Why We Enjoy Fear: The Science of a Good Scare [C1]

Perché abbiamo trasformato la paura in una forma di intrattenimento? La scienza dimostra che un buon film horror favorisce la resilienza psicologica.

Palms **sweat**"), heartbeat quickens, muscles tense. Your skin **prickles** and stomach **churns**. When fear subsides, we can be left with feelings of pleasure. Is this just the relief of having survived — or is it something more?

FIGHT OR FLIGHT

The amygdala, an **almond-shaped** **bundle** of neurons deep in the centre of the brain, controls the fear response. In a fearful situation, the amygdala stimulates the hypothalamus, which activates two systems in the body – the sympathetic nervous system and the adrenal cortical system — causing a flash flood of hormones and **triggering** the **fight-or-flight** response. Adrenaline **boosts** the body's alertness. It speeds up the heart rate and **diverts** blood from the core to the muscles needed for movement. Cortisol raises blood pressure. **Blood vessels** around the vital organs dilate, flooding them with oxygen and nutrients. Breathing quickens, delivering fresh oxygen to the brain, while levels of glucose in the blood **spike**, giving the body a quick energy boost — ready for action. "Although we have an understanding of some aspects of neural fear networks and how they coordinate behaviour, there are still many unknowns," says Dr. Charlotte Lawrenson, a neuroscientist at Bristol University. When we are exposed to sensory stimuli or an environment that is potentially threatening, she says, two pathways are activated in the brain. The first is fast. Information is transferred to the sensory thalamus and then to the amygdala, allowing for immediate action on the threatening stimuli. The second is a slower, indirect route. Information is sent from the thalamus to the cortex, the **outermost layer** of the brain, associated with consciousness, reasoning and memory. This analyses the threat and allows us to determine whether we are in real danger. "We do not know exactly where the feeling of fear

occurs in the brain," says Lawrenson, "but it is likely to be from the coordinated activation of a fear network involving multiple brain regions." If the threat is determined to be real, other areas of the brain will be activated to initiate a whole-body response to the danger. This includes the **periaqueductal grey**, which coordinates the antinociceptive, autonomic and behavioural reactions to stress and injury, blocking the detection of pain by sensory neurons and **kickstarting** il via a") the involuntary physiological processes and responding action. "The memory of [the danger] will be transferred and stored in the hippocampus," adds Lawrenson's co-researcher, Dr. Elena Paci, "so that we are able to remember and identify the threat at the next encounter."

COLLECTIVE FEARS

Fear is an ancient emotion and scary stories are **ingrained** in human history. In early societies, fear-inducing tales were used to teach children about dangers they might encounter, such as wolves and other predators. Today, cinema offers a window into society's collective fears. In the 1954 sci-fi film, Godzilla was created by nuclear radiation, revealing the shared anxiety about the Second World War atomic attacks. Horror films have often featured technology — robots that revolt against their creator like the Westworld hosts, or murderous AI such as Hal in 2001: A Space Odyssey and Skynet in The Terminator. In the late 1970s and the 1980s, Michael Myers and Freddy Krueger made their appearances alongside the emergence of the serial killer in the public consciousness. In March 2020, when the pandemic **went into hyperdrive**, downloads of the movie Contagion — about a deadly pandemic — **surged** Why did people want to watch a horror film about something so real to them at that point in time? Professor Marc Malmdorf-Andersen and his colleagues think that horror films have learning potential for uncertainty management.

AN UNPREDICTABLE WORLD

An associate professor at Denmark's Aarhus University, Malmdorf-Andersen researches the cognitive processes involved in play and learning. "Spending

time in these fictional **realms** can almost be thought of as an opportunity **to draft up** your own instruction book for **worst-case scenarios**," he says. A study on horror fans during the Covid pandemic found that people who enjoyed watching scary films were more psychologically resilient than non-horror fans. "They have, in some ways, been exposed to similar scenarios and might use that experience for navigating new, uncertain realities," says Malmdorf-Andersen. "It is possible that recreational forms of fear in general can help improve emotion regulation and **coping** skills." Enjoyment of fear, says Malmdorf-Andersen, makes sense if you look at it as a "form of play." "Enjoyment of scary stimuli seems to be related **to getting a grip** on unpredictable situations," he says. "In much the same way, children's play is characterised **by seeking out** moderate amounts of uncertainty, moderate surprises, in an effort to make sense of them." In fact, researchers at Exeter University say that when children's play involves risk and fear, it can function as a protective factor against anxiety. Play, says Malmdorf-Andersen, is a strategy for learning how to deal with unfamiliar situations and making the unpredictable predictable.

THE SWEET SPOT

To investigate the relationship between enjoyment and fear, Malmdorf-Andersen and his colleagues at Aarhus University's Recreational Fear Lab studied a group of people who went to a haunted house visitor attraction. There, the guests voluntarily signed up to be terrified by **brain-munching** zombies, **chainsaw-wielding** maniacs and child-eating murderers. The researchers filmed the guests, monitored their heart rates and asked them how they felt at various points during the experience. "At Dystopia Haunted House there are about 70-100 scare actors each night," says Malmdorf-Andersen, and a large special-effects department. They challenge their guests on a lot of different levels – disgust, fear, **jump scare**, **unease**, being alone, being in the dark, claustrophobia... The findings indicated that humans don't enjoy being too far from their normal physiological state, but they do enjoy being just a little bit out of their comfort zone. "Our results suggest that there might be a **sweet spot** between fear and enjoyment," says Malmdorf-Andersen. "A just-right spot

where the context is not too terrifying, but not too **tame** either. This **sweet spot** seems to be where enjoyment is maximised." At that spot, a flood of fear quickly followed by relief results in the release of feelgood chemicals in the brain — endorphins and dopamine — rewarding you with a **rush** of euphoria.

WHEN FEAR GOES TOO FAR

However, it is important to keep in mind that everyone is different. We all have a unique sense of what we find scary — and it's a fine line between **harmless** fun and genuine terror. Too much fear can lead to distress and dysfunction. Globally, about 275 million people suffer from anxiety disorders, which can become chronic and debilitating and affect a person's life trajectory. "Different people have a different level of activation of certain areas [of the brain]," says Paci. What can be a **thrill** for one person can be truly terrifying for another. So **dare** to be scared this Halloween — but just the right amount. Published in The Guardian on 22 October 2022. Reprinted with permission.

Glossary

- **realms** = campi, ambiti
- **chainsaw-wielding** = dotati di motosega
- **jump scare** = spavento da far saltare
- **fight-or-flight** = attacco o fuga
- **spike** = impennarsi
- **to draft up** = abbozzare
- **coping** = superare
- **to getting a grip** = controllarsi, tranquillizzarsi
- **by seeking out** = cercare
- **rush** = impeto, fervore
- **diverts** = deviare
- **kickstarting** = dare il via a
- **ingrained** = radicate
- **brain-munching** = divoratori di cervelli
- **sweet spot** = punto di equilibrio
- **harmless** = innocuo, inoffensivo
- **thrill** = emozione
- **triggering** = innescare
- **periaqueductal grey** = sostanza grigia periacqueduttale
- **surged** = aumentare vertiginosamente
- **worst-case scenarios** = scenari peggiori
- **boosts** = promuovere, aumentare
- **almond-shaped** = a forma di mandorla
- **Blood vessels** = vasi sanguigni
- **went into hyperdrive** = entrare in ipervelocità
- **unease** = agitazione, ansia
- **dare** = osare
- **prickles** = formicolare
- **outermost layer** = strato esterno
- **bundle** = fascio
- **churns** = agitarsi
- **tame** = mite, mansueto
- **sweat** = sudare