of tragic drama, the cathartic outcome has been conceptualized as occurring outside of the media experience proper, but short-range measurements were operationalized in the tradition of stimulus-response behaviorism. For instance, previous media-focused catharsis research monitored consequent stress and depression levels for up to two hours (Zillmann, 1998). In contrast, this current study exhibited a delayed effect in improved general health, lower depression, and lesser anxiety after a 4-week period. Therefore, within the domain of emotion and narrative-focused media effects research, this dissertation delineates an area of study that could expand the scope of media effects to longer term, delayed outcomes or after-effects.

*Health-enhancing mechanisms.* This study makes contributions to media psychology research by applying aspects of biobehavioral health and health psychology

to catharsis research. In the process of testing a revised catharsis theory, two underlying mechanisms for health effects, originally drawn from Greenberg et al.'s (1996) imaginary-trauma study, were empirically confirmed in the present study. Greenberg et al. (1996) offered two self-perception mediators to explain the nonimmediate benefits of emotional expression and processing – one centered on improving emotion regulation and the other on imagining more resilient future selves – of which the former was tested in this current study. Within the domain of affective regulation and in the context of handling imagined trauma, the authors presented the following three constitutive processes:

- (a) acquiring specific skills and strategies associated with affective awareness, tolerance, and modulation;
- (b) developing perceptions of control and self-efficacy in the context of aversive emotional arousal; and
- (c) developing self-empathy and acceptance of one's own emotional reactions (Greenberg et al., 1996, p.599).

This dissertation focused on the latter two components and found support for their mediating role in promoting catharsis through cinematic human drama. These findings extend the scope of the health effects of the processing of imaginary trauma based on real-life events to the realm of entertainment media consumption, particularly fictional narratives. Previous research in media psychology (e.g., Oliver & Raney, 2011) has shown that media users are not merely pleasure-seekers, but they also pursue meaningful media experiences to cope with fundamental questions about the meaning of life and related themes of common humanity. Thus, the study of the benefits of narrative-media use, coupled with cinema's enduring popularity as a universal art form,

remains a fertile research domain for understanding the therapeutic value of emotion processing within the safety of mass entertainment.

*Catharsis and mental well-being.* The prevailing findings of significant improvements in psychological well-being and general health rather than physical health (i.e., the variable Change in Physical Symptoms) are worth noting because many previous expressive writing studies have assessed affect-related variables, including depression or anxiety, but focused primarily on the results of enhanced physical health. This predilection may be driven by researchers' awareness that the expressive-writing manipulation has a stronger effect on physical rather than psychological health variables (Pennebaker & Chung, in press). Nevertheless, this present study found consistently positive changes in levels of depression and state anxiety through various mediators, compared to benefits to physical health symptoms, which were either marginal or non-significant; self-reported general health improvements were also measured, but they were not as consistent as self-reported increases in mental well-being. The question remains as to whether catharsis through tragic drama has a more noticeable effect on mental health rather than physical wellness. One possible explanation rests on the focal health mechanisms of self-compassion and emotional self-efficacy, which are arguably two forms of psychological coping and are empirically known for influencing psychological well-being (Bandura et al., 2003; Neff et al., 2007). Moreover, the processing of vicarious versus actual traumas is likely to follow dissimilar mediating pathways. Thus, the results of this experiment raise future challenges for a new catharsis theory to explain the tendency of tragic drama to affect psychological rather than physical health.



### *Research Implications*

*Boundaries of the writing procedure.* Though this study may not have exactly replicated the imaginary-trauma condition described by Greenberg et al. (1996), it has effectively found comparable health outcomes as those found in the previous work. Greenberg et al. (1996) was the first experiment to show that imagined distress could be as therapeutic as revisiting real, painful memories. This present study was novel in its application of expressive writing on tragic drama to examine its potential health-focused media effects. In the process, the writing procedure was slightly modified to adapt to media research, which unveiled new boundaries for the procedures of health-promoting expression on fictional narrative media. Previous procedures in expressive writing research have focused primarily on two strategies: (a) multiple writing sessions of two to five sittings and (b) writing blocks of 2 to 30 minutes (Burton & King, 2008; Pennebaker & Chung, in press); the typical procedure often featured three writing sessions of 15-minute blocks over three consecutive days. This current study extends the boundaries of the expressive writing technique in two ways: (i) a 20-minute single writing session (conducted on an online data collection tool) and (ii) the use of vicarious trauma from tragic drama as the event topic for emotional processing. These new procedural results should encourage future experimental work in catharsis research because the design of a fiction-based expressive writing study could be conducted within a laboratory session of 60 minutes or less. Further, the prospects of a web-based experiment using embedded video and online questionnaires are also feasible.

*Applications in narrative-focused medicine.* The findings in this study should encourage the use of expressive writing in catharsis research in the various forms of entertainment media – including narrative cinema, television programs, and other forms

of mediated popular fiction – and the common premises they entertain. The various story themes in tragic drama that remain salient to individuals in various stages of their life course, e.g., “[u]nrequited love, abandonment by intimates, suffering from incurable disease, death after prolonged agony, unbearable emotional torment ending in suicide...” (Zillmann, 1998, p.4), are open to experimental investigations in the context of media use as a coping tool for healthy and normally-functioning people. Therefore, writing-based catharsis research could be employed to explore research questions and hypotheses in the realm of intervention-based therapy. Recent research in the area of Medical Humanities has explored the potential for using thought-provoking literature as a non-clinical intervention for mental well-being. For example, Dowrick, Billington, Robinson, Hamer, and Williams (2012) reported evidence from qualitative data analyses that symptoms of depression were reduced following a storytelling intervention involving exposure to literary fiction and poetry and group discussions led by facilitators; the small sample size of less than 20 participants were recruited from a reading group in health centers for people diagnosed with depression. Narrative-based interventions seem to be gaining support amongst medical practitioners as a supplementary form of mental health therapy. Consequently, the application of writing-based “tragic reflection” may be a more systematic approach to studying the remedial effects of narrative-based therapy for improving psychological well-being.

*Cross-cultural catharsis research.* The present approach to media-focused catharsis research could also be applied to cross-cultural studies because of the intriguing differences amongst the literature of various races and nations. It has been asserted that East Asian cultures, including India, China, and Japan, have produced

human drama that lacks the individual-focused approaches of Western tragedy (Sewall, 2012). As a result of these disparate literary traditions, East Asian media users may differ in their evaluation of meaningfulness in the context of human drama compared to Westerners and non-East Asians. Accordingly, variables such as level of preference for individualistic and collectivistic narrative perspectives may be worth exploring in catharsis research. Thus, the use of an East Asian sample of participants may further expand the scope of human drama-based entertainment research. In sum, the new approach to catharsis research in this current study could open new avenues for pursuing media effects research on the health benefits of media-induced emotions, including applications in cross-cultural studies.

#### *Practical Implications*

*Catharsis as self-transformation.* The findings from this study suggest that catharsis involves changes in self-perception. The popular belief of attaining relief from enacting aggression and emotional outbursts could now be revamped and recast as therapeutic self-transformation. Catharsis is not venting, but rather the gaining of insight into *the human condition* that in turn increases an individual's sense of self-kindness and perceived ability at handling negative emotions, such as dejection. The mere recognition of one's distress and displeasure while undergoing tragic emotions is not sufficient to trigger catharsis. Instead, the value of catharsis through mediated tragic drama, for the layperson, lies in the captivating property of the storytelling medium and the opportunity to gain self-transforming insights about general human suffering, e.g., sadness-inducing life events of other people.

*Tragic reflection in psychotherapy.* Clinical psychologists and psychotherapists have been known to use popular movies in their clinical practice as “therapeutic tools”

(Lampropoulos, Kazantzis, & Deane, 2004, p.535). Generally, the use of movies in psychotherapy fulfills two main functions: (i) to assist the therapist in gaining emotional access to challenging clients and (ii) to promote observational learning in the client through character portrayals in cinematic human dramas, especially on ways of self-expression (Schulenberg, 2003). However, there appears to be an oversimplified view of expressive activities as a means of achieving relief from high stress or trauma, e.g., laughter or crying (Wolz, 2011). After all, Scheff (1979) has argued that crying alone may only indicate the expression of negative affect without giving rise to therapeutic change; media effects research also found that crying during tragic drama actually increased tension and anxiety instead of providing reprieve (Zillmann, 1998). In short, the use of popular cinema in psychotherapy seems to heavily rely on the intuition of therapists without systematic research on its health benefits or applying empirically-tested theories to predict outcomes; a “cinematherapy” website (Wolz, 2011) lists a film index that categorizes movies into general thematic categories, e.g., inspiration and couple issues, based on the subjective evaluations of authors of popular psychology books, articles, and websites. Further, published empirical studies on the therapeutic effects of cinema-assisted psychotherapy are either based solely on anecdotal evidence (Schulenberg, 2003) or reported study results that are not generalizable, e.g., a single-subject study design by Powell and Newgent (2010). In short, the “intervention” employed in this study, i.e., Tragic Reflection through cinema, could be applied to psychotherapy research to measure its benefits in a clinical context.

*Emotional fitness via mediated catharsis.* In the non-clinical domain, routine engagement in cinematic human drama followed by introspection may improve

emotional fitness, as regular bodily exercise promotes physical fitness. Though the detected indirect effects of catharsis through changes in self-perception were small, a cumulative impact is plausible. In this study, participants spent only 20 minutes in active thinking and writing about the human drama after watching a shortened version of the story; the affective and cognitive “workout” undergone by the participants was likely curtailed by the truncated manipulation, which may account for the small effects. Therefore, it is conceivable that the richer emotional experience of a feature length human drama coupled with post-film reflections or even group discussions on the human story could produce a more powerful cathartic effect. Moreover, it is also reasonable to conjecture that the repetition of these meaningful entertainment activities, e.g., watching and discussing a somber movie once a week, could have a stronger, accumulated effect on the inclined viewer. Thus, frequent engagement in human drama by motivated viewers could have greater therapeutic outcomes compared to the sometimes marginal effects measured in this experimental study.

### *Limitations*

Despite the promising exploratory results reported in this study, several caveats must be acknowledged. These limitations include demand characteristics of the experimental set-up, low sample sizes for some of the structural analyses, and external validity issues related to the writing procedure. These shortcomings are addressed either with counter-arguments or suggestions for modifications in future studies.

Participants’ awareness of the repeated measures of the self-perception and health-related variables could not be avoided. Deception was not employed in this experiment and some (but not many) participants speculated, via an open-ended question during the follow-up online questionnaire (Time 3), that this study was indeed

related to media use and health. Thus, demand characteristics are a possible threat to the internal validity of this study. Nevertheless, a check was performed using *t*-tests to show that the groups who accurately guessed the study objectives did not differ from the remaining participants in the sample (see the end of the Method section for details). Further, a number of health outcome variables were measured, including a second physical symptoms checklist for upper respiratory illness that was not used in data analysis, and some of these scales did not capture positive changes in health improvements. In the measures used in data analysis, the variable Change in Physical Symptoms did not show any significant results in the experimental groups, whereas the other health measures did.

Another mitigating factor against demand characteristics is the use of change scores for all of the dependent variables, including a 4-week interval before making the follow-up measurement; the potential short-term priming of participants to the main themes of the study, i.e., media and its health effects, was not likely to have affected the delayed follow-up measures. Additionally, the commonplace idea of catharsis through tragic drama in the popular imagination, i.e., watching a sad movie can be cathartic and beneficial, would likely be an assumption held by the prevailing student population in this sample; these educated individuals possess, at minimum, a high school diploma and have likely been exposed to the concept of catharsis in high school English courses. Taken together, these observations and assumptions suggest that the self-report health measures were not distorted by participant biases.

Next, data analyses of more complex models are limited in this study due to inadequate sample size for proper structural equation modeling. Though the full sample

of  $N=200$  is considered large for structural analyses, sub-samples were often necessary to perform exploratory analyses involving variables that were usually not measured in one of the four experimental conditions. For example, the multiple group analysis of participants in two different categories arranged by life events required careful interpretation as a result of low sample size after the sample was split into two groups of less than 100 cases respectively; this particular model involved a variable that was not measured in one of the conditions, which reduced its initial sample size prior to analysis. Therefore, to enable more robust testing of the data for a 4-condition experiment where only 3 conditions could sometimes be analyzed in a single model, a sample size in the vicinity of 267 (which would yield around 200 cases for 3 conditions with equal cell sizes) would enable greater researcher confidence in the interpretation of its results.

Another substantive limitation applies to the reflection component of the experiment. The single writing session of only 20 minutes could not capture a very broad range of emotional responses to the human drama. Moreover, the shortened 15-minute movie also curtailed the emotional potency and character complexity of a feature-length Hollywood drama. In addition, the follow-up measurement was conducted only once and at 4 weeks after the experiment, thus the data for changes in self-perception and health outcomes were not available for scrutiny for the period of weeks before and after the follow-up measurement. It is conceivable that important results, e.g., the temporal peak of the outcome variables, may lie in the period between post-experiment and the subsequent weeks and months after the manipulation. For example, Chung and Pennebaker (2008) found evidence of fewer physical symptoms at

a 9<sup>th</sup> month follow-up measurement in participants who wrote expressively about their life transitions compared to a control group. As a consequence of the abbreviated experimental manipulations and the single 4<sup>th</sup> week follow-up measure in the present study, the writing task may not be optimized for its therapeutic potential. This limitation may be especially relevant to the measures of physical symptoms. Additional measurements, such as another follow-up measure at a 9 or 12-week interval, may capture improvements in physical health that take a longer period of manifestation as perceptible relief in symptoms.

Self-reflection was operationalized as writing in this study. However, emotional expression, which formed the basis for the component of drama contemplation in Tragic Reflection, was defined as language-based, not specifically writing-based. Accordingly, verbal expression should also be tested for these cathartic effects. After all, it is often the case that cinema-goers would begin their cognitive processing of the story by conversing with their viewing partners as the end credits roll; this can sometimes occur during the film itself. Emotional expression through verbal utterances seems more externally valid to the movie-going experience. One future modification to a similar study may include an experimental condition where participants are asked to write as though they were communicating with a social other, e.g., a friend or a significant other or someone else whom you think you'd see and talk to about your movie experiences; this variation may prove to be a reasonable compromise for gathering quantified essay data while reducing the artificiality of non-social reflective writing. In short, this study was restricted only to writing-based Tragic Reflection, which is less naturalistic than voiced reflection or reflection that is directed at a social other.



There is evidence from psychology literature within the domain of emotional responding to suggest that the presence of social others may affect emotional expression (Kring and Gordon, 1998). Thus, the controlled nature of this laboratory experiment could not capture the sociality aspect of film viewing, which may substantively affect the processing of the human story. For example, a movie-going companion may actually encourage a viewer to begin to discuss the narrative and express emotions that may otherwise remain unvoiced or provide the viewing with a context or alternative viewpoint with which to assimilate the human drama. Nonetheless, while the inclusion of social others during movie-watching may increase external validity, additional social factors will likely come into play, which could influence expressive behaviors and introduce confounding variables into the study. Therefore, the design of “tragic reflection” in this experiment where sociality is kept to a minimum, is limited to a situation with little to no social stimulus or feedback. Perhaps one advantage of this methodological approach lies in the greater facilitation of emotional expression for groups that are less inclined to do so.

#### *Suggestions for Future Research*

*Gender-related moderators.* Given that the catharsis theory developed in this study posits a relationship between the emotional expression of a vicarious event and its therapeutic effects, individuals who are less willing or able to express sad emotions (e.g., males) may benefit more substantively compared to groups that are more confident about emotionality (e.g., females). Previous literature on gender differences from an emotion research perspective have found gender differences in college-aged young adults in expressing distress (Blier & Blier-Wilson, 1989) as well as wishful identification (Hoffner & Buchanan, 2005). In this study, despite the slightly stronger

effect of Tragic Reflection on identification in a 100% versus 80% female sample (this comparison was not inspected for statistical significance), this relationship did not translate to a greater influence on self-perception variables in the weeks after the catharsis manipulation. Thus, it seems more likely that the self-transformation depends largely on the individuals' motivations to contemplate the meanings of the media content towards enhancing their sense of control in handling sadness and self-directed kindness. Future research should consider a final sample size of larger than 200 to enable the analyses of a male-only sample and a multiple group analysis to compare the indirect health effects on both genders or groups exhibiting differing levels of emotional expressiveness.

Kring and Gordon (1998) reported a personality variable known as psychological androgyny where androgynous individuals were more expressive via self-report compared to other individuals identified as feminine and masculine. Androgyny is operationalized as individuals who score above the median in both a masculine and a feminine scale. These persons are conceptualized as having flexibility in their situational behavior related to socially-sanctioned gender norms. Further, the authors found that androgynous persons also exhibited significantly more facial expressiveness during emotional films compared to masculine participants; the comparison with feminine participants was in the same direction, but only marginally significant. In a related study, Williams and D'Alessandro (1994) found that androgyny predicted improvements in mental health outcomes, including subjective well-being, depression, and anxiety. Taken together, these findings strongly suggest that androgyny could be a moderator for Tragic Reflection because androgynous individuals, who could be males

or females, may be more willing and able to express their tragic emotions after viewing a human drama and benefit indirectly from the effort. A future study that employs androgyny as a moderating variable may measure a larger health effect for individuals who fall within this personality category.

*Healthful contemplations in solidarity.* The tradition of movie-going is a social activity. Reading, on the other hand, is largely entertained in solitude. However, research in reading as an intervention and shared pastime, e.g., *Get into Reading* (Dowrick et al., 2012), has suggested a link between group engagement in literary text and mental health. These research efforts on reading literary works as a meaningful social activity are a form of facilitated group therapy that brings together individuals diagnosed with some deficiency in mental health; some clinicians apply this option as an alternative to anti-depressants. The approach of these reading intervention procedures seems applicable to catharsis research since this present study has designed a solitary viewing and self-reflecting activity that more resembles a home-theatre setting than a cinema-going experience. Therefore, a future study may mimic the technique of a program such as *Get into Reading* by conducting a field experiment at a health clinic or low-security penitentiary to expand “tragic reflection” more explicitly into the realm of *the social sharing of emotions* by including opportunities for profound discussions about meaningful life events while promoting social feedback. Other potential research settings of interest include film clubs, poetry reading clubs, and book clubs. The presentational mode of cinematic narration makes this medium particularly conducive to processing and assimilating the shared narrative experience at its conclusion. Consequently, the perpetuation of movie-going as a social pastime could be

augmented in the aspect of personal health, particularly mental well-being, by designing a therapeutic component of self-reflection in the manner of “tragic reflection.”

*Cognitive learning and possible selves.* In light of the proposed mechanisms for health benefits in the study by Greenberg et al. (1996), future research may focus on the learning component of the mediating effects of improved affective regulation. The authors conjectured that one’s awareness of and perceived ability in regulating emotional upheavals may be reinforced through learning new skills and technique for handling stressful events. So, a follow-up catharsis study may attempt to measure the acquisition of new knowledge related to competence and learned strategies for handling future distress. For example, cognitive learning variables, which included the mechanisms of “downward social comparison, information utility, and terror management” (Kim, 2007, p.16), could be measured before and after Tragic Reflection to assess the gaining of new proficiencies in handling distress. Moreover, the second mechanism of nurturing “a more resilient version of self” (Greenberg et al., 1996) is also worthy of future study because of its relation to self-discrepancy theory, which has been used to explain the significant mediation of discrepancy word use in this present study. The constructs of self-discrepancy reduction and resilient possible selves are rooted in individuals’ self-beliefs and future expectations; both are aimed at encouraging self-betterment and the former shares its chief attributes with self-efficacy (Higgins et al., 1992). Therefore, future work on variables related to cognitive learning and the construct of possible selves may be particularly fruitful towards our understanding of other theoretical mechanisms behind catharsis through expressive writing.

*Addressing aesthetic distance.* In a future study, perhaps items that tap into aesthetic distance could also be designed into the study to measure the level of participants' sense of security and control during the narrative experience. This may be a composite variable that takes into account both identification and optimal aesthetic distance. This new composite concept may be an individual difference moderator labeled "emotional fitness," because the emotional upheavals from repeated exposures to human drama may provide an individual with an implicit sense of safety and control during successive emotional episodes, be it fictional or real.

*The upside of distress.* The benefits of introspective writing on a human drama could conceivably arise from expressing positive emotions rather than strictly negative affective responses. Expressive writing studies have shown that negative affect is not necessary for health outcomes because "writing about positive aspects of stressors might evoke positive emotions, which act as a buffer to the negative emotions evoked by the stressor" (Lepore, Greenberg, Bruno, & Smyth, 2002, p.103). Since the benefits of expressive writing has not (and may not) be attributed to a singular key governing mechanism and therapeutic effects in the course of processing both positive and negative emotions have been found, it is plausible to conjecture that the expression and management of distress is not as crucial as the development of a useful and coherent narrative of a life event, either real or fictional, that supplies insights into human life (King, 2002). Therefore, as a variation of this present study, which only featured a sadness-inducing drama and instructed participants to express negative affect, future studies should also look at the effects of expressing positive affect in the context of fictional tragedies. For example, participants could be instructed to write about the

positive side of negative life experiences, including other people's trauma and highly stressful events. Future work may gain more knowledge about the larger health mechanism at work of which only a fraction of its influence could be detected by focusing on assimilating negative emotional arousals.

### *Concluding Remarks*

The use of catharsis as a theoretical explanation for the redeeming qualities of expressing emotions has been made in social psychology research on real life events and traumas (Greenberg et al., 1996; Pennebaker & Beall, 1986) and in media psychology research on tragic drama (Zillmann, 1998). Media-induced catharsis is particularly valuable as a form of emotional coping without directly visiting the realities of everyday existence. The merit of catharsis through media that are designed for leisurely pursuits lies in the relative security of its indirect nature; distressing events experienced through fiction are not stained with personal memories, unlike the evocation of personal life events, and may enhance media users' development of psychological resilience to future episodes of undesirable emotional upheavals. Consequently, this catharsis study has attempted a novel application of the activity of expressive contemplation on human drama consumption and found evidence of benefits after a meaningful entertainment experience. In the process of this investigation, a new catharsis theory for media psychology was tested and indirect health effects were found for individuals who underwent self-reflection by writing a short essay on the tragic events portrayed in the human story to which they were exposed through storytelling media. The empirical evidence from this initial exploration of a catharsis theory not rooted in the pervasive notion of emotional purgation showed that the cinematic media has a high potential for facilitating catharsis through drama, especially when the

vicarious experience is coupled with language-based introspection. Moreover, additional evidence suggests that the process of contemplation via a flexible personal outlook, as opposed to adopting fixed judgments on the fictional scenario, strongly promotes mental well-being in the subsequent weeks. Overall, these are notable findings in light of the disfavored reputation of this ancient concept in contemporary communications and psychology research. As a form of insight-gaining recreation attained through a stimulated imagination, catharsis appears to be very much alive and well.

Further investigations into the mechanisms of catharsis through the modest means of popular entertainment are a worthy endeavor, particularly those made towards the goal of uncovering the benefits of coping with the larger issues of the human struggle. The popular misconception of catharsis as an unthinking activity for experiencing relief from negative emotions has not been constructive towards our understanding of the benefits of entertainment. Furthermore, widespread opinions on the recreational arts are often predisposed towards its hedonistic surface and escapist potentials, which devalues its other forms, including those that inspire compassion for others and self-compassion. Nonetheless, the idea of catharsis may have persisted because of those discerning media users who not only believe in its putative values, but have also experienced its positive effects on well-being either through repeated activities of drama exposure and introspection or fewer but more powerful episodes of “tragic reflection.” Recent communication research has pointed to the selection of meaningful media entertainment, especially through audiovisual media such as cinema, as a natural means of reflecting on life’s meanings (Oliver, 2008; Oliver & Raney,

2011). The study of catharsis has proven conducive to interdisciplinary efforts whereby the Humanities and the Arts intersect with social science approaches and the field of medicine. Henceforth, the existing focus on meaningfulness in entertainment research and the encouraging findings in this study should pave the way for the further study and application of “tragic reflection” in such exciting areas as therapeutic entertainment and Medical Humanities.



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## Appendix A: Stimulus Movie Scripts

[Reading Instructions and Shortened Movie Script for *In the Bedroom*]

The following script is made up of scenes from an actual movie script. In the interest of time, this is a condensed version where only a selection of scenes from the actual script is included.

After reading, you'll be asked to write your response to the movie script and answer some questions, including those about your impressions of the movie script. Please read the entire script.

Now, please begin reading the script below.

This is the story of Matt & Ruth Fowler, a doctor & a music teacher. MATT FOWLER is in his early 50's. Kind face, good looking, athletic in his day. RUTH FOWLER is 50, of fair coloring, and attractive. They will experience a life-changing event involving their son Frank. FRANK FOWLER is a young man in his early 20's with a lively step and a face full of warmth.

Frank spends his holidays at home. One summer, he fell in love with a woman, as seen in the following scene.

EXTERIOR SCENE. A PARK – DAY

We are in the midst of a field of tall grass & wild flowers. Two young people under the tree. They are in a deep embrace. These people are Frank and his girlfriend.

CLOSER NOW

We see them in glimpses: Their eyes – Lips – Hands –

Finally they part – the woman rests her head on his chest.

She reaches out and strokes his hand.

He stares at their fingers mingling together.

The woman sighs.

GIRLFRIEND

I love it here.

FRANK

I know you do...

GIRLFRIEND

I can feel my life – ya know.

He stares up into the boughs above him and smiles.

FADE TO BLACK

Frank's girlfriend is pretty - beautiful actually with a little more sleep. Her ex-husband, RICHARD, is a volatile man from a wealthy family. Frank's girlfriend has 2 kids with her ex. Her kids love Frank. So, her ex considers Frank a competitor. Frank does not respond to Ruth's advice about the potential trouble with Richard. In the following scene, Matt and Ruth discuss Frank's relationship.

INTERIOR SCENE. FOWLER HOUSE -- NIGHT

THE BEDROOM

Sitting in their bed, Matt reads a book and Ruth sews.

RUTH

Oh God, you don't think...

MATT

No, he's not going to marry her.

RUTH

Then, what's he doing with her?

MATT

She probably loves him. Girls always have.  
Let's just leave it at that?

RUTH

Hmm. He wouldn't listen to me. I've ask him  
three times to dismantle that swing-set.

MATT

Oh, leave it up. Looks like a young couple  
lives here.

RUTH

Well, he needs his head in school, not in her.

MATT

So to speak.

Ruth turns to him and pricks him lightly with her needle.

MATT

Oww!

RUTH

It would help if you were on my side.

MATT

Oh, I can be on your side.



She laughs and pushes him away.

RUTH  
I've got a needle! I've got a needle!

FADE TO BLACK

Ruth tries without success to talk to Frank. He's much in love with his girlfriend. Meanwhile, her ex, Richard, stalks her. In the next scene, Richard enters her house uninvited...

INTERIOR SCENE. GIRLFRIEND'S HOUSE -- DAY

THE KITCHEN

Frank's girlfriend enters with groceries.

Richard is seated at the kitchen table. He's finishing the first half of a sandwich. He drains a glass of milk.

Frank's girlfriend sets her purse down on the counter, and starts cleaning up his mess.

GIRLFRIEND  
How'd you get in this time?

RICHARD  
Chimney.

She takes the carton of milk that Richard left out. She pours the final drops into his glass.

RICHARD  
Thank you.

She throws the carton out. She takes a seat, and stares at him.

GIRLFRIEND  
What can I help you with?

He kicks back the last of the milk, wipes his mouth.

RICHARD  
Where are they, with him?

GIRLFRIEND  
That's none of your business.

RICHARD  
I see. They're my kids, but they're none of my business.

GIRLFRIEND

You know what I mean.

Richard presses his fingers to his eyes. He pauses.

RICHARD

I... I was thinking about moving back.

GIRLFRIEND

Jesus, Richard, you don't change, do you?

RICHARD

Change? No, I don't change. But, everything around me changes. You change. You take my house, you take my kids, you fuck this other guy. No, I don't change at all.

GIRLFRIEND

It's not your house.

RICHARD

Oh, no?

GIRLFRIEND

No. And as far as fucking goes... who was it that answered your phone the other morning?

RICHARD

She...

GIRLFRIEND

I don't care. Really, you can just stop now. It's not working.

He takes a breath.

RICHARD

I just want... a chance.

GIRLFRIEND

For what? To fool them for a few days into thinking they have a real father, and then it's back to -

RICHARD

I am their father!

GIRLFRIEND

No, Richard. You know what defines a father? It's what he does, not what he promises. It's being a positive, consistent presence.

RICHARD

"Positive consistent presence." Wow.

GIRLFRIEND

Look... can you just go now? I really don't want you here when they get back.

RICHARD

Oh, no, wouldn't want that.

He doesn't budge.

GIRLFRIEND

You have to leave.

He slams the kitchen table and pushes himself up to go.

FADE TO BLACK

Shortly after, her ex gives Frank a beating. Frank calls it a minor scuffle, though he is clearly out-matched.

One day, the ex returns. Frank rushes to his girlfriend's rescue. In a confrontation, the ex shoots Frank in the face. Frank's girlfriend screams when she saw what had happened.

Frank is instantly killed. Matt and Ruth mourn the sudden death of their only son, a talented student in architecture. In the following scene during Frank's funeral reception, Matt mourns in his son's old room.

INTERIOR SCENE. FOWLER HOUSE -- DAY

UPSTAIRS HALL

Frank's room is facing Matt. Matt pauses at the door.

FRANK'S ROOM

Matt slowly enters. He looks around.

The place is untouched. Frank's many sketches are still pinned to the wall. Some clothes lie scattered on the floor.

Matt takes Frank's clothes from the floor and places them on his bed.

He wonders around. Strays near Frank's drafting table -

He reaches out, touching the table, grazing the topography of scattered pencils - drawings strewn across it.

He picks up an artifact, an object from Frank's table. Suddenly, he cries.

FADE TO BLACK

In court, Frank's girlfriend fails to establish herself as an eyewitness. She merely heard a shot.

Using their wealth and influence, the ex's family (the Stroudts) achieved bail. In the following scene, Matt and Ruth's lawyer gives them the news.

INTERIOR SCENE. DISTRICT ATTORNEY'S OFFICE -- DAY

RUTH

You mean there's nothing we can do about this? You let that bastard walk out and we're supposed to just sit here?

THE D.A.

You see, we can't appeal bail. It's just not set up that way. The state's bail code is to ensure future court appearances. In this case Stroudt's family was prepared to put up a substantial amount of property as bail - That, along with his ties to the community made it hard for us to convince the judge of a serious "Risk of Flight." Now you can file a civil suit. I recommend it. But not now, wait till after the criminal trial

Matt stares at a small cartoonish statue on the D.A.'s desk. It is one of those things that were popular in the 70's. A little man chasing an ambulance. It reads "World's Greatest Lawyer."

RUTH

And when will that be?

THE D.A.

Well... honestly - anywhere between twelve and eighteen months?

RUTH

Oh my god, oh my god.

Matt jumps in.

MATT

But you're confident you'll be able to put him away for good then... Right?

The D.A. takes a long pause.

RUTH

The things she said in there [Frank's

girlfriend]... what is the damage?

THE D.A.

Manslaughter.

RUTH

What? Oh, Jesus Christ! This was no accident. He killed our son in cold blood.

MATT

Ruth.

RUTH

What?

Matt looks at his shoes, as Ruth looks at the D.A.

FADE TO BLACK

Their son's killer at large, Matt and Ruth do not know what to do. They become strangers in their own house. In the following scene, they confront each other...

INTERIOR SCENE. FOWLER HOUSE -- DAY

THE KITCHEN

Ruth is putting groceries away. Matt appears in the doorway. She continues "straightening up," starts to wash dishes. She stops and turns around.

RUTH

What do you want?

MATT

I want to know what's going on.

RUTH

Right.

MATT

You're obviously upset. If there's something you want to talk about...

RUTH

Talk? Who, us? What if somebody walked in? They wouldn't recognize us. They'd think they had the wrong house.

Matt pauses.

MATT  
Do you want to talk or not?

RUTH  
Oh, you mean about our dead son?  
No, we haven't before why should  
we bother now?

MATT  
What can I do, Ruth?

Ruth looks at him for a long time.

RUTH  
Forget it, Matt. Why don't you just go...

MATT  
What do you want from me?

RUTH  
I want you to stop acting like nothing's  
happened! That's what I want

MATT  
Why? Because I'm not bouncing off the  
walls?

RUTH  
No, Matt, that would require feelings. We  
don't want you to hurt yourself.

MATT  
Do me a favor, Ruth. You want to have a  
grieving contest, go find someone else.

He starts to turn.

RUTH  
Yeah, I know how you grieve. Go have  
another beer.

He turns back.

MATT  
What do you know? You know  
nothing! You know nothing about me.  
What I go through - every day.

RUTH  
No, I don't know, Matt. I don't know what  
you go through, or if you go through

anything. But that's your choice, dear,  
not mine...

MATT

You're goddamn right it is. My choice is  
to not scream at the world. Maybe one  
of us has to be reasonable here, did you  
ever think of that?

RUTH

Reasonable? Gee, Matt, I don't know  
about you, but I miss my son. I'm glad  
you have time for reason. That's what  
you imparted to Frank. That sense of  
reason - Oh, he thought you were very  
reasonable.

MATT

What the hell is that supposed to mean?

RUTH

Nothing.

She turns back to the dishes.

He moves closer to her.

MATT

What are you really trying to say anyway?

She says nothing.

MATT

... that I'm the one responsible? Is that is?  
Let me tell you something. Let me tell you  
something! You got it backwards. I know  
what you think. That I was too lenient,  
that I let him get away with...

Ruth smashes a plate on the floor.

RUTH

Everything. Everything!

She exits into

THE HALL

He's right behind her.

MATT

Oh, really?!? Why do you think he never came to you?

RUTH

He wouldn't talk to me, Matt. He didn't trust me. You made sure of that.

THE LIVING ROOM

MATT

Why would he talk to you, Ruth? You never listened!

RUTH

No. But you did. You were winking at him the whole time. You encouraged him. You wanted what he had. Her.

MATT

You've got to be kidding...

RUTH

You know it. Come on. You wanted it, and you couldn't get it - that's why you didn't stop him - so you could get your kicks through your son. You can't admit the truth - To me, or to yourself. You can't admit that FRANK died for your fantasy piece of ass.

Matt stopped for a second. Then he continues.

MATT

You want to know why our son is dead, Ruth? He was with her not because of me, he went there because of you. Because you are so controlling, so overbearing, so angry that he was it, that he was our only one.

RUTH

That is not true.

FADE TO BLACK

After their shouting match, they regained their perspectives & apologized. In the following scene, Ruth tells Matt that she saw Richard again (the ex).

INTERIOR SCENE. FOWLER HOUSE -- DAY

THE LIVING ROOM



Matt reaches out, stroking her head, pushing her matted hair from her forehead as she sobs into his lap.

RUTH

I'm sorry. I have been so angry - I keep seeing him, Matt. I've seen him.

Mat nods, but he's not really clear.

MATT

... Oh, I know - up in his room -  
Sometimes I swear Frank's in there - on  
the way home just now - at a stop light -  
for a second I could've...

RUTH

Not Frank.

Matt stops.

RUTH

Richard...

She sobs.

RUTH

... and I don't know what to do.

MATT

Ruth. Where did you see him?

RUTH

Everywhere - Downtown, and the market.  
I saw him at South End. He smiled at me,  
Matt.

FADE TO BLACK

A war veteran, Matt is capable of killing a man. After hearing Ruth's story about seeing their son's killer again, Matt's sleepless nights worsen.

Matt decides to take action.

Matt kidnaps Richard, plants evidence of his skipping bail, & leads him to some deep woods. Matt shoots Richard several times and kills him.

After burying Richard's body, Matt returns home, removes his garments & cleans himself. Matt returns to Ruth, shaken by his own actions. In the following scene, Ruth asks Matt: "did you do it?"

INTERIOR SCENE. FOWLER HOUSE -- PRE-DAWN

THE BEDROOM

Matt stands in the doorway, pauses, seeing only the orange ember of Ruth's cigarette, in the dark.

RUTH  
Did you do it?

He doesn't answer. He walks in and comes to bed, climbing in as Ruth moves over.

RUTH  
Are you all right?

He lies down. He faces the window, away from her.

RUTH  
What am I thinking - you must be hungry.

Ruth gets out of bed, leaves the room and heads downstairs.

Matt just lies there, in another world.

Then, he looks at his finger. The bandage wet from washing up after returning home. He slides it off easily, like an oversized ring. His finger looks fine.

FADE TO BLACK

Matt & Ruth will live with their loss & heal their wounds together for the rest of their days.

THE END

Please hit 'Continue' below after you're finished with your reading.

[Reading Instructions and Shortened Movie Script for *Mystic River*]

The following script is made up of scenes from an actual movie script. In the interest of time, this is a condensed version where only a selection of scenes from the actual script is included.

After reading, you'll be asked to write your response to the movie script and answer some questions, including those about your impressions of the movie script. Please read the entire script.

Now, please begin reading the script below.

This is the story of Jimmy Markum, a former hoodlum and store owner who lives peacefully with his wife and children.

JIMMY is forty years old, and he has tattoos on his arms and neck that are largely hidden by his shirt. Jimmy is about to experience a life-changing event involving his daughter Katie. Katie is his beloved eldest daughter. Jimmy once described his love for Katie as: "it's like we're the last two people on Earth."

In the following scene, Jimmy reminds Katie to attend her sister's communion.

INTERIOR SCENE. JIMMY'S STORE -- DAY

Sitting at a small desk surrounded by shelved stock: cigarettes, corn flakes, soda... Going over some order sheets, Jimmy's lost in thought. Jimmy tries to focus on his order forms. Then KATIE is in the door looking at him. Nineteen and beautiful. She smiles as she watches him. He finally feels her eyes on him.

KATIE

Going out tonight with Eve and Diane.  
And it's seven-thirty.

JIMMY

Don't be out late. It's your sister's first  
communion tomorrow. Christ, I sound  
like, I don't know...

KATIE

Someone's father?

JIMMY

Yeah. Not mine, but somebody's.

She leans in, kisses him on the cheek.

KATIE

Later, Daddy.

He watches her breeze out. Finally...

JIMMY

Later...

FADE TO BLACK

On the day of his youngest child's communion, Jimmy's life turned upside-down. Katie never showed up at church.

EXTERIOR SCENE. CHURCH -- DAY

The kids flow outside through the front of the church, the adults following behind. Jimmy's youngest daughter spots her father, makes a break for him.

JIMMY'S YOUNGEST

Daddy, Daddy!

Jimmy scoops her in his arms.

JIMMY

Baby!

JIMMY'S YOUNGEST

This dress itches.

JIMMY

It's itching me and I'm not even wearing it.

Jimmy looks over his shoulder, smiles at his wife and second daughter. They beam back.

A state POLICE CRUISER SLAMS around the corner and barrels down the street, rear TIRE SLAPPING the median strip, SIREN SLICING the morning air. Jimmy whips around, his eyes matching the cop car's movement. Two more cop cars zip by and take the entrance road into a nearby Park. Jimmy lowers his youngest daughter to the ground.

FADE TO BLACK

In the following scene, Jimmy spots Katie's car in a park.

EXTERIOR SCENE. PARK ENTRANCE -- DAY

Jimmy spots the clot of cops around a car, moves laterally for a better view. He gets it, sees it's Katie's. Jimmy starts forward, pushes through one end of the sawhorse, is almost there before two cops block him. As they babble official speak...

JIMMY

That's my daughter's car.

EXTERIOR SCENE. THE PARK -- DAY

SEAN DEVINE is here, a detective with the stacies. He was one of Jimmy's childhood friends. Grown up into a good-looking adult. He's joined by his partner, WHITEY POWERS. Sean looking for something, anything, as frogmen are seen combing a pond in the park. Whitey steps over to address his partner.

WHITEY

We got dogs sniffing something by the old bear cage. Want to take a walk over?

Sean nods. His WALKIE-TALKIE SURGES TO LIFE.

WALKIE (Voice-Over)

Trooper Devine.

SEAN

(into walkie)

Yeah, go ahead.

WALKIE(V.O.)

We got a guy out on Sydney, says he's the father of the girl.

SEAN

Shit...

(into walkie)

You got a psychologist on scene yet?

WALKIE(V.O.)

En route.

WALKIE(V.O.) (CONT'D)

He's asking for you, Devine. Says he knows you.

Sean looks to Whitey who just shrugs.

WALKIE(V.O.) (CONT'D)

He's not taking no for an answer. And he's got some guys with him.

SEAN

What guys?

WALKIE(V.O.) (CONT'D)

Crazy-looking guys.

EXTERIOR SCENE. THE PARK -- DAY

Jimmy's there with three large, mean-looking guys, his GOONS. They gave the police jail-yard stares. They shout across the barrier at the cops.

GOON #1

That's our niece in there, you dumb prick  
pieces of shit!

COP #1

Hey. We're doing our job.

GOON #1

All due respect, the doughnut shop's  
that way.

Jimmy standing a little alone, watching. Finally:

JIMMY

Ease, ease up, fellas! Go to Drew  
Pigeon's house. Talk to his daughter  
and her friend. Katie was out with them  
last night.

GOON #2

(nodding)

Let's go!

JIMMY

And hey, these girls are friends. Don't  
get hard on them, but get answers.

As two of the goons head off, Sean the detective arrives, greeting Jimmy with a handshake.

SEAN

Jimmy, hey, man.

JIMMY

Is she in there, Sean?

SEAN

We don't know. All we're doing right now  
is looking.

GOON #1

Why don't you quit blowing sunshine up  
your ass and let us take a look.

Sean ignores the goon and just keeps his eyes on Jimmy.

SEAN

Sorry. As soon as I know anything, you'll  
know.

JIMMY

That's my daughter's car.

SEAN

I know. I --

JIMMY

My daughter's car. It's got blood in it.  
They brought fucking dogs in. Why do  
you got dogs? Looking for my daughter,  
Sean?

SEAN

Because we're looking. Okay, Jimmy?  
Right now all she is, is missing. Okay?

In the following scene, Katie is found.

EXTERIOR SCENE. THE PARK -- DAY

Sean the detective approaches Whitey, two officers and a MEDICAL EXAMINER huddled around a low concrete and metal structure. A body is scrunched there, the space between the walls no more than three feet wide. Katie Markum sits with her back against the wall on the right, her feet pushed up hard on the wall to the left. A torn sock hangs around her left ankle, a simple black shoe with a flat heel is on her right foot. Her jacket is torn, her pants mud-stained. Sean steps in, crouches. Whitey fills the space behind him.

WHITEY

That her?

As gently as he can, Sean uses his gloved forefinger to move back a heavy strand of hair. He looks at Katie a moment.

SEAN

Yeah...

WHITEY

We'll have the father do a positive ID at  
the morgue.

MEDICAL EXAMINER

Blood's from a split on the crown of her  
head. She was beaten with some kind of  
stick. But that didn't kill her. She was  
shot a second time. Looks like a .38.

Sean hasn't really heard any of the examiner's analysis.

SEAN

What the fuck am I going to tell him. Hey  
guess what, Jimmy? God said you owed  
another marker. He came to collect.

Sudden SHOUTS from outside, the K-9 DOGS BARK like mad. Sean springs up. As he and Whitey turn outside.

#### CLEARING IN THE PARK

Eight uniforms and two plain clothes converge on Jimmy and Goon #1 as they burst from the trees. Goon #1 goes down snarling almost right away. But Jimmy's too quick. He's almost to the concrete structure when he stumbles. A young trooper body-tackles him, lands on top of him. As he pins Jimmy's arm back...

SEAN

Hey! Hey! Take it easy. It's the father.  
Just pull him back.

JIMMY

Sean! Look at me, Sean!

Sean looks back at him. Jimmy arches up under the young cop's weight. Another cop helps hold him.

JIMMY (CONT'D)

You find her? Is it her? Is that my  
daughter in there?! Is that my  
daughter in there?!

Sean is motionless. He holds Jimmy's eyes with his own, locking them until Jimmy's stare sees what Sean has just seen. And he knows it's over, his worst fear realized. And Jimmy screams. It ECHOES through the park. Ropes of spit shoot from his mouth. Screaming.

#### FADE TO BLACK

Jimmy suffers from the loss of his eldest daughter. In the next scene, Jimmy talks with his father-in-law.

#### INTERIOR SCENE. MARKUM HOUSE -- PANTRY -- DAY

Jimmy shakes a bag of ice into a beer cooler. THEO his father-in-law watches.

FATHER-IN-LAW

How you handling this so far?

Jimmy looks up at father-in-law.

JIMMY

Hasn't really sunk in, Theo.

FATHER-IN-LAW

Gonna hurt like hell when it does. When  
my Jane died? I was no good for six  
months. But my kids were all grown up. I  
had that luxury. You, you got domestic



responsibilities?

JIMMY

Domestic responsibilities?

FATHER-IN-LAW

Yeah, you know, you gotta take care of my daughter and those little girls. They got to be your priority now.

JIMMY

You figured that might slip my mind, Theo?

FATHER-IN-LAW

Just needed to be said is all. You'll carry on. 'Cause you're a man. I said to my daughter, your wedding day, said you got yourself a real old school man there --

JIMMY

Like they put her in a bag.

FATHER-IN-LAW

What's that?

JIMMY

That's what Katie looked like when I saw her in the morgue. Like someone put her in a bag and then had beaten the bag with pipes.

FATHER-IN-LAW

Yeah, well, I, uh--

JIMMY

Janey died in her sleep. All due respect and shit, but there you go. She went to bed and never woke up. Peaceful.

FATHER-IN-LAW

You don't need to talk about Janey--

JIMMY

My daughter though? Someone put a gun to her. She was murdered. And right about now they'll be starting the autopsy. Laying out scalpels and chest spreaders. And you want to talk to me about my domestic fucking responsibilities?

Jimmy's father-in-law looks down, shuts up finally.

FADE TO BLACK

In the next scene, Jimmy tries to confide in an old friend, DAVE BOYLE, a man in his late 30s.

EXT. MARKUM HOUSE -- BACK PORCH -- DAY

Jimmy sits on the deck. Sits by himself under the clothesline stretched across the porch. Dave steps out, lights a cigarette. By Jimmy's invitation, Dave sits down alongside Jimmy, backs to the siding.

JIMMY

I was more afraid of my little daughter  
than I ever was of being in prison.

Dave looks on as the tears roll down Jimmy's cheeks.

JIMMY (CONT'D)

I loved her the most, because when we  
sat in the kitchen that first night, we were  
the last two people on Earth. Forgotten  
and unwanted. And, Dave, I swear, it's  
starting to piss me off. I haven't cried  
yet for her. My own daughter and I can't  
even cry for her.

DAVE

Jimmy?

JIMMY

Yeah?

DAVE

You're crying now.

JIMMY

(realizing)

Yeah...

Jimmy sobs.

JIMMY (CONT'D)

I just want to hug her one more time.  
She's nineteen fucking years old!

FADE TO BLACK

Later, Jimmy's friend Dave became a suspect. Blood was found on Dave, his clothes and in his car the very night Katie was killed. Dave was innocent. The blood stains came from a pedophile

Dave had badly beaten up the night before to rescue a boy victim. Dave had been a victim of abuse as a child. But, Jimmy was convinced that Dave killed Katie. In the following scene, cornered by Jimmy and his goons, Dave begs for his life, for a chance to see his wife (Celeste) and son again.

EXTERIOR SCENE. RIVER BANK -- NIGHT

DAVE

I want to go home to Celeste. I want to feel Celeste.

JIMMY

Yeah. Good. Right after you do your time. I did mine. Do yours. Admit what you did.

DAVE

The boy...

JIMMY

One more time about the boy and I will open you up.

Jimmy holds a wicked-looking buck knife. Dave dry heaves. Jimmy nearly does himself. Even Jimmy's goons look confused as Jimmy blinks out toward the river.

JIMMY (CONT'D)

I thought I was done. I thought I had left killing people and dumping them in the river behind.

(turns to Dave)

Admit what you did and you'll live. Say it out loud and you'll breathe. You'll go to jail, but I will give you your life. Admit what you did!

FADE TO BLACK

Jimmy tricked Dave into a false confession and stabbed him. In the following scene, Jimmy finishes his vengeful act.

EXTERIOR SCENE. RIVER BANK -- NIGHT

Dave finds himself lying on the river bank. Hands trying to hold his guts in. He looks up to Jimmy. Finally, Dave's words come out in a whisper.

DAVE

I wasn't ready.

JIMMY

Like I said. You do this part alone.

Jimmy raises the GUN, takes aim at Dave, point blank. And as Dave closes his eyes, the gun goes off and kills Dave.

FADE TO BLACK

The next day, Jimmy, not having slept all night, sits by himself on a neighborhood sidewalk. In the following scene, the detective reveals Katie's actual killers.

EXTERIOR SCENE. SIDEWALK -- DAY

Jimmy sits on the curb, sips his bourbon from a bottle. A car pulls up across the street. Sean. He walks over.

SEAN  
Tough night?

Jimmy nods.

SEAN (CONT'D)  
Me, too. Saw a bullet with my name on it.

Jimmy holds up the bottle. Sean takes it, swallows a long pull. As he hands it back...

SEAN (CONT'D)  
We got them.

JIMMY  
Got who?

SEAN  
Katie's killers. Got them cold.

JIMMY  
Killers? Plural?

SEAN  
Kids, actually. Ray Harris's son, Ray Junior, and a kid John O'Shea. They confessed a couple hours ago.

JIMMY  
No doubt?

SEAN  
None.

JIMMY  
Why?

SEAN  
They don't know. They were playing with

a gun. Saw a car coming so one of them lies down in the middle of the street. Car swerves, clutch kicks out. Katie. O'Shea says they meant to just scare her, but the gun went off. She hit him with the door and ran. They chased her so she wouldn't tell no one.

JIMMY

And the beating they gave her?

SEAN

Ray Junior had a hockey stick.

Jimmy looks around. The news is sinking in now. Sean crouches down beside him.

SEAN (CONT'D)

Go easy, Jim. Take a breath. Look at me. I got a call from Celeste Boyle. She was hysterical. She said Dave's missing. Said you might know where he is.

Jimmy looks at Sean, but can't find any words.

SEAN (CONT'D)

We need to talk to him. Boston police found the body of a guy this morning. In the woods behind McGill's.

JIMMY

A guy?

SEAN

A pedophile with three priors. They want to talk to Dave about it.

Jimmy stares blankly at Sean.

SEAN (CONT'D)

When was the last time you saw Dave, Jimmy?

FADE TO BLACK

So, Katie's death turned out to be a random killing by two neighbourhood kids who found a loaded gun. Dave's pedophile story was the truth afterall. Jimmy confessed to his wife in private: "I killed Dave. I killed him and I threw him into the river. I killed the wrong man, that's what I've done. And I can't undo it." Jimmy and his wife kept his secret from the authorities. At the end of this episode, Jimmy is never caught, but he lives with his loss and guilt for the rest of his life.

Final Shot: Jimmy Markum stands in his bedroom alone with his back to the viewer. He stands slightly hunched and looking out of a window, with a large tattoo of a cross on his back and lower neck prominently exposed to the viewer.

THE END

Please hit 'Continue' below after you're finished with your reading.

## Appendix B: Instructions for Writing Task

[Below are instructions for the writing task in the Movie+writing and Script+writing conditions; the instructions appeared in five separate pages/screens in the online questionnaire, where the writing took place in pg. 2, 3, and 4.]

pg.0

### Writing Task

Next, you will be asked to write down your thoughts about the story in three time blocks, for a grand total of 20 minutes. Each block features a slightly different set of instructions. Please read the instructions in the subsequent pages carefully before you begin your writing.

pg. 1

We are now going to give you a test of your imaginative and emotional capacities. People who are imaginative and really in touch with their emotions generally do very well at this task.

The aim of this exercise is for you to mentally recreate the traumatic event depicted in the movie [or script] you just watched, especially the emotions associated with the events in the story. Now, we want you to close your eyes and try to imagine yourself actually experiencing the event you have just seen and heard [or read] as though you were in the shoes of the character(s). Let your imagination carry you away from this room and into the traumatic situation from the movie [or script]. Experience this imaginary situation as vividly and fully as you can.

Visualize all the details of your imagined surroundings, the sights, sounds, and smells. Get into the fantasy as much as possible. Now we want you to look deeply inside yourself and to really experience as intensely as possible the full extent of your feelings on this imagined event. Now, give yourself a brief moment to imagine this event before moving on.

Click the 'Continue' button below when you're ready to move on.

pg.2

Now, for the next 7 minutes, we want you to explore the full extent of your feelings associated with this traumatic experience by writing them down in the box below. Please write about your thoughts and feelings, including those that may have been brought up by the movie scenes [or scenes in the script] you just watched [or read]. In fact, we want you to focus on your most intense feelings. One way of doing this might be to write on one or two of the movie scenes [or scenes from the script] that brought about your most intense feelings.

Describe as vividly and fully as possible all of the feelings that you have when you imagine this experience. As you write, sink into your feelings more and more. Do not write about your emotions in general, but rather about how you responded emotionally to the particular events depicted in the movie scenes [or scenes from the script]. One way of doing this might be to write about your thoughts and feelings associated with the separation and loss experienced by the character(s), e.g., emotions associated with the character(s) never being able to see their loved one again.

You can repeat yourself as often as you like. All your writing will be completely confidential, so do not be concerned about spelling, structure or grammar. At "Time: 180" the 'Continue'

button will appear to enable you to move on (after approx. 7 minutes), but you may keep writing for another 3 minutes, if you wish.

pg.3

We would like you to write for another 7 minutes. You may continue where you left off in terms of describing your thoughts and feelings that have been brought up by the movie [or script]. We would also like you to try to clarify your thoughts and feelings. Try to write about how you make sense of your thoughts and feelings, where you think they come from, and what they mean for you. One way of doing this might be to write about how you think the character(s) should have dealt with their traumatic events and their aftermath, e.g., holding back strong emotions, losing his/her temper, taking revenge.

Again, you can repeat yourself as often as you like. All your writing will be completely confidential, so do not be concerned about spelling, structure or grammar. At "Time: 180" the 'Continue' button will appear to enable you to move on (after approx. 7 minutes), but you may keep writing for another 3 minutes, if you wish.

pg.4

We would like you to write one last time for 7 minutes. You may continue where you left off in terms of clarifying your thoughts and feelings that have been brought up by the movie [or script]. We would also like you to try to write your interpretation of the meaning of the final scene or moment in the movie [or script]. This scene or moment is pictured [or repeated] above. It features the character Matt Fowler removing a bandage from his finger and looking at it with contemplation. [or Jimmy Markum standing slightly hunched and looking out a window, with a large cross tattoo on his back and lower neck, prominently exposed to the viewer.] Consider this scene in relation to the entire story and tell us what you think it means to you as a viewer.

Again, you can repeat yourself as often as you like. All your writing will be completely confidential, so do not be concerned about spelling, structure or grammar. At "Time: 180" the 'Continue' button will appear to enable you to move on (after approx. 7 minutes), but you may keep writing for another 3 minutes, if you wish.

[Below are instructions for the writing task in the control condition; the instructions appeared in four separate pages/screens in the online questionnaire, where the writing took place in pg. 2 and 3.]

Pg.0

#### Writing Task

Next, you will be asked to write in two time blocks, for a grand total of 20 minutes. Each block features a slightly different set of instructions. Please read the instructions in the subsequent pages carefully before you begin your writing.

Pg.1

We are now going to give you an exercise in mental imagery about events outside of yourself. This is a test of how good you are at perceiving the details of your surroundings. People who are attentive to their environment and who remember things the way they are without distortion generally do very well at this task.

The aim of this exercise is for you to recreate, in your imagination, the physical environment that surrounds you every day, the Penn State University Park campus. Try to visualize all of the



physical details of the campus, the buildings, people, benches, and trees. Concentrate on these images as much as possible. Now, give yourself a brief moment to visualize the campus.

Click the 'Continue' button below when you're ready to move on.

Pg. 2

For the next 10 minutes, we want you to write down as many factual details as you can about the campus. What do the buildings look like and how are they situated in relation to one another? What color are the buildings? Focus on the buildings you frequently come across in your time at Penn State. It is important that you write down only factual details without describing any opinions or emotions. Describe things exactly the way they are, without elaborating on how you feel about them. Your essays should be as clear, detailed, and objective as possible. Remember, we are interested in facts, not feelings.

You can repeat yourself as often as you like. All your writings will be completely confidential, so do not be concerned about spelling, structure or grammar. At "Time: 300" the 'Continue' button will appear to enable you to move on (after approx. 10 minutes), but you may keep writing for another 5 minutes, if you wish.

Pg. 3

For the next 10 minutes, we want you to write down as many factual details as you can about the people on campus. What do people look like going about their daily college life? Where do they usually walk or hang out in the daytime? What are they wearing? Focus on the people and exterior locations you frequently come across in your time at Penn State. It is important that you write down only factual details without describing any opinions or emotions. Describe things exactly the way they are, without elaborating on how you feel about them. Your essays should be as clear, detailed, and objective as possible. Remember, we are interested in facts, not feelings.

You can repeat yourself as often as you like. All your writings will be completely confidential, so do not be concerned about spelling, structure or grammar. At "Time: 300" the 'Continue' button will appear to enable you to move on (after approx. 10 minutes), but you may keep writing for another 5 minutes, if you wish.

## Appendix C: Measurement Instruments

### [Identifier]

1. Please enter the last 4 digits of your cellphone number. Example, if your number is 814-555-1234, please enter 1234.
2. Please enter your month of birth. Example, if you were born in January, enter 01.
3. Please enter your day of birth. Example, if you were born on January 9th, enter 09.

### [Basic Demographics]

1. Age \_\_\_\_\_
2. Gender: M F
3. Race (please check all that apply): American Indian (1), Alaska Native (2), African American (3), Asian or Pacific Islander (4), Caucasian (5), Hispanic (6), Other (7)
4. Class standing: Freshman (1) Sophomore (2) Junior (3) Senior (4) Graduate student (5) Other (6)
5. Have you had children? Yes No
6. English is my first language. Yes No ; if not, Please tell me the name of your first language (e.g., French)
7. How many years have you received instruction in the English language?

### [Life Events and Experiences]

Below are various life events that some people have or will experience. For each event listed, please indicate if you have experienced the event, and if so, how long ago you experienced it:

- 1 = Past 3 months  
2 = 4-6 months ago  
3 = 7-12 months ago  
4 = 1-2 years ago  
5 = 2-3 years ago  
6 = 3-4 years ago  
7 = More than 4 years ago  
0 = Did not happen

- |  |   |
|--|---|
| 1) Reconciliation with romantic partner                                  | 16) Parents divorced or separated                         |
| 2) Became involved in a steady romantic relationship (at least 2 months) | 17) Divorce or marital separation (self)                  |
| 3) Became engaged  | 18) Performed poorly in a class, assignments or exams     |
| 4) Became an uncle/aunt  | 19) Did not get into graduate school                      |
| 5) Became a mother/father  | 20) Unable to locate a job                                |
| 6) Sibling got married   | 21) Got fired or laid off                                 |
| 7) Marriage (self)   | 22) Victim of a violent crime or assault                  |
| 8) Made a new close friend   | 23) Family violence                                       |
| 9) Got a car   | 24) Death or life-threatening illness of a close friend   |
| 10) Joined a club or group   | 25) Serious illness or accident requiring hospitalization |
| 11) Performed in an artistic event                                       | 26) Had problems getting along with                       |

- (concert, etc.)
- |  |  |
|--|--|
| 12) Received an A for a college course                 | coworkers/classmates   |
| 13) Got into graduate school                           | 27) Had problems with troublesome neighbours                   |
| 14) Got a promotion or a raise                         | 28) Had an operation   |
| 15) Parents/relatives gave you a start in business/job | 29) Death or life-threatening illness of a close family member |
|  | 30) Family had financial problems                              |
|  | 31) Had an unwanted pregnancy or abortion                      |
|  | 32) Long-term (at least 3 months) romantic relationship ended  |
|  | 33) Had a difficult time deciding on career or life goals      |
|  | 34) Had a difficult time separating from friends and family    |
|  | 35) Gained weight (at least 10 pounds)                         |

[Mood States and Multiple Affect Adjective Checklists]

Below is a list of words that describe feelings people have. Please reach each one carefully and select an answer that best describes HOW YOU FEEL AT THE PRESENT MOMENT. Use the following scale [changes to 7 point scale with three anchors: Not at all... somewhat... Very Much, based on Oliver's survey on "Close-ended affect."]

- 0 = not at all  
 1 = a little  
 2 = moderately  
 3 = quite a bit  
 4 = extremely

[Depression]	[Fatigue]	[Sad affect]	[Meaningful affect]	[Other affect]
1 unhappy	9 worn-out	14 gloomy	17 touched	27 happy
2 sad	10 fatigued	15 low	18 moved	28 cheerful
3 blue	11 exhausted	16 fine*	19 emotional	29 joyful
4 hopeless	12 weary	['sad' & 'blue',	20 meaningful	30 upbeat
5 discouraged	13 bushed	redundant]	21 compassion	31 depressed
6 miserable			22 tender	32 melancholy
7 helpless			23 poignant	33 distressed
8 worthless			24 introspective	34 angry
			25 contemplative	35 irritated
			26 inspired	['upset' redundant]

\* reverse code this item

[Identification]

The following questions ask about your experience while watching the film. [Since questions are positioned AFTER writing task, use "The following questions ask about your experience of thinking and writing about this story and its characters"] Please indicate how much you agree with the following statements.

- 1 (Strongly disagree)                      4 (Neither agree not disagree)                      7 (Strongly agree)

1. The story affected me emotionally. (Busselle & Bilandzic, 2009, EE)
2. When a main character suffered in some way, I felt sad. (Busselle & Bilandzic, 2009, EE, modified)
3. I felt sorry for some of the characters. (Busselle & Bilandzic, 2009, EE)
4. I think I have a good understanding of the main character(s).
5. I could feel the emotions that the main character(s) portrayed.
6. At key moments in the story, I felt I knew exactly what the main character(s) was going through.
  
7. I could put myself in the main character's shoes. (Maleckar, 2011; cognitive, distinction)
8. I imagined what it would be like to be in the position of the main character. (Maleckar, 2011; cognitive, distinction)
9. I experienced the main character's feelings as if the events were happening to me. (Maleckar, 2011; emotional, merger)
10. I felt as if the main character's feelings were my own. (Maleckar, 2011; emotional, merger)

[Subjective Written Essay Evaluation, OMITTED from Movie-only condition]

The next section asks your evaluation of your own writing, which you completed just a moment ago. To what extent do you agree with each of the following statements?

1 (not at all)                      4 (somewhat)                      7 (a great deal)

My essay revealed my emotions (SubjWrt\_1).

My writing was valuable to me (SubjWrt\_2).

My writing was meaningful to me (SubjWrt\_3).

My writing reflected imagined or made-up events.

My writing reflected events experienced by a friend or someone I knew.

My writing reflected events previously seen in a movie, on TV, in a book, or news in the media.

[Self-Compassion Scale-Short Form or SCS-SF]

The next section asks how typically you act towards yourself in difficult times. Please read each statement carefully before answering. Indicate how often you behave in the stated manner, using the following scale [Changed to 7-point scale to make questionnaire scales more homogeneous, using two end anchors: 'Almost Never or Never' and 'Almost Always or Always'; also added one sentence to instructions: "If you have not experienced some of these difficult times, please select 1 as your response." Also added "In the past 2 weeks" right before each statement so that participants report recent opinions on self-compassion instead of a lifetime/global opinion; Kristin Neff said OK to changes: "This sounds like a good variation. I don't know of any published work changing the scale this way but it's common to make these types of instruction changes to scales so I think it will be fine." (Neff, 2011-08-26, personal communication)]

1. In the past 2 weeks, when I failed at something important to me, I have become consumed by feelings of inadequacy.\*
2. In the past 2 weeks, I have tried to be understanding and patient towards those aspects of my personality I don't like.

3. In the past 2 weeks, when something painful happened, I have tried to take a balanced view of the situation.
4. In the past 2 weeks, when I was feeling down, I have tended to feel like most other people are probably happier than I am.\*
5. In the past 2 weeks, I have tried to see my failings as part of the human condition.
6. In the past 2 weeks, when I went through a very hard time, I have given myself the caring and tenderness I need.
7. In the past 2 weeks, when something upset me, I have tried to keep my emotions in balance.
8. In the past 2 weeks, when I failed at something that's important to me, I have tended to feel alone in my failure.\*
9. In the past 2 weeks, when I was feeling down, I have tended to obsess and fixate on everything that's wrong.\*
10. In the past 2 weeks, when I felt inadequate in some way, I have tried to remind myself that feelings of inadequacy are shared by most people.
11. In the past 2 weeks, I have been disapproving and judgmental about my own flaws and inadequacies.\*
12. In the past 2 weeks, I have been intolerant and impatient towards those aspects of my personality I don't like.\*

\*These items are reversed prior to scoring.

[Regulatory Emotional Self-Efficacy subscales: Distress and Anger, modified instruction by adding "in the past 2 weeks"]

The next section asks you to rate your capacity at managing your emotional life, in the past 2 weeks. For each case, please indicate how well you can handle your emotional life on a scale of 1 (not well at all) to 5 (very well)

[Changed to 7-point scale to make questionnaire scales more homogeneous, using two end anchors: 'Not Well at All' and 'Very Well']

In the past 2 weeks, how well can you keep from getting dejected when you are lonely?

In the past 2 weeks, how well can you keep from getting discouraged by strong criticism?

In the past 2 weeks, how well can you reduce your distress when you don't get the appreciation you feel you deserve?

In the past 2 weeks, how well can you keep from getting discouraged in the face of difficulties?

In the past 2 weeks, how well can you manage negative feelings when reprimanded by your parents or significant others? [added "or close friends"]

In the past 2 weeks, how well can you avoid getting upset when others keep giving you a hard time?

In the past 2 weeks, how well can you get over irritation quickly for wrongs you have experienced?

In the past 2 weeks, how well can you avoid flying off the handle when you get angry?

[Meta-Emotion]

When thinking about the feelings you experienced during the movie you watched or the writing you made [depending on experimental condition], how much do you agree or disagree with the following statements?

1 (Strongly Disagree) — 4 (Neither Agree nor Disagree) — 7 (Strongly Agree)

1. I like this feeling.
2. When I am in this mood, I enjoy it.
3. It was pleasant for me to experience this feeling.
  
4. To me, this feeling was a valuable experience.
5. I find it important to experience these feelings.
6. This feeling was a significant experience for me.
7. This feeling was meaningful to me.

[Wahler Physical Health Symptoms, 10 frequent items only]

The following 10-most-frequent-symptom items were used to construct the shorter version of the Wahler physical symptoms scale; the item number in parenthesis denotes the location of the item in the original list of 42 items:

1. Headaches (item 2)
2. Neck aches or pains (item 4)
3. Feeling hot or cold, regardless of weather (item 5)
4. Arm or leg aches or pains (item 6)
5. Difficulty sleeping (item 10)
6. Backaches (item 12)
7. Intestinal or stomach trouble (item 13)
8. Feeling tired (item 26)
9. Muscular weakness (item 27)
10. Muscular tensions (item 29)

[SF-8 Health Survey, modified “4 weeks” to “2 weeks” & somewhat shorter instructions]

This section asks for your views about your [general] health. This information will help you keep track of how you feel and how well you are able to do your usual activities. If you are unsure about how to answer a question, please give the best answer you can.

1. Overall, how would you rate your health during the past 2 weeks?

Excellent    Very good    Good    Fair    Poor    Very poor

2. During the past 2 weeks, how much did physical health problems limit your usual physical activities (such as walking or climbing stairs)?

Not at all    Very little    Somewhat    Quite a lot    Could not do physical activities

3. During the past 2 weeks, how much difficulty did you have doing your daily work, both at home and away from home, because of your physical health?

None at all    A little bit    Some    Quite a lot    Could not do daily work

4. How much bodily pain have you had during the past 2 weeks?

None    Very mild    Moderate    Severe    Very Severe

5. During the past 2 weeks, how much energy did you have?

Very much    Quite a lot    Some    A little    None

6. During the past 2 weeks, how much did your physical health or emotional problems limit your usual social activities with family or friends?

Not at all    Very little    Somewhat    Quite a lot    Could not do social activities

7. During the past 2 weeks, how much have you been bothered by emotional problems (such as feeling anxious, depressed or irritable)?

Not at all    Slightly    Moderately    Quite a lot    Extremely

8. During the past 2 weeks, how much did personal or emotional problems keep you from doing your usual work, school or other daily activities?

Not at all    Very little    Somewhat    Quite a lot    Could not do daily activities

[Center for Epidemiologic Studies Depression Scale, 10-item or CESD10]

In the next section, please tell me the extent to which you have felt or behaved each of the following ways during the past week.

1 = Rarely or none of the time (less than 1 day)

2 = Some of the time (1-2 days)

3 = Occasionally (3-4 days)

4 = Most of the time (5-7 days)

1. I was bothered by things that don't usually bother me.
2. I had trouble keeping my mind on what I was doing.
3. I felt depressed.
4. I felt that everything I did was an effort.
5. I felt hopeful about the future. \*
6. I felt fearful.
7. My sleep was restless.
8. I was happy. \*
9. I felt lonely.
10. I could not get "going".

(\* denotes reversing positively-worded items)

[Spielberger's State-Trait Anxiety Inventory-short form or STAI-SF]

Read each statement and select the appropriate response to indicate HOW YOU FEEL right now, that is, AT THIS VERY MOMENT. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best on the following scale:

1 (Not at all)

2 (A little)

3 (Somewhat)

4 (Very much)

1) I feel calm\* (STAI item 01)

2) I feel tense (STAI item 03)

- 3) I feel upset (STAI item 06)
- 4) I am relaxed\* (STAI item 15)
- 5) I feel content\* (STAI item 16)
- 6) I am worried (STAI item 17)

(\* denotes reversing positive items)



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## EDUCATION

- Ph.D. in Mass Communications (Cognate: Media Effects)  
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The Pennsylvania State University, August 2012  
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- M.S. in Mechanical Engineering  
P.C. Rossin College of Engineering and Applied Science  
Lehigh University, 2000
- B.S. in Physics & Mathematics, Film minor  
School of Natural and Social Sciences  
Susquehanna University, 1998

## AREAS OF RESEARCH INTEREST

Media Psychology and Media Effects  
Narrative Media  
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## AREAS OF TEACHING

Quantitative Research Methods  
Media Psychology and Media Effects  
Film Theory

## CONFERENCE PAPERS, PEER-SELECTED

Khoo, G. S. (2012, August). *The cathartic effects of narrative entertainment through contemplation: Examining the mediating role of self-perceptions on health outcomes after fictional drama exposure*. Paper to be presented at the annual conference of the Association for Education in Journalism and Mass Communication (AEJMC), Chicago, IL.

Khoo, G. S. (2012, July). *Exploring catharsis via cinematic human drama*. Paper to be presented at the International Society for the Empirical Study of Literature and Media (IGEL) in Montréal, Canada.

Khoo, G. S. (2011, August). *Coping catharsis: The therapeutic effects of cinematic human drama*. Paper presented at the StoryNET symposium in the 7th Conference of the Media Psychology Division of the German Psychological Society in Bremen, Germany.

Oliver, M. B., Woolley, J. K., Limperos, A., Tamul, D. J., Bae, K., & Khoo G. S. (2011, May). *Meaningful affective states predict favorable evaluations of meaningful entertainment*. Paper presented at the Information Systems Division of the International Communication Association (ICA) at the 61st annual conference in Boston, MA.

Khoo, G. S., Jia, H., & Hafernik, C. (2010, June). *To friend or not to friend? An exploratory study of psychological effects of interface cues in Facebook friend requests*. Paper presented at the Communication and Technology Division of the International Communication Association (ICA) at the 60th annual conference in Singapore.