Learning aggression through the media: Comparing psychological and communication approaches

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2 authors, including:

Douglas A Gentile
Iowa State University

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Learning Aggression Through the Media: Comparing Psychological and Communication Approaches

Julia A. Maier
Iowa State University

Douglas A. Gentile
Iowa State University

Access to images and ideas of violence permeate the media. A question asked by many is if this exposure has any effect on our actual behavior. Hundreds of studies have been conducted to address this very concern and found that aggressive media can increase viewers’ aggressive thoughts, feelings, and behaviors (e.g., Anderson et al., 2003; Gentile, 2003). Despite resting on a strong foundation of theoretical and empirical support, this area of research is often considered controversial. As individuals, we look at ourselves and our peers; we make note of the movies we watch or the games we play, but may fail to see any of these predicted increases in thoughts, feelings, and behaviors. One reason for this supposed disconnect is there are many levels of analysis from which one can investigate, such as at individual, group, or societal levels. The research methods, the variables considered, and the conclusions reached can be different, depending on the perspective taken, and this can lead to results that appear to be difficult to reconcile but are not inherently contradictory.

The psychological research on the effects of media violence is predominately focused on passive learning, meaning exposure to violent media has an effect regardless if the person intends to learn or not. Psychological
approaches have generated many valuable learning theories that have been used in predicting how these instances of violence can result in average increases in thoughts, feelings, and behaviors for groups of people. Whether imitating someone else’s aggressive behavior, or having been repeatedly shown that aggression can be an effective solution to a problem, some form of learning is occurring. If conducted carefully, this type of research is very valuable for documenting causal effects of media violence. Nonetheless, we know that not every individual in the violence viewing group of a given study increased in aggression, even though the group average does tend to increase. Therefore, there may be something important to study at the individual level.

In contrast to the psychological literature on media violence, the communication literature offers the perspective of the “active viewer” and the manner in which motivations can result in different outcomes. Studies may demonstrate that individual viewers have different goals for viewing a particular media product and take away different meanings from it. If conducted carefully, this type of research is very valuable for demonstrating how individuals’ uses of media can moderate the effects that the media have. Nonetheless, although individuals may differ in their response to a specific media product, this does not invalidate the overall effect at the broader, group-average level that many psychological studies focus on. Therefore, gains in understanding the effects of violent media may be made through interdisciplinary approaches that utilize the strengths from both psychological and communication studies.

The goal of this chapter is to describe how approaches based in psychology and communication studies can complement each other and lead to a richer understanding of how media can influence viewers. We will describe an integrative psychological theory of learning and how it may be applied to learning from the media. We will then describe a perspective that a communication theory of media can offer and how it applies to learning from the media. Finally, as an example of the value of crossing these disciplinary boundaries, we will describe a study that blends elements from psychological and communication studies to address somewhat different questions than are usually answered within either discipline.
Psychological Theory: General Learning Model

A great deal is known about how humans can learn. Over the past century, hundreds of studies have tested and verified several specific psychological learning mechanisms. These theories have generally been developed independently of each other, come out of different areas of psychology, and focus on different types of learning. This is valuable as it allows researchers to design a program of related studies and gain detailed information about how and when learning occurs. It is limiting, however, in that it means that the connections between types of learning are not easily addressed because we have developed several domain-specific learning theories that each address only one part of the bigger picture.

The General Learning Model that we describe here is an attempt to integrate each of the domain-specific aspects into one meta-model. This model has been described at a lower level of detail previously (Buckley & Anderson, 2006; Gentile et al., 2009; Swing, Gentile, & Anderson, 2008), and may allow for the generation of new testable hypotheses as links between different levels of analysis are explicated. The call for an integrated model is also warranted because the human brain is integrated. Each area or module of the brain, while optimized for certain tasks, works with the others for efficient learning. The brain has evolved to be able to learn through multiple methods, while still being an integrated whole. Finally, an integrated model allows for us to see how different learning processes build upon and can support each other.

The first component of the General Learning Model is the proposition that to learn there must be some sort of input of information (Figure 11.1). These inputs come from both the person learning and the situation around them. This is a basic proposition of nearly all psychology, not simply learning, for that matter. The interaction between personal qualities, such as attitudes, beliefs, and behavior tendencies, and situational factors, or stimuli in environment, as the basis for behavior was even quantified as a mathematical equation by Kurt Lewin (1936). What we learn and how we learn it is the result of the stimuli presented to us from the environment, combined with our own personality and biological mechanisms for learning them.
The second proposition of the General Learning Model is that nearly all learning theories address how interacting with environmental information can result in learning. This is reflected by the present internal state component of the model. Once the information is detected, it must be stored and organized in some way that constitutes learning. Depending on the type of learning, these inputs can affect our cognitions, our affect, or our arousal; different domain-specific mechanisms address what is affected and how. Note that there is an important distinction between learning and performance. Learning often occurs without an immediate behavioral performance that would demonstrate that learning has occurred.

Whether we are interested in how people learn basic facts about the world from watching the 6 o’clock news, how we learn about new products and develop an opinion about them, or, relevant to the current chapter, how people can learn aggression from the media, the General Learning
Model utilizes what we know about learning from a multitude of areas to understand these processes. Following are some examples of important learning theories from various areas of psychology, such as neurology, behaviorism, perception, and cognition. The descriptions exemplify how different each theory is, yet each theory is represented by some component of the General Learning Model.

The Mechanisms of Learning

Learning can be examined at multiple levels of analysis, even solely within the brain. At the individual synapse level, Bliss and Lomo (1973) discovered that after simple repetition of a stimulus, the synapse changed to be more receptive to the stimulus. They called this *long-term potentiation*, meaning that the potential that a neuron would fire given the presentation of the stimulus has increased, and that this is a long-term change in the synapse. At the structural level, several different brain structures have been implicated in different types of learning and memory. For example, the amygdala (a part of the brain in the limbic system) is involved in attending to and learning about the emotional aspect of experiences, whereas the hippocampus is involved in attending to cognitive aspects of experiences. At a network level, the different systems of the brain work together to learn multiple aspects at once and to associate them together.

There is, unfortunately, no simple way to understand how the brain circuitry relates to different types of learning and memory. In general, the brain does not have a single structure or area that corresponds directly to each type of learning. Learning can happen in almost all regions of the brain. Some types of learning happen within specific systems, and others connect multiple systems. For example, habituation learning (described in the next section) seems to happen within whatever perceptual system is being used (e.g., vision, auditory), whereas when viewing words, some areas of the brain attend to the shape of the words and other areas attend to the conceptual meaning of them. For our purposes here, however, the important thing is to recognize that although neural mechanisms support the psychological mechanisms of learning, they are not simply isomorphic. Furthermore, understanding the multiple levels of organization in the brain can help to understand complexities of what is learned (e.g., attitudes have both a conceptual and an emotional component, and each is learned within different brain structures linked in broad network systems).
The Processes of Learning

Perceptual Learning

Each of our sense organs has evolved to be able to detect information that exists in the environment. That is, the “stimuli” that we can perceive are not random, but are structured by the laws of physics in such a way that they are useful for organisms to detect. For example, light bounces off of surfaces in precisely lawful ways, and this reflected light fills the space around an observer in a highly structured way. Eyes have evolved to be able to detect energies at certain frequencies (which we see as colors), because this information is useful for our survival. We have thus evolved to be able to detect the affordances around us, which is a functional level of learning. We can learn to detect what surfaces we can walk on, sit on, swim in, pick up, etc. We come prepared by evolution to be ready to learn how to get around and act in the world. There are two types of what could be called perceptual learning—habituation and discrimination.

Habituation is learning to tell that something is recognizable. It is perhaps the easiest type of learning to demonstrate, and can be shown even in very young babies. Simply show a baby a picture of a person repeatedly and measure looking time; looking time will begin to decrease after only about three presentations of the picture, thus demonstrating that the baby has learned enough about what the picture looks like to recognize that it is the same picture when it is put up another time. All that is needed for habituation learning is single or repeated exposure to a stimulus. In fact, even a single exposure that is too fast to be consciously noticed can be learned and can change behavior (e.g. Bridger, 1961; Colombo & Mitchell, 2009).

Discrimination is learning to tell that two or more things are not the same. An example is learning to tell different red wines apart. If one is not experienced with wines, one might not be able to tell the difference between a cabernet and a shiraz. In fact, telling the taster what the name of each is will not help; they will not be able to learn which name goes with which wine until they can tell them apart. Discrimination learning also only needs repeated exposures to happen. It usually helps if the repeated exposures provide an opportunity for comparison. If one only tries one wine at a time, it will take longer to learn to discriminate. Discrimination learning also does not need any type of reinforcement, although reinforcement can sometimes speed up the process.
The distinction between habituation and discrimination also demonstrates a feature of learning—that we can learn to generalize from a specific learning. Consider, for example, young children who often call all four-legged animals “doggie,” demonstrating that they have learned that four legs is a salient feature. Only later do they learn to discriminate that the word *doggie* does not also apply to cats—that more than just four legs matters. This example is not an entirely accurate representation, however, because word learning is a different learning process (but does still rest on discrimination learning). Furthermore, even babies can learn to generalize from specific instances to broader categories. For example, infants shown a series of photographs of stuffed animals will demonstrate habituation to a novel stuffed animal photograph, but not a novel photograph of a rattle (Younger & Cohen, 1983). These learning processes do not require language or higher cognition (although they can benefit from it), but can occur simply from repetition with something. Once you can recognize something (habituation) or can discriminate it as different from other things, then you can learn to associate it with different things and consequences. That is, it is necessary to be able to discriminate something *before* association learning can occur with it.

**Association Learning**

*Classical Conditioning*

Classical conditioning (Pavlov, 1927) rests on two foundations of the brain—that some responses to the environment are automatic, and that the brain can learn to connect (associate) multiple stimuli and responses. In the classic example, when a dog is given food, they always salivate. This is an automatic physiological response that cannot be consciously controlled. Therefore, the food is an unconditioned stimulus (US) and the salivating is an unconditioned response (UR). That is, they are “unconditioned,” meaning that they did not require conditioning or training. If a neutral unrelated thing (like a bell or a light) immediately precedes the presentation of the US, it can become “conditioned” such that the dog learns that the bell signals food and then begins to salivate to the bell alone. Once this has happened, the bell is no longer a neutral stimulus but has become a conditioned stimulus (CS), and the salivating to it has become a conditioned response (CR).
Once learned, more can be learned than this simple single association of stimulus and response. For example, we will tend to generalize our initial learning to other similar stimuli. If dogs learned to salivate to the sound of a bell ringing at the pitch of C, they will often salivate to a bell at the pitch of B as well. In the classic “Little Albert” study of conditioned fear (Watson & Rayner, 1920), the baby Albert was conditioned to fear the sight of a white rat by pairing a loud noise with it (babies are startled and scared by sudden loud noises). After conditioning, Albert also cried at the sight of a white rabbit and even a white Santa Claus beard. In addition, one can chain these types of conditionings (known as higher-order conditioning). For example, after being conditioned to salivate to a bell, we can precede the bell with a light, and the dog will learn to salivate to the light as much as it did to the bell.

Not all types of things can be learned in this way. Classical conditioning rests on automatic responses, so if the initial behavior is not reflexive, then learning cannot happen through this process. Furthermore, even if we do start with an automatic response, there are some things that cannot be learned easily in combination with it. For example, when humans or other animals ingest food and later become sick, they often learn to associate the taste of that food with illness and will avoid it (even if the food wasn’t what made them sick). Similarly, rats given blue colored water will not learn to associate the color with illness, whereas they will learn to associate the color with an electric shock (Garcia & Ervin, 1968). This makes evolutionary sense, as our sense of taste evolved to help us seek foods that were healthful, whereas our sense of sight evolved to help us for many other reasons. Thus, although classical conditioning is powerful, it is limited in many ways.

**Operant Conditioning**

Most human associative learning is not related to reflex behaviors, but instead to learning from the consequences of behaviors under voluntary control. Also known as instrumental conditioning, humans (and other animals) try behaviors and learn from whether the consequences are reinforcing or punishing (Thorndike, 1905; Skinner, 1938). Behaviors that are reinforced become more likely to be repeated in the future, whereas behaviors that are punished become less likely to be repeated. Reinforcement can be positive (by providing something desired) or negative (by removing something unpleasant), as can punishment (positive:...
providing something unpleasant; negative: removing something desired). In an evolutionary sense, behaviors become selected, as they are subject to the pressures of the environment. Those behaviors that provide benefit (real or perceived) get stronger, and those that do not get selected against.

Much of the time in the real world, however, reinforcements or punishments do not reliably or immediately follow the behavior. Ironically, this can strengthen learning. How reinforcements are “scheduled” can affect both the speed of learning and the resistance to extinction. When reinforcement is given reliably (fixed) after a certain amount of time or after a certain number of behaviors have been performed, learning tends to be fast, but it can be extinguished fairly quickly. If, for example, we paid you $10 every time you did a somersault, you would probably do several. If we stopped paying you, you would quickly stop doing them. In contrast, when reinforcement is more random (variable), either after some unknown amount of time or an unknown number of behaviors, initial learning is slower, but it is highly resistant to extinction. Gambling on slot machines is a good example, where one performs the behavior (put coin in, pull lever) multiple times, with the hope that one of these times it will pay off. Ironically, winning once will often make people play much longer and lose much more money than if they never won.

Observational Learning

Humans are able to learn even without trying behaviors themselves, but simply by seeing others do things. Humans are not the only animals able to do this, of course. For example, young chimpanzees can learn how to “fish” for termites by watching older chimpanzees do it. Humans, however, are so good at it that we can learn even by watching people we do not know on television. In a classic experiment, Bandura, Ross, & Ross (1963) showed preschool children an adult woman modeling several novel aggressive acts toward a doll on a television screen. The children were then allowed to play in a room with several toys, including the toys that were modeled in the aggressive acts. Children spontaneously imitated the acts that they had seen. In a follow-up experiment, Bandura & Kupers (1964) had the adult model either praised or punished in the television show. When the model had been punished, children did not spontaneously imitate the aggressive acts. When the model was rewarded, children did. Therefore we can learn not only from observing others’ actions, but can also learn from the
consequences of others’ actions. Perhaps even more interesting, however, was that the children learned the novel actions in all cases, but only spontaneously imitated when the model was either rewarded or had no consequences. Although the children who had seen the model punished did not spontaneously imitate, they were able to demonstrate the behaviors when asked to. This demonstrates how learning can clearly occur even when there is no immediately observable change in behavior and why distinguishing between learning and performance is important.

Cognitive Learning

Human communication also allows for learning that is devoid of the need to act. Your reading this chapter gives you a chance to learn concepts or to connect them in new ways. Thus, humans can learn by associating cognitive concepts together, by creating new mental representations of concepts, by creating cognitive maps of spatial arrangements, etc. These do not need to be reinforced to be learned, although reinforcement can often make learning occur faster.

Declarative conceptual information is often described as being linked into associative networks of related concepts. Thus, the concept of “bird” is probably closely related to the concept of “sparrow,” but less closely related to the concept of “ostrich,” and even less to the concept of “dinosaur.” As we learn, however, that birds are the modern descendants of dinosaurs, we can reorganize our associations between different concepts. Although neural networks are generally assumed to be semantic in nature, concepts can also be linked with feelings related to those concepts.

Emotional Learning

Emotional learning and memory is connected to cognitive learning and memory, but it is also a distinct form (Eichenbaum, 2008). The brain has circuits designed specifically to attend to the emotional importance of situations, such as the amygdala. These brain circuits support our feelings and expressions of emotions, our learning about the emotional aspects of experiences, and also can change what is learned. In brief, there are three major outputs of the amygdala. In response to seeing something (a fight, for example), one neural response pathway travels to the cerebral cortex to support our conscious awareness of our feelings.
A second pathway travels to other memory systems (e.g., striatum and hippocampus), which can influence what is attended to and therefore what is learned. A third pathway controls our bodily responses, such as hormone release and the autonomic nervous system (e.g., the “fight or flight” response). One important implication is that emotion plays an important role in attention and vigilance. Not only does it moderate attention and memories, but we can remember emotional aspects of experiences and concepts.

A second implication is that when we have an emotional response (especially one that releases the hormones epinephrine and cortisol), memory is enhanced. One study demonstrated this effect with media, by randomly assigning participants to view either 12 emotionally arousing film clips or 12 emotionally neutral film clips while undergoing brain scans (Cahill et al., 1996). The amygdala and related areas were more active during the arousing film clips, and memory for those clips was better three weeks later than for the neutral film clips. Importantly, the amount of amygdala activation predicted performance on the memory task for the emotionally arousing film clips, but not for the neutral film clips.

**The Content of Learning**

The strengths of an integrative approach to learning emerge when we try to consider what can be learned through these various learning processes. In order to have successful and meaningful outcomes for learning, it quickly becomes apparent that we must utilize different types of knowledge that were perhaps acquired through multiple processes. At a psychological level, there are many ways that learning and memory can be understood. We do not suggest that the following list is comprehensive, but it is illustrative. Memory is often described as being either declarative or procedural, but this underestimates what can be learned, which can be declarative, procedural, perceptual, emotional, or some combination of these.

At a perceptual level, we can become sensitized to types of information. For example, it is important to separate male from female chickens shortly after hatching, but it is very difficult to tell the difference between them by sight. Although most people initially cannot tell the difference, they can learn to with years of practice, but even then the experts do not really know on what they are basing their judgment. One classic study
demonstrated that there is information in the cloacal region of chicks that can be perceived through training, bringing novices up to almost expert levels (Biederman & Shiffrar, 1987).

At a cognitive level, we not only learn conceptual information like the meanings of words, but also how concepts fit together at different levels of organization. Networks of related concepts are referred to as schemas; for example, our “bird” schema can consist of those characteristics that classify something as a bird (e.g., feathers, wings, beak) and even exemplars or prototypes of the category (e.g., robin). Concepts that are more strongly related would have the strongest connections in the network, such that bird-robin would be stronger than bird-kiwi (Collins & Loftus, 1975). In addition to basic category-related schemas, information can also be organized to direct behavior, known as scripts (such as knowing what the sequence of events is at a restaurant; Fiske & Taylor, 1991).

Many cognitive concepts also have emotional components associated with them. For example, attitudes and stereotypes are based not only on cognitive “facts” about situations or types of people, but also on our feelings about them. Thus, as we learn that there can be differences in cultures or groups of people, we often tie those differences to our feelings or preferences for them. At an emotional level, the “Little Albert” study demonstrates that fears can be conditioned by experiences; a great deal of advertising works on this principal as well by continually pairing attractive models with their products, for example. Furthermore, repeated opportunities to experience or practice certain feeling states can lead to them becoming solidified into traits. This is similar to how cognitive or behavior habits can become personality traits.

**The Moderators of Learning**

When presented with a new situation, we have an opportunity to learn, but not everyone will learn from it, and those who do may learn different things from it. This is because several factors moderate what gets attended to initially, how it interacts with prior knowledge, and how the brain encodes and retains information. As with our discussion of the content of learning, the following is merely an illustrative sample of moderators of learning and not intended to be comprehensive.
Emotion

Emotional states can increase vigilance, change what is attended to, and change the neurochemistry to influence memory retention. In a classic study, Kleinsmith and Kaplan (1963) had participants learn words in pairs, a type of cognitive learning task called paired-associate learning. Some of the words were emotionally-laden words, such as kiss, rape, and money, whereas others were neutral. At immediate recall, neutral words were remembered better than emotional words. When tested a week later, however, participants recalled the emotional words better than the neutral words. Therefore emotions can moderate what is learned and recalled in ways that may not be immediately straightforward.

Stress

If the emotion is stressful, hormones are released in response to the stressful event. These include many of the same hormones that enhance memory, such as epinephrine and cortisol. If the stress is too severe or prolonged, however, it can disrupt the retention of memory (Newcomer, et al., 1999).

Level of Processing

When learning, how the material is analyzed can change the amount that is learned. For example, when studying a list of words, those who attended to surface characteristics (whether the words were in capital or lowercase letters) learned the words much more poorly than those who attended to the meaning of the words (Craik & Tulving, 1975).

Practice Schedule

Learning tends to get better with more time practicing, but how the time is distributed can change how well something is learned. This is sometimes referred to as the distinction between massed and distributed practice, where massed practice is spending a lot of time all at once and distributed practice is practicing a little at a time over multiple sessions. It turns out that distributing practice is better for learning (Gentile & Gentile, 2008; Robinson, 1921). Furthermore, the amount of delay between initial
learning and rehearsal can influence ultimate retention, with several studies demonstrating that increasing the time between study episodes often enhances memory (sometimes referred to as the “spacing” effect or “lag” effect). Although there is no single optimal delay for all types of learning (and the optimal lag can change across time as one rehearses), one set of studies suggests that it may fit an inverted-U function, with performance increasing up to several days of delay and then falling off as the lag increases to several months (Cepeda, Coburn, Rohrer, Wixted, Mozer, & Pashler, 2009).

**Proactive and Retroactive Interference**

During learning, the new information being learned interacts both with what is already known and what happens after. That is, other information can interfere with learning. Previously known information can change how new information is attended to and encoded, known as proactive interference (Underwood, 1957). Furthermore, retroactive interference impedes the learning and retrieval of previously learned material due to information that was learned after it (Baddeley & Dale, 1966).

**Context**

As can be seen above, we can learn many things through many processes simultaneously. Therefore, it should not be surprising that the context in which we learn something can affect how well it is remembered. A classic study demonstrated this with underwater divers learning lists of words either while underwater or on land (Godden & Baddeley, 1975). Memory for the lists was better when tested in the same context that the words were learned—that is, if they had initially studied the list underwater, they recalled more words when tested underwater than when tested on land. Therefore, cues that we might assume are irrelevant to what is being learned may also be learned and influence memory.

**State**

Similar to context-dependent learning and memory, one’s mental or emotional state can influence learning and memory. In one study, participants
studies lists of words that included positive, neutral, or negative words. They were then induced to feel happy or sad moods. Following this mood manipulation, participants were asked to recall the words. Participants remembered more words with meanings that matched their moods than words that did not (Teasdale & Russell, 1983).

**Sleep**

Sleep appears to be essential for the consolidation of certain types of learning—most specifically for perceptual and motor learning. For example, in a perceptual training study, participants were taught to identify letters in their visual periphery that were then covered by other letters (Stickgold, Malia, Maguire, Roddenberry, & O’Connor, 2000). When tested the following day, those who had slept with the most REM-level sleep showed the greatest improvements in learning. The evidence for the role of sleep in the consolidation of cognitive learning is less clear however (Siegel, 2001).

**Consolidation Disruptors**

Beyond disrupting sleep, several other variables can disrupt the consolidation of learning. These include drugs, alcohol, electroconvulsive shocks, or distracter tasks (Dudai, 2004).

**Transfer of Learning**

Once something has been learned, it can usually be remembered in a situation similar to how it was learned (e.g., state- or context-dependent learning). In education, this is seen through tests in classes. The gold standard, however, to which educators aspire is *transfer*. That is, can what is learned in one context be recalled and applied in a novel context? For example, it is not particularly useful for children to learn math if they cannot transfer that knowledge to know if they have enough money to purchase something. Although transfer has historically been difficult to demonstrate with cognitive knowledge gained in school, it is less difficult to demonstrate with other types of learning, such as attitudes and stereotypes, which may generalize to novel situations very well (e.g., Das & Nanda, 1963; Gim & Yoon, 1998).
It has been long recognized that some specific elements are required to be similar in order to transfer what is learned in one context to another (e.g., Thorndike & Woodworth, 1901). Nonetheless, modern theorists have attempted to categorize the multiple dimensions on which transfer can occur, from nearly identical domains/contexts (near transfer) to those which are highly dissimilar (far transfer). Barnett & Ceci (2002), in particular, have elucidated a thoughtful taxonomy for considering the dimensions of transfer. They describe two broad dimensions, content and context, that need to be defined to understand the type of transfer desired. The content dimension includes the skill that is learned (e.g., procedural or broad principle), the type of performance change (e.g., speed or accuracy), and the memory demands of the learned material. The context dimension includes the knowledge domains across which transfer is desired, the physical context, the temporal context, the functional context, the social context, and the modality of learning and testing. For our purposes, however, what is of interest is understanding that the real power of learning rests in its ability to be applied outside of the original learning context and its power to shape later behaviors, especially if the later situation has some similar features or primes concepts that were originally learned together.

**General Learning Model**

The General Learning Model has value as a meta-theory precisely because it defines the multiple levels at which learning can occur and how they can work independently or influence each other, rather than focusing only on one or two mechanisms or processes. Furthermore, it incorporates both short-term and long-term processes. Using learning aggression from the media as an example, we can describe how the General Learning Model incorporates the multiple domain-specific theories and allows for a more complex description of the parallel learning processes at work.

The short-term process is shown in Figure 11.1, where both the personal and situational variables can influence the learning encounter. People bring their genetics, history, prior knowledge, schemas, intelligence level, expectations, feelings, and state to the encounter, whereas situational variables include the specific content of interest (violent content, for example), contextual factors, distractions, and so forth. When one watches violent media, these influence one's present internal state. The script elements
can prime cognitions related to aggressive concepts, thereby reinforcing them through repetition. Violence is often physiologically and emotionally arousing, which can direct and increase attention, while also increasing stress hormones, which can improve learning. Furthermore, because we often watch media violence as a form of entertainment that can include other enjoyable experiences (such as eating snack food or watching a favorite actor), we are classically conditioning ourselves to like violence and find it entertaining rather than being disgusted by it (a more natural reaction to viewing violence). Following from operant conditioning, because we like feeling the adrenaline rush of excitement, this further reinforces the aggressive cognitions that are primed. Finally, because one way we learn is by observing others, we will learn the attitudes and behaviors of the characters and often are able to imitate them after the show (such as by repeating characters’ catch-phrases).

With repeated exposure, we would predict a different level of effects. Figure 11.2 demonstrates the perceptual, cognitive, and emotional constructs that are likely to be influenced by repeated learning trials. Perceptual constructs include perceptual schemata, such as vigilance for enemies and hostile attribution biases. For example, with repeated exposure to violent media, one begins to interpret daily events as being more hostile (Gentile, Coyne, & Walsh, 2010). Cognitive constructs include beliefs, such as whether people believe aggression is normal (Huesmann & Guerra, 1997), and scripts, such as expecting that the most typical response to being provoked should be to retaliate (Anderson & Carnagey, 2004). Because many thoughts get linked with emotions during learning, these also may be influenced, such as attitudes about the acceptability of using aggression (Anderson et al., 2003), or stereotypes about what types of people are more likely to be aggressive (for example, Blacks are often portrayed as much more aggressive than they are in reality; Dixon & Linz, 2000).

Additionally, emotional responses can be affected by media violence. Some studies, for example, have demonstrated that people can become desensitized to aggression (Carnagey, Anderson, & Bushman, 2007). Others have demonstrated increases in trait anger (Bushman & Huesmann, 2006), that is, the tendency to react with anger easily. Furthermore, repeated exposure to violent media links the concept of violence with feelings of excitement and fun, such that these emotions become conditioned responses to further exposures of media violence (near transfer) and perhaps real-world aggression (far transfer). Ultimately, all of these learned
habits of perception, cognition, and emotion, aggressive or otherwise, come together with the person’s genetic and prior dispositions to form what is typically thought of as personality characteristics—the tendency for a person to react in patterned or regular ways to situations. At this point, most of the specific lessons learned from the media have become generalized as attitudes, beliefs, scripts, etc., and can therefore transfer to novel situations in the person’s life.

The General Learning Model demonstrates that there are many routes to learning, some of which occur in parallel simultaneously. Therefore, the acquisition of aggressive thoughts, feelings, behaviors, and even modifiable personality tendencies from violent media should not be as surprising as some may believe. It may be that people react strongly against this idea
because they feel that psychological theories are too deterministic, but the fact that we learn so easily from every experience we have should not be controversial. Although we can certainly engage in practices that can increase our learning, such as repetition or distributed practice, preventing learning from happening at all is much more difficult, if not impossible, given that many of these processes occur automatically and without any specific intention to learn. Many studies on violent media effects have even emphasized this very point, showing that people can have increases in aggressive behavior even when simply in the same environment as an aggressive stimulus, such as a photograph of a weapon left on a table (Berkowitz & LePage, 1967). What is missing from this picture, however, is the influence of the learner’s motivations and any active role he or she can play in a learning encounter with the media.

**Communication Theory: Uses and Gratifications**

In contrast to the psychological methods described earlier, with the intention to understand processes and outcomes, the uses and gratifications theory within communications began as more of an ecological field with its goal of understanding why people engaged in different forms of media-related behavior (Katz & Lazarsfeld, 1955). As the theory developed through the years, however, the scientific rigor increased and methods were used to try to predict viewers’ choices and satisfaction, such as with television channels (Dobos, 1992). Throughout its development, though, the central theme of the Uses and Gratifications Theory has been on the role of the audience (Windahl, 1981).

According to the uses and gratifications theory, people have a variety of needs that influence their media viewing behaviors, including needs for relatedness, identification, information, and escaping from reality (Blumler, 1979; Blumler & Katz, 1974; Katz, Blumler, & Gurevitch, 1973). How a person chooses to fulfill these may influence both the selection of media content, as well as the level of processing applied. Besides picking which movies to watch, for example, viewers might also choose which type of scenes they will attend to during the movie. Some may be more excited by violence and thus pay closer attention to these scenes, whereas others may be more interested in the relationship-oriented storyline. Additionally, some people may choose to process the images and dialogues on a relatively surface level in order to simply follow the plot,
thus requiring the use of fewer cognitive resources (Lang, 2000). Others may choose to process these on a deeper level to get at the underlying messages, by looking for symbolism or thinking about themes, for instance, and would thus use more cognitive resources in the process (Lang, 2000). Others may not consciously think about all the ideas presented but will become emotionally involved, by allowing themselves to empathize with the characters to discern meaning and thus activate schemas (Lang, 2000; Miall, 1989). At present, the manner in which the viewer processes the media is not typically considered in psychological media violence studies, and such research may simply suggest that viewing style does not matter; everyone would be at risk for an increase in aggressive behavior.

Although the Uses and Gratifications Theory emphasizes the role of the active audience member, the above examples demonstrate that simply because an individual can play an active role when viewing the media, there is no guarantee that he or she always will (Rubin, 1984). The amount of activity can certainly vary depending on the type of communication setting or point in the communication process; furthermore, activity of the viewer can also differ on type instead of simply amount. This variance of both quantitative and qualitative factors of activity has led to many theoretical models of active viewing (Ruggiero, 2000). For example, dependency theory posits two factors that determine a reliance on the media for information: the satisfaction of needs by the media and the stability of society. How many needs are satisfied by a given source will certainly increase an individual’s dependence on that source. As for social stability, the theory states that when there are times of social change or conflict, one’s reliance on the media for information increases (DeFleur & Ball-Rokeach, 1982).

When considering how we learn from the media, particularly nondeclarative knowledge types of learning such as learning aggressive scripts and conditioned emotions, factors pertaining to active viewing become important moderators of learning. Two such factors of the “active” audience member would be choosing the type of information to attend to and how deeply to process that information. Let us consider, for example, a movie-going audience member. A movie contains, on average, 2 hours’ worth of auditory and visual stimuli that are organized to create plots, symbolism, storylines, themes, and messages. Additionally, in the case of violent movies, there are also a number of nonviolent scenes, as well as storylines, themes, or messages that may be unrelated to aggression
altogether. This allows for a number of concepts to which the viewer can attend. Furthermore, the viewer may intend to watch a movie without much mental effort and engage in a rather low-level of processing, or this movie may be one in which the viewer intends to be involved and think about the content, thus engaging in a higher level of processing.

What one focuses on (attention), and how one thinks about it (processing) are closely related because one must pay attention to something in order to process it on a deeper level. In the movie setting, however, it is possible to attend to one type of scene for plot-related information, but not process it on a meaningful level. This makes it important to consider attention and level of processing separately. The interaction that needs to be considered is how thinking deeply or not thinking deeply about either aggressive or nonaggressive concepts may have different effects on the subsequent accessibility of aggressive cognitions.

Differences in attention and level of processing allow for a number of situations worth considering in the media violence discussion. If the viewer is focused on the nonviolent aspects of the movie, do the violent scenes still have the same impact? Does thinking about the movie during viewing change the magnitude of the media effects? And how do these two factors interact? In particular, how does a deeper processing of nonviolent themes compare to a general “surface-level” processing of the movie? Despite the thorough investigation of moderating variables on learning and the effects of media violence, little research has considered these differences in “viewing style” as something that could influence the magnitude of the media effects of aggression. What the viewer attends to in the media and how deeply they process it are two cognitive viewing-style factors that can influence learning, both of which need more research for a better understanding of media violence effects.

**Interdisciplinary Research**

The questions of attention and processing can be addressed by either communications or psychological research. The uses and gratifications theory of communications allows for the consideration of viewers’ motivations and their influence on what is attended to and how it is processed. Learning theories of psychology offer insight into the mechanisms through which the viewer retains what is attended to and processed. By integrating these approaches, however, perhaps we can develop a more complete picture of
how people learn from the media and the role individual motivations can play.

A study designed to test the hypothesis that the media violence effect could be moderated by viewing styles effectively combined the assumptions from both the psychological and communications disciplines. Previous research in the area of media effects on aggression has had a foundation in social cognitive learning, where the acquisition of knowledge comes from associating concepts together in a mental semantic network (Anderson, 1997; Lindsay & Anderson, 2000). Once these networks have been created, repeated exposures serve to strengthen them. Furthermore, activating one of these concepts in the network, such as by seeing a weapon or an act of violence, will cause the entire network to become activated through a process called spreading activation (Collins & Loftus, 1975). It is this activation of the entire network that is believed to lead to a short-term increase in aggressive thoughts, feelings, or behaviors.

Uses and gratifications theory, from communications, provides an important consideration in this learning model. As the General Learning Model demonstrates, both situation and person factors are important for a given learning trial. The media provides the situational information, but the person’s individual motivations for viewing the media should also play a role in what is learned. By considering these individual “viewing styles” in a typical psychological paradigm studying the effects, we are able to consider many important parts of the General Learning Model combined with the Uses and Gratifications approach at one time.

The goals of the study described here were to determine if, and how, the motivations of viewers would moderate the effects of violent media on subsequent aggressive thoughts. Previous research has established that, on average, viewers will have more aggressive thoughts after watching a violent movie clip (Anderson, 1997; Bushman 1995). Based on uses and gratifications theory, it was hypothesized that this effect would be different for participants based on their viewing style.

Design

Introductory psychology students at a large Midwestern university were recruited to participate in this study. Every participant watched a full-length R-rated movie, Witness (Feldman, Bombyk, & Weir, 1985), starring Harrison Ford and Kelly McGillis, and completed a lexical decision task.
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The movie was selected for the numerous violent and nonviolent scenes it contains, as well as themes that contrasted with the violent storyline, such as community and romance. Viewing the entire movie allowed participants to become involved in either the corrupt cop/murder investigation storyline, which incorporated a lot of violent scenes as that plotline developed, or the romantic storyline as the good cop fell in love with an Amish woman and became accepted by the Amish community.

The accessibility of aggressive cognitions was measured using a lexical decision task (Neely, 1991). This task was developed as a way to measure the accessibility of cognitions using reaction time data. Theoretically, if a given semantic network is activated, participants should respond more quickly to concepts included in that network, compared to concepts that are semantically unrelated. For the task itself, participants are shown a group of letters and must make only a decision regarding if the letters create a real English word. Participants make this decision more quickly for concepts that are already accessible in their mind. For example, after shown the word “doctor,” participants classify “nurse” as a word more quickly than “butter” because of the semantic relatedness between the first two words.

The lexical decision task consisted of 96 target trials: 24 aggression-related words, 24 movie-related words, 24 control words, and 24 nonwords. Words were chosen for this task using the word and nonword generators on the English Lexicon Project website (Balota, et al., 2002). A list was created of words similar in average reaction time, letter length, and frequency of use in the English reaction time. From this list, 24 words were chosen that were aggression-related and 24 that were unrelated to aggression or the movie. Finally, 24 words were chosen that were relationship- or journey-related, scene-specific words, and Amish culture-related words. The nonwords were selected from a nonword generated list with similar length and average reaction time.

Active Viewing

To evaluate if active viewing moderates the increase of aggressive cognitions after viewing violent media, both attention, the storyline attended to, and processing the amount of thought about the film were considered. Attention was not manipulated, but following the film, participants were asked to identify and describe the scene they considered most...
striking—scenes that stood out or were particularly memorable. This method has previously been used in literary studies to measure reader’s reactions to stories (Kuiken, et al., 2004). These responses were evaluated to determine the type of scene participants attended to and one of three codes were assigned: Orthogonal, Mix, or Aggressive. Both the actual content of the scene and the focus of the participants’ discussion were considered in coding. No presence of aggression in either the scene or the discussion yielded an “orthogonal rating,” whereas presence in both the scene and discussion yielded an “aggressive” rating. A “mix” rating was assigned when aggression was present in either the scene or the discussion, but not both.

A manipulation was used to simulate differences in levels of processing. Participants were randomly assigned to one of three conditions: surface, depth, and control. In the surface condition, prior to watching the film, participants were instructed to pretend they were watching the film as a way to relax and not have to think. The emphasis on relaxing and not thinking much about the film was intended to induce participants to a surface-level of processing, engaging just enough to follow the plot. The depth condition incorporated instructions to pay attention to deeper themes or messages in the film. These instructions specifically stated there was more to a film than the basic plot, and encouraged participants to look beyond the surface. Participants in the control condition received no instruction on how to watch the film and completed the lexical decision task prior to watching the film, whereas participants in the other two conditions completed the lexical decision task after watching the film.

**Hypothesis I—Concept Activation**

As previous studies on violent media effects have used separate violent and nonviolent movie clips (e.g. Bushman, 1995), whereas the current study used a full-length movie with both violent and nonviolent images, the first goal was to replicate past findings that exposure to specific images would result in an increase in the accessibility of related thoughts. Specifically it was hypothesized that participants in the experimental conditions (those who completed the dependent measure after watching the movie) would identify both aggression and movie concepts as words faster than control words, whereas participants in the control condition would not (who completed the dependent measure before watching the movie).
To test this, each individual participant’s average reaction times for aggressive words and movie words were subtracted from their average reaction time for the control words to create an indexed aggression score and indexed movie score (see Table 11.1). A t-test was conducted for each indexed score to determine if it was a statistically different zero because a score of zero would indicate the same reaction time as for control words. For participants in the surface condition, results indicated that the mean aggression score was marginally significantly different from zero, $t(71) = 1.794, p = .077$, and the mean movie score was significantly different from zero, $t(71) = 3.239; p = .002$. Similarly, for the depth condition, the mean aggression score was also marginally significantly different from zero, $t(65) = 1.771, p = .081$, and the mean movie score was significant different from zero, $t(65) = 2.712, p = .009$. For the control condition, neither the mean aggression score nor the mean movie score were significantly different from zero.

These results support the hypothesis that concepts related to aggression and other movie-related themes were activated in viewers of the film because participants did respond faster to these words than unrelated control words. Additionally, the participants who completed the word task before watching the movie did not respond any differently to the aggression- or movie-related words. Given support for our initial hypothesis, the second and third hypothesis look specifically at the active viewer variables of attention and level of processing.

### Table 11.1

<table>
<thead>
<tr>
<th>Condition</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
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<td></td>
<td></td>
</tr>
<tr>
<td>Surface</td>
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<td>9.4146</td>
<td>44.52193</td>
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<tr>
<td>Depth</td>
<td>66</td>
<td>10.9875</td>
<td>50.39522</td>
</tr>
<tr>
<td>Control</td>
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<td>−1.3555</td>
<td>45.62401</td>
</tr>
<tr>
<td>Movie score</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surface</td>
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<td>15.3656</td>
<td>40.25912</td>
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<tr>
<td>Depth</td>
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</tr>
<tr>
<td>Control</td>
<td>60</td>
<td>5.7612</td>
<td>40.16824</td>
</tr>
</tbody>
</table>

*Note: Means represent the difference in reaction times between control words and aggressive/movie-related words. Positive scores indicate an average faster reaction time to target words than control words.*
Hypothesis II—Role of Attention

In general, learning theories tend to explain learning as a passive experience where any exposure will activate concepts in a semantic network regardless of whether the person is aware of the stimuli. The weapons' effect is a strong example of this mechanism, where the mere presence of the image of weapon is enough to elicit aggression (Berkowitz & LePage, 1967). The second hypothesis of this study, however, was more in line with communications theories of the role of the active viewer and that attention to particular types of information can moderate the activation of concepts in the semantic network. Specifically, we hypothesized that participants who attended to nonaggressive scenes would respond faster to movie-related words than to aggression-related words, and the opposite was expected for those who attended to aggressive scenes.

To test this hypothesis, the average movie score for each participant was subtracted from their average aggression score to create a difference score. A negative difference score indicates the participant responded faster to movie related words than aggression words. A one-way ANOVA was conducted for type-of-scene with the difference score as the dependent variable, and the test was significant, $F(2,135) = 3.9, p = .023$; however, it was not in the expected direction. Looking at the mean difference scores, we see that participants who chose an aggressive scene responded faster to movie words than aggressive words, $M = –13.51, SD = 36.63$; whereas participants who chose an orthogonal scene responded slightly faster for aggression words, $M = 6.45, SD = 37.94$ (See Figure 11.3). Pair-wise comparisons revealed that these two groups were significant different from each other, $t(101.19) = 2.775, p = .007$. Those participants whose response yielded a mixed coding were in the middle, not being significantly different from those who chose an orthogonal nor those who chose an aggressive scene.

These results clearly are in the opposite direction of the hypothesized effect, with those attending to aggressive scenes responding more quickly to the movie-related words than the aggressive words, and vice versa. There are many possible explanations for why this may have occurred that need to be explored in future research. One explanation focuses on the instructions participants were given, being asked to describe the scene they found to be “the most striking.” They were further instructed, “This could be either your favorite scene or one that
you just found particularly memorable.” The first scene chosen may have been particularly striking because it was different from everything else the participant was attending to during the movie. For instance, if the participant spent the movie attending to the romantic relationship between the two main characters, they may have found one of the aggressive scenes striking because it was so different from that on which they had focused. Similarly, if the participant was invested in the aggressive storyline, a nonaggressive scene that focused on community-building and social support could have been striking because it was in such contrast to the violence.

In this case, the type of scene classification could be an indicator of the types of concepts they were not paying attention to for the majority of the movie. Furthermore, the opposite direction of the results could then be interpreted as supporting the hypothesis. If participants initially chose an orthogonal scene because it was different from the aggression they had been paying attention to, then the results showed they were more likely to respond the quickest to aggression words. Similarly, if the participants initially chose an aggressive scene as most striking because they had been attending to one of the nonviolent storylines, then the results showed

**FIGURE 11.3**
Mean difference score by type-of-scene.
they were more likely to have movie words activated. Regardless of the reason for why the results were opposite of our initial expectations, the results still demonstrate that the way in which individuals approached viewing the movie changed the extent to which aggressive cognitions were primed.

**Hypothesis III—Role of Processing**

Although the previous hypothesis was not supported in the direction predicted, results do show that attention does matter. The final factor to consider in the role of the active viewer is how deeply the information they attend to is processed. Again, participants in this study were instructed to watch the movie with a particular level of processing: a surface level where they were told to just relax and not think, and a depth level where they were told to think about themes and messages in the film beyond the basic plot.

Following previous research on depth of processing (Lang, 2000), it was expected that deeper processing of particular information would lead to greater activation of these concepts. It was hypothesized, therefore, that there would be a polarization of the type-of-scene effect for participants in the depth condition. Without knowing that the test of Hypothesis II would reveal the opposite pattern as expected, we had originally predicted that participants in the depth condition who selected an aggressive scene would respond faster to aggressive words than similar participants in the surface condition, with a comparable pattern for participants who selected an orthogonal scene.

To test this hypothesis, a 2(condition) X 3(type-of-scene) ANOVA was conducted for the difference score. The interaction was not significant, $F(2,132) = 1.775, p = .173$, but there was a main effect for type of scene, $F(2,132) = 4.460, p = .013$. Despite the interaction being nonsignificant, the depth condition did appear to pull the effect toward the extremes, suggesting a trend for the depth condition to polarize the difference score (Figure 11.4). Post-hoc pair-wise comparisons revealed the only scores significantly different from each other were for those participants in the depth condition who selected an orthogonal scene, $M = 14.192$, $SD = 45.15$, compared to those who selected an aggressive scene, $M = -21.36$, $SD = 45.00$, $t(43.68) = 2.672, p = .011$. These results, although not statistically supporting the hypothesis, do offer a trend in the expected direction,
suggesting more power or clearer operational definitions are needed in future research.

CONCLUSION

The current study was a demonstration of research based on both psychological and communication theories, specifically investigating how attention and level of processing may affect the magnitude of semantic priming of aggressive cognitions. Although some of the hypotheses tested were not significant in this sample, a few effects emerged that supported the theories. Specifically, both the aggressive and nonaggressive content of the movie was learned, as measured by the semantic priming task. Furthermore, the data supported the hypothesis that the viewer’s motivations (i.e., viewing for meaning rather than to relax) could potentially increase the magnitude of the learning effects.
More research is needed in the area of cognitive-viewing styles, particularly in the development of a more precise operational definition. Furthermore, the role of the active viewer is an important one in understanding a viewer’s experience with the media. Although the level of processing and attention are important considerations for how a person may engage with the media, there may be many other important active viewer factors explored in the area of uses and gratifications theory that may offer a more appropriate construct through which to define viewing styles, such as the types of needs viewers use the media to satisfy (Blumler & Katz, 1974). Additionally, even though the study presented here only utilized a portion of the General Learning Model to understand violent media effects on aggressive cognitions, there are several other levels of learning that can be explored.

It is our contention that incorporating both psychological and communication approaches to media effects can offer valuable insights beyond the scope of either by themselves. The General Learning Model is able to bring to the communications research an integrative approach to understanding normative processes by which viewers can learn from and be affected by the media, and also describes the mechanisms through which the effects occur. The uses and gratifications theory is able to bring to the psychological research the importance of considering the active role of viewers and the important moderating effects that individuals’ motivations, goals, and needs can have on what and how they learn from the media. Together, these approaches can lead to a more complete understanding of the roles and effects of the media in our lives.

REFERENCES


