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The Unintended Consequences of Disaster-Related Media Coverage

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Introduction

The media has played many roles when it comes to covering natural and human-made disasters: informing community residents of impending storms or floods, telling human-interest stories about the victims/survivors of these events, and educating people about the resources available in disasters' aftermath. Media also educate the public about how to avoid future recurrences of preventable tragedies (e.g., house fires, drowning in a backyard swimming pool) and seek to create awareness of trauma or injustices (e.g., armed conflict, ethnic and racial oppression) that undermine the social fabric.

However, over the past two decades the nature of media coverage has dramatically changed as new media outlets (e.g., Facebook, Twitter) have altered public access to information. The simultaneous increase in severe climate-related disasters and persistence of armed conflict (Leaning & Guha-Sapir, 2013) now allows people to wade through vivid media descriptions of disaster-related debris across the world. Audio, visual, and text accounts of natural disasters and atrocities committed across the globe personalize humanity's plight and motivate calls for social or political change. Graphic images transport war into the homes of individuals who otherwise could only imagine its pain. Victims of disasters cry out for attention to their plight through media coverage. Social media's dissemination of explicit citizen-produced videos of police beatings and shootings of unarmed African Americans have sparked greater scrutiny of law enforcement and judicial policies. However, in the current era of the 24-hour news cycle and ubiquitous digital news platforms, a growing body of literature suggests the media's role in the aftermath of disasters/trauma may have a more complex, injurious impact.

Media outlets – under competitive pressure to provide “breaking” news – may disseminate exaggerated or incorrect information and circulate live unedited graphic images, with serious potential consequences

as repeated exposure to disaster-related media coverage has been linked with adverse health outcomes. Operating as a form of “risk amplification,” media exaggerations of danger have been found to increase public anxiety, fear, and perception of disaster-related physical health problems (Vasterman et al., 2005). Widespread media coverage of events such as the 1995 bombing of the Murrah Federal Building in Oklahoma City (e.g., Pfefferbaum et al., 2000), the 2001 September 11 (9/11) attacks (Ahern et al., 2004; Silver et al., 2013), and the 2013 Boston Marathon bombings (Holman et al., 2014) have expanded the boundaries of disasters from geographic to virtual, transforming them into widespread collective traumas associated with poor psychological outcomes identified not only in directly exposed individuals but also in those who were indirectly exposed through the media. Current diagnostic criteria for posttraumatic stress disorder (PTSD) specifies that trauma exposure “must result from one or more of the following scenarios, in which the individual: experiences firsthand repeated or extreme exposure to aversive details of the traumatic event (not through media, pictures, television or movies unless work-related)” (American Psychiatric Association, 2013). However a growing body of research findings linking media exposure with significant post-trauma psychological symptomatology calls into question its exclusion.

Media as Exposure

Media exposure can be seen as a “secondary traumatization” triggering symptoms consistent with those of PTSD (e.g., avoidance, numbing, hyperarousal, intrusive images) for some people, although they may be milder (Ben-Zur et al., 2012). Viewing trauma/disaster via the media may elicit fear responses or memory-related cognitive processes (e.g., encoding) similar to those associated with direct trauma exposure and threat appraisal leading to a diminished feeling of security (Houston, 2009). Expansive high definition

(HD) televisions display traumatic events in a way that is more “real” than was the case with older technology. HD television has been found to enhance a viewer’s sensation of being present in the scene portrayed (Bracken, 2005). Indeed, Bracken et al. (2010) labeled the degree to which a viewer has the sensation of experiencing the medium directly as “telepresence.” Subsequently, after comparing mobile devices, computers, and television researchers found that screen size correlates with greater telepresence and that screen quality and size both predict the response intensity (Lombard et al., 1997). Gerbner’s (1998) concept of “cultivation theory” posits that television, and later its electronic descendants such as the Internet, make a strong contribution to viewer “conceptions of social reality” (p. 189). If electronic media influences a viewer’s perception of reality, we can reasonably suggest that exposure to electronic media may contribute to posttraumatic stress (PTS) symptoms and other psychological responses to disasters, including acute stress, anxiety, and depression. Given the significant role of media in our daily lives, its impact on our well-being is likely to grow as reality television blurs the line between fiction and reality and promotes social media use (Stefanone et al., 2010).

As technology has qualitatively enhanced the viewer experience, the frequency of media exposure has also increased with the proliferation of smart phones, other electronic devices, and social media. Using the number of information bytes delivered to American homes as a marker of media use, a 2013 report published by the University of Southern California Marshall School of Business projected that in 2015 total media use in the United States would be 15.5 hours per person per day – a 36% increase from 2008. Moreover, monthly viewing of videos on the internet was projected to increase nearly fourfold from an average of 3 hours per person in 2008 to 11 hours per person in 2015, while the total use of Facebook and YouTube was projected to increase from a total of 6.3 billion hours to 35.2 billion hours annually (Short, 2013). As devices capable of providing high-quality media experiences proliferate, the role of the media in our lives will likely continue to grow, providing more opportunities for indirect exposure to disaster and other traumatic events occurring around the world.

In sum, a growing body of evidence challenges current thinking about the role of the media – especially television – in “exposing” individuals to trauma. In its simplest form, the concept of “exposure” is a factor in

a causal pathway that exhibits a dose-response relationship with an outcome (mental health). As discussed later in this chapter, research has found that media-based exposure (dose) can be found on the causal pathway to adverse psychological outcomes (response). Additionally, just as in environmental epidemiology where adverse health results when the exposure (the “agent”) reaches the “target” (an organ or organ system) (Zartarian et al., 1997), media targets the brain and influences cognition, emotion, and perceptual processes sometimes resulting in poor mental and/or physical health.

The Psychological Response to Media Coverage of Disasters

Since the 1995 Oklahoma City bombing and the 9/11 World Trade Center (WTC) attack, a proliferation of literature has described the psychological outcomes associated with exposure to media coverage of major disasters. After the Oklahoma City bombing, researchers studied psychiatric disorders in bombing survivors (North et al., 1999) and children whose parents died in the attack (Pfefferbaum et al., 1999). Soon thereafter attention turned to the stress responses of children living 100 miles from the site, who were only exposed to the bombing through television (Pfefferbaum et al., 2003). Similarly, after the WTC attacks, stress responses were documented among individuals who reported high levels of media-based exposure as well as people who were directly exposed (i.e., proximity to the site, injured, or had friends or relatives injured or killed). In cross-sectional (e.g., Lau et al., 2006), prospective longitudinal (e.g., Silver et al., 2013), and experimental studies (e.g., Ortiz et al., 2011), researchers internationally have quantified the association between indirect media-based disaster exposure and PTS symptoms, PTSD, acute stress, depression, fear of future disasters, and other adverse mental health outcomes. Moreover, media exposure appears to have a stronger association with subclinical levels of PTS symptoms than with PTSD (Galea & Resnick, 2005). This association is not moderated by disaster type (i.e., terrorism), but it does depend in part on geographic proximity to the event; ironically, the farther people live from an event site, the stronger the association between media coverage and PTS (Galea & Resnick, 2005). A succession of papers has described how indirect exposure through media can elicit deleterious outcomes comparable to adverse outcomes elicited by direct exposure.

Table 12.1 Key topics and major findings

Key Topics	Major Findings
Frequency of exposure	Frequent television viewing of terrorism or war and of specific devastation content (e.g., planes hitting buildings or people jumping or falling from the WTC, rape, lack of humanitarian aid) is positively associated with probable PTSD independent of pre-event psychological health. Frequent television viewing of disaster/trauma coverage also predicts acute stress, dreams reflecting greater distress, fear for personal and family safety, and increased incidence of physical health ailments. ^a
Fear for personal safety	Viewing 9/11 television coverage was linked to fear for personal and family safety. Early exposure to television coverage of the 1995 Oklahoma City bombing was linked to persistent fear, sadness, and anger. Middle school children living 100 miles from Oklahoma City who viewed the bombings on television reported continuing to feel unsafe two to three years after the event. Traumatic imagery has been linked to activation in brain regions that play a role in fear responses. ^b
Indirect exposure compared to direct exposure	Individuals directly exposed to 9/11 and who saw people jumping or falling from the WTC on television had higher rates of PTSD and depression; watching 9/11-related images was linked to PTSD or depression in those not directly exposed. Indirect exposure to the Boston Marathon bombings through six or more hours of daily media coverage in the week post-BMB was associated with higher acute stress than was direct exposure to the bombings. ^c
Viewing specific images	Viewing specific images such as buildings being hit by planes or people jumping and falling from the World Trade Center during 9/11 was linked to higher rates of PTSD and depression. Children viewing images of death/injury also have higher rates of PTSD. Frequency of seeing specific Iraq War-related images has been linked to high acute stress. ^d
Social media compared to traditional media	Individuals who relied primarily on social media reported higher posttraumatic stress reactions (PTSR) than individuals who relied on traditional media. ^e
Re-traumatization	Iraqi refugees watching media coverage of the Iraq war predicted PTSD, and the effect size was comparable to having a family member or close friend killed in the war. In disaster assistance, medical personnel exposed to more than four hours of television coverage of the event to which they responded was associated with higher PTSD symptoms in a longitudinal study. ^f

^a Ahern et al., 2004; Bernstein et al., 2007; Busso et al., 2014; Holman et al., 2014; Lau et al., 2006; Pfefferbaum et al., 2014b; Propper et al., 2007; Silver et al., 2013

^b Bourne et al., 2013; Pfefferbaum et al., 2008; Pfefferbaum et al., 2014b

^c Ahern et al., 2002; Holman et al., 2014

^d Saylor et al., 2003; Silver et al., 2013

^e Goodwin et al., 2013

^f Kira et al., 2008

Adults

A growing body of research has demonstrated the negative impact of indirect media-based disaster exposure in adults (see Table 12.1). Adult residents of the New York City (NYC) area – including Manhattan, the NYC boroughs (i.e., Brooklyn, Queens, the Bronx, Staten Island), plus surrounding New Jersey and Connecticut counties – with no baseline probable PTSD who reported prolonged exposure to media coverage of the one-year anniversary of the 9/11 attacks had 3.4 times greater risk of developing new-onset probable PTSD (Bernstein et al., 2007). Another 9/11-related study found that media exposure was significantly associated with changes in dream content from before to after the 9/11 attacks; individuals reporting more media exposure the day of the attacks had dreams reflecting significantly greater

distress post-9/11 (Propper et al., 2007). Media-based exposure has been associated with adverse mental health in national studies across the United States (e.g., Silver et al., 2013) and international studies (e.g., Holmes et al., 2007) as well.

A recent study comparing the acute psychological impact of direct vs. indirect media-based exposure to the 2013 Boston Marathon Bombings (BMB) in a national sample of adults found that respondents who reported engaging in six or more hours per day of media coverage during the week following the BMB reported significantly higher acute stress than respondents reporting less than 1.5 hours of daily exposure (Holman et al., 2014). Importantly, acute stress was significantly higher in individuals indirectly exposed to the BMB through media than it was in those who were directly exposed (e.g., self or close other at the

marathon, living in areas locked down during the law enforcement search for one of the suspects) (Holman et al., 2014).

Although we know direct exposure to all types of trauma may affect mental and physical health, media exposure to the same event can also independently exacerbate the impact of direct exposure in adult trauma survivors (Schlenger et al., 2002). Following the 2011 earthquake and tsunami in Japan that left thousands of people dead or missing, Disaster Medical Assistance Team (DMAT) members who were directly exposed as rescue workers reported significantly higher PTS symptoms if they were exposed to more than four hours of television coverage of the disasters as well (Nishi et al., 2012). In a nationally representative U.S. sample exposed to the 9/11 attacks *only* through the media, those who reported high levels of acute stress reported *increased* incidence of physician-diagnosed cardiovascular ailments over the subsequent three years, even after controlling for pre-9/11 mental and physical health, demographics, ongoing stress, and other cardiovascular risk factors (Holman et al., 2008). These findings were strongest for individuals who felt the greatest fear of future terrorism one year post-9/11 – a fear that could be inflamed by extensive 9/11-related media exposure.

Children and Adolescents

Similar results have been found in adolescents and children. However, the impact of indirect exposure is stronger for youth than it is for adults (Galea & Resnick, 2005). In children who lived 100 miles from Oklahoma City during the bombing, vicarious exposure through television elicited increased levels of PTSD symptomology and probable PTSD (Pfefferbaum et al., 2000; Pfefferbaum et al., 2008). Even children as far away as London, England, who watched television coverage of the WTC attacks reported PTS symptoms, had persistent intrusive imagery related to 9/11, and had increased perceptions that their own lives were in danger (Holmes et al., 2007). The consistency of these findings raises questions about the mechanisms underlying these effects.

There are several possible individual and environmental explanations for children and adolescent vulnerability to indirect media-based disaster exposure. For example, if children personally identify with media content, they may be more likely to feel threatened and stressed through media exposure (Becker-Blease

et al., 2008; Ortiz et al., 2011). Moreover, it appears that adolescents with lower autonomic nervous system (ANS) reactivity only develop PTSD when they have higher levels of indirect media-based exposure, suggesting synergy between media exposure and ANS reactivity following trauma for some people.

The impact of these individual risk factors on post-disaster distress may also be exacerbated or tempered by the broader social environment in which children live. Family environments powerfully shape children's vulnerability: children from families with unstable or unsupportive interpersonal relationships who reported greater exposure to television coverage immediately after 9/11 also reported elevated distress levels (Kennedy et al., 2004). Parental mental health may also influence that of their children (Beardslee et al., 1998; Lambert et al., 2014; Lester et al., 2010). For example, children whose parents have poor psychological health are themselves more likely to have major depression, poor functioning, and interpersonal difficulties (Beardslee et al., 1998), and children of soldiers deployed to combat in Iraq or Afghanistan have exhibited adverse behavior changes corresponding to poor mental health of the non-deployed parent (Lester et al., 2010). Indeed, parental behaviors and responses may powerfully affect adolescent responses to the same index trauma (Gil-Rivas et al., 2004). Given the greater impact of indirect media-based trauma exposure on children/adolescents' mental health, their extensive engagement with multiple new forms of media technology, and their susceptibility to social-environmental risks, future research should examine the complex influences of disaster-related media exposure on their health and well-being.

Mechanisms Linking Media Exposure with Psychological Response

Empirical work seeking to tease apart *how* media-based trauma exposure is associated with mental or physical health is scant. Nonetheless, Figure 12.1 depicts several important mechanisms that should be considered in future research seeking to explain these associations. While this is speculative, it is drawing from what little work has been done to identify future directions. Media characteristics to be examined include media type (e.g., television, radio, social media); number of types of media consumed; content of the media story (e.g., graphic or bloody images, death); and the vividness with which the media is

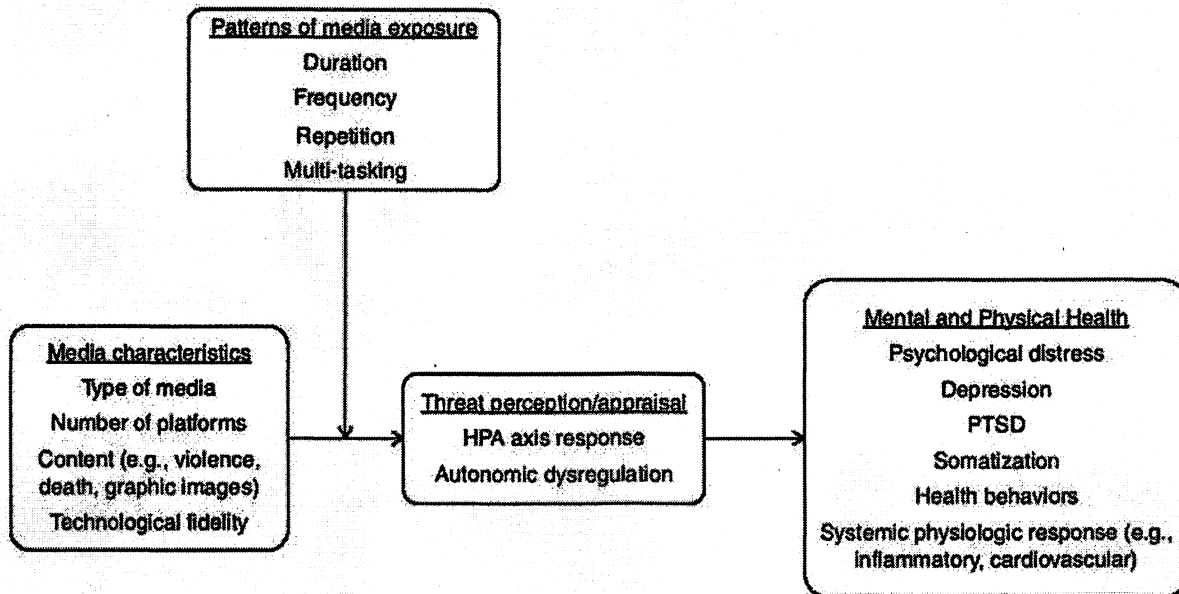


Figure 12.1 Potential Mechanisms Linking Indirect Media-Based Exposure to Traumatic Content with Mental and Physical Health Outcomes.

consumed (e.g., image resolution, sound quality). Each of these characteristics may contribute independently to media consumers' threat perception and appraisal. However, the patterns of media exposures must also be considered. Television news stories regularly repeat cycles of the most eye-catching footage while telling viewers a story. People also vary in terms of how often (frequency) and how long (duration) they attend to media stories, and many people multitask using several media sources at once, thereby increasing the paths by which they are exposed simultaneously. Patterns of media exposure may also potentiate the impact of media characteristics on perceived threat, resulting in subtle physiologic responses (see Bodas et al., 2015). Over time, an accumulation of these kinds of responses may lead to mental and physical health problems linked to traditional stress responses in the body (see Figure 12.1).

Type of Media Exposure

As technology has facilitated unprecedented 24/7 media access through multiple devices (television, computer, phones, tablets, etc.) and platforms (Facebook, Twitter, etc.), the amount of time spent actively engaging with various media sources has increased (Kohut et al., 2010). There are clear benefits to these technological advances: social media has created a conduit for interpersonal connectivity and

social support during and after disaster, such as confirming loved ones' safety or sharing information and emotional responses through broader bonding networks (Neubaum et al., 2014). However, easy access to disaster-related media may also have a downside, especially when people are inadvertently exposed to potentially disturbing content and images. The impact of being "wired" through multiple media platforms may pose even greater threat to children and adolescents, who appear to be more vulnerable to the negative impact of media-based exposures.

To date, most studies have focused on exposure to television coverage of terrorism – specifically the 9/11 attacks. The primary outcomes have been PTSD caseness, PTS, depression, anxiety, acute stress reactions, and substance use (Pfefferbaum et al., 2014a). Findings suggest that the amount of television exposure, how closely an individual pays attention to news coverage of an event, and a person's own history of trauma victimization are all predictors of fear of terrorism (Nellis & Savage, 2012). Although research about the influence of the internet, radio, or newspapers is insufficient to draw any conclusions about how other media platforms may affect post-disaster psychological health (Pfefferbaum et al., 2014a), preliminary evidence suggests we need to tease apart the unique contributions of different types of media on post-disaster mental health. A meta-analysis of 23

studies suggested that exposure to multiple media platforms (i.e., television, internet, print) more strongly predicted PTS than exposure to television alone (Houston, 2009). This finding is particularly salient in light of the public's increasing reliance on multiple platforms for news (Houston, 2009). Multiple platforms make it easier to access media coverage, thereby increasing the likelihood of both multiple exposures via repetition and greater variation in exposure content for different events.

Although individuals voluntarily access multiple sources of media, people are also inadvertently subject to multiple points of exposure through e-mail and text messaging, as well as video feeds at the gas pump, the grocery store, in airports, or in taxi cabs. Breaking news banners or interruptions often occur while online or while watching more benign television shows such as sitcoms or feature news stories. The lack of control over these exposures may render people more vulnerable to their negative impact. The end result could bode poorly for public health over time, as the cumulative indirect media-based exposures to 9/11, Superstorm Sandy, and the Sandy Hook School shootings sensitized individuals to the negative impact of the Boston Marathon Bombings (Garfin et al., 2015).

Attempts have also been made to examine whether specific types of media are more damaging than others. After Superstorm Sandy devastated the New York metropolitan area in October 2012, respondents directly exposed to the storm (loss of property or directly witnessed injury) had higher PTS if they had primarily depended on social media for information about the disaster than if they had relied on traditional platforms (Goodwin et al., 2013). Following Typhoon Haiyan, social media exposure was associated with significantly higher acute stress and psychological distress than was traditional media exposure. YouTube and Twitter were primarily responsible for these associations (Goodwin et al., 2015). Given how frequently young people use social media, these findings may have more serious implications for younger generations, especially children and adolescents who are already at higher risk for deleterious impacts of disaster-related media coverage.

Together these studies demonstrate the need for more research to flesh out the unique contributions that different types of trauma-related media exposure can have on users' psychological health. As part of this work it is important to identify the qualities of

the media exposure that may trigger untoward symptoms (e.g., visual images, verbal content, tone of verbal content).

Response to Graphic Images in Media

Experimental research has found that exposure to traumatic imagery can trigger both brain activity and core psychological symptoms related to PTSD – fear and flashbacks. Viewing traumatic films has been associated with increased activity in the amygdala, the anterior cingulate cortex, and other brain regions that play a role in fear responses (Bourne et al., 2013; Clark et al., 2016). Similarly, when compared to watching a video of a professor lecturing, viewing 9/11-related video coverage produced more contextually vivid and distressing dream activity in college students (Davidson et al., 2005). Prospective research with a nationally representative sample later demonstrated that the frequency with which respondents reported seeing images of the Iraq War was associated with high war-related acute stress. Two images appeared to be particularly upsetting: images of allied prisoners of war and images of dead Iraqi children (Silver et al., 2013). To the extent that viewing traumatic imagery induces neural activity associated with intrusive flashbacks, it may prove detrimental for mental health (see Pearson et al., 2015).

As noted earlier, media-based exposures may also exacerbate the impact of other potential vulnerabilities (e.g., prior exposures, personal characteristics). Adults who were directly exposed to the 9/11 attacks (proximity, injury to self, friend, or relative) and viewed specific television images of people jumping or falling from the Twin Towers had significantly increased odds of PTSD and depression when compared to those who were directly exposed but did not see the images (Ahern et al., 2002). Similarly, Iraqi refugees living in the United States found that watching media coverage of the war in their homeland predicted development of PTSD. The effect was comparable to losing a family member or close friend in the conflict (Kira et al., 2008).

A few studies have examined how exposure to disaster-related images may affect specific emotional responses. In adults and children, greater exposure to graphic images (e.g., dead bodies, people jumping from the WTC) was associated with both higher PTS symptoms (Ahern et al., 2002; Saylor et al., 2003) and specific emotions. That is, some images evoked anger

(planes hitting the WTC towers), some shock (people jumping from towers), and others sadness (dead bodies) (Fahmy et al., 2006). It is not only vivid images that can affect people – experimental studies using the traumatic video paradigm for studying their impact on subsequent intrusions suggest that auditory exposure to traumatic content may increase risk for negative psychological outcomes (Krans et al., 2011).

The influence of viewing graphic videos/images of traumatic events is particularly salient because we live in a world where visual coverage has become integral to news coverage, which often includes graphic, high-quality images. Indeed, highly disturbing, graphic videos can be disseminated at the speed of broadband. Although multiple media platforms include images of disaster, research has primarily focused on the effects of television viewing. Greater attention must be paid to the impact of viewing graphic content on new media platforms and the specific aspects of media exposure (repetition, graphic content, audio, etc.) that may explain the impact of indirect media-based disaster exposure on mental health.

Given that *inadvertent* exposure to images a parent is watching is associated with persistent, image-related fear years later in children (Riddle, 2012), combined with the proliferation of passive public media displays (e.g., grocery lines, gas stations), we must also consider potential impacts of *active* vs. *passive* image exposures. This is especially important in light of incidents such as the 2015 murders of two journalists on *live* television in Roanoke, Virginia. The horror of this act was forced on the public like a home invasion – there was no stopping it. Under these circumstances the viewing public has no choice in the act of watching except to close one's eyes and/or cover one's ears, neither of which can take away the shock and horror of such a graphic, *live* public display of violence.

The potentially distressing role of graphic images in media reports has also triggered great debate about the ethics of showing versus not showing this content. As documented earlier, there are potential health risks to viewers who see this content. But the media has a social responsibility to raise public awareness about global events and/or call for intervention to prevent human suffering (e.g., the 2010 Haiti earthquake, war crimes). How should the media cover these stories given that they may be distressing for viewers to watch? The *60 Minutes* story on the sarin gassing of Syrian civilians – which showed graphic images of dead/dying civilians – has brought this question to

the fore (<http://www.cbsnews.com/news/behind-60-minutes-decision-to-show-disturbing-video/>). After careful deliberation about whether or not to show these images, the decision was made to show them in the interest of raising public awareness about a serious war crime against humanity. Such decisions are not without consequences, however, for both viewers and potentially the victims who were interviewed.

Psychological Outcomes in Subjects of Media Coverage

Although we know little about potential consequences for trauma victims of interacting with journalists, preliminary studies suggest the experience generates mixed feelings in individuals being interviewed. Consenting to media interviews risks further traumatizing survivors but may also have positive outcomes. How a trauma survivor experiences interactions with journalists influences stress responses; a negative or upsetting experience may predict higher levels of PTSD (Thoresen et al., 2014).

Children who survive disasters are particularly vulnerable to the effects of being interviewed by journalists. Their participation may be involuntary, having been persuaded by their parents to talk to reporters, either because their parents have succumbed to pressure from journalists or because their parents hope to receive offers of financial support. The experience can leave children feeling further traumatized, depressed, dissociated, or re-traumatized (Libow, 1992). Media coverage can also undermine their emotional responses, as they are encouraged to feel good about their own survival even if they have lost parents or other close relatives. Experiences with the media may leave children feeling even more powerless than did the disaster itself. Alternatively, children may feel supported by public responses to coverage in the form of direct offers of support, such as letters or gifts (Libow, 1992). Either way, it is important to carefully consider how such involvement in the media may impact a child before involving him/her in a story.

The Positive Media Role in Disaster

Disaster-related media also has a beneficial impact. Journalists inform the public about necessary precautions when facing an impending natural disaster (e.g., hurricane) or terrorist threat, and media broadcast valuable information about measures to be taken as events unfold. In these cases, the absence of media

coverage could endanger the lives of people who are not forewarned about an impending disaster and updated with accurate information regarding the disaster's unfolding impact. For example, relief agencies can best disseminate vital information about shelter locations or suggested evacuation routes through media outlets. Without this information people may experience isolation and fear.

Media can also intervene to promote greater understanding of common responses to disaster. After the 1999 flooding in Vargas State, Venezuela, and the 1998 bombing of the U.S. Embassy in Nairobi, Kenya, media campaigns supported recovery efforts by informing the public about mental health and offering a platform for the public to express emotional responses to the bombing in order to seek social support. Journalists in both countries helped de-stigmatize adverse psychological responses by effectively informing the public about PTS symptomatology and other possible reactions to trauma (Ortero & Njenga, 2006). A multi-platform media campaign in metropolitan NYC after 9/11 facilitated hotline use for counseling service referrals – in fact, there was a temporal relationship between the spending on media campaigns and an increase in hotline call volume (Frank et al., 2006). Furthermore, after Hurricane Katrina devastated New Orleans, a radio campaign addressing prevention measures for stress and depression effectively increased utilization of a help line (Beaudoin, 2008).

Indeed, some of the same media portrayals of disaster that elicit harmful psychological responses can often motivate donations to disaster relief organizations (Bennett & Kottasz, 2000). Social media can also play a powerful role in disaster assistance. After an earthquake devastated Haiti in 2010, social media served as a virtual lifeline for survivors as well as for aid organizations delivering assistance (Nelson & Patel, 2011). Together these findings demonstrate

the potential for media to positively impact the public through facilitating their access to much needed resources.

Recommendations for Management of Media Exposure

Although we live in an era of ubiquitous media coverage when multiple information platforms facilitate the spread of news in real time, there are simple steps that can be taken for management of media exposure (see Table 12.2 for a summary of these recommendations). Avoiding exposure to traumatic coverage is recommended but not always possible. Moreover, as media disaster coverage can serve a positive goal, avoiding it altogether may be ill advised.

Consuming media to stay informed, while avoiding repetitive media coverage, is recommended. If the coverage focuses on a local developing disaster, watching for updates, safety precautions, or danger signs is constructive. Watching previously viewed images of devastation or carnage from local crises or other more distant collective traumas is not recommended. Additionally, limiting the vividness of high-definition technology by muting the sound is suggested, thereby minimizing the sensory input that may contribute to the medium's adverse effects. This exercise in willpower requires a conscious effort, which can be challenging in the digital age when traumatic media coverage has become a regular component of life's daily rhythm.

Young children gain little from watching coverage of traumatic events. Parents or other responsible adults should carefully limit the opportunities for direct or inadvertent exposures to traumatic imagery or content. Adults can strive to make age-appropriate decisions about the media coverage children consume and exercise some control over the media habits

Table 12.2 Recommendations for media use in the context of disaster

Ways to Engage Media	Things to Avoid
Consume media to stay informed	Avoid repetitive coverage
Watch for updates on local disasters	Do not watch previously viewed images/stories
Engage the media as a deliberate act	Minimize news as background chatter
Make age-appropriate decisions about the media children consume	Refrain from giving children direct or inadvertent exposure to traumatic content
Educate adolescents about risks of overexposure to traumatic content	Limit adolescents' traumatic content exposure by limiting media-viewing hours

of the young people in their lives. The older the children grow, the less realistic it becomes for adults to control what they hear, see, and read, as comprehensive monitoring of adolescent media habits is practically unachievable. However, establishing rules for media-viewing hours or creating an alternative media environment that minimizes cable news background chatter is reasonable. It may also be appropriate for adolescents to be educated about the potential for harm from overexposure to this kind of media content. Turning on the television or consuming news should be a deliberate act, not an unconscious or habitual one that has no constructive intent.

The public is urged to deliberately avoid viewing graphic videos posted by terrorist groups, for whom social media has become an incitement and recruitment tool. Doing so not only prevents exposure to a particularly gruesome genre of media images but also deprives the purveyors of this toxic content a conduit for their message. Indeed, refusing to expose oneself to media content that intentionally seeks to terrorize and intimidate the population is itself a form of resistance that diminishes the power of terrorist groups.

Finally, given the findings described herein, it is suggested that health professionals should advise their patients to take precautions to minimize their exposure to traumatic media coverage. This would not be a matter of simply turning off the television, but would entail judicious consumption of media, avoiding prolonged exposure by taking regular breaks from engaging media coverage of events. Health professionals should also collaborate with other community and media leaders to agree on a protocol that balances the need to inform the public with the need to avoid endangering the public's health. When an event occurs, health professionals and researchers should engage with media outlets to encourage (1) dissemination of accurate information that facilitates viewers' ability to cope, (2) use of warnings before showing images of graphic violence, and (3) avoidance of exaggeration and propagandistic approaches to media coverage. They should also actively encourage the public to avoid excessive media consumption.

Conclusion

The relationship between media and psychological responses to disaster is a complex one and far stronger than has been previously understood. Traditionally the media's role during disaster has been to warn the public about impending crises, disseminate

information about available resources, and report on the toll of distant traumas or injustices, thus personalizing humanity's plight and motivating calls for social or political change. However, the growing body of research richly describes the psychological outcomes elicited by indirect trauma exposure through viewing media coverage as a potential form of secondary traumatization. Research has consistently found that indirect exposure to traumatic events through media can pose significant independent risk for psychological disorders in adults, adolescents, and children, and even exacerbate distress in people directly exposed to the trauma in question.

It is also possible that those who are already distressed are drawn to media coverage in the aftermath of tragedy, and viewing television may be used as a coping mechanism. However, early post-event media-based trauma exposure is linked to subsequent health outcomes independently of pre-event mental health and early post-event distress, suggesting that pre-event distress is not driving the negative impact of media exposure. While some researchers attribute the influence of the media to the perceived credibility of the information, other researchers maintain that the effect of media exposure is linked to how attentive people are to what they are viewing. Although graphic images may have biological implications, there is clearly much to learn about the mechanism through which media exposure is a psychological risk. It is not known if it is the content of graphic images, the specific message or its appraisal, the repetitive exposure, and/or the accumulation of multiple exposures to different events that drive these effects (see Figure 12.1). Just as graphic image exposures may trigger fear-related brain activity, it is questionable whether other sensory input (e.g., audio) – radio, television, or online video – has a unique influence on psychobiological responses.

Despite its potential for harm, the media can play a constructive role in promoting post-disaster recovery – whether it is journalists reporting stories about available assistance or public-sector officials waging public-interest campaigns. Media depictions of devastation can motivate donations to disaster relief organizations and social media can serve as a vital conduit for survivors seeking assistance. Social media can also be a conduit for confirming that loved ones are unharmed, and for sharing information or emotional responses by gathering users into a network with others who have connections to the trauma. Finally, media can play a constructive role in elucidating the human toll of preventable crises

and atrocities. In sum, much research is needed to better understand the complex effects that media exposure may have on mental and physical health in order to minimize potential harm, inform clinical approaches, and maximize the use of media as a tool to promote resilience and ameliorate suffering.

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