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The Role of Emotion in Media Use and Effects

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Abstract and Keywords

This chapter provides a summary of the existing media psychology literature regarding the role of emotions in media use and effects. Traditionally, emotions as an object of study from a media psychological perspective have largely been understood within the context of media entertainment research. General involvement mechanisms and affective dispositions of media users toward characters are addressed, as well as the effects of more specific displays of media violence, and frightening and otherwise disturbing materials. However, other branches of media-related emotion research can also be found, such as those related to persuasion and news effects. Most recently, emotions have become a hot topic, and an increased emphasis can be found on emotions as a mechanism underlying media use and effects. Likewise, studies in emotions have become omnipresent in online and computer-based communication, most notably including virtual humans expressing and detecting emotions. The newest trends in applying psychological emotion theories in modeling emotions in virtual humans are discussed. Although a review, this chapter goes beyond the boundaries of the extant knowledge base by raising new questions and providing innovative views on future research in media psychology.

Keywords: emotions/affect/mood, information processing, media effects, media entertainment, virtual humans

Introduction

Overlooking the field that has become known as media psychology over the recent decades, some interesting observations can be made. First of all, several initiatives marked the field including the publication of the book entitled *Media Psychology* (Giles, 2003), establishing an APA-division *Media Psychology* in 1980s (Rutledge, 2008; http://www.apa.org/divisions/div46/), the journal *Media Psychology* (founders Bryant & Roskos-Ewoldsen, 1999; for an analysis of journal content, see Chapter 5), while in 1988 the German-language *Zeitschrift für Medienpsychologie* was established (founders Mangold, Viehoff, & Vorderer), which has been published as the English-language *Journal of Media Psychology* since 2008. Clearly, media psychological research has a *user*-centered perspective on media effects, in studying how, why, by whom, and when media are used; underlying mechanisms in processing media messages; and under which circumstances certain effects may be expected to occur. A second observation is that the journal-focused initiatives seemed to be biased toward media entertainment as their main subject, whereas the APA division clearly emphasizes a developmental perspective rooted more strongly in "traditional" psychology. Third, the rise of media psychology shows a strong interest in the role of emotions in media use and effects. A growing number of media studies demonstrate how important the role of emotions is in message processing (p. 187) (e.g., Konijn & Hoorn, 2005; Konijn et al., 2009; Krämer et al., 2005; Lang, 2000; Nabi, 2009; Nabi, So, & Prestin, 2010; Zillmann, 2003). For example, the study of affective processing of media characters dominated the field from an entertainment perspective (see the pioneering work of Dolf Zillmann), whereas Lang et al. made a strong case for motivated processing of media messages (e.g., limited capacity theory) (Lang, 2000). Likewise, a long-standing tradition in studying aggression from media violence and

fearful responses to media fare in children is clearly acknowledged in media psychological studies (Cantor, 2010; Strasburger, Jordan, & Donnerstein, 2010; see also Chapter 9). Finally, studies in media psychology are empirically based by and large (see Chapter 7), often applying experimental designs and research methods in the tradition of mainstream psychology.

Media psychology has long been associated with studies in media entertainment, with a special focus on children's television use (see Chapters 1 and 6). With the introduction of television in the 1950s, concerns about the unconscious (e.g., subliminal) influences of advertising attracted the attention and interest of communication scholars and psychologists (Hovland, Janis, & Kelley, 1953; Byrne, 1959; see also Chapter 16). However, then, news broadcasts and political campaigns were not really seen as objects of study in media psychology. Given today's broader understanding of what media psychology entails (see Chapters 1 3, and 5), there is no reason not to include such studies as long as they embrace media psychological theorizing: even more so because they often belong to the same discipline as media entertainment studies and can be found in Communication Studies departments. Likewise, recent developments in user-centered computer-based studies, such as digital games, online communication, social media, and human–computer interaction studies, are increasingly embraced in media psychology (see Chapters 19 and 20). Again, such studies often focus on emotions; for example, emotional expressions of avatars or emotion regulation (see later section). In brief, from its start and increasingly in recent developments, media psychological research shows a marked interest in how emotions and affects play a key role in media use and effects.

The present chapter sketches how the field has developed in regard to studying media-related emotions while gradually evolving into future directions for media research. First, it describes how the study of cognitive effects has been analyzed as separate from affective responses to media content. Then, the various threads of media psychological research related to media entertainment are reviewed, illustrating how most early studies applied a more dimensional view to emotional involvement mechanisms, whereas more recent studies also include discrete or specific emotions. Important lines of research have recently been developed in how emotions affect attention, memory, and information processing of media content, which are discussed next. The chapter draws particularly on recent insights from the neurosciences to increase our understanding of media's impact. Finally, recent trends in media psychological theorizing and research relating to virtual media environments, in which virtual humans, which express and "understand" emotions play a central role, including so-called emotion modeling, are reviewed. In closing, some future perspectives for media psychological research into affects and emotions are sketched.

Cognition and Emotion in Early Media Research

When it comes to studying the role of emotion in media-based research,[1] separate strands of scholarship have evolved. On the one hand, research originated in the dominant tradition of mass communication with a rather heavy focus on cognitions or cognitive effects, often rooted in political, persuasive, or sociological theoretical frameworks. Such research mainly focused on analyzing the content of informative messages and their impact on the public at large. Informative messages, such as the news, political campaigns, and educational media were worth studying in their effort to offer the public serious messages about the world's state of affairs. Thus, such messages should appropriately inform the public by presenting genuine content and portrayals—arousing emotion, affect, or mood, certainly was not considered part of that (Zillmann, 2003). However, although studying the news was usually not related to emotions, this academic practice obviously overlooked the fact that much of daily news reports do portray emotions or incite emotions in their viewers. Interestingly, scholars studying children and media acknowledged this fact early on when focusing on frightful images for (young) children (e.g., Walma van der Molen, 2004; Cantor, 2010; see also Chapter 6). Recently, more general studies can be found on the role of emotions in processing the news, in particular highlighting the impact of emotional exemplars (e.g., Aust, 2003; Brosius, 2003; Sundar, 2003; Hendriks Vettehen, Nuijten, & Peeters, 2008; Bucy, 2010). Thus, mass media had to serve public welfare in providing authentic images of and reliable information about the surrounding world, thereby emphasizing the cognitive aspects of information (e.g., recall), ironically often through disclosing threats and dangers of direct concern to the public. Until recently, the news was not thought of as inciting emotions or creating agreeable moods in the public (Zillmann, 2003). To play the emotional cords of the media user clearly was considered the mission of entertainment.

It is not a surprise, on the other hand, that the entertainment industry in the early 20th century raised both public

and scholarly attention and concerns. With their argument against "escapism," Katz and Foulkes (1962) expressed their concern for the public fleeing in "superficial entertainment just for pleasure" while turning away from duties, social responsibilities, and political connectedness. They saw mass media as simply providing an entertaining, dreamlike world to which people escape and get narcotized (Katz & Foulkes, 1962). Probably such concerns were fed by the increasing use of media for purposes of propaganda in view of World War II. From here, media and entertainment studies expanded and the role of affect and emotions entered the field of mass communication, propagating a hedonistic media user's perspective. Thus, early media scholars such as Katz wondered how media could serve the public if they would just bring pleasure, enjoyment, oblivion, and escapism. In their view, the media turned away from their information function to serve the public in their daily societal duties.

Looking at these worries and early theorizing on media effects within their historical background, one gets a strong sense of theorizing on emotions and media effects as captivated in old Cartesian thinking in which cognitions and emotions were seen as separate entities (Damasio, 1994; Konijn & Van Vugt, 2008). Likewise, in psychology, behaviorism and stimulus–response models prevailed, ignoring "black boxes" like inner feelings, whereas only in the late 1980s and 1990s did emotion research start to flourish, and the old battle between cognitions and emotions melted down in cognitive appraisal theories on emotions (Arnold, 1960; Frijda, 1986; Lazarus, 1991, 1993). In cognitive appraisal theories, emotions are seen as *functional* responses of the organism to a demanding environment that offers threats, challenges, and opportunities for overcoming negative feelings, keeping up positive ones, or improving affective states in general. Emotions signal what is relevant and point the human being at threats, dangers, and opportunities to serve one's well-being in general. Emotions *include* some cognitive processing of information for an emotion to occur, even if subconscious. For example, an initial, primary fearful response to a swiping twig on the floor that resembles a snake, immediately dissolves once one realizes the "snake" is a piece of wood (Damasio, 1994; LeDoux, 1996). Therefore, in contemporary emotion research, we see a less strict dichotomization of cognition versus emotion (Rolls, 2003; Lewis, Haviland-Jones, & Barrett, 2008). Clearly, media-based emotion research is following this pattern, be it more slowly and much later, only starting to increase attention among media scholars over the last decade (Nabi & Wirth, 2008). In contemporary research in media psychology and communication science in general, we see a merging of theoretical thinking in line with cognitive appraisal theories of emotion. The following zooms in a little closer on the nature of emotions studied in media psychology.

Emotional Response to Entertainment Fare

A strong line of research evolved around the 1980s to 1990s in answering the question, "How do people respond emotionally to entertainment fare and develop strong emotional bonds with fictional characters?" Much of such theorizing reflected on Aristotelian conceptions of catharsis (after his influential *Poetics*; cf., Feshbach, 1956; Oatley, 1994), Freudian concepts of identification (Freud, 1942/1904), or Coleridge's "willing suspension of disbelief" (1960) in further stretching these concepts to more modern media fare (Zillmann, 2010). In reversed order, these conceptualizations may even be seen as conditional to each other, in that a willing suspension of disbelief eases identifying with a character, which may eventually lead to a (belief in) purification of one's anger, sadness, or otherwise unpleasant feelings (i.e., catharsis, also called the ventilation hypothesis) (Kennedy-Moore, & Watson, 1999). Today, each of the concepts regularly returns the stage, for example, as applied to new forms of media entertainment such as interactive storytelling (Cohen, 2009) or catharsis from playing video games (e.g., Bushman & Whitaker, 2010).

In this line of theorizing, the concept of identification has been devoted quite some attention while it also received serious criticism. In particular, the definition of identification as covering emotional connectedness with media characters seems problematic and has often been mixed up with the liking of a character (Tannenbaum & Gaer, 1965; Zillmann et al., 1980; Mayne, 1993; Oatley, 1994; Zillmann, 1994; Smith, 1995; Konijn, 1999; Hoffner & Buchanan, 2005; Konijn & Hoorn, 2005). Furthermore, identification falls short of explaining the complexity and intrinsic affectivity that is inherent in media exposure. Sometimes the behavior and affective experiences of media users seem to reflect those of the hero, sometimes only vaguely, and at other times not at all. Moreover, they might well experience the reverse: antipathy, aversion, or ambiguity, whereas intense negative affect toward a character can promote enduring involvement (Hoffner & Cantor, 1985; Konijn & Hoorn, 2005). Another drawback is the way identification has been measured. According to its definition, measurements of identification should be largely based on similarity with the media figure; sharing of several important features between respondent and character

(e.g., including similarity in emotions). However, if the observer does *not* share important features with the character but *wishes* to be like the character, the concept of wishful identification is more appropriate (Von Feilitzen & Linné, 1975; Konijn et al., 2007). Furthermore, if the observer does *not* share important features with the character and does not wish to be like the character, yet feels compassion, understanding, or sympathy for the character, then empathy seems a more appropriate construct. Empathy in media users has been conceptualized as resulting from being a witness to emotions in others (Zillmann, 1991; Nathanson, 2003). Close inspection reveals that many identification measures include a variety of related concepts. Finally, empirical support for identification in the sense of similarity-identification with media characters has rarely been found (Zillmann, 1994; Konijn, 1999).

A plethora of concepts related to identification or emotional involvement in general have been coined ever since, ranging from parasocial relationships (Horton & Wohl, 1956; Cohen, 2004), connectedness (Russell, Norman, & Heckler, 2004), to transportation (Green & Brock, 2000; also Chapter 25), immersion (Schubert, 2003), and presence (Biocca, 2002). Certainly, each concept in itself brings interesting perspectives to the understanding of viewer, character, and story relationships. However, a concept-forest seems to be blurring a clear sight on how individuals establish emotional connectedness, involvement with fictional characters, or media figures more generally. Clearly, a key mechanism underlying the various concepts mentioned in the preceding is some measure of emotional involvement or connectedness with the character, story, or narrative. Although the definitions do not always draw clearly on emotional involvement or emotional responsiveness to the media content, the measurements of the various constructs are contaminated with a measurement of emotional responsiveness and often also include a measure of "liking" the character or narrative. Therefore, emotional involvement has been coined (Konijn & Hoorn, 2005; Wirth, 2006) as a more generic concept covering the various forms of emotional bonding with a character, story, or narrative. Involvement has been conceptualized as engagement with the narration and its character (Slater & Rouner, 2002). It would be an important contribution to the field of media psychology to review all of these concepts and clearly chart how constructs overlap and to delineate their differences. Likewise, it would bring the field a big step forward to compare the various measurement devices in detail, particularly as many scales are newly devised independently from others.

A drawback of such identification or involvement-based theories is illustrated by their lack of explaining the liking for antiheroes, bad characters, or villains in movies and video games. The same problem holds for influential affective disposition theories (Zillmann, 1994, 2003; Raney, 2004, 2010). Affective disposition theory states that individuals are predisposed to empathize with the sufferings of others whom we like. Therefore, we fear for the fate of the sympathetic protagonist (and enjoy his or her victory), and experience relief at the devastation of his or her rivals (and fear their triumph). The problem here is that most such theorizing presupposes that more involvement or more character-liking means more media enjoyment, which implies that if you do not like the character you do not like the program. However, this is obviously not true, because numerous programs and stories have unlikable—even abhorrent—characters, who are nevertheless very involving. In the movie *Silence of the Lambs*, for example, the serial killer Hannibal Lecter is an essential, intriguing, and also empathy-evoking character. Currently, research into the experience of negative affects through media use and liking villains and abject characters is falling short. After all, entertainment does not always display or evoke emotions that we would normally consider entertaining, with such films as *Funny Games, A Nightmare on Elm Street*, or games such as *Manhunt*, offering emotional rollercoaster rides that certainly leave us affected and may even cause nightmares. Yet such intense "unpleasant" experiences (filled with fear, suspense, anger, or sadness) seem to add to our liking or appreciation of the (p. 190) movie, game, or experience in general, although we feel very distant from the bad characters.

A broad range of affective states related to media entertainment, character or story involvement, and appreciation of certain media content has thus been overlooked in media research until recently. As illustrated, distant or detached feelings were neglected (yet acknowledged in Konijn & Hoorn, 2005; Bilandzic, 2006). Furthermore, emotional responses to media content can emerge from so-called task emotions (e.g., admiration for the actor) (Konijn, 1999) or relate to aesthetic appraisals or "the artifact" (Tan, 1996), as well as emotionally moving sensations in response to technically sophisticated media products such as the 3D movie *Avatar*. Recently, scholars have pointed at the notion of mixed or multileveled emotions and parallel processing of positive *and* negative affects. Appreciating, liking, or enjoying a character may then be defined as a tradeoff between involvement (e.g., empathy) and detachment (e.g., disgust) (Konijn & Hoorn, 2005; Konijn & Ten Holt, 2010). Thus, we may burst into tears when Jack drowns in the *Titanic*, feeling with Rose and simultaneously appreciating the film of pulling the heart strings so skillfully. As said, traditional theories saw negative affects or emotions as opposed to

positive ones. However, progressing insights from emotion psychology (e.g., Cacioppo, Gardner, & Berntson, 1999) enables media psychologists to gain a better understanding of how we may like the often negative feelings that are stirred by the mass media.

Finally, most emotional responsiveness considered thus far merely reflects affective states or moods, not what is understood as discrete, basic, or specific emotions. Eventually, identification and emotional involvement may be considered mechanisms through which discrete emotions may result as media effect.

Emotional Involvement, Moods, and Discrete Emotions

As has become clear, most theories dealing with emotions and media thus far related to general understandings of getting emotionally involved with media fare as opposed to dealing with discrete or more specific emotions. Likewise, most theories are based on hedonistic principles, stating that media fulfill a function in improving negative moods (and sustaining positive ones), with mood management theory (MMT) (Zillmann, 1988; reviewed in Oliver, 2003) as the most prominent one. A modification of this theory is found in the mood adjustment theory, allowing for counter-hedonic media selection in using "negative" media fare to adjust for a subsequent task (Knobloch, 2003a), or for example, an imagined future encounter in which one may retaliate one's anger (Knobloch-Westerwick & Alter, 2006). Although mood management theories have received empirical support in various studies (Oliver, 2003), scholars have pointed out that such theorizing seems limited in addressing more complex experiences in encountering contemporary media offerings. Mood management–based theorizing is criticized for (1) overlooking nonhedonistic views on media use, and (2) demonstrating an unspecific, dimensional view on emotions. Although these theories explain *why* people are motivated to select specific media fare, the same criticisms hold for the involvement-based theories while individuals are encountered with media (i.e., after selection). This brings us to briefly define mood, affect, and emotions.

A crucial difference between affects and emotions is that *emotions* have an object, relate to meaningful events, and are clearly defined by a specific event with a beginning and an end, whereas affect is rather free-floating and objectless (Russell & Barrett, 1999). An emotion is the awareness of situational demands and personal concerns, often including physiological change along with hedonic quality, comprising the felt need to act or not to act, to serve one's needs, goals, or concerns (Frijda, 1986; Ortony, Clore, & Collins, 1988). Likewise, emotions are characterized by vital implications of threats and rewards for the human system (Rolls, 1999). Hence, emotions indicate that personal concerns are touched by an event (including imagined events). In contrast, *affect* is usually reflected in varying degrees of pleasure–displeasure, or positive–negative, as well as (de)arousal or (de)activation. Affect usually covers various concepts such as moods, feelings, and emotions. *Mood* is often applied to an enduring affective state, characterized by being global and not clearly elicited by an external event. Moods are not felt as motivated by inner drives related to situational demands. Moods may also simply have a biochemical source (e.g., epinephrine) or may be experimentally induced, as in some media exposure studies (Lang, 2000).

At this point it is important to note that media-related studies in emotion and affect may refer to quite different aspects of emotions (Konijn, 2008). That is, emotions or affect may be used to indicate subjective experiences (i.e., feelings) in media users, but may also indicate the behavioral expression (e.g., facial expressions, verbal and nonverbal behavior) of emotion as (visible) in a media portrayal. Obviously, experiencing (felt) emotions in users should be (p. 191) clearly differentiated from the depiction of emotions in media offerings. For example, sadness expressed in a media message (e.g., tears) does not necessarily imply sadness in the observer. Likewise, emotions may pertain to different stages of a media encounter such as motivation processes (or input for media selection), an underlying mechanism, or an outcome. For example, "Because I feel sad, I want to watch a comedy" is in line with mood management motivations. Sadness as an underlying mechanism is illustrated in, "Because I felt sad while watching, I gained greater understanding of the important values in life, which makes me feel good." Sadness as an outcome or media effect is illustrated by, "I now feel sad because I empathized with the poor character."

Clearly, the concepts of emotion, mood, and affect are not often used in the strict senses as defined, but rather are used interchangeably. However, given the definitions, we must conclude that most studies in media psychology thus far dealt with general affects or mood (i.e., a dimensional or aspecific view on emotions), whereas studies in discrete or specific emotions are relatively sparse. Exceptions are studies into fear and aggression, which have

been studied abundantly (see the following). Notably, these studies were inspired by portrayals of fearful and violent events in media fare out of concerns for their detrimental impact. Studies thus far hardly addressed emotional experiences in the media users as a starting point. The following briefly addresses several studies of discrete emotions related to media.

Most studied clearly is *aggression* from media violence, with Bandura et al.'s (1961) bobo-doll study as a well-known marker. An important criticism of that study long plagued media violence research—the question of whether experimental manipulations could be considered representative for real-life occurrences of aggression and whether the measurements really indicated aggression (Anderson & Bushman, 1997; Anderson & Dill, 2000; Ferguson & Kilburn, 2010; see Chapter 9). In 1998, Dill and Dill reported an important review of the empirical literature showing a consistent effect of media violence on increased aggressiveness. With the introduction of video games, research in media violence effects received a new impetus, with violent games being among the best selling. Highly realistic graphics, lifelike virtual environments, interactivity, and games' highly immersive potential attracted increased concern of parents, pediatricians, and policy makers (e.g., see Chapter 20). Although still debated (e.g., Ferguson & Kilburn, 2010; also see Chapter 9), a recent high quality meta-analysis covering a broad range of (inter)national studies confirmed the earlier conclusions of Dill and Dill (Anderson et al., 2010). A number of studies address intervention strategies to reduce children's aggressive responses to media exposure, mostly including parental and media literacy interventions (Cantor & Wilson, 2003; also see Chapter 6). Meanwhile, a number of related studies focused on the underlying mechanisms to sort out who is vulnerable under which circumstances (e.g., boys with lower educational ability, perceiving relatively high levels of realism in the games, wishing to be like the aggressive heroes; see the risk factors approach in Anderson, Gentile, & Buckley, 2007; Konijn et al., 2007; Nije Bijvank et al., 2011). However, important questions remain; for example, in establishing appropriate risk profiles and clarifying underlying mechanisms (see Chapters 9 and 20). Obviously, games sorting detrimental effects can likewise be used to sort beneficial effects, such as with serious games (Anderson, Gentile & Dill, 2012; Konijn & Nije Bijvank, 2009; Ritterfeld, Cody, & Vorderer, 2009; Belman & Flanagan, 2010; see also Chapter 19).

Another large number of studies can be found devoting attention to *fear*, both in addressing children's fear in response to scaring and fearful movies and television (including media violence), and fear as a persuasion technique in so-called fear appeals (often used in prevention campaigns, such as showing rotten lungs to reduce smoking). Children's fright responses to motion pictures were reported by Blumer as early as 1933. In the 1970s, public attention for such fright responses increased when *Jaws* and *The Exorcist* aroused intense emotional reactions, but by the mid-1980s researchers were focusing sustained attention on the media and children's fears (Cantor, 2009, 2010). An important focus of research efforts in this area include developmental differences in the coping potential of what frightens children, including longer-term effects, and the lessons learned from them (Hoffner & Cantor, 1985). Sometimes, intensely frightening images on television or a movie (e.g., *Jaws, Poltergeist*) endure well beyond the time of viewing, even in students and adults (Cantor, 2004, 2010). Studies show that such television exposure not only incites anxieties in children (Singer et al., 1998), but also nightmares and sleep disturbances (Owens et al., 1999; Van den Bulck, 2004; Paavonen et al., 2006). Retrospective studies show that having been frightened by a television show or movie could last into adults' memories (p. 192) (e.g., through unwanted recurring thoughts, or disturbances in eating and sleeping) and indicate the severity and duration of media-induced fear (Harrison & Cantor, 1999). Cantor (2010) summarizes what researchers have uncovered about viewers' fear reactions to the mass media.

Interestingly, however, harmful effects of media violence and fear-arousing images on children have mainly focused on entertainment media, whereas real-life violence depicted in television news has largely been ignored. For example, large-scale content analyses of media violence all excluded broadcast news programs (Walma van der Molen, 2004).

Finally, fear has been studied intensively within the context of persuasion, ads, and commercials, starting with the early work of Hovland et al. (1953) and extending into a large body of studies in *fear appeals* (Witte & Allen, 2000). The results of such affect-laden exposures are mixed; for example, either because people consider the relevance of the related risks as rather limited to themselves, or consumers may remember the affect-arousing image (e.g., the rotten lungs) but not the message (Obermiller et al., 2005). Other reasons for the mixed results are that the affect-laden images may not match the advertised product (e.g., women and trucks), the affective appeal may not arouse the intended affect (e.g., laughter among adolescents instead of fear), or it may not be relevant to the

consumer (e.g., considering oneself not susceptible). Likewise, attaching *humor* and *sexual affect* to commercial content have been widely studied based on the idea that a positive attitude toward a product, service, or brand would result from creating an association of positive affect, thereby increasing purchase behavior (Weinberger & Gulas, 1992). Over the past decade, including and studying emotions within persuasive contexts have become highly popular because "emotions sell"—even negative affect seems more effective than no affect (Williams & Aaker, 2002). The role of emotions and affect in persuasive communication is further discussed in Chapter 16.

Related to studying fear, yet clearly focused on (young) adults in response to media entertainment, is research into the enjoyment of *horror* and *suspense*. Exposure to horror has been explained by clear gender socialization effects: Young males enjoy horror even more when accompanying females are afraid (Zillmann, Weaver, Mundorf, & Aust, 1986; Zillmann & Weaver, 1996; Mundorf & Mundorf, 2003). Some claim that horror is enjoyed just for reasons of sensory delight (Sparks & Sparks, 2000), although many puzzles still remain unsolved in this respect (Tamborini, 2003). Knobloch (2003b) reviews the various theoretical approaches to the enjoyment of suspense and mystery in entertainment media. Suspense has been studied within the contexts of affective disposition theory through empathy with the character and fearing bad outcomes, as well as in the context of excitation transfer (Zillmann, 1971). According to excitation transfer, distress and related arousal-based emotional states develop along with exposure to the plot, whereas residual excitation of one episode transfers onto the next. The intensity of build-up suspense and its ultimate resolution in the film's ending predicts the viewer's final relief and enjoyment.

Research into *sexually arousing* and pornographic media content has engendered huge commercial interests (Brown, 2009; see Chapters 13, 16) and has given rise to a highly concerned public. Research shows that roughly 65% of television programs contain some sexual material and more than half of adolescents cite television as an important source of information about birth control, contraception, and pregnancy prevention (Kunkel, Farrar, Eyal, Biely, Donnerstein, & Rideout, 2007). Studies show that first exposure to pornographic materials is occurring at younger ages than in previous generations, whereas the exposure rate is higher among (young) males than females (Bryant & Zillmann, 2001). Effects found from a sexually oriented media diet include more permissive sexual attitudes (Bryant & Rockwell, 1994; Brown, 2003; Taylor, 2005), desensitization, and habituation to pornography (Zillmann & Bryant, 1986), early sexual initiation among adolescents (Collins et al., 2004), endorsement of sexual stereotypes (Donnerstein, 1984; Ward & Friedman, 2006), and early teen pregnancy (Chandra et al., 2008). A recent study in a European context assessed causality in the relationship between adolescents' risky sexual online behavior in a two-wave longitudinal study, in which peer involvement, perceived vulnerability, and perceived risks were all significant predictors of risky sexual online behavior 6 months later (Baumgartner, Valkenburg, & Peter, 2010). The importance of studying the underlying processes (e.g., perceived realism) in the effects of adolescents' use of sexually explicit Internet material is discussed in Peter and Valkenburg (2010).

Sadness has triggered many researchers' attempt to understand how people may enjoy tragedy, tearjerkers, sad movies, and tragically ending media fare. The puzzle has been termed the *sad movie paradox* (Oliver, 1993). It has been found that enjoyment of sadness depended on how people appraised their sad (p. 193) response (Oliver, Weaver, & Sargent, 2000). Another explanation has been found in downward comparison; through comparison with another's bad fortune, people may feel uplifted (Suls & Wheeler, 2000) or be self-satisfied in having the capacity to empathize with suffering others (Mills, 1993). Vicariously going through sad experiences as portrayed in media fare may also serve valuable learning experiences in preparing for possible real tragedy in one's own live (Goldenberg, Pyszczynski, & Johnson, 1999). Most recently, the concept of *eudaemonia* has been coined to explain the paradox (Oliver, 2008; Oliver & Woolley, 2010). In search of greater meaning in life and an increase in one's psychological well-being, people are motivated to expose themselves to distressing media content. A eudaemonic explanation coincides with the content of sad media in which interpersonal relationships, love, overcoming life's obstacles, and human's strengths and weaknesses are often highlighted (de Wied, Zillmann, & Ordman, 1994).

A few studies can be found exploring the role of *Schadenfreude* or *malicious pleasure* in media use, "taking delight in the suffering of another" (Adorno, 1996). Research shows that malicious pleasure was increased by threats of Dutch inferiority regarding a German loss in soccer (Leach, Spears, Branscombe, & Doosje, 2003). Likewise, enjoying "suffering others" in *Idols* occurred in particular in viewers who were low in self-esteem (Van Dijk, Ouwerkerk, Goslinga, & Nieweg, 2005). Malicious pleasure is explained by social comparison theory (Suls & Wheeler, 2000) suggesting that the suffering of others might actually make us feel good in comparison, because it

makes our own lives appear better and helps individuals gain a sense of mastery over threats through ego-enhancing experiences. Thus, the function of such media-related emotions can be identified as restoring self-esteem or resources generally, while engaging in the suffering of others.

Feelings of *guilt* have only recently been studied as a discrete emotion in the context of *moral emotions* and moral disengagement while playing violent video games (Bandura, 1990, 2002; Hartmann, Toz, & Brandon, 2011). *Moral disengagement* is understood as disconnecting one's inner moral standards from doing harm in game-play (Bandura, 1990). Movies, games, and related violent media fare ease such disengagement by providing cues for "justifying" the violence (e.g., fighting for a higher goal, such as saving the world, dehumanization, and fighting nonhuman creatures such as aliens). As such, players may enjoy the violence without moral concerns or guilt (Raney, 2004, 2010; Dill, Gentile, Richter, & Dill, 2005). Empathetic players showed increased levels of guilt when confronted with unjustified virtual violence (Hartmann et al., 2011).

The role of *regret* in selecting and perceiving regret-related media content has been studied by Nabi, Finnerty, Domschke, and Hull (2006). Their findings show that participants who had been cheating on their partner more strongly preferred regret-related storylines over those who had not cheated. In addition, in a subsequent experimental design, participants were presented with two different story endings; one expressing self-blame and regret, and the other rationalizing the cheating behavior. The regretful cheaters enjoyed the rationalization ending more than the self-blame ending. Moreover, regret after watching was reduced, although this was not dependent on the story ending. The authors conclude that entertainment programming can help viewers to cope with regret, perhaps through reframing the experience.

Effects of *anger* in media use and effects have been studied by several scholars. One study showed that anger resulted in lower risk perceptions than fear while judging risks of terrorist attacks after 9/11 (Lerner & Keltner, 2000). Likewise, another study found that anger frames the interpretation of news reports differently than fear leading to differences in policy preferences (Nabi, 2003). An older study (O'Neal & Taylor, 1989) found that angry participants selected violent or hostile materials over mood-improving comedies if they were led to believe the characters would get a chance for revenge (see also Knobloch-Westerwick & Alter, 2006). A recent study revealed that anger played a major role in moral judgment of antisocial media content (Plaisier & Konijn, in press). Adolescents who were rejected by their peers and experienced anger as a result showed a tolerant moral judgment of and a preference for watching antisocial media content in You Tube clips.

As mentioned, studies differ in their focus on particular stages of the process of encountering media. Most of the described studies reported on discrete emotional responses (as effects) to specific emotion-rich media content. However, several of the latter studies (e.g., regarding regret and anger) did not study discrete emotions in response to emotion-evoking media displays, but rather the impact of users' emotions before encountering emotion-rich media fare. Because these studies highlight an important role of emotions in the way media information is processed, they are discussed further in (p. 194) an information processing perspective later in this chapter, particularly the role emotions play in attention and recall from media exposure and how processes of learning from fiction and entertainment media may evolve.

Emotions Direct Attention and Memory

An important reason to study emotions related to media exposure is that emotions and affect play a significant role in processing the information provided through media exposure (Lang, Newhagen, & Reeves, 1996). Affective processing of media fare may modify the way in which the presented information is perceived, stored, retrieved, and valued, and how it becomes integrated into our real-life knowledge structures, whether fictitious (entertainment) or factual (news) media. Given the hybrid status of many contemporary media messages, studies on the role of affect are becoming increasingly important because they give us information about the underlying processes of the media's power to influence people. Media formats such as reality television, virtual worlds, and today's highly sophisticated graphics and 3D presentations in games and movies may add to ambiguity regarding the reality status of its content, at least for our primary perceptual system or lower path of processing in the brain (Konijn & Ten Holt, 2010).

Moreover, in our current "mediated society," we not only develop intimate relationships online, but also acquire real-world knowledge in large part through mediated exposure in which affects and emotions play a vital role to get

messages across. It is generally understood that emotions serve an attention-grabbing function and motivate people to focus their attention on distinctive information or objects. Emotions are thus helpful to selectively direct attention to parts of a media message (e.g., tears on a victim's face) because people are limited in their capacity to process information (Lang, 2000). Therefore, selective attention refers to the process of prioritizing particular objects or events while ignoring others (Theeuwes, 1993). A relatively limited number of studies thus far have studied the extent to which emotions (media generated or otherwise) affect the way a message is perceived and recalled.

Most studied is the influence of emotionally laden content on memory. However, the results seem mixed and may depend on differences in arousal level (or intensity) and the valence of emotions (or direction of affect; positive or negative), whereas even specific emotions with a similar valence may sort different effects (e.g., anger versus sadness). Selective attention related to media exposure was evidenced in a study showing emotional pictures in television news. This led participants to narrow attention to certain parts of the message, subsequently provoking recall errors (Brosius, 1993). In general, studies showed that emotionally arousing media messages increased recall of information related to the emotion-arousing content (David, 1996; Lang et al., 1996; Zillmann, Knobloch, & Hong-sik, 2001). However, information processing was impaired when presented after the emotionally arousing material (Mundorff, Drew, Zillmann, & Weaver, 1990; Christianson & Loftus, 1991; Grabe, Yegiyan, & Kamhawi, 2008).

Studies in which participants were explicitly shown negative images exhibited enhanced memories of events that immediately followed those images, and led to a generally poorer recall of narrative information in the long run (Reeves, Newhagen, Maibach, Basil, & Kurz, 1991; Newhagen & Reeves, 1992). Likewise, specific or discrete emotions with a negative valence; that is, disgust and surprise, resulted in better recall of the central topics of advertisements just presented, whereas happiness, fear, and guilt weakened such recall (Englis, 1990). However, differences for similarly valenced emotions were also found. Images that evoked fear and anger enhanced visual recall, whereas images that evoked disgust reduced visual recall (Newhagen, 1998). Such effects were also found for the memories of children. Sad children were more suggestible than those in either happy or angry moods (Levine, Burgess, & Laney, 2008). In contrast, other studies showed that positive messages may be remembered better than negative ones (Mathur & Chattopadhyay, 1991; Lang, Dhillon, & Dong, 1995; Lang et al., 1995; Bolls, Lang & Potter, 2001). One's emotional state also determines what aspect of a message one focuses on: People in a negative emotional state are more likely to focus on threats, and those in a positive emotional state being more likely to focus on rewards (Tamir & Robinson, 2007).

Differences in attention and recall for positive and negative emotions should be further studied in terms of mood congruency (cf., affect infusion model) (Forgas, 1995; Gendolla, 2000) such that negative emotions may enhance recall for (subsequent) negative information, whereas positive emotions may enhance recall for (subsequent) positive information. This also connects to an older study demonstrating that memories are organized by affect; that is, the mood we were in when we stored information is stored together with the information and is thus more accessible when we are in a similar affective state (Isen, Shalker, Clark, & Karp, 1978). (p. 195) Furthermore, recent insights from positive psychology (Seligman & Csikszentmihalyi, 2000) and the “broaden and build” effect of positive emotions (Fredrickson, 1998) indicate that although negative emotions narrow attention down to one specific problem, positive emotions broaden our attention to take in more of the world around us (for empirical evidence, see Isen, 2008; for media and positive psychology, see Chapter 10).

In all, media producers may not just focus on what they are trying to tell, but also on what emotions they evoke while spreading a message; the emotional waters a message sinks in, so to speak. Emotional waters can easily spread a message as moral panic (e.g., the Columbine school shootings) or a hoax (e.g., the anthrax letters) through today's fast and global online communications and highly popular social media.

Emotions Affect Information Processing

In addition to differences in recall of media information from similarly valenced emotions, a few studies investigated differences in perception of media messages because of different yet similarly valenced *discrete* emotions. Fear and anger (both negatively valenced) differently influenced people's risk perception after news reports about 9/11 such that participants perceived higher levels of risk when fearful than when angry (Lerner & Keltner, 2000).

Another study showed the differential framing effects of fear and anger on the processing of media messages. Students induced with fear decided to a more protection oriented approach in determining what kind of action should be taken against an undesirable activity as presented in a news report, whereas in the case of anger a more retributive approach was taken (Nabi, 2003). Likewise, participants in bad moods were better at detecting lies in news reports than individuals who were in neutral or positive moods (Forgas & East, 2008). Furthermore, people who were uncertain processed information more systematically than those who were more certain (processing the information more heuristically) (Tiedens & Linton, 2001). Similarly, sad people engaged in local and item-level processing, whereas happy people engaged in more global and category-level processing (Gasper, 2004). This is in line with the affect infusion model, arguing that people in negative moods use more detailed and systematic schemas and process persuasive messages more systematically (Forgas, 2007). Isen (2008) then added the important condition that this is only in terms of how relevant the information is to the person doing the processing. Two studies in particular applied an emotion processing perspective in demonstrating the relevance of the presented information to reveal important new insights in media use and effects.

Based on functional regret theory, Nabi, Finnerty, Domschke, and Hull (2006) predicted that entertainment programming may be selected to cope with a regretted experience. Their findings showed clear differences between participants who regretted a cheating experience and those without regret. The regretful participants showed higher preferences for regret-related storylines and story endings rationalizing the cheating behavior, whereas regret after watching was reduced. Thus, the study illuminates the importance of a close connection between the emotion experienced in the user and relevant information in the media message to explain counter-hedonic media preferences and outcomes.

In an experimental design, causal effects were shown for adolescents who were angry to show a preference for antisocial and amoral media content compared with either adolescents who were not angry or young adults (Plaisier & Konijn, in press). Note that anger induced by peer rejection influenced the perceptions of the participants in loosening their moral judgment of antisocial media content, subsequently increasing their preference for such media content compared with neutral and pro-social media content. Thus, anger played a significant role in explaining how the information from media was perceived and processed.

Another line of research examined how emotions influence the believability, source credibility, or perceived realism of media content. Especially in view of the hybrid nature of many contemporary media offerings, it is increasingly important to understand how people interpret the level of realism in media content (Shapiro & Lang, 1991; Brosius, 1993; Lea & Spears, 1995). Likewise, the “laws of fiction” (e.g., emotional close-ups, perspective-taking, and dramatic storylines) are increasingly applied in contemporary media fare (including reality-based programming and broadcast news) to enhance a program's emotion potential (Bragg, 2000; Konijn & Hoorn, 2004; Walma van der Molen & Konijn, 2007). Ambiguously real media require people to make ever more sophisticated judgments to determine what is factual. Several studies found that stories labeled fiction lead to attitude change equal to—and sometimes even greater than—those labeled nonfiction (Slater, 1990; Murphy, 1998; Strange & Leung, 1999; Green & Brock, 2000). Mares (1996) reported source confusion; that is, erroneous attributions of (p. 196) news-to-fiction as well as fiction-to-news among respondents who saw news reports and a movie trailer on the same subject. However, these studies did not take the role of emotions into account.

Research suggests that the more emotional people are when processing media, the more likely that they will believe it. Individuals experiencing higher levels of negative emotions (i.e., annoyance in Study 1 and empathetic sadness in Study 2) while presented with audiovisual materials taken from a television documentary, attributed higher levels of perceived realism and information value to the contents than those who were less emotionally moved, especially when the materials were framed as fictional (in contrast to “reality-based” material) (Konijn, Van der Molen, & Van Nes, 2009). The authors reasoned that the underlying mechanisms are in line with emotion psychology such that “emotions point to the presence of some concern” (Frijda, 1988, p. 351). Because emotions signal what is relevant to us, such as a threat or a reward, emotions may as well serve as a signal for the program's reality status. “If I feel, it must be real.” In line with emotion psychology, emotional experiences signal to individuals that something is real, psychologically real, or of real importance. Thus, processing media messages in an emotional state (whether preexposure or in response to) may alert the viewer that something real, psychologically real, or of real importance is occurring (i.e., relevant in challenging their well-being) (Konijn et al., 2009). This may explain why even fictional media can affect one's real-world perceptions.

Such emotional responding to what is in fact fictional (and most often we know we are just watching a movie or playing a game) can be further explained by how the brain responds to mediated images. So-called "mirror neurons" (Rizzolatti & Craighero, 2004) contribute to such an understanding. Mirror neurons "mirror" the behavior of another individual without conducting the behavior itself. They are active both when people perform an action and when they watch it being performed. Such mirror neurons are assumed to also be incorporated in empathy or emotional contagion—a kinesthetic response through which we may "feel with" the observed other. Mirror neurons may explain why we feel the sufferings of "just" a movie character, for example, when we watch a Nazi war criminal "dentist" torturing Dustin Hoffman's character in *Marathon Man* (1976) by drilling his teeth without anesthesia.

Research using functional magnetic resonance imaging (fMRI) among other techniques, has shown that certain brain regions comparable with the mirror neurons are active when a person experiences an emotion (e.g., disgust, happiness, pain) and when he or she sees another person experiencing an emotion (Gallese, 2001; Jabbia, Swarta, & Keysers, 2007). Likewise, brain activation differed in responding to sad films as compared with amusing films (Goldin, Hutcherson, & Ochsner, et al., 2005). Empathy involves not only the firing of mirror neurons representing a form of simulation of the observed states, but the sensed states are also attributed to the other individual, distinguishing them from the observer's own emotions.

Research in neuroscience, with fMRI scans and electroencephalography recordings provide us a glimpse of the human brain in action. An important finding in view of processing media messages is that we have a higher and lower pathway that processes information from the outside world (Damasio, 1994; LeDoux, 1996). The lower pathway runs to the amygdala, which is part of the limbic system and is involved in the processing of emotions, including fear and pleasure. The higher pathway leads to our higher brain faculties and ultimately conscious awareness. The lower pathway is markedly faster than the higher pathway, allowing us to react before we have fully cognitively processed the information (Damasio, 1994; LeDoux, 1996, 2000; Panksepp, 1998; Rolls, 2003). This means that we can react to a threat before we are consciously aware of it, offering important evolutionary advantages in enabling us to respond immediately to conditioned and evolutionarily determined dangers (for a review, see LeDoux & Phelps, 2008).

However, the lower pathway is often triggered by "false-positives," or things that only roughly match the fear-evoking response—such as a stick that resembles a snake triggering a fear reaction. Moreover, the immediate response of the amygdala is not the whole response. Instead, the higher path moderates our behavior and guides us down rehearsed or automatized danger-avoidance paths. In this way, the initial response can largely be controlled when necessary; for instance, when we realize the "snake" has twigs and leaves. Thus, media images that only roughly match a real-world event may trigger the amygdala to respond. As emotion theory predicts, touching relevant concerns seems a prerequisite (as discussed). For example, virtual displays of human physiology while performing surgery at a distance represent artery and muscles in various nonnatural colors depending on its meaning and relevance for the surgery at hand (Hoorn et al., 2003; Yee, Bailenson, & Rickertsen, 2007; Hoorn, 2012).

(p. 197) The amygdala thus responds to simple perceptual cues, especially the face and eyes (Adolphs et al., 2005) and is involved in detecting significant threats or potential rewards (Barrett & Wager, 2006). Therefore, it may be hard for the lower pathway to distinguish between imagined and perceived images when using graphically rich media, having trouble distinguishing between the fictional and factual (Zillmann, 2003, 2010). Indeed, positron emission tomography studies demonstrated that two-thirds of the activated brain substrates used to process imagined versus perceived images are the same (Kosslyn, Thompson, & Alpert, 1997). Likewise, neuropsychological research showed that the brain responds in similar ways to emotion-rich media events as to real-life events (Murray, 2008). Especially when ambiguous audiovisual stimuli are involved, or in case of doubt, people may then err on the side of safety (Shapiro & Lang, 1991) or take the "low road" and err on the side of caution (LeDoux, 1996) when emotions signal a threat—either factual or fictional.

Specifically in the case of danger, threats, or fear; that is, when negatively valenced emotions arise, emotions may incite the viewer to process a media message at least partly as a real event, and leave traces in memory that may later be remembered as if the event had really happened (cf. source confusion in Mares, 1996). Perhaps, this explains the sleeper effect (Hovland & Weiss, 1951; Kumkale & Albarracín, 2004), in which messages from sources with low credibility show opinion change, not directly, but over time. Thus, emotions may blur perceptions of the

factual and fictional directly as well as over time. The emotional impact of a message may last and add to its credibility, supported by the affective storage of information (Isen et al., 1978).

In conclusion, mass media may sort its effects in much more implicit and less understood ways than we may have assumed thus far. Until recently, the "fictionality" of many messages has been rather obvious. However, new technologies and contemporary media fare make it increasingly difficult for the human brain to detect or experience the difference between real and virtual worlds, at least in its primary response of mirror neurons and the lower pathway, even if we might consciously realize they are fictional or virtual. Research as discussed shows that emotions play a key role here. The fabric of our emotional system seems to help contemporary media exert even more influence than any of us would admit.

Emotions in Virtual Media Environments

The salient role of emotions in processing information is clearly understood in how new computer technologies emerge. Given the all-pervading use of computers and sophisticated technological innovations that allow computers to incorporate preexisting media devices, it is not surprising that computers are the top-rated topic in content analyses of *Media Psychology* (see Chapter 5). Increasingly, emotions are implemented in software applications that look and act like people—virtual humans. Positive results of implementing "emotions" in virtual humans are obtained in line with the generally positive effects of human functions of emotions in the context of decision making (LeDoux, 1996), memory storage and retrieval (Rolls, 1999), learning (Bower, 1991), social reasoning (Forgas, 2007), and their social and communicative functions (Manstead et al., 1999). Users may feel emotionally attached to virtual humans that portray emotions, and interacting with such "emotional" embodied computer systems positively influences their perceptions of humanness, trustworthiness, and believability. Affective computing is a research domain that studies such virtual humans to enrich them with emotional capabilities (Picard, 1997; Picard & Daily 2005; Konijn & Van Vugt, 2008), thereby drawing on knowledge from emotion psychology.

Research shows that even experienced computer users are inclined to treat their computers as largely social and interact in affective ways with them (Reeves & Nass, 1996; Brave, Nass, & Hutchinson, 2005). For example, people can feel pleased by the flattery of a computer, even though the flatterer is a piece of software. When confronted with a virtual human, people responded more politely and tended to make more socially desirable choices than without (Krämer, Iurgel, & Bente, 2005), and responded more empathically (Paiva, Dias, & Aylett, 2005). Positive effects of mirroring the interlocutor's emotional state have likewise been confirmed with virtual humans (Bailenson & Yee, 2005). Furthermore, the success of the *Cyberball* game (Williams, Cheung, & Choi, 2000) demonstrates that a simple piece of software is capable of inducing strong feelings of anger, frustration, and exclusion in participants. In addition, very elementary, simple forms of behavior representing emotional behavior in the emotionally expressive robot Kismet triggered sympathetic responses (Breazeal, 2003). Therefore, the rapid developments in this area of affective computing seem quite promising for the future.

Virtual humans (also called robots, avatars, or embodied agents) (Konijn & Van Vugt, 2008) that (p. 198) exhibit emotional behavior are used effectively in a range of applications, especially those in which human–human relationships are crucial, such as health care, psychotherapy, and education. For example, Bickmore, Gruber, and Picard (2005) incorporated the virtual human Laura into a health care system to motivate people to do their daily physical exercises. The patient's desire to continue working with Laura was highest when she showed relational, emotional behavior. The emotional and relational communication behaviors of patients were considered analogous to responses to real-life health providers. Therefore, emotional virtual humans may improve patient satisfaction and outcomes of health systems.

Increasingly, virtual humans are used in applications ranging from e-learning environments, online banking sites, psychotherapy applications, to games and virtual reality worlds (Bates, 1994; Breazeal, 2003; Mateas & Stern, 2006; Pontier & Siddiqui, 2008; Gratch, 2010; Krämer, 2010). Its success may be a result of the human system being hard-wired to respond to such emotional displays—most find it difficult to suppress responding to emotional displays (Fridlund, 1997; De Waal, 2003). Emotional displays are strong vehicles to communicate personal information and guide interpersonal behavior (Smith & Scott, 1997; Manstead et al., 1999). A random sample of effective applications of virtual humans that make use of emotions is illustrated in the following.

A virtual human psychotherapy application has been developed based on cognitive appraisal models of human emotion (Marsella, Johnson, & LaBore, 2003). The application aimed at improving the social problem solving skills of parents of children with chronic diseases (e.g., cancer). The user is positioned to make decisions on behalf of the mother of the sick child to learn about the consequences of various decisions. Another application in the health domain is a serious game developed for children suffering from cancer to increase their self-efficacy and insight in the disease (Kato, Cole, Bradlyn, & Pollock, 2008).

In an educational context, the FearNot! system was developed to teach children to cope with bullying behavior in schools (Aylett, Vala, Sequeira, & Paiva, 2007). The system lets the user play-act in various bullying situations to which the child is asked to respond, for example, by avoiding the bully, talking to the bully, fighting back, telling a friend or teacher, and so forth. For adults, the interactive system "Façade" (Mateas & Stern, 2003) has been developed to provide insights in marital problems through engagement with the virtual couple Grace and Trip. The user plays the character of a longtime friend who is unaware of these problems. His or her responses define the course of the conversation and even the course of Grace and Trip's lives.

Interesting parallels with media entertainment crop up, in particular the emphasis on emotional involvement with a character, narrative, and fictional world. Role-playing games are an intriguing mixture of traditional media and technological innovation, allowing one to present oneself as a "fictional" character in virtual worlds and create one's own narrative. This principle is increasingly used in serious games (Ritterfeld et al., 2009; Kato, 2010; see also Chapter 19). The interactive nature enforces high levels of emotional involvement. "What if" scenarios force changes in perspective taking, which are probably among the main carriers of serious games' educational effectiveness (Gee, 2007). *America's Army* is one of the first online digital games that can be named a serious game. It was developed by the United States Army and is in fact a recruitment tool. It has been criticized for serving as a propaganda device (United States Army, 2002; Konijn & Nije Bijvank, 2009). Another example is *Peacemaker*, in which the player is forced to take the perspective of the Israeli prime minister as well as the Palestinian authority (http://www.peacemakergame.com/game.php).

Virtual leaders may also have disastrous consequences; however, as is illustrated by *Pro Ana* (http://www.msnbc.msn.com/id/8045047/). "Ana" exists only in a virtual world and promotes anorexia and self-starvation. *Pro Ana* appeared to be a very real presence in the lives of many adolescent girls, who felt encouraged in extreme dieting behavior by Ana's words of "thinspiration" and "pain is temporary, but thin is forever." In 2005, experts estimated that Ana influenced several million girls. Many examples of virtual leaders and the influential role of opinion makers can be found in today's highly popular social media (Mitchell & Ybarra, 2009).

The impact and options of creating virtual characters empowered with emotional expressiveness as well as emotional responsiveness to users and the capability of emotionally binding users seem endless and very promising for future applications. However, to create virtual humans that respond appropriately in various situations, sophisticated software is required that asks for a deep understanding of the user's situation and characteristics. Therefore, a number of research efforts are taking place and various techniques are currently under study to design virtual (p. 199) humans that exhibit emotions and may detect emotions in the users.

Designing Virtual Humans and Emotion Modeling

Obviously, because human emotions are complex, they are also difficult to appropriately design in virtual humans and computer applications. Not only the face and body contribute in conveying emotional states, but also their co-occurrences. For example, many observers judging a facial expression are also strongly influenced by emotional body language (Meeren, Van Heijnsbergen, & De Gelder, 2005). Therefore, ideally, virtual humans exhibit emotions using both face and body. For example, sadness can be specified in terms of depressed corners of the mouth and weeping, and in addition, in terms of hanging shoulders and head hanging down. Many scripting languages and tools exist to enable virtual humans to express affect and emotion. The Affective Presentation Markup Language, for example, enriched the virtual human GRETA with multimodal emotional expressions using both face and gestures (De Rosis, Pelachaud, & Poggi, 2003). To ease the interpretation of an emotional state exhibited by a virtual human, it may be helpful to amplify significant features and signify only the necessary or most relevant for emotional expressions to be recognized, as is the custom in theater, art, and movies (Hoorn et al., 2003; Yee, Bailenson, & Rickertsen, 2007).

In addition to techniques to have virtual humans express emotions, various systems, and devices are developed that can somehow *detect* or predict the emotional state of the user in several ways. Just to name but a few are self-report systems that ask the user to indicate its emotional state to the computer (Picard & Daily, 2005) or emotion recognizers based on haptic data that originate from touching devices such as keyboards, mice, and touchpads (Bailenson, Yee, Brave, Merget, & Koslow, 2006). For example, button pressure as a measure of a game player's arousal, which was related to game difficulty (Sykes & Brown, 2003) or indicated user's frustration, stress, or anger (Mentis & Gay, 2002). Sensors and physiological indicators such as skin conductance and muscle activity have been used in preparing for a job interview (The Emphatic Companion) (Prendinger & Ishizuka, 2005).

Because haptic and physiological methods for emotion detection are error prone and quite demanding on their users, which reduces their reliability, techniques are used to *automatically* "detect" a user's emotional state without the need of self-reports or sensors. To that end, recordings of facial expressions of computer users are analyzed to assess underlying feelings and emotions. However, although facial expressions are fundamental in human emotion communication, facial expressions are not always clear indicators of emotion (Fridlund, 1997; Manstead, Fischer, & Jacobs, 1999; Konijn & Van Vugt, 2008). Nevertheless, facial expression analysis has become an active research area in the field of affective computing (Zhao, Chellappa, Phillips, & Rosenfeld, 2003; Ahn, Bailenson, Fox, & Jabon, 2010). Likewise, complex pattern recognition algorithms are needed for the recognition of gestures; for example, glove- and vision-based gesture recognition systems have been developed to recognize gestures (Wu & Huang, 2001; Karpouzis, Raouzaiou, Drosopoulos, Ioannou, et al., 2004). Eye-tracking technology is another important research tool in the area of affective computing, because gaze is also important in face-to-face interpersonal communication, for example, to regulate the flow of conversation (Vertegaal, Slagter, Van der Veer, & Nijholt, 2001; Partalaa, & Surakkaa, 2003; Drewes, Atterer, & Schmidt, 2007). Despite the difficulties, however, such automatic detection of assumed emotions in users can be useful in virtual environments to improve the communication between virtual human and user.

Finally, various approaches aim at recognizing emotions based on conversational content. A number of analytical tools have been developed to automatically analyze huge databases with emotion-tagged speech signals (e.g., specific words or other utterances), such as the Affective Reasoner (Elliott, 1992) and recent emotion recognition technology (Matsumoto & Ren, 2011). Other systems may apply a statistical approach based on the idea that certain word combinations are more probable for the expression of certain emotions than others (Polzin & Waibel, 2000). However, emotional cues are mostly implicitly hidden because users most often do not explicitly verbalize their emotional state; automatically detecting emotions in media content is not easy. In the last decade a number of developments have taken place to improve emotion recognizers, for example based on speech characteristics (e.g., pitch, prosody, durations of silence, speaking rate) (Van den Broek, 2004), real-world knowledge to evaluate the affective qualities of the underlying semantic content of text (Liu, Liberman, & Selker, 2003), or semantic analyses (Van Atteveldt, Kleinnijenhuis, Ruigrok, & Schlobach, 2008). However, such methods do not (p. 200) allow for *real-time* and *continuous* determination of a (changing) user's emotional state while speaking, although they can provide useful information after the fact.

In sum, verbal and nonverbal behaviors allow the researcher to unobtrusively detect the user's emotion through a computer in ways parallel to face-to-face communication. Because of the ambiguity in interpreting individual cues of emotion expression, *multimodal automatic emotion recognition* (based on multiple cues) seems the most promising approach because it reduces the uncertainty associated with using a single mode (Picard & Daily, 2005); for example, combining signals from facial features, prosody, and content in speech to recognize emotions (Fragopanagos & Taylor, 2005). Nevertheless, environmental contexts and specific task demands further influence the way verbal and nonverbal behaviors should be interpreted. Therefore, Gratch and Marsella (2005; Gratch, 2010) propose complex emotion modeling mainly based on appraisal and coping theories of emotion. Such modeling allows for appropriately functioning virtual humans that may resemble common interpersonal communication or at least act similarly powerful.

Psychological emotion theory is at the basis of many research efforts to improve the development of virtual human applications. For example, the virtual human should show *consistent* emotional behavior for users to get engaged in human–computer communications and to understand what is going on (Nass, Brave, & Takayama, 2006). Psychological appraisal theories have been implemented (i.e., translated into computer software) to design emotionally consistent systems that are able to operate in interactive environments (i.e., emotion modeling) (Gratch, 2010). This allows the computer to predict or determine the emotional state of the user and his or her

potential to cope with the particular situation, subsequently adjusting the system's response. The output of such an emotion model is an emotional representation to be displayed by the virtual human. The thus selected emotion pattern (output from the emotion model, for example, sadness) is converted into appropriate behavioral components, such as facial expressions, head nods, gestures, eye gaze, body movements, and/or speech qualities such as utterances and prosody.

Psychological emotion models in combination with affective character models have served as input for developing the add-on software Silicon Coppélia (Pontier & Siddiqui, 2008; Hoorn, Pontier, & Siddiqui, 2012). This software can build up and regulate the affective behavior of virtual humans in response to the behavior of users. For example, a game character that is armed and dangerous may start shooting when approached by an aggressive user or hold its fire when approached with empathy. Thus, users can influence the behavior of the virtual human through their own behavior, yet the system is too complex to predict which behavior. Such emotion modeling software has a number of promising applications for the future. In combining this software with packages to create state-of-the-art gamelike situations and characters, methodologically sound experiments can be created to study, for example, up-to-date gaming experiences (Konijn, Walma van der Molen, & Hoorn, 2011). Apart from visible interventions with characters, features, and contexts, unobtrusive manipulations can be investigated that are directed at the cognitive function level of task performance and response execution (e.g., variations in time lag, lighting, expected position on the screen, warnings) without spoiling the excitement of playing a video game. Such emotion modeling software thus has promising applications not only for experimental emotion psychology, but also for training programs, learning and development, serious games, and e-health applications (Ritterfeld et al., 2009; Kato, 2010; see Chapter 19).

In conclusion, observers will ascribe emotions to virtual humans, even if they are construed solely by technical means, because of their habit of deriving emotions from outer appearances (Reeves & Nass, 1996). Future research will explore what type of virtual humans and what type of emotional displays, including in response to user's emotions, fits best with what type of applications. Just as in real life, different emotional responsiveness is expected from teachers, bankers, and psychotherapists. Developments in emotion modeling and programming languages continue to have virtual humans “reason” about emotions and respond with emotional displays in ways as expected from humans given a particular context. Clearly, designing emotionally competent virtual humans poses computer scientists, communication scholars, and emotion psychologists alike for interesting and collaborative research challenges.

Conclusions and Future Directions

This chapter described how early media psychological research has developed from emphasizing cognitions, attitudes, and recall from media exposure, to a steady increase in studying emotions, both in terms of emotional displays in media content and as an emotional state in users. Media research that (p. 201) focuses on emotions now include not only entertainment and persuasion media, but also the role of emotions in processing the news, online communication, and virtual worlds. The impact of emotional exemplars in the news and media generally seems significant because they are more accessible and influential than non-arousing exemplars, although their impact requires more detailed research in how emotional exemplars in the media may affect real-world knowledge structures. Special attention is needed in this respect for the influence of emotional portrayals in fiction and entertainment media, how they may eventually cultivate various beliefs, such as stereotypical ideas about unfamiliar issues, or in answering questions such as, “How do emotional exemplars facilitate stimulus generation?” After all, the extant literature suggests that we tend to respond to media images as we do to real images (at least at the lower path of processing), and media images are processed such that they may affect one's perceptions of social reality.

Quite some research in the tradition of media psychology has been devoted to emotional responses to entertainment fare. However, such research efforts seem to have boundaries that constrain their findings to uplifting media fare, and less so to the intriguing phenomenon of enjoying sad, violent, or gory media. Progress needs to be made in understanding the appreciation of villains, abject and bad characters, and antiheroes, particularly because they are common in contemporary movies and video games. Experiencing intense unpleasant emotions and affects seems to add to media users’ enjoyment and appreciation of the movie, game, or experience in general, although we may feel very distant from the “bad characters”. Exploring one's emotional borders is

especially salient for the developmental stage of adolescence, for which media lend themselves perfectly. One may also think of the role of emotion-rich media in acquiring emotional competence; that is, to learn to understand emotions in others and oneself, develop one's emotion regulation skills, and learn how to cope with and behave in emotionally taxing situations. In a similar vein, it may well be that amoral or antisocial media fulfill an important function of adolescent development in exploring one's borders. After all, it is inherent in this developmental stage that growing individuals develop their own identity, such as sexual maturation, emotional growth, and developing one's moral standards (Subramanyam & Šmahel, 2011). This coincides with an overrepresentation of sexual and emotion-rich portrayals, including high levels of (a)moral and ethical considerations. As such, the positive role of even negative or antisocial media content also should be taken into account.

Clearly, media may fulfill a wider array of functions than has generally been considered from hedonistic perspectives. Media may not only fulfill a function in improving our bad moods, but counter-hedonic media selections may help us to adjust for a subsequent task, fulfill coping needs (e.g., overcoming guilt or regret), or eudaemonic functions. For example, most recent research showed how the enjoyment of sadness depended on how people appraised their sad response. When appraised as adding meaning in life, sad media increased viewers' psychological well-being (Oliver & Woolley, 2010). Likewise, processes of social comparison clarify how sufferings of others, in particular others that we most likely will not meet in person, may increase our self-esteem, weaken our own disappointments, or make our life seem better in comparison. However, social comparison may also result in less comfortable feelings; for example, body dissatisfaction, when the object of comparison represents an unattainable ideal (Knobloch-Westerwick & Romero, 2011; Veldhuis et al., 2012). What is the role of emotion (both in media depictions as in users' responses) in predicting which (part) of the observed behaviors are most likely to be compared, imitated, or learned— emotions deriving from the wish to be like an idealized image, beliefs in achieving self-ideals, one's hope of actualizing self-ideal images? As argued herein, people may be motivated to expose themselves to distressing or upsetting media content in serving coping needs and the social sharing of emotions (Nabi et al., 2010). Finally, sad or bad media may serve valuable learning experiences in preparing for possible real misfortunes in one's own life.

Because emotions are defined as the awareness of situational demands and personal concerns, interesting research challenges lie ahead in discovering how situational demands and personal concerns are specified in media-related emotional responsiveness. Likewise, additional specific research applying emotional psychological frameworks is needed to more fully and specifically understand which needs, goals, and concerns are served by using media, particularly emotion-evoking media. Likewise, because emotions are characterized by vital implications of threats and rewards for the human system, which ones relate to media use? After all, emotions signal what is relevant and point the human being at threats, dangers, and opportunities to serve one's well-being in general. From an emotion psychological perspective, (p. 202) in which emotions are seen as functional responses of the organism to a demanding environment, a relevant question is, "What functions are served, under which circumstances and to what ends, in using media?" More specifically, "What threats, challenges, and opportunities for overcoming negative feelings, keeping up positive ones, or improving affective states are offered by media use that either display or evoke unpleasant emotions in its users?" Another unexplored question is, "What is the extent to which media play a role in satisfying needs for experiencing emotions as such, just for the sake of being moved?" Future research may further substantiate such questions and discover other important and specific functions of supposedly "negative" media offerings.

Further theorizing and research are needed into parallel processing of positive *and* negative affects, or the occurrence of multileveled emotions. Contemporary emotion psychology acknowledges that positive and negative emotions are not bipolar, but rather occur in parallel. Similarly, appreciating or enjoying media fare that evokes emotions with a negative valence can be explained as such. However, research into specific emotions is needed to further understand how such parallel processing may occur, under which circumstances, and with what effects.

Studies differ in their focus on particular stages of the process of encountering media, although the extant literature is not always clear in this respect. Most of the described studies reported on emotional responses (as effects) to specific emotion-rich media content. That is, emotions as outcome of media portraying gory, fearful, or graphic displays of emotion-evoking content. However, subjective experiences (i.e., feelings) in media users may also serve as a starting point. Only a few studies, thus far, examined discrete emotions in users *before* encountering emotion-rich media fare, and how these emotions affected preferences and processing of specific media content. The results highlight an important role of emotions in the way media information is selected and processed. Thus,

emotional frameworks may be applied to various stages of a media encounter, to motivation processes (or input for media selection), an underlying mechanism, or an outcome.

Many studies have focused on general involvement processes. Certainly, developing strong emotional bonds with fictional characters, and portrayed events and narratives is important in appreciating entertainment media. However, important progress can be made in reviewing the various concepts that have evolved (e.g., transportation, immersion, presence, parasocial interaction), how constructs overlap, and how to delineate their differences as well as compare the various measurement devices in detail. Furthermore, emotional involvement may be considered a mechanism through which discrete emotions may result as media effect.

A number of studies have been described in this chapter that showed how affective processing of media fare modifies how the presented information is perceived, stored, retrieved, and valued, and how it becomes integrated into our real-life knowledge structures. The results of the influence of emotions in relation to media content on memory are mixed and depend on differences in arousal level and the valence of emotions, whereas discrete emotions with a similar valence also sorted differences in attention and recall. Effects of positive and negative emotions could be further studied in terms of (dis)congruency between users' emotional states and the emotional portrayals in media images. For example, negative emotional states may enhance attention for and recall of negative information in the media. Likewise, moods while storing information seem to be more readily accessible when we are in a similar affective state while recalling that information, because memories seem to be organized by affect. However, this has hardly been studied in media-related contexts thus far. Undoubtedly, emotions play an important role and often seem contagious when mediated events are still remembered years later, in media messages that create hoaxes, social unrest, or moral panic, or in specific media fare that go viral (e.g., a You Tube clip). Thus, it is important to study in much greater detail than has been done thus far how, when, and under what circumstances specific media messages pull the heart strings in excessive ways.

In addition, emotions and affect have been shown to influence information processing. Findings showed that different emotions differently influenced people's risk perceptions, policy preferences, and reality perceptions. Various theories have been discussed that explain parts of the puzzle. On the one hand, theories argue that people in negative moods process media-related information in a more detailed and systematic way than people in positive moods (Forgas, 2007), whereas others argue that this is only in terms of how relevant the information is to the person doing the processing (Isen, 2008). Some recent studies confirmed that a close connection between the emotion experienced in the user (e.g., regret, anger) and information in the media message relevant to that emotion explained counter-hedonic media preferences as well as outcomes in accordance (p. 203) with a functional view of emotions. Much more research is needed, however, in studying correspondence between specific emotional states and emotion-relevant media, especially how emotions serve emotion regulation and coping needs and direct information processing of media content.

Many studies in recall and information processing of media pertained to factual (news) media; however, future research should examine how emotional processing of information occurs with fictitious (entertainment) fare or ambiguous materials such as today's popular formats as reality television, infotainment, sophisticated graphics, and virtual worlds. Moreover, intimate relationships develop online, and much of our real-world knowledge is acquired through media exposure. The hybrid status of such media messages and blurring of mediated and real worlds demand further study in the role of affect and the underlying processes of the (entertainment) media's power to influence people implicitly, subconsciously, or in the long run. Research results thus far suggest that the more emotional people are when processing media, the more likely it is that they will believe it. More work needs to be done here.

Sophisticated research methodology such as used in neuroscience may be helpful in this respect. Although media-related research using functional magnetic resonance imaging scans, electroencephalograph recordings, positron emission tomography scans, and the mirror neurons is still scarce, they all provide a glimpse of the human brain in action when processing media content. One of the important findings is that we have two pathways along which we process such information, a higher and lower pathway (Damasio, 1994; LeDoux, 1996). However, the lower, faster pathway is often triggered by false-positives because it scans the environment for possible threats and dangers and prepares the human system for possible (immediate) action. Therefore, it may be hard for our lower path to process ambiguously real or graphically real media and discern between the real and the not-so-real, or fictitious (Murray, 2008). Both such insights and the technological developments in graphically realistic media fare may thus

require people to make ever more sophisticated judgments to distinguish between fictional and factual events (Konijn & Ten Holt, 2010; Zillmann, 2010). As a consequence, future findings may show that such media leave traces in memory that may later be remembered as if the media event had actually happened (cf. source confusion in Mares, 1996) or explain "sleeper effects" (Kumkale & Albarracín, 2004). Thus, the emotional system may get blurred in distorting perceptions of the factual and fictional, directly as well as over time. Moreover, important questions arise as to what extent ambiguously real and emotion-evoking media may extend to real-life events; for example, in terms of desensitization effects or distorted reality perceptions. Thus, to what extent do media-evoked emotions intensify media's impact or transfer to real-life situations and make (heavy) users of particular media less responsive to daily life occurrences of related events?

In a similar vein, not much is known about how positive emotions may direct information processing from media. When applying recent insights from positive psychology and the "broaden and build" effects of positive emotions (Fredrickson, 1998; Seligman & Csikszentmihalyi, 2000), positive emotions as derived from media use may fulfill important functions of restoring energy and resources. Although not yet in media-related contexts, research showed that positive emotions broaden our attention to take in more of the world around us, whereas negative emotions narrow attention down to one specific problem (Isen, 2008). Thus, it might well be that people in positive emotional states realize an ambiguous or virtual state of media content more clearly than those in negative emotional states that prohibit the broader picture in zooming in on the details. Also, people may use specific media fare displaying (or evoking) positive emotions to bounce back from negative emotional experiences during the day (cf. Tugade & Fredrickson, 2004). Future research may more closely connect insights from positive psychology to specific media use in serving such a need for positive emotions to build up.

Finally, this chapter discussed emotions as related to virtual media environments. New technologies regarding computer usage emerge rapidly, and a large number of media applications show virtual humans or avatars that express emotions, detect emotions in users, and respond in an emotionally appropriate way. Increasingly, emotions are implemented in software applications, especially in virtual humans that look and act like people, with positive results. Developments in this area of affective computing seem quite promising for future applications, especially those in which human–human relationships are crucial, such as in health care, psychotherapy, and education. Not only insights from emotion psychology are used, but insights from media entertainment and art perception are also included. For example, the importance of emotionally binding the user to (p. 204) a virtual human, and some narrative or storyline in the virtual world, can easily be recognized.

However, in line with the complexity of human emotions, it is also complex to appropriately design virtual humans in computer applications. For example, in humans expressing emotions, the various body parts co-act consistently in appropriately conveying emotional states, and possible human deception usually goes unnoticed. In having virtual humans express emotions, various systems and devices have been developed that cannot only express emotions fairly well, but that are also able to somehow "know" the emotional state of the user. To that end, multimodal automatic emotion recognition systems seem a promising way to go (Picard & Daily, 2005). In addition, over the last decade sophisticated efforts have been undertaken to model human emotion processing in virtual humans, called emotion modeling (Pontier & Siddiqui, 2008; Gratch, 2010). Most such efforts thus far are based on appraisal and coping theories of emotion, allowing virtual humans to more or less resemble common interpersonal communication and function appropriately in a given context. The output of such emotion modeling is "emotional behavior" displayed by a virtual human. Promising applications of such emotion modeling software are awaited. Obviously, various types of applications and training goals need different types of virtual humans, emotional displays, and emotional responsiveness. In online shopping worlds, for example, quite different emotional responsiveness is expected than from teachers and psychotherapists, or virtual coaches that take over repetitive monitoring behavior in health care.

Especially promising are the developments relating to serious games for learning and development (Ritterfeld et al., 2009; see also Chapter 19), sophisticated training programs, and a variety of health applications (Kato, 2010). The options of creating virtual characters empowered with emotional expressiveness as well as emotional responsiveness to users, including the ability of emotionally binding users, seem endless and very promising. Smart mixtures of traditional entertainment media tools and technological innovations allow the user in role-playing games to explore various perspectives of oneself in confronting a diversity of possible events. The interactive nature and vicariously experiencing possible actions enforce high levels of emotional involvement and provide rich learning experiences. In designing emotionally competent virtual humans, computer scientists, emotion

psychologists, and media psychologists are needed to challenge each other in collaborative research endeavors.

Although the field of media psychology has devoted much research attention to the possible detrimental effects of questionable media content, the time is ripe to also focus on how media functions to serve human well-being. In particular, in view of contemporary developments in media technology and use, more in-depth theorizing and research are warranted. Media's potential to emotionally connect to users and create emotionally rich virtual worlds may serve important functions for both general life satisfaction and the relative balance of positive and negative affects in daily life. Thus, relating human well-being to media-based research seems a worthy pursuit for future media psychology.

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Notes:

(1.) Most often such media-based research is done in departments named Communication, Communication Studies, or Communication Science. Sometimes, and increasingly, media-based research can be found in departments of psychology, often in pedagogy or developmental psychology.

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