Long-Term Memories of Frightening Media Often Include Lingering Trauma Symptoms[1]

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Abstract

College students who wrote narrative accounts of their exposure to popular frightening television programs or movies before the age of 14 often included descriptions of sleep disturbances (58% of participants) as well as interference with their waking life (58%), including long-term avoidance of, or anxiety in situations not normally considered threatening. These surprisingly strong and seemingly irrational reactions are consistent with LeDoux's two-system conceptualization of fear memories.

Background

There is a growing body of literature demonstrating that exposure to frightening content on television and in the movies is associated with intense emotional reactions that extend well beyond the time of viewing. For example, a survey of elementary and middle school children reported that the more television a child watched, the more likely he or she was to report the symptoms of anxiety, depression, and posttraumatic stress (Singer, Slovak, Frierson, & York, 1998). A survey of parents of elementary school children reported that more hours of television viewing (especially at bedtime) were associated with higher rates of nightmares, difficulties with falling asleep, and the inability to sleep through the night (Owens, Maxim, McGuinn, Nobile, Msall, & Alario, 1999). Nine percent of the children studied experienced television-induced nightmares at least once a week. A more recent survey involving a representative sample of students in Belgium reported that approximately one-third of 13-year-old boys and girls said they experienced media-induced nightmares at least once a month (Van Den Bulck, 2004).

Although simple correlational studies cannot rule out the alternative explanation that anxious children or those with sleep problems seek out greater levels of television viewing, a recent longitudinal survey supports the interpretation that viewing precedes and promotes these problems. Jeffrey G. Johnson and colleagues (2004) conducted a prospective panel survey that measured children's television viewing and sleep problems at ages 14, 16, and 22 years. They reported that adolescents who watched more than three hours of television at age 14 were significantly more likely than lighter viewers to experience sleep problems at ages 16 and 22, even after controlling for previous sleep problems and other factors such as psychiatric disorders, and parental education, income, and neglect. In contrast, early sleep problems were not independently related to later television viewing. Moreover, respondents who reduced their amount of television viewing between the ages of 14 and 16 were significantly less likely to experience sleep disturbances at ages 16 and 22. These findings suggest that heavy viewing leads to difficulty falling asleep and to frequent nighttime awakenings, and that the correlation between viewing and sleep problems is not simply due to sleepless youth turning to television for relief.

Methodological Considerations

For ethical reasons, it is not possible to study the induction of nightmares and long-term anxieties experimentally. The studies reported above are based on a respondent's amount of media exposure generally rather than on his or her reactions to specific programs or movies. The assessment of autobiographical memory to explore the long-term effects of scary movies has been useful in delineating some of the parameters of intense reactions to movies. For example, Harrison & Cantor (1998) asked research subjects to describe a television program or movie that had produced a fear reaction that lasted beyond the time of viewing. Although subjects could receive full extra credit for simply replying that they had had no such experience, more than 90% acknowledged having a media-induced fear experience and wrote a paper and filled out a 3-page questionnaire about their reactions. Their papers were content analyzed using a coding scheme derived from the DSM-IV criteria for specific phobia, and 52% of respondents reported difficulties eating or sleeping, 36% reported avoiding or dreading the situation depicted in the movie, and 23% reported mental preoccupation or obsessively thinking about the movie. More than one-fourth of the respondents said that some of the fright symptoms were still present at the time of assessment, although the average time since media exposure was more than six years.

Method

Because the students' papers were so revealing of their long-term emotional reactions, I began saving the papers from a similar assignment in one of my classes (with permission from students and a promise to separate their names from their papers). Between 1997 and 2000, I collected 530 papers (virtually all of the papers on this topic written in my upper-level undergraduate class on media effects). Although all students were required to write a paper, they could choose to write about another person's experience if they could not remember an intense media-produced fright reaction of their own. Nevertheless, 93% wrote about their own response. In a previous article (Cantor, 2004a), I analyzed responses to the four movies written about most frequently in this group of papers (Poltergeist, Jaws, Scream, and The Blair Witch Project.)

Because of a special concern regarding young children, for the present paper, I restricted my analysis of the same papers to experiences that happened to the writer him- or herself and that happened at age 13 or younger (74% of the papers). The titles appearing most frequently for this age group were Poltergeist (n = 28), Jaws (23), Nightmare on Elm Street (16), Thriller (16), It (14), The Wizard of Oz (12), and E. T., The Extraterrestrial (11).

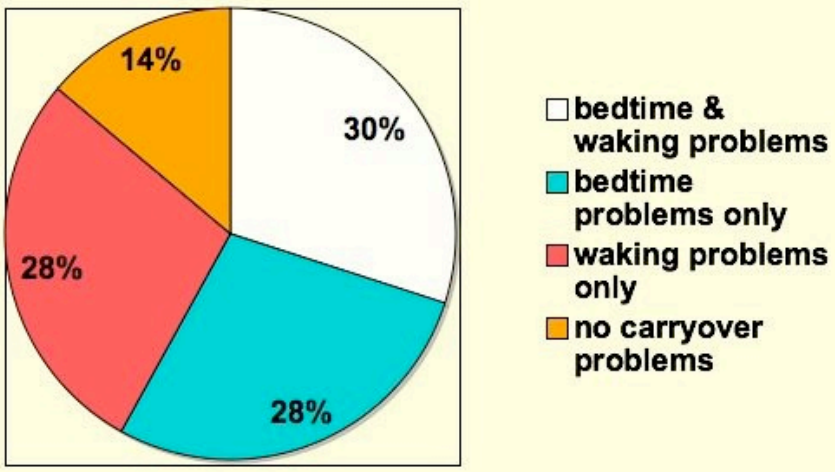
Content analysis of papers about these movies explored fright symptoms that endured beyond the time of viewing. These symptoms were placed into two major categories: reactions occurring while the respondent was attempting to sleep (bedtime problems); and reactions that occurred during the daytime (waking effects). Bedtime problems included nightmares or the inability to sleep, not wanting to sleep alone or requiring special adjustments (e.g., needing the light on, "protective" positions, etc.). Interference with waking life involved anxiety in normally nonthreatening situations (e.g., swimming, being alone) or discomfort near otherwise benign objects or beings (e.g., clowns, machines, or animals). The problems were characterized as enduring if they were described as still occurring in the respondent's life at the time of writing.

Enduring effects that were simply an avoidance of the particular show that had caused the problems or an avoidance of horror shows in general were not included as an ongoing effect. Such effects are considered rational responses to a negative media experience. However, feeling scared as a function of just remembering the show or avoiding another benign activity that might risk reminding the respondent of the show was included as an ongoing effect. All papers were analyzed by at least two independent coders. Where disagreement existed in coding decisions, a third coder broke the tie.[2]

Results

Combining all these media offerings, 58% of the papers reported bedtime problems, but only 6% reported that sleep problems were ongoing. Fifty-eight percent of the papers reported problems with waking life, and 30% reported that these reactions were continuing. In spite of the fact that the same percentage of respondents reported bedtime and waking problems, the association between these two types of reactions was not significant ($\chi 2(1) = 2.27$, $p = .13$). As can be seen from Figure 1, only 14% of respondents reported no problems lasting beyond the time of viewing (even though carryover responses were not specifically solicited in the paper assignment). Thirty percent of respondents reported both bedtime and waking problems as a function of media exposure. Equal numbers of students (28%) reported one type of problem but not the other (waking problems without bedtime problems or vice versa.)

Figure 1. Independence of Bedtime and Waking Effects*



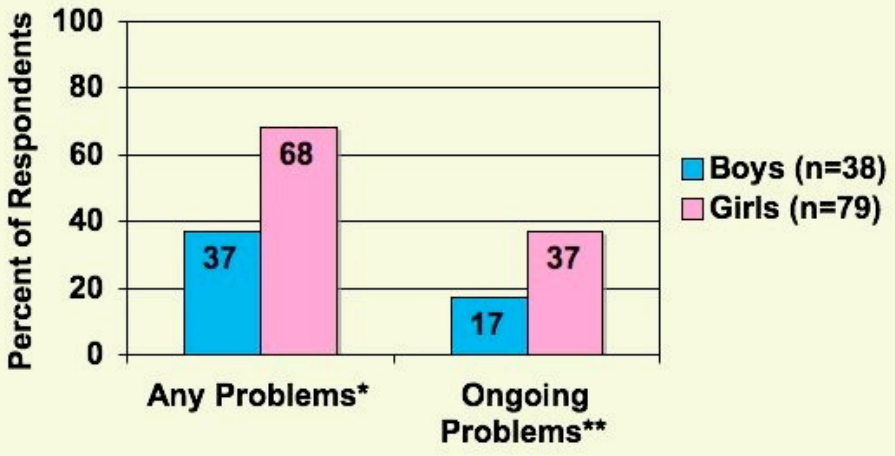
*($\chi^2_{(1)} = 2.27, p = .13$)

Chi square analyses were conducted to determine whether gender, age at the time of exposure, or the circumstances of viewing were related to any of these effects.

Gender

Whether the respondent was male (n = 38) or female (n = 79) was unrelated to reports of bedtime problems but it was related to problems with waking life. As can be seen from Figure 2, sixty-eight percent of female students reported effects on waking life as compared to only 37% of males ($\chi 2(1) = 10.47$, $p = .001$). Similarly, 37% of females reported ongoing waking effects vs. 18% of males ($\chi 2(1) = 4.03$, $p < .05$). This finding is consistent with previous research on gender differences in fear, although a portion of the gender difference has been shown to be due to gender differences in the social desirability of admitting experiencing fear (see Peck, 1999).

Figure 2. Gender Differences in Waking Effects



*($\chi^2_{(1)} = 10.47, p = .001$); **($\chi^2_{(1)} = 4.03, p < .05$)

Age Group

Respondents were divided into two age groups, 7 years and below (n = 59) vs. 7.5 to 13 (n = 60). Age group was not significantly related to any of the fear symptoms. Although age differences are often found in the types of images and events that produce fear, this lack of age

difference is consistent with the fact that intense fright reactions to media have been observed in viewers of all ages (see Cantor, 1998, 2002).

Viewing Situation

If respondents mentioned viewing alone or with other people, we coded the viewing situation as alone (n = 7), with peers or others close in age (n = 40), or with adults or other caregivers (n = 54). Problems with waking life were significantly associated with the viewing situation variable ($\chi 2(1) = 7.86$, $p < .05$). Surprisingly, the few respondents who viewed alone reported the rarest waking life problems (14%). However, those who viewed with peers (70%) were more likely than those who watched with adults or caregivers (57%) to report problems with waking life. The latter difference may reflect the tendency of many caring adults to offer comfort or distraction to scared children.

Analyses of Individual Shows

Table 1 shows the percentage of respondents writing about each media offering who reported each problem.

Movie	Bedtime Problems	Enduring Bedtime Problems	Waking Problems	Enduring Waking Problems
Polgergeist (n=29)	68%	7%	64%	32%
Jaws (23)	39	4	83	43
Nightmare on Elm Street (16)	69	13	37	31
Thriller [music video] (16)	40	0	27	7
It (24)	64	0	64	50
The Wizard of Oz (12)	75	17	50	8
E. T. (11)	55	0	64	27

What seems so intriguing about these reports of long-term reactions is that a substantial proportion of those who viewed five of the seven shows reported enduring problems. The made-for-TV movie It, about a murderous clown and the blockbuster shark extravanganza Jaws produced the greatest number of enduring effects. Given that the respondents were mostly in their third year of college and the experience occurred at or before the age of thirteen, these waking problems would have normally lasted at least seven years. It is instructive to see these long-term problems described in the respondents' own words. The emotional intensity of the writing is notable. Each entry is a different respondent.

Enduring Waking Effects

Poltergeist

I still do not like clowns of any sort, whether they are dolls or real life clowns.

To this day I am scared of clowns and will never have one in my house, even when I have children.

I still hate clowns.

To this day, I think clowns are scary instead of funny.

I had a fear of clowns for years after, and to this day they really scare me.

To this day, I cannot go into Maureen's room without thinking of that clown, and clowns in general still disturb me!

I now hate watching the shadow of the trees outside of my bedroom window. Even now, I certainly don't leave my TV on after the station goes off the air, and I still always make sure that my closet door is closed before I go to sleep.

The horrifying images eventually stopped my fears of going to bed, but even now at 20 years old I never look underneath my bed.

Jaws

I feel intuitively that I am destined to die as a result of a shark attack; therefore, whenever I swim in the ocean, or even a murky lake, where I cannot see beneath my feet, I feel increasingly panicky and claustrophobic and in a short time, must leave the water.

As far as the lasting effects, to this very day, when floating in a body of deep water, I still occasionally have that feeling that something could come up and grab me.

Today that fear still lurks in the back of my mind every time I go swimming in a lake even though I try to tell myself it was only a movie that I had seen.

To this day, I sometimes think of the movie Jaws when I am in the water.

Today, I still fear swimming in the ocean, and I look over my shoulder whenever I am swimming in a fresh-water lake.

Sharks have become a terrifying creature to me to the point that I am not able to watch Discovery Channel documentaries or National Geographic presentations. A mere unexpected glimpse of them in magazines and newspapers causes me to gasp and increases my heart rate. Friends and family are always quite amused by this phobia and have gone to such lengths as to offer me

money to view Deep Blue Sea without covering my eyes. I wouldn't even do It for the hundred dollars my father offered me! . . . These pictures created thirteen years ago are still vivid in my mind today . . . The shark in Jaws was pieces of metal and plastic put together, but knowing that even now does not remedy what occurred in the past.

To this day, I am still afraid of sharks and will not watch any type of movie or television show that involves them.

I also refused to swim in a lake or pool that summer for fear that I would be attacked by a shark. My parents tried to convince me that there could not be a shark in the lake, but I was firm in my belief. This paranoia is still with me today. I know that sharks are not found in lakes and pools, yet, whenever I am in the deep end at a pool, I swim really fast to get to the edge (always looking behind me).

I was scared in any type of water body even though I knew that sharks couldn't live in rivers, streams, or public swimming pools. I still to this day, think about the movie when I am about to go swimming.

The entire time I was in the ocean, I thought a shark was going to swim up and eat me. I couldn't enjoy the ocean because I was constantly looking for sharks. To this day, I am a little apprehensive whenever I swim in the ocean.

Nightmare on Elm Street

Even now writing this paper the thought of it makes me sick to my stomach.

To this day I cannot stand to hear screeching noises. For example when your classmates would really try to be funny and take their nails and scrape them down the blackboard in school so that it would make an evil, ugly, terrible high pitched noise. It hurts to even talk about it as I speak. The movie Nightmare on Elm Street definitely had that effect on me… And from that day on, I always grind my teeth when I hear such a noise.

I remember mass quantities of blood spilling out everywhere in the film. Perhaps that has something to do with why, to this day, I cannot give blood or stand watching myself bleed from the most minor of cuts. .. I have a terribly irrational fear of the dark which comes and goes. I often wonder if this could be the result of seeing horror movies at such a young age. Certainly when I am afraid of the dark I recall feelings from about this age – I feel like a 9-year-old.

I still get frightened when I am alone. It has been about 8 years since I have seen a Freddy Krueger movie. When I walk up the back stairs at my parents' I have to run up them with light feet. I am afraid I will sink in, get stuck and Freddy will come and get me.

Thriller

Still, to this day I get frightened when the video is on, or if I hear the song on the radio. The same fear I felt when I was a little girl comes back again.

It

Today I am still scared of clowns and people wearing masks or face paint.

I, to this day, hate clowns. I avoid them at all costs and will not force them upon my daughter. It's scary because you never really do know what is lurking underneath that jolly painted face of a clown.

I still think that that is the ugliest clown I ever saw in my life, and I still have an overwhelming dislike, and slight fear, of clowns.

The image of the clown's wicked face gazing at the camera from across a pond still sticks out in my mind… The movie and especially the "evil clown" in it had some psychological effects on me. To this day I still hate clowns and think of them all as evil. I can definitely attribute that to the movie.

If I were to go back in time I wouldn't have watched the movie because it took a lot of sleep out of me. I remember I had so many nightmares about that ugly, evil clown. He freaked the hell out of me. From that day on I did not see clowns as funny entertainers. I saw them as freaky creatures that could kill me and torture me. … but I know for sure the clown scared me because until today April 24, 2000, I still have the image of the clown in my memory and that scares the hell out of me.

Since viewing it, I honestly find clowns to be disturbing, and unnerving. Now, I can't see a clown without immediately picturing the clown from "It." If I can manage to get that image out of my head, I still see clowns as unpleasant people and I always ask myself: What kind of sick person would be a clown?

To this day, because of the movie, clowns are one of the only things that eerily terrify me. Since that summer, I have been in many situations in the presence of clowns, and due to that one night over ten years ago, I have never looked at them the same way.

E.T., The Extraterrestrial

This is an extremely difficult assignment for me, because I have been traumatized my entire life by the movie ET. I have never had to write a paper about the way that the movie has affected my life, so hopefully this will be a bit therapeutic. … When I would go play at friend's houses, they would have to hide al of their ET toys and dolls. When my mom took me to toy stores, she would have to avert my attention away from the ET aisle. . . I am actually getting flushed even writing this paper because I am so worked up as I picture the images that I remember in my head. So far this paper has not been therapeutic, as I am still disturbed by the movie. I don't like hearing, writing, or saying his name. This is the most time I have ever spent by myself thinking about it, and I really would like to get my mind on something else. I think I am a perfect example of how a mass media stimulus that causes fright can truly affect someone for the rest of his or her life!

But to this day, I am still scared by that scene and the thought of space aliens still frightens me.

This is not something that I like to admit to anyone, but I am still to this day, terrified of the movie E.T. The thought that life existed on other planets really scared me to death . . .Nothing else in the movie, like the plot, scared me, but E.T. himself still gives me the creeps. .. I was very anxious the whole movie and to this day when people bring it up I become very tense and agitated.

I am actually getting flushed even writing this paper . . . I don't like hearing, writing, or saying his name.

The Wizard of Oz

My spine continues to crawl today at the thought of The Wizard of Oz.

Every time the green witch was shown I would plug my ears. . . . I am 21 years old and I still plug my ears at scary scenes.

Explaining "Irrational" Enduring Effects

At first blush, these enduring reactions seem paradoxical. All the writers are young adults and old enough to know that they are feeling fear in a situation in which they are not objectively threatened. They know that clowns do not kill, that sharks live in oceans, not lakes, streams, and pools, and that E. T., Freddy Krueger, and the Wicked Witch of the West are creatures of a writer's imagination. And yet, they experience fear at reminders of these creatures and many of them express emotional distress just writing about their experience.

But these reactions do make sense in the context of Joseph LeDoux's (e.g., 1996) two-system conceptualization of fear memories. According to LeDoux, implicit emotional memories, including physiological reactions, are stored in the amygdala and are highly resistant to change; explicit, cognitive memories of the same event are stored in the hippocampus and are more malleable. The hippocampus mediates conscious processing, and is involved in appraising the situation and making sense of it. The amygdala responds more quickly, even before the cause of alarm has reached our state of awareness, and orchestrates more automatic responses, such as tensed muscles, blood pressure and heart rate changes, and the release of adrenaline into the bloodstream. These reactions, which contribute to the way our bodies feel when we are afraid, are part of the so-called "fight-or-flight" response, that prepares us to defend ourselves from harm.

Citing studies involving species ranging from laboratory animals to humans, LeDoux explains the process of fear conditioning: A laboratory rat exhibits a fearful reaction upon receiving an electric shock. If the shock is paired with the sound of a tone, that tone comes to elicit the fear reaction, even when the shock does not accompany it. Likewise, if a rabbit encounters a fox (a predator) at a particular pond and escapes safely, it will avoid that pond in the future, or, if it has no choice, it will express its fear by exhibiting timidity and hypervigilance whenever it returns to that location. Similarly, if a man has a serious, traumatic automobile

accident during which the horn of his car gets stuck on, he is likely to experience bodily reactions associated with fear in future situations when hearing the sound of a horn. The horn may, in fact, remind him of the accident, and he may consciously associate his feelings with that event. However, over time, he may forget about the association of the horn with the accident, but still have physiological responses associated with fear whenever he hears a horn sound. In these cases, the implicit (nonconscious) emotional memory system has been activated to create the bodily experience of emotion. Other contextual features of the accident, that may never have been consciously associated with it, may also trigger the implicit emotional memory – a particular make of car, a certain type of intersection, or any other detail that was prominent at the time of the accident.

According to LeDoux, evolution favors the survival of animals (including humans) that can quickly identify stimuli that are life-threatening and that immediately take defensive action. In addition, the emotional memory system makes sure that memories of things that have endangered us in the past are extremely accurate, so that whenever we encounter similar things even years later, we will be prepared to act quickly again. Because of this, implicit fear memories are especially enduring. Research shows that although our conscious memories of fearful situations are not always correct and are quite malleable over time, implicit fear memories are highly resistant to change. In fact, LeDoux calls them "indelible":

Unconscious fear memories established through the amygdala appear to be indelibly burned into the brain. They are probably with us for life. This is often very useful, especially in a stable, unchanging world, since we don't want to have to learn about the same kinds of dangers over and over again. But the downside is that sometimes the things that are imprinted in the amygdala's circuits are maladaptive. In these instances, we pay dearly for the incredible efficiencies of the fear system. (LeDoux 1996, p. 252).

This dual memory model accounts for the fact that adults may understand that their fears are ungrounded but be unable to control their fearful feelings. Although LeDoux was talking about responses to real-life threats, it is interesting to see how the writers of these papers express lingering trauma symptoms similar to people who have actually undergone traumatic experiences. Although the immediate experience of fear while watching a shark attack in real life is no doubt different from the experience of watching a movie, the brain seems to be storing these experiences similarly, as if the viewer's survival depended on holding on to that memory. Le Doux went on to say that in situations where the hippocampus and the amygdala disagree, the amygdala usually wins (LeDoux, 1996, p. 265). This may account for the fact that people can argue with themselves about their safety, and yet still feel emotionally distressed when in a safe situation that evokes memories of a frightening movie scene. If evolution accounts for the dual-component memory system, it certainly hasn't had time to catch up with stimuli that can look very real, but come to us through the mass media.

These findings certainly argue for parental and caregiver caution when choosing appropriate media fare for young people. Making the wrong choice of a movie or a TV show to see can alter a person's life in very intense, distressful, and irrational ways. Understanding the long-term consequences of media exposure is critical to ensuring the long-term emotional health of young people (Cantor, 2004b).

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Footnotes

[1]Some of the data related to Jaws and Poltergeist and some of these arguments have been reported in Cantor (2004a).

[2]Intercoder agreement was as follows for the four judgments: bedtime problems 92%, enduring bedtime problems 92%, problems with waking life 84%, enduring bedtime problems 87%. Scott's pi values for these percentages are .84, .84, .68, and .74, respectively. Many of the disagreements stemmed from divergent opinions on the locus of the problems. For example, is being afraid of the dark necessarily a bedtime problem?