

The lure of horror

Christian 'Jeepers' Jarrett with a Halloween special, on the intriguing insights into our psyche offered by scary stories

Fear coils in your stomach and clutches at your heart. It's an unpleasant emotion we usually do our best to avoid. Yet across the world and through time people have been drawn irresistibly to stories designed to scare them. Writers like Edgar Allen Poe, H.P. Lovecraft, Stephen King, and Clive Barker continue to haunt the popular consciousness. Far longer ago, listeners sat mesmerised by violent, terrifying tales like *Beowulf* and Homer's *Odyssey*.

'If you go to your video store and rent a comedy from Korea, it's not going to make any sense to you at all,' says literature scholar Mathias Clasen based at Aarhus University, 'whereas if you rent a local horror movie from Korea you'll instantaneously know not just that it's a horror movie, but you'll have a physiological reaction to it, indicative of the genre.'

Why is horror the way it is?

Fresh from a study visit to the Center for Evolutionary Psychology at the University of California, Santa Barbara, Clasen believes the timeless, cross-cultural appeal of horror fiction says something important about humans, and in turn, insights from evolutionary psychology can make sense of why horror takes the form it does. 'You can use horror fiction and its lack of historical and cultural variance as an indication that there is such a thing as human nature,' he says.

This nature of ours is one that has

been shaped over millennia to be afraid, but not just of anything. Possibly our ancestors' greatest fear was that they might become a feast for a carnivorous predator. As science writer David Quammen has put it, 'among the earliest forms of human self-awareness was the awareness of being meat'. There's certainly fossil evidence to back this up, suggesting that early hominids were preyed on by carnivores and that they scavenged from the kill sites of large felines, and vice versa. Modern-day hunter-gatherers, such as the Aché foragers in Paraguay, still suffer high mortality rates from snakes and feline attacks.

Such threats have left their marks on our cognitive development. Research by Nobuo Masataka and others shows that children as young as three are especially



fast at spotting snakes, as opposed to flowers, on a computer screen, and all the more so when those snakes are poised to strike. Modern-day threats, such as cars and guns, do not grab the attention in this way. That we're innately fearful of atavistic threats is known as 'prepared learning'. Another study published just this year by Christof Koch and his team has shown how the right amygdala, a brain region involved in fear learning, responds more vigorously to the sight of animals than to other pictures such as of people, landmarks or objects.

Viewing the content of horror fiction through the prism of evolutionary evidence and theory, it's no surprise that the overriding theme of many tales is that the characters are at risk of being eaten. 'Do we have many snakes or snake-like creatures or giant serpents in horror fiction?' Clasen asks. 'Yes we do: look at *Tremors* – they were really just very big snakes with giant fangs'. In fact, many horror books and movie classics feature oversized carnivorous predators, including James Herbert's *The Rats*, Shaun Hutson's *Slugs*, *Cat People*, *King Kong*, and the *Jaws* franchise, to name but a few. Where the main threat is a humanoid predator, he or she will often be armed with over-sized claws (Freddie Krueger in *Nightmare on Elm Street*) or an insatiable taste for human flesh (e.g.

Hannibal Lecter in the 1981 novel *Red Dragon*).

Vampires and other mythical monsters

And yet, arguably, the most iconic horror monsters are not the furry or slimy toothed beasts of the natural world, but the unreal, mythical fiends that we call vampires, werewolves, zombies and ghosts. Can a psychological approach explain their enduring appeal too? On the face of it, the answer is straightforward: with the exception of ghosts, these mythical monsters are exaggerated, souped-up versions of the more

bibliography

- Barrett, J.L. (2000). Exploring the natural foundations of religion. *Trends in Cognitive Sciences*, 4, 29–34.
- Clasen, M. (2010). The horror! The horror! *The Evolutionary Review*, 1, 112–119.
- Clasen, M. (in press). Monsters evolve: A bio-cultural theory of horror stories. *Review of General Psychology*.
- Clasen, M. (2012). 'Can't sleep, clowns will eat me': Telling scary stories. In C. Gansel & D. Vanderbeke (Eds.) *Telling stories: Literature and evolution*. Berlin: de Gruyter.
- Davis, H. & Javor, A. (2004). Religion, death and horror movies. Some striking evolutionary parallels. *Evolution and Cognition*, 10, 11–18.
- Fischoff, S., Dimopoulos, A., Nguyen, F. & Gordon, R. (2005). The psychological appeal of movie monsters. *Journal of Media Psychology*, 10, 1–33.
- Freud, S. (1919/1955). The uncanny. In J. Strachey (Ed.) *Standard edition of the complete psychological works of Sigmund Freud* (pp.219–256). London: Hogarth Press.
- Hoffner, C.A. & Levine, K.J. (2005). Enjoyment of mediated fright and violence: A meta-analysis. *Media Psychology*, 7, 207–237.
- Ketelaar, T. (2004). Lions, tigers, and bears, oh God! How the ancient problem of predator detection may lie beneath the modern link between religion and horror. *Behavioural and Brain Sciences*, 27, 740–741.
- Masataka, N., Hayakawa, S. & Kawai, N. (2010). Human young children as well as adults demonstrate 'superior' rapid snake detection when typical striking posture is displayed by the snake. *PLoS ONE*, 5, e15122.
- Mori, M. (1970). The uncanny valley.

realistic threats faced by our ancestors. They're strong, they're unstoppable and very, very hungry.

But digging deeper, these monsters may also endure culturally because they press the right cognitive buttons. For example, just as Pascal Boyer (cited in Barrett, 2000) has argued that many religious entities thrive by being 'minimally counter-intuitive' – that is, they fulfil nearly all the criteria for a given category, but violate that category in one particularly memorable, attention-grabbing fashion (a random example would be Moses and the bush that's in flames but doesn't burn) – a similar account could explain the enduring appeal of horror monsters. In this vein (ahem), vampires fit the human category in most respects, except they are undead. Ghosts are similarly person-like but have no body.

Another cognitive button pressed by horror would be our tendency to see agency where there is none, a kind of over-active theory of mind that facilitates a belief in wraiths and spectres. Similarly, perhaps clowns (e.g. as in Stephen King's 1986 novel *It*) have the capacity to provoke fear because their make-up conceals their true facial emotions, thus thwarting our instinctual desire to read other people's minds through their faces (it's notable that many other horror baddies conceal their faces with masks).

There are other overlaps with religion based around the disgust-reaction and the far-reaching effects of our deep-seated fear of infection. The term 'psychological immune system' is used to describe findings such as that people are more prone to racial prejudice when primed with reminders of infection. In the same way that many religious practices are thought to have evolved to deal with corpses and the infectious health risks they present, the cultural origin and persistence of some mythical monsters can similarly be understood in terms of our fixation with death and infection. For example, one theory has it that the vampire myth emerged from a pre-

Psychoanalysis and metaphor

Traditionally, horror fiction has been interpreted in cultural and metaphorical terms, often with a psychoanalytic bent. By this account, the vampire's blood lust can be seen as representing repressed sexual desires, and the threat of daylight as the disapproval of society. Werewolves symbolise the beast within us all, our perennial battle to constrain the insatiable Id.

Freud himself wrote about 'das Unheimliche' in literature, which translates as 'the uncanny'. In a long, meandering essay he said an uncanny experience occurs 'either when infantile complexes which have been repressed are once more revived by some impression, or when primitive beliefs which have been surmounted seem once more to be confirmed.' Later commentators have picked up these ideas and interpreted horror fiction as a safety valve for our raging passions and fears. While this idea may contain a kernel of truth, many readers will find psychoanalytic interpretations far-fetched. Barbara Creed (cited by Tudor, 1997), for instance, has argued that the ubiquity of blood, and especially bleeding women, in horror films is a manifestation of castration anxiety; David Gilmore (cited by Clasen, 2012) sees the abundance of richly toothed monsters with gaping mouths as a sign of the oral-aggressive stage of psychosexual development; and Elaine Showalter (cited by Clasen, 2010) sees Dr Jekyll and Mr Hyde as representing turn-of-the-century homosexual panic, with the novel's 'chocolate-brown fog' indicative of anal sex.

Other metaphorical and cultural interpretations are more credible. For instance, George Romero has admitted that the zombies in *Night of the Living Dead* (1968) were intended to symbolise the mindless consumer society of the USA. The tensions between vampire and human communities in *True Blood* seem to be an obvious metaphor for racial tension – an undertone arguably shared by other vampire tales such as the Anita Blake Vampire-Hunter series. And no doubt films like *Outbreak* (1995) tapped into the then and now media-driven fear of mass infection.

scientific misinterpretation of the appearance of corpses – bloated and apparently full of fresh blood. A 16th century skeleton with a brick jammed posthumously in its jaw was uncovered recently from a mass grave near Venice. Archaeologists at the University of Florence believe the brick was intended to prevent the corpse feasting after death.

The horror creature whose popularity feeds most obviously from our fear of contagion is the unstoppable, flesh-eating automaton known as a zombie. One possible source of the zombie myth is Haiti where deceased relatives are sometimes believed to be living with their families in an undead state. Research suggests these 'zombies' in reality are brain-damaged or mentally ill relatives, but a controversial suggestion made by

anthropologist Wade Davis is that victims are enslaved by witch doctors using a 'zombie powder' containing tetrodotoxin, a compound found in puffer fish, which can cause zombie-like symptoms such as lassitude and loss of will.

Besides its disgustingness, another feature of the zombie movie monster that exploits our cognitive machinery is known as the uncanny valley (see box overleaf) – that is, there's something particularly unnerving about an entity that moves jerkily in a way that's nearly human, but not quite. 'Zombies also drastically reduce the moral complexity of life,' says Clasen. 'Zombies are unequivocally bad, they need to be killed, they need to be shot in the head. There is no moral shade of grey and that can be a pleasurable fantasy – a way to relax your

Energy, 7, 33–35.

Mormann, F., Dubois, J., Kornblith, S. et al. (in press). A category-specific response to animals in the right human amygdala. *Nature Neuroscience*.

Oliver, M.B. (1993). Adolescents' enjoyment of graphic horror. Effects of viewers' attitudes and portrayals of victim. *Communication Research*, 20, 30–50.

Quammen, D. (2004). *Monster of God*. New York: W.W. Norton.

Steckenfinger, S.A. & Ghazanfar, A.A. (2009). Monkey visual behaviour falls into the uncanny valley. *PNAS*, 106, 18362–18366.

Straube, T., Preisler, S., Lipka, J. et al. (2010). Neural representation of anxiety and personality during exposure to anxiety-provoking and neutral scenes from scary

movies. *Human Brain Mapping*, 31, 36–47.

Tudor, A. (1997). Why horror? The peculiar pleasures of a popular genre. *Cultural Studies*, 11, 443–463.

Welsh, A. & Brantford, L. (2009). Sex and violence in the slasher horror film: A content analysis of gender differences in the depiction of violence. *Journal of Criminal Justice and Popular Culture*, 16, 1–25.

Zillmann, D., Weaver, J.B., Mundorf, N. & Aust, C.F. (1986). Effects of an opposite-gender companion's affect to horror on distress, delight, and attraction. *Journal of Personality and Social Psychology*, 51, 586–594.

Lure of horror

mind.' No wonder, in the competition to scare audiences, zombies are staggering towards dominance at the box office (recent hits including *Zombieland*, *I am Legend* and *28 Days Later*).

Does this idea, that fictional monsters tap into our evolved mental habits and fears, amount to anything other than speculation? In a 2004 paper, Hank Davis and Andrea Javor at the University of Guelph provided a simple test. They took three of the evolutionary-cognitive themes we've discussed so far – predation, contagion and violations of the person category – and had 182 participants rate 40 horror films on their successful portrayal of these features. Films that scored higher tended to have performed better at the box office. *The Exorcist*, often described as the ultimate horror film, scored highest and came out joint fifth in terms of box office revenue. 'Successful horror films are those that do the best job of tapping into our evolved cognitive machinery – they exploit topics and images we already fear,' says Davis.

If monsters succeed by playing on our primal fears and flicking our cognitive switches, this begs the question: which monster does it most successfully? The zombie may be clawing its way ever deeper into pop culture, but vampires probably remain the quintessential movie monster, at least according to a 2005 survey by Stuart Fischhoff at California State University's Media Psychology Lab.

Fischhoff's team asked 1166 people aged 6 to 91 to name their favourite movie monster and the reasons for their choice. Vampires, and in particular Count Dracula, came out on top overall. The youngest age group (aged 6–25) preferred Freddy Krueger, but vampires still came in at number two. In general, younger viewers were more partial to slasher film



baddies than older participants. Popular reasons for participants' choice of monster included superhuman strength, intelligence and luxuriating in evil. 'Movie monsters tap into our archetypal fears that never entirely disappear no matter how mature, smart, informed and rational we think we've become,' says Fischhoff. 'As the American cartoonist of Pogo, Walt Kelly, might have said, "We've met the monster and he is us".'

But why the particular appeal of vampires? Fischhoff thinks it may have to do with their sexiness. Since at least Bram Stoker's *Dracula* (but with the exception of F.W. Murnau's *Nosferatu*) and continuing to modern incarnations in the *True Blood* and *Twilight* series, they are, Fischhoff says, '...inherently sexy... Even their act of monstrousness, neck biting and blood sucking, with or without killing, is intimate and sensuous.' Other factors, according to Fischhoff, include: their immortality; their fascinating, tormented characters (most of them are not simple killing machines); and the fact they often have a vestige of humanity, and can fight their impulses. 'They can be "us",' Fischhoff says, 'epitomising our flirtation with our dark side, our Id, our

selfish, impulse-ridden, tantruming child who battles with our adult-parent side.'

Who wants to be afraid?

Psychology can help explain why horror takes the persistent form that it does, but that still leaves the question of why we should want to scare ourselves through fiction in the first place. One suggestion is that, like play, it allows us to rehearse possible threatening scenarios from a position of relative safety. 'Movie monsters provide us with the opportunity to see and learn strategies of coping with real-life monsters should we run into them, despite all probabilities to the contrary,' says Fischhoff. 'A sort of covert rehearsal for... who knows what.' Despite its fantastical elements, Clasen explains that successful horror fiction is usually realistic in its portrayals of human psychology and relationships. 'That's where horror matters,' Clasen says; 'that's where horror can teach us something truly valuable.'

Further clues come from a line of inquiry, most of it conducted in the 80s and 90s (coinciding with the rising popularity of slasher films), that looked at individual differences in horror film consumption. After all, although many people enjoy horror, most of us don't. Who are these people who pay out money to be scared? A meta-analysis of 35 relevant articles, by Cynthia Hoffner and Kenneth Levine published in 2005 in *Media Psychology*, highlights the principal relevant traits: affective response; empathy; sensation seeking; aggressiveness; gender; and age.

The more negative affect a person reports experiencing during horror, the more likely they are to say that they enjoy the genre. Media experts like Dolf Zillmann make sense of this apparent contradiction as a kind of conversion process, whereby the pleasure comes from the relief that follows once characters escape danger. This explanation struggles to account for the appeal of slasher films, in which most characters are killed. Part of the answer must lie with meta-emotion – the way we interpret the emotional feelings we're experiencing, with some people finding pleasure in fright. Another possibility is that, for some, pleasure is derived from the sense that film victims are being punished for what the viewer considers to be their immoral behaviour. Consistent with this, a 1993 study by Mary Oliver found that male high school viewers who endorsed traditional views on female sexuality (e.g. 'it's okay for men to have sex before marriage, but not

The uncanny valley

One likely reason that zombies are so disturbing is that they are located in the depths of what roboticist Masahiro Mori called the 'uncanny valley'. In the 70s Mori noticed that as robots became more realistically human, their appeal increased until, that is, they became too human-like, at which point people's reaction to them darkened, as they experienced an eerie feeling. Zombies have human faces and bodies, but with their plodding gait and empty gaze it's clear that they're not fully human, which particularly creeps us out. An explanation proposed for the uncanny valley is that an entity that appears almost like us, but not quite, triggers our evolved fear for disease and infection, or an innate mating aversion. Mori himself thought that ultra-realistic entities remind us of corpses and death. A recent study by Shawn Steckenfinger and Asif Ghazanfar showed that macaque monkeys also exhibit the uncanny valley. They were found to look longer at pictures of real or unrealistic macaque faces than pictures of almost-real cartoon macaque faces, with looking-time taken to be an indicator of preference. Steckenfinger and Ghazanfar proposed that as an entity becomes hyper-realistic it triggers raised perceptual expectations – for example, about skin tone and subtle movements – and when these are not met, an uncomfortable feeling ensues.

women'), were more likely to enjoy horror movie clips, especially if they involved a female victim portrayed with her lover.

Other researchers have examined related claims that female characters are more likely to be killed than male characters, especially if they're portrayed as sexually promiscuous. A 2009 study by Andrew Walsh and Laurier Brantford analysed 50 slasher films released between 1960 and 2007, including the *Texas Chainsaw Massacre* and *Hatchet*. The researchers found that male characters were more likely to be victims of rapid, serious violence, whereas females were more likely to be victims of less serious, but more drawn-out violence, including confinement and stalking. Female characters were also more likely to be seen partially or fully naked, and when scenes involved a mix of sex and violence, the victim was more likely to be female. 'Frequent depictions of women in prolonged states of terror may reinforce traditional gender schemas of women as helpless and, as a result, may serve to normalise aggression or hostile attitudes toward women,' Walsh and Brantford said.

Unsurprisingly perhaps, people with lower self-reported empathy levels are also more likely to say they enjoy horror films. However, this literature is hampered by conflicting findings depending on whether one includes or omits films that include scenes of graphic torture and violence. People who seek out intense thrills and experiences (as measured by Marvin Zuckerman's Sensation-Seeking Scale), and those who are more aggressive, are also more likely to report enjoying horror films, as are men, probably in part because they tend on average to be more aggressive and have lower empathy (see 'Your brain on horror').

With regard to age, there's a suggestion that enjoyment rises through childhood, peaks in adolescence and then gradually fades with age. Related to this is the 'snuggle theory' – the idea that viewing horror films may be a rite of passage for young people, providing them with an opportunity to fulfil their traditional gender roles. A paper from the late 1980s by Dolf Zillmann, Norbert Mundorf and others found that male

undergrads paired with a female partner (unbeknown to them, a research assistant), enjoyed a 14-minute clip from *Friday the 13th Part III* almost twice as much if she showed distress during the film. Female undergrads, by contrast, said they enjoyed the film more if their male companion appeared calm and unmoved. Moreover, men who were initially considered unattractive were later judged more appealing if they displayed courage during the film viewing. 'Scary movies and monsters are just the ticket for girls to scream and hold on to a date for dear life and for the date (male or female) to be there to reassure, protect, defend and, if need be, destroy the monster,' says Fischhoff. 'Both are playing gender roles prescribed by a culture.'

Conclusion

The horror genre, as popular as ever, offers intriguing insights into our psyches and is surely ripe for further investigation. Brain-imaging technology is only just starting to be deployed to study the neural correlates of the horror experience. The notion of meta-emotion, or how some people are able to interpret negative affect as a positive experience, is another intriguing area for study. Norbert Mundorf at the University of Rhode Island, one of the scholars who studied individual differences in horror appreciation back in the 80s and 90s, admits that he and colleagues perhaps focused too much on the enjoyment of

slasher films, neglecting the psychology of more subtle horror experiences, which would have been trickier to study. Looking ahead he believes that changes to the way we consume media – especially the ability to access niche material online in limitless supply – also poses new questions about our enjoyment of horror. 'We need to understand how this media-rich environment affects consumption of extremely violent and disturbing content,' he says. 'In particular, one would expect that it provides unlimited material for those high in sensation-seeking. New research approaches would benefit from analysing media consumption in this virtually unlimited virtual environment.'

Another intriguing angle for the future is whether insights from psychology could help guide horror writers and producers to develop even scarier material. Clasen believes most successful horror writers have an intuitive insight into human psychology – 'H.P. Lovecraft, for example, had a solid grasp of human biology and psychology and used that in stories to creep people out' – but he agrees the ultimate horror story has yet to be told. It's when the day comes that there is no horror fiction, if it ever does, that we should probably worry. As Arthur Conan Doyle wrote, 'Where there is no imagination there is no horror.'

I Dr Christian Jarrett is The Psychologist's staff journalist. chrber@bps.org.uk

Your brain on horror

What goes on in the brain of a person watching horror? Readers may be surprised to hear that the amygdala – that almond-shaped brain structure so often associated with fear – was not one of the areas identified in a brain-scan study by Thomas Straube and his colleagues at Friedrich-Schiller-University of Jena. They used fMRI to monitor 40 participants as they watched scary scenes from *Aliens* (1986), *The Shining* (1980), *The Silence of the Lambs* (1991) and *The Others* (2001). Neutral scenes from the same films served as comparison material. Scary clips triggered increased activity in the visual cortex, the insular cortex (a region involved in self-awareness) and the thalamus (the relay centre between the cortex and sub-cortical regions). Subjective feelings of anxiety were associated with more activity in the dorso-medial prefrontal cortex (DMPFC) – an area previously associated with the assessment of the emotional significance of stimuli and situations. In relation to the lack of amygdala activity, Straube's team reasoned that amygdala activation is more often associated with sudden, unexpected threats, rather than the sustained anxiety elicited in the current study.

Another aspect to their investigation addressed the trait of sensation seeking. Consistent with prior research that found sensation seekers are more aroused by stimulating material, high scorers on sensation seeking in the present study showed a greater response in the visual cortex when watching horror clips. Also, high sensation seekers exhibited lower activity in the thalamus and insula during neutral clips, consistent with the idea that they might be under-aroused in usual circumstances. The greater baseline activation in low sensation seekers could represent a signal of potential danger, the researchers said, and therefore limit their search for further challenges, including horror movies. Much of this is clearly speculative and more research is needed. 'Researchers need to find out the neural differences between different forms of horror (with or without disgust, etc.) and the interactions between bodily responses, inter-individual differences, and brain activation,' says Straube.