Evolutionary Approaches to Media Processes and Effects

RICHARD HUSKEY
Ohio State University, USA

BRITNEY CRAIGHEAD and RENÉ WEBER
University of California, Santa Barbara, USA

Introduction

More than 150 years have passed since the first publication of Charles Darwin's (1859) landmark treatise *On the Origin of Species by Means of Natural Selection*. The ideas contained in that text have since revolutionized the scientific investigation of living organisms. Today evolutionary theory is foundational to a diversity of fields, including biology, linguistics, anthropology, neuroscience, and psychology. By comparison, media scholars have been slower to embrace evolutionary theory (Hennighausen & Schwab, 2015; Weber, Sherry, & Mathiak, 2008). However, a growing number of theories advance explanations for media processes and effects from an evolutionary perspective.

The present entry provides an overview of Darwin's theory of natural selection and discusses the requirements for establishing psychological processes as evolutionary adaptations. Not all media theories—not even some that claim to adopt an evolutionary perspective—meet these criteria. Accordingly, this entry reviews a selection of well-established evolved psychological mechanisms that are recruited during media use. It concludes with a brief overview of methodological approaches for testing evolutionary hypotheses of media processes and effects.

The foundations of evolutionary media science

Natural selection (Darwin, 1859) offers a mechanism that explains how complex functional design emerges within living organisms. Three key concepts underlie the theory of evolution through natural selection: variation, differential reproduction, and heredity. The total sum of observable characteristics for a given organism that result from an interaction between that individual's genetic composition (genotype) and the environment is called *phenotype*. Importantly, there is phenotypic variation between organisms. In the simplest case, one group of organisms might have characteristic A whereas the other does not. Suppose that organisms with characteristic A are slightly more likely to survive than organisms without characteristic A. We

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should then expect that, on average, organisms with characteristic A will reproduce in greater number than those without characteristic A. This is known as differential reproduction. If characteristic A is heritable, then the offspring of organisms with characteristic A will also display this trait. Over time and as a consequence of differential reproduction, organisms with characteristic A will outnumber those without. Darwin would call characteristic A an *adaptation*—a trait that helps an organism survive in its natural environment long enough to enable increased rates of reproduction.

One limitation of Darwin's early theory was its silence on exactly what mechanism allowed for the inheritance of an adaptation. Advances in genetics during the twentieth century largely resolved this issue by demonstrating that genes are the most effective replicators; therefore natural selection must occur at the genetic level (Dawkins, 1986). Genes are capable of exerting far-reaching influence. Genes are capable of influencing phenotypic expression not only within an individual organism but also within groups of organisms.

As an example, the cuckoo bird has evolved a strategy for manipulating other (host) bird species into incubating and subsequently caring for cuckoo eggs and chicks. First, female cuckoos lay their eggs in host nests. The timing is such that the cuckoo eggs hatch a few days earlier than host species eggs. Once hatched, young cuckoos proceed to push all rival eggs out of the nest. Even more deviously, young cuckoos have evolved a call that manipulates the host into providing food, thus ensuring that the host species feeds cuckoo chicks.

This seemingly altruistic behavior of the host species can be explained through genetic selection (Dawkins, 1986). There is an asymmetry in selective pressure between cuckoos and hosts. Over the long course of evolutionary history, all cuckoos that manipulated their hosts unsuccessfully perished (and consequentially did not pass on their genes). By comparison, not all host birds are invaded by cuckoos, and therefore not all host birds that failed to detect cuckoos perished. As this example (along with many others) demonstrates, a gene-centered view of natural selection is capable of explaining complex functional design in individual organisms as well as in groups of organisms.

There have been many challenges to this gene-centered view, the most prominent arguing that natural selection operates at the group level, where individual organisms act in ways that benefit the group as a whole. While group-selection hypotheses are intuitively appealing, several flaws severely weaken them (for an extended critique, see Dawkins, 1986). Most notably, groups reproduce and form subsequent groups at a much slower pace than the rate at which genes reproduce and form subsequent organisms. Thus it is unlikely that adaptations at the group level override the forces of natural selection at the individual level.

Some media scholars reject the notion that evolution has anything to do with the relationship between humans and media. In this view, media are merely an artifact that influences, and is influenced by, culture. As this entry will demonstrate, this is a rather narrow view, which privileges environmental explanations while completely ignoring biological influences. A more complete view treats human behavior, including our capacity to create media and culture, as the result of an interaction between biology and the environment (Hennighausen & Schwab, 2015; Weber, Sherry, & Mathiak, 2008). Evolutionary media scholars link environmental and biological factors by borrowing a concept from evolutionary psychology: *evolved psychological mechanisms* (EPMs; Tooby & Cosmides, 2005). These regulate human behavior, are shaped by environmental influences, are genetically based, and therefore are heritable. Analogously to the way in which computer hardware enables computer software, neural structures in the brain enable EPMs. This is the foundational idea that underlies the investigation of media phenomena from an evolutionary perspective.

Demonstrating adaptation

Tinbergen (1963) specified four questions that must be answered in order to establish the claim that something is an evolutionary adaptation: what it is for, how it evolved, how it developed, and how it works. Consider, for example, the eye (for an extended treatment, see Dawkins, 1986). The first question requires specification of the problem the adaptation evolved to solve. Eyes solve problems related to locomotion, food acquisition, and predator avoidance. The second question investigates how the adaptation developed over long periods of time. Addressing this issue requires specifying the selective pressures that shaped the adaptation. In the case of eyes, organisms outfitted with even the crudest form of vision were better able to find food and avoid predation than were organisms without the benefit of vision. The third question focuses on issues of development within individual organisms. This requires an understanding of how eyes change across the life span of an organism (e.g., fetal development, maturation, degeneration). The final question deals with the multilevel processes (molecular, neurophysiological, hormonal, social, cultural) that enable an adaptation. In human eyes, the cornea, the lens, and other structures focus incoming light on the retina. Light-sensitive cells within the retina (rods and cones) convert this light into electrical signals that are transferred, via the optic nerve, to visual cortices in the brain, which then relay this information to downstream structures for further processing.

Not all features of an organism—and this includes psychological processes—are adaptations resulting from natural selection, and there are several instances where it is incorrect to evoke adaptation when other explanations are more accurate (see Tooby & Cosmides, 2005). For instance, developmental requirements are different from adaptations (see Dennett, 1995, pp. 247–248). That eyes are part of the body requires no adaptive explanation, since it is unclear how eyes would develop independently of bodies. In other cases, features of an organism are simply a by-product of an adaptation. By-products perform no adaptive function of their own but are present in an organism because they are coupled with other features that were selected for. In vertebrates, the optic nerve creates a small blind spot in the visual field. This blind spot is not an adaptation but simply a by-product of the eye's historical development. As another example, it would be incorrect to say that the eye evolved in order to watch television. Instead, the ability to watch television is a by-product of the eye's ability to assist in the transformation of the light-reflective properties of surfaces and edges into visual representations of the external world.

These criteria for establishing an evolutionary adaptation carry two important implications. First, considerable work needs to be done in order to specify that a physical feature or an EPM is indeed an evolutionary adaptation. Forgoing this painstaking groundwork results in what is commonly referred to as a "just so" story, or an oversimplified claim that ignores more plausible alternative explanations. Self-determination theory (Ryan & Deci, 2000) is often used as a theoretical framework for explaining selective exposure to and motivations for media use. The theory argues that humans have innate needs for competence, relatedness, and autonomy. Relatedness, or the desire to be connected with others, is treated as an evolutionary adaptation. Critically, relatedness is rather an umbrella category that taps into a number of more carefully demonstrated adaptations (e.g., pair bonding, attachment, inclusive fitness, reciprocal altruism). Similar arguments can be made for competence and autonomy.

Second, just because a theory acknowledges that humans are evolved organisms, it does not follow that it is an evolutionary theory. So-called learning theories recognize that humans and their capacity to learn are the product of evolution. While this is undoubtedly true, learning theories as applied to media research are principally interested in questions of how media content shapes behavior within an individual's life span. They do not consider how and why learning evolved, or what the survival value of specific learning mechanisms might be. These theories are not truly evolutionary in nature, and therefore they are not included here. The next section focuses instead on specific and well-demonstrated EPMs that are recruited during media use. As will become clear, most of the media research does not directly test evolutionary theory. Instead EPMs are used as an explanatory framework for understanding media processing and effects.

Theorizing media processes and effects as a by-product

Given the criteria formulated above, many researchers have been reluctant to specify EPMs for media. A prevailing view argues that humans deploy the same EPMs when interacting with media as they would when engaging with the real world (Reeves & Nass, 1996). This response occurs because the evolutionarily old human brain has yet to develop mechanisms for dealing with modern media and entertainment technologies. Fully understanding this claim requires a brief digression into an important concept: the environment of evolutionary adaptedness (EEA; Tooby & Cosmides, 2005). The EEA is not a specific time or place. Instead, the EEA represents a particular period during which a species-typical adaptation emerged as the result of natural selection. The earliest *Homo sapiens* remains date back some 200,000 years. These early ancestors of modern humans lived nomadic hunter-gatherer lifestyles in the African savannah. It is under these conditions that many species-typical EPMs emerged. Modern humans use EPMs developed during the EEA to respond to media.

As an example, consider the startle response. Within the first hundred milliseconds after exposure to a startling stimulus, the brain sends a signal that engages a bodily startle response. The body flinches and attention is oriented in the direction of the stimulus. Simultaneously, physiological processes designed to help orient to and encode the startling stimulus are activated. Pupils dilate and heart rate momentarily drops. Shortly thereafter, heart rate increases, a process that delivers blood to vital muscles and tissue necessary for fight-or-flight. This response occurs automatically, nearly instantaneously, and before the brain can begin the comparatively slow process of cognitively appraising the situation. During this appraisal, the valence of a stimulus begins to modulate the startle response. The adaptive nature of the startle response is straightforward: If you are caught off guard, startle first and evaluate later. The startle response is just one example of an EPM that evolved to solve ancestral problems and is regularly hijacked by modern media (e.g., audiences tend to startle when the killer jumps out in a horror movie). The next sections introduce two representative EPMs that are recruited during media use.

Motivated processing

Media recruit EPMs for cognitively processing motivationally relevant environmental stimuli. The limited capacity model of motivated mediated message processing (LC4MP; Lang, 2009) specifies three cognitive systems that are recruited during media use: encoding, storage, and retrieval. Encoding is the process of selecting information from the environment and creating a mental representation of that information. Mental representations are not exact copies of the stimuli. Rather they are mental approximations. Each individual encodes information in a unique way, since encoding is dependent on the previous experience of the encoder. Storage is the process of turning encoded information into a long-term memory representation. As new stimuli are encoded, links are formed with previously encoded information, and this process shapes the individual's understanding of new stimuli. Retrieval is the activation of previously stored information. This is a dynamic process that occurs during message processing and facilitates information understanding. A key constraint is that individuals have a finite pool of cognitive resources that can be allocated to these subsystems.

The LC4MP holds that individuals allocate cognitive resources to processing motivationally relevant media stimuli (Lang, 2009). Two survival-relevant cognitive systems evolved to aid in the processing of motivationally relevant information. The aversive system encourages individuals to avoid dangerous stimuli, while the appetitive system motivates them to seek out stimuli that enhance survival. The aversive system quickly and efficiently responds to threatening stimuli, whereas the appetitive system is comparatively slower to respond to survival-enhancing stimuli and may require more cognitive resources. The activation of these systems is characterized by a negativity bias. Moderately threatening stimuli can enable a strong aversive response whereas survival-enhancing stimuli must be overwhelmingly positive to achieve a strong appetitive response. The differential activation of each system promoted survival by allowing individuals to quickly respond to potentially dangerous stimuli. By comparison, positive stimuli are less likely to demand an immediate action and therefore can be processed more carefully.

Specifying the EPMs recruited for processing media has inspired an expansive body of research investigating the contribution of message features to attentional allocation, selective exposure, persuasion, media enjoyment, and interactive media use (see Lang, 2009).

Moral judgment

Media researchers have also turned their attention to the EPMs that are recruited for processing moral information embedded in narratives. A dominant perspective treats moral judgments as the product of a dual processing system. In some circumstances, individuals are slow and deliberate when making a moral evaluation. However, many moral judgments are made quickly and intuitively. Moral foundations theory (MFT; Haidt, 2012) argues that humans evolved an EPM for making these quick and intuitive moral judgments. This EPM modulates moral intuitions, a set of cross-culturally universal moral beliefs that are concerned with care, fairness, authority, loyalty, and sanctity. Each intuition is thought to exist along a continuum from positive to negative, and different cultures place different relative importance on each of these moral domains.

The model of intuitive morality and exemplars (MIME; Tamborini, 2013) argues that audiences draw upon these moral intuitions when making judgments about media. Audiences may deliberatively reflect on media's moral content, but in most instances audiences make quick judgments in order to attend to and understand the narrative. Media narratives that exemplify a particular moral intuition are most likely to prime audiences' intuitive moral judgments, and characters within a narrative can also function as exemplars (e.g., an unambiguous hero is an exemplar that upholds all moral domains). Exemplars are linked with a morality domain upfront and not as the result of audience moral monitoring.

Audiences also rely on quick and intuitive processes for judging morally exemplary features in a narrative. That said, aspects of a narrative can subsequently override these initial judgments. By comparison, morally ambiguous narratives result in slower and more deliberate processing. Taken together, these aspects of the MIME account for the short-term ways in which audiences process media; they are also thought to explain selective exposure. Audiences select content that conforms to the moral intuitions prioritized within a given group or culture.

The MIME is also interested in the long-term influence of exposure to moral content in media (Tamborini, 2013). Media narratives can highlight an intuition's importance or emphasize the superiority of one intuition over another. Repeated exposure to such content is thought to produce similar patterns of emphasis and deemphasis in the minds of audiences, thus shaping moral attitudes and behavior. Over time, exposure to a consistent media diet that emphasizes the superiority of one intuition over another will either increase the salience of the intuitions thus emphasized or will maintain their salience in the face of other influences.

Research in this area focuses on a diversity of topics, including how moral narratives synchronize audience cognitions, moral disengagement, moral contributions to aesthetics, selective exposure, and media production (for an overview, see Tamborini, 2013).

Limitations inherent in treating responses to media content as a by-product

Investigating the EPMs that are recruited during media exposure yields several benefits. Most notably, it provides more causally ultimate explanations that address Tinbergen's (1963) "What is it for?" question. This approach also offers a foundation for researchers interested in addressing "How does it work?" questions. Both the LC4MP and the MIME have motivated investigations into the relationship between media and neurophysiological processes.

Specifying media as a by-product also comes with some inherent limitations. The LC4MP and the MIME can be regarded as media theories that are based on evolutionary reasoning, but they do not directly test evolutionary adaptations. Instead they use previously demonstrated EPMs as explanatory mechanisms for understanding the relationship between media and audiences. Critics have argued that these type of theories make equal sense when the evolutionary frame is replaced by a more causally proximate explanation. It is unclear, then, what explanatory power is gained by adopting an evolutionary framework. Floyd (2014) has argued that this limitation can be partially overcome by specifying research designs that attempt to delineate how much variance is explained by evolutionary variables after accounting for more causally proximate explanations. At the time of this writing, this practice is largely absent from many evolutionary media studies.

As a solution to this issue, a complementary approach specifies instances where media serve an adaptive function. The next section details two prominent adaptationist claims that the human mind contains EPMs for pretend play and for participating in fictional simulations or narratives.

Treating media content as an adaptation

A dominant view among media scholars is that the motivation to play and to participate in fictional pretenses is simply a by-product of other EPMs and thus serves no adaptive function. However, evolutionary scholars are beginning to develop a line of reasoning that treats these behaviors as evolutionary adaptations (see Tooby & Cosmides, 2001). Tinbergen's four questions help provide a framework for this adaptationist argument and clarify how it differs from the arguments that treat media as a by-product of other adaptations.

Play

What is it for? In order understand how play and fictional pretenses can be adaptive, it is helpful to consider that adaptations can operate under two modes: the functional mode and the organizational mode (Tooby & Cosmides, 2001). When an adaptation is operating in the functional mode, the adaptation is performing the function it evolved to fulfill. Alternatively, when the adaptation operates in the organizational mode, it performs a function that helps to calibrate or develop the adaptation. From this perspective, play is the organizational mode for an adaptation designed to encourage behaviors such as fighting, predator escape, or other forms of survival-relevant learning in a safe environment. While play may initially seem like a useless expenditure of resources, evidence suggests that its true purpose is to provide an individual with input from the environment that helps train and refine EPMs for adaptive behavior.

How did it evolve? While play is a ubiquitous human behavior, it is also observed in most mammal species (Boulton & Smith, 1992), which suggests that this is an adaptation that predates human evolution. Mammals, particularly juveniles, participate in rough-and-tumble play that includes behaviors such as fighting and chasing. Rough-and-tumble play is not aggressive; participants reduce the strength of physical actions such as kicks or blows. Moreover, rough-and-tumble play features an absence of signs of injury, distress, or annoyance in the recipient and, if injury or distress does occur, the perpetrator shows signs of regret or remorse.

Most mammals are able to create mental representations of elements that exist within their current environment (Ohler & Nieding, 2006). These are called primary representations. At some point, humans evolved the cognitive ability to create secondary representations, or mental representations of elements that are not present in their current environment. This allows for imagining future events or ruminating on how things could have gone better in the past (e.g., evaluating lessons learned during rough-and-tumble play). The capacity for secondary representations also allows humans to engage in imaginative pretenses and fiction.

Pretend play (the ability to participate in fictional pretenses) appeared early in mammalian evolution and is a behavior observable in many mammal species, including humans. The excitement and enjoyment that occur during pretend play suggest that the latter is optimized for pedagogical purposes and for cognitive development (Steen & Owens, 2001). Engaging in an entertaining and enjoyable behavior motivates the learning of survival-relevant behavior. The learning processes involved in play are largely unconscious and are often intrinsically rewarding.

How does it develop? Play is a fundamental and ubiquitous part of human cognition, and the ability to play is present in all normally developing children (Tooby & Cosmides, 2001). And, as natural selection necessitates, there is variation in playing behavior and ability. Children with severe cognitive impairment reliably develop the ability to play and participate in imaginative pretenses, while the ability for pretend play can be selectively impaired in children with autism.

How does it work? Researchers have also begun to investigate the neural architecture that enables EPMs for play. For example, rough-and-tumble play is associated with the selective engagement of a number of neural systems such as the parafascicular thalamus, as well as of cortical and hippocampal regions (for a brief overview, see Ohler & Nieding, 2006).

Fictional narratives

A related line of reasoning theorizes the existence of an EPM for storytelling. Fictional narratives serve an adaptive function by allowing individuals to learn vicariously through the experience of others (see the "What is it for?" question). The information communicated through narratives does not need to be literally true in order to provide educational benefits to individuals (Tooby & Cosmides, 2001). Instead fictional narratives help audiences experience other lives and realities, which is a precursor to forethought, planning, and empathy.

Humans evolved from organisms whose only source of information came from individual experience (see the "How did it evolve?" question). Even though humans have the ability to communicate with others, our cognitive systems for learning are designed to learn through our own experience (Tooby & Cosmides, 2001). Thus, when we receive information from others, for instance in fictional narratives, we process it more deeply when that information resembles personal experience (see the "How does it develop?" and "How does it work?" questions).

Theorizing EPMs for play and participating in fictional narratives are just two promising directions for conducting media research from an adaptationist perspective. In many respects, these are preliminary ideas in need of more serious investigation. It is also quite possible that other EPMs for media use are waiting to be discovered. The final section offers a brief discussion of the methods that can help researchers test adaptationist hypotheses.

Methodological approaches for testing evolutionary hypotheses

Hennighausen and Schwab (2015) note: "the principle [*sic*] aim of evolutionary media psychologists is to analyze the specific elements of the human mind's adaptive toolbox and their ultimate functions in modern human's use of the media" (p. 134). Accordingly, evolutionary media research must: (1) identify the EPM that evolved to solve an adaptive problem, (2) develop hypotheses for testing the EPM, and (3) test these hypotheses. The first objective deals with Tinbergen's "What is it for?" question, while the second objective addresses Tinbergen's remaining questions. Empirical approaches for hypothesis testing include experimentation, field research, behavioral genetics, and neurophysiological investigation. Each is briefly introduced below.

Field research and experimentation

Conducting sound evolutionary media research requires examining the contribution of both evolutionary and cultural factors in order to identify how much each contributes to a given effect (Floyd, 2014). For instance, a recent field study tested the extent to which audience preferences for different media genres are biologically or culturally determined (see Hennighausen & Schwab, 2015). To examine biological factors, Schwab measured moviegoers' biological sex as well as the ratio between second- and fourth-finger length (2D:4D). This ratio indexes testosterone levels during fetal development and is associated with masculine behavior (e.g., aggression, competitiveness, dominance). Schwab also assessed environmental factors such as identification with socially constructed gender identities. Crucially, the results demonstrated that biological sex and 2D:4D ratio explained variance in the preference for media genres above and beyond cultural factors.

Researchers can also use experimental research to test adaptive functions for theorized EPMs. The logic of such studies is rather straightforward. If EPM X has evolved to serve a specific adaptive problem Y, then manipulating X *or* Y should result in outcome Z. As an example, an EPM for tracking group affiliation may have evolved in order to reduce exposure to out-group members who might carry novel (and potentially deadly) pathogens. In two experiments, Reid and colleagues exposed native English-speaking subjects to mediated images of pathogens or guns, and then had these subjects listen to mediated recordings of native or foreign-accent speakers (Reid et al., 2012). They found an interaction effect whereby, as pathogen disgust increases, so does the perceived dissimilarity of foreign-accented speakers. Importantly, this effect was only observed when subjects were exposed to images of pathogens (but not guns), which suggests that the EPM for tracking group affiliation is related to pathogen threat—and not to more general threats of between-group violence.

Behavioral genetics and twin studies

Twin studies are one of the primary methods of addressing the unique contribution of both genes and environment to a given phenotypic effect. These studies rely on a few crucial concepts. First, monozygotic (identical) and dizygotic (fraternal) twins have different genetic profiles. Monozygotic twins develop from a single fertilized egg and therefore share nearly 100% of their genes. Dizygotic twins, by comparison, develop from two different fertilized eggs. This means that dizygotic twins share on average just 50% of their genes. The second concept is that of environmental similarity. This is the extent to which each twin develops in the same environment and accounts for a number of factors such as uterine environment, parental style, education, socioeconomic status, and cultural upbringing. Finally, twin studies must also account for environmental differences or instances where twin experiences diverge. Such instances may include major illness, accidents, and so on. By accounting for these three factors in a sample of both monozygotic and dizygotic twins, researchers can parcel the contribution of each to phenotypic effects.

In one notable example, media researchers used two different twin study datasets to examine computer use, TV-viewing habits, perceived importance of the news, and interpersonal communication habits (Kirzinger, Weber, & Johnson, 2012). Using the standard twin study paradigm discussed above, these researchers sought to distinguish the extent to which each behavior was influenced by genes, by environmental similarities, and by environmental differences. The results demonstrate that 9–35% of the variance in media usage was explained by genetic factors, while shared environmental factors accounted for 17–31% of the variance (the remaining variance for each behavior was necessarily attributed to environmental differences).

Neurophysiological measures

Finally, if EPMs are specialized software programs that are designed to solve adaptive problems, then there is value in investigating the hardware that enables these software programs. Neurophysiological investigations into biological hardware focus on the central nervous system (the brain and spinal cord), the peripheral nervous system (the remaining nerves), and the endocrine system (the hormones that regulate bodily function). Investigations into the biological machinery that enables a given EPM are complex and necessarily must go beyond simple investigations such as whether neural region P "lights up" during task Q. Instead, the most useful approaches for evolutionary media research should determine whether a given EPM selectively engages a neural system or establish the extent to which the same neural mechanisms are involved in a variety of EPMs (Weber et al., 2015).

Media neuroscientists are increasingly investigating the neural basis of morality. A pressing issue is the extent to which morality recruits domain-general or domain-specific neural systems, as mounting evidence suggests that EPMs for moral judgments selectively engage specific neural systems. In one exemplary study, subjects were exposed to moral narratives related to harm, dishonesty, and disgust while undergoing functional magnetic resonance imaging (Parkinson et al., 2011). The results demonstrated that moral judgments related to each domain recruit specific and dissociable neural structures.

Outlook

Social scientific media scholarship owes its intellectual tradition to Carl Hovland and other social psychologists at Yale who emphasized the importance of environmental influences on attitude formation and behavior (Weber, Sherry, & Mathiak, 2008). This early research laid the foundation for many of the impressive discoveries detailed elsewhere in this volume. However, this prioritization of environmental factors ignored biological contributions to media processes and effects. Conducting modern media research requires researchers to specify the joint contribution of biology and the environment on communication phenomena of interest. Addressing the biological question requires a foundational understanding of evolutionary theory that eschews "just so" stories. It also requires adopting new research methods as well as a broad reading of literature across a number of scholarly traditions.

SEE ALSO: Attention and Awareness; Exemplification Theory; Limited Capacity Model of Motivated Mediated Message Processing (LC4MP); Morality and Media Effects; Motivation; Selectivity Paradigms and Cognitive Dissonance; Social Learning Theory and Social Cognitive Theory

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Richard Huskey is an assistant professor at the School of Communication at The Ohio State University, USA, and founder of the Cognitive Communication Science Lab. His research lies at the intersection of media psychology and cognitive neuroscience with a particular focus on how media content influences human cognition and behavior. Philosophically, this work understands the mind (and the communication phenomena it enables) as a physical property of the brain. From this multilevel perspective, Richard Huskey's research investigates three core topics: attitude and behavior change, media enjoyment, and the influence of moral narratives.

Britney Craighead is a a PhD student in the Department of Communication at the University of California, Santa Barbara, USA, and a member of the Media Neuroscience Lab. Her research interests include media effects, video games, and media neuroscience. Specifically, she is interested in reward circuits and reward processing. Her research focuses on content features in video games including reward and punishment and their impact on addiction and flow experiences.

René Weber is professor in the Department of Communication at the University of California, Santa Barbara, USA, and director of the university's Media Neuroscience Lab. (http://medianeuroscience.org) His research focuses on cognitive responses to motivationally relevant narratives in traditional and new technology media. He develops social scientific, statistical, and neuroscientific methodology to test media-related theories. His research has been published in top-tier communication and neuroscience journals and in three authored books. He is the former chair of the International Communication Association's Mass Communication Division and the chair of the association's Communication Science and Biology interest group.