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Research looks at the physical facts behind fiction's fascination

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Screenshot from the film Stuart: A Life Backwards. Credit: BBC/ HBO Films/ Knifedge/ Neal Street Productions

If you've ever been lost in a radio drama, caught up in a film or transfixed by a play, you've probably not stopped to ask why. Yet, humanity's fascination with fiction is an evolutionary enigma. Now, Oxford arts and sciences researchers have found that stories that arouse our emotions trigger the same mechanisms as other forms of bonding.

Robin Dunbar, professor of evolutionary psychology at Oxford

University, explained: "Fiction is widely studied by humanities academics as it is an important feature of human society, common to all cultures. Yet the reasons why fiction can be so engrossing and the functions for this have not been widely studied by psychologists or behavioural biologists.

"There are good social reasons: folklore enables us to pass on wisdom or ingrain community values, bringing us together. While that is important, it does not fully explain why we are willing to return again and again to be entertained."

While comedy makes us laugh, a process that releases endorphins – feel-good chemicals that increase pain tolerance and lead us to bond with each other, it is less clear why we would choose to watch emotionally stirring drama that reduces us to tears.

The Oxford team decided to test whether such drama causes emotional arousal that itself triggers endorphin release by showing volunteers the hard-hitting film Stuart: A Life Backwards, chronicling the life story of a disabled child abuse survivor who eventually kills himself. A second group watched documentaries that were about far less emotive subjects.

As it is impossible to directly measure endorphin release without scanning or a lumbar puncture, neither of which are generally practical, the team tested changes in pain threshold, a common proxy measure for endorphin release. This was done with the wall-sit test, in which people take an unsupported sitting position with their back against the wall and hold it as long as possible. The two volunteer groups did the test before and after the viewing. They also completed questionnaires before and after to assess the emotional effect of the films.

Those who watched Stuart were, unsurprisingly, significantly less cheerful afterwards, while the documentary viewers were far less

affected. When retested on the wall-sit, those who had watched Stuart could hold the position for an average 13.1% longer. The documentary group held for an average 4.6% shorter time, the same result as researchers would expect had they done nothing between the two wall-sits.

From the questionnaires, the team found that those who had watched the film also felt a greater bond to their fellow viewers compared to the documentary-watching group.

Professor Dunbar said: "Those who had the greatest emotional response also had the greatest increase in pain threshold and the greater their sense of being bonded with their group.

"It seems that our affinity for emotive fiction may have evolved in the context of bonding social groups. As we have also seen this endorphin effect in laughter, singing and dancing, it seems storytelling is part of group of social activities that bring people together.

"This is not to say that this one chemical effect alone is the only reason for dramatic fiction – there are other aspects of human psychology at work – but we believe that it is an important reason for our enjoyment of fiction."

The study is published in the *Royal Society Open Science*.

More information: R. I. M. Dunbar et al. Emotional arousal when watching drama increases pain threshold and social bonding, *Royal Society Open Science* (2016). DOI: 10.1098/rsos.160288

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