

## **The Divine Madness of Stephen King: A Neurocognitive Examination**

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### **ABSTRACT**

This paper examines the life and work of Stephen King in the light of recent brain research. His words, taken from his interviews and writings will be examined in relation to some of these scientific findings. It will be argued that he has an intuitive insight into key brain mechanisms and deploys that knowledge in the construction of his novels. This concordance is proposed as a possible explanation for his phenomenal success. The analysis will be in 3 parts, Childhood, Writing, and Mechanisms. King's childhood experience of adversity and its impact on his life and work will be explored in terms of the research on Anxious Attachment. The role played by critical relationships in his development and the theme of altruistic bonds so prevalent in his novels (*The Stand*, *Shawshank*, *IT*, etc) will be related to a study of oxytocin and fiction. Regarding his writing, King's fecund productivity and vivid imagery will be examined in terms of the studies on the personality trait of High Sensation Seeking. The volume of output and the reported pressure he writes under will be evaluated in relation to the state of Flow. Using King's own statements, his views on authorial strategies will be contrasted with the findings of research studies into Theory of Mind, empathy, suspense, and narrative transportation. It is hoped that this analysis will open new avenues of evaluating and appraising the achievements of Stephen King

**KEYWORDS:** Horror, Neurobiology, Stephen King, Empathy, Fear, Suspense

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### **I. INTRODUCTION**

The last three decades have witnessed remarkable advances in brain research that have provided us with new insights into the mechanisms that mediate consciousness. This paper will seek to apply some of these insights to better understand the life and work of the remarkable author Stephen King. His words, borrowed from his interviews and writings, will be examined in relation to some of these scientific findings. Further, it will be argued that King has an intuitive insight into critical neural mechanisms, which he deploys in the construction of his novels. The concordance between King's views on writing and the findings of these scientific studies is proposed as a possible explanation for his phenomenal success.

An analysis of King's childhood, writing and authorial strategies will be conducted. King's childhood experience of adversity and its impact on his life and work will be explored in light of the research on anxious attachment styles (Bowlby 1977). Additionally, role critical relationships play in his development and theme of altruistic bonds, so prevalent in his novels and stories such as *The Stand*, *Rita Hayworth and the Shawshank Redemption* and *It*, will be associated with a study of the link between oxytocin and fiction. Regarding his writing, King's fecund productivity and vivid imagery will be examined in terms of studies on the personality trait of High Sensation Seeking (HSS). Furthermore, the volume of output and reported pressure he writes under will be evaluated in terms of the state of Flow. Finally, using King's own statements, his views on authorial strategies will be contrasted with the findings of studies on the theory of mind, empathy, suspense and narrative transportation.

### **The Neurophysiology of Horror**

According to Stephen King, there are three types of responses he seeks to induce in the mind of the reader. 'There's terror on top, the finest emotion any writer can induce, then horror and, on the very lowest level of all, the gag instinct of revulsion' (King 1989: 50). It should be noted that horror has affinities to porn, in that, it trades on the ability of the media to arouse not only fantasies and emotions in the beholder but also intense physiological responses, which form a critical part of its impact. Porn excites the erotic, whereas horror fiction is rooted in arousing the twin emotions of fear and disgust. Fear is a primeval emotion, designed by evolution to deal with danger by triggering the fight or flight response. King distinguishes between two types of fear, terror and horror. Joseph Ledoux (2017) postulates that there are two "fear circuits" delivering the response to threat –

the low road and the high road. The low road is a quick direct primitive response that could be seen to constitute horror. The high road is a longer circuit involving higher brain functions, which could denote terror. Functional neuroimaging studies of the brain support King's distinction. Hudson et al (2020) found two types of activation – Acute and Sustained. The acute pattern that conforms to terror, mobilizes parts of the brain that heighten sensory awareness of sound, vision, and touch. Vigilance levels are elevated, and the environment is scanned for potential dangers in a state of dread. King commenting on two stories states "It's what the mind sees that makes these stories such quintessential tales of terror. It is the unpleasant speculation" (King 198:20). In this study, the magnitude the fear response was greater when the threat was uncertain, unidentifiable or ambiguous. King argues that the terror of the unknown is the "finest variant" "You can scare people with the unknown for a long, long time" (King 1981: 117). The Acute response corresponds with horror and is mediated by activation of the brain areas involved with emotion, evaluation and action. (Hudson et al 2020; Lehne and Koelsch, 2015)

Disgust is an emotional response structured to detect the putrefied and the pathogenic so they can be avoided (Rozin et al. 2008). In the brain fear and disgust both share some of the same neural networks, making them as King conceives them to be, emotions that are synergistic, amplifying each other (Morales et al 2012). Fear increases mental and physical arousal and narrows the focus of attention; disgust magnifies the fixation on the noxious stimulus (Cisler et Al. 2009). The disgust response also augments certain additional reactions such as nausea, which King labels as the "gag instinct of revulsion". Physical disgust such as the reaction to a putrefying corpse is processed by the same brain structures, that mediate moral disgust, as in the response to unfairness or injustice (Klucken et al. 2012, Kalisch et al. 2006). Hein et al (2010) found that when the agents of morally disgusting acts are defeated, the brain's dopamine reward system is triggered, creating a positive sense of satisfaction. King's novels have a teleological moral arc that modulates this brain pattern. In "The Outsider" for example he arouses physical disgust by describing the details of the brutal sadistic killing of a child. He also induces moral disgust at the unfairness in the way an innocent suspect and his family are treated. A triumphant catharsis of these feelings is created in the exciting climax where the monstrous "outsider" is destroyed. The tropes of horror, that King actively deploys can be seen to speak to the brain's most primal mechanisms mediating attention and emotion.

### **The Delights of Danger**

A fundamental fallacy about fear is that it is always aversive. However, low and controlled doses of fear can be arousing, enjoyable and even exhilarating. Ecstatic states stemming from a sense of awe to the sublime have always been conceived as having a patina of fear. This is reflected in the popularity of a variety of fear-inducing diversions, from the popularity of horror films to the attraction of haunted houses, from the thrill of roller coasters to the adrenaline rush of dangerous sports. King better emphasizes the pleasure derived from fear by drawing on examples such as 'The rides in the amusement park that mimic violent death, things like the parachute drop where you get to experience your own plane crash, the bumper cars where you get to have a harmless head-on collision, and so on' (King et al. 1989:11). The positive effects of confronting these fears are exemplified in the studies based on bungee jumpers (Hennig et al. 1994; Castella et al. 2020). These studies have shown that the jumpers not only experience exhilaration but also enhanced cognitive functions, and elevations in their endorphins and immune responses as a consequence. Other studies (Luo et al. 2018) show that facing fear and successfully surviving it triggers the dopamine reward system that makes the experience pleasurable. It also enhances self-esteem (Woolf 2018). The enjoyment of fear is not to everyone's taste. A neurocognitive variable that marks out the lovers of dangerous delights is a personality trait called 'Sensation Seeking' (SS). Several studies (Greene et al. 2005; Edwards 1984) indicate an association between the enjoyment of horror films and the trait of sensation seeking. This association is greatest in individuals who are male (Zuckerman 1986) and have low levels of empathy (Aluja-Fabregat 2000). The disinhibition factor of desiring to feel out of control was the best predictor for women (Cantor and Sparks 1984).

Marvin Zuckerman who pioneered the concept in his research states, 'Sensation seeking is a personality trait defined by the search for experiences and feelings that are varied, novel, complex and intense, and by the readiness to take risks for the sake of such experiences' (Zuckerman 1994: 27). Further, his research infers that SS is a biologically driven component of the human personality (Zuckerman 1994). Whilst much of the research has focused on studying the physically challenging, the concept also includes the search for the mentally challenging as appears to be the case with Stephen King. His SS trait is most manifest in its openness to experience component. This is constituted by the craving for intense novel experiences in the fields of imagination, feelings, aesthetics and ideas (Zuckerman 1994; Aluja et al. 2004).

### **The Fascination of a Frightened Child**

One of the paradoxical facets of King's childhood is that despite being an anxiety-ridden child, he experienced an irresistible attraction to the dark and terrifying. This feature of his life will be explored in two stages. The first will document the evidence that he did, exhibit a propensity for seeking the thrill of fear from a

very early age and this drive evolved over time. This is relevant to the frequency with which issues in his childhood are echoed in his life and novels. In the second stage, various aspects of his life will be examined to assess whether he had a personality trait called High Sensation Seeking, which could explain this contradiction.

In his autobiographical statements, King describes himself as a man with a permanent address in 'the People's Republic of Paranoia' (Rozak 2008: 10). Yet, despite the pervasive anxieties, phobias, nightmares, and night terrors that plagued his childhood, he admits to being preoccupied with horror from an early age. King articulates, 'I was always interested in monsters. I read "Fate" magazine omnivorously. There are good psychological reasons for my attraction to horror stories as a kid' (Allen 1979). King experienced fear and fascination in equal measure. Like the barracks dog in *From a Buick 8*, he would 'simultaneously howl in terror and yank forward as if in the grip of some ecstatic magnetism' (King 2018: 37). At age four, King had a sudden, shocking and brutal confrontation with death.

About an hour after I left, I came back (she said) as white as a ghost. I would not speak for the rest of that day; I would not tell her why I'd not waited to be picked up or phoned that I wanted to come home... It turned out that the kid I had been playing with had been run over by a freight train while playing on or crossing the tracks (years later, my mother told me they had picked up the pieces in a wicker basket). I have no memory of the incident at all. (King 2010: 55)

When the mind is subjected to excessive levels of shock, it often shuts out that experience through a phenomenon known as Autobiographical Amnesia (Stanilou et al 2018). This experience, however, did not dim King's penchant for horror. In that year itself, he felt impelled to listen to radio programmes his mother deemed unsuitable for his age. King declares,

My first experience with real horror came at the hands of Ray Bradbury – it was an adaptation of his story 'Mars Is Heaven!' on Dimension X. This would have been broadcast around 1951, which would have made me four at the time. I asked to listen and was denied permission by my mother. 'It's on too late,' she said. 'And it would be much too upsetting for a little boy your age' [...] and my mother's words echo down to me over the years like a voice in an uneasy dream that has never really ended: 'Too upsetting ... upsetting [...] upsetting' (King 2010: 74).

From that night onwards, like many fear-stricken children, he could not sleep without the lights on. Even to this day, this fear haunts him in hotel rooms. 'I always leave the light on in the bathroom when I am in a hotel [...] It's so the thing under the bed can't get out and get me' (King et al. 1989: 12).

Studies on children exposed to horror media conducted by Cantor (2004; 2006) have documented the immediate and long-term negative psychological effects that King records. Undeterred by the intensity and variety of his anxiety symptoms from age five, especially in the eight months when he did not attend first grade due to an illness, King vicariously devoured comic books full of horrific tales and illustrations. King documents, 'The stuff I was drawn to was built in as part of my equipment [...] My mom hated those gruesome E. C. Comics of the fifties, but she let me read them [...] until the nightmares started [...]' (King et al. 1989: 210). He records the impact that Stevenson's *Dr Jekyll and Mr Hyde* had on him, explaining,

She (mother) read us "Dr Jekyll and Mr Hyde" when I was six [...] I never forgot it [...] I lived and died with that story [...] I can remember lying in bed, wakeful after that night's reading was done (Beahm 1991: 17).

The fascination with the 'dark and dragging horrors on the nightside of the universe', as King writes in *Pet Sematary*, was extended by weekly visits to the cinema.

I always went. It was at the Ritz that I saw 'I Married a Monster from Outer Space' with Tom Tryon, 'The Haunting' [...] Chris and I liked just about any horror movie, but our faves [...] (were) directed by Roger Corman, with titles cribbed from Edgar Allan Poe. (King 2014: 17)

The vivid visual nature of King's narratives, which have made him the most adapted author ever, may have its origins in the visual imprinting of the graphic comics he read and the films he saw as a child. His close childhood friend Chris Chesley observed, 'He learned to write from what he saw on the screen at the Ritz theatre' (Beahm 2015: 73). King agrees 'I still see things cinematically. I write down everything I see. It seems like a movie to me, and I write that way' (Beahm 1919: 17). As he grew older, his reading became more sophisticated. He read Bram Stoker's *Dracula* at age eleven and regards the discovery of H.P. Lovecraft at fourteen as a turning point in his life: 'it was his seriousness as much as anything else which that (my) interior dowsing rod responded to' (King 2014: 102).

### **High Sensation Seeking (HSS) Trait**

Stephen King has repeatedly stated that his penchant for the dark side was something innate in him. This conforms to what a personality trait is. In his own words, 'I was built with a love of the night and the unquiet coffin' (King 2014: 158). Studies (Zuckerman and Litle 1986) have observed that HSS individuals show a greater interest in morbid themes, whereas people with low SS were found to find these themes distasteful and thus avoid them. High sensation seekers preferred the complexity, ambiguity and incongruity of surreal art, compared to low SS who liked their art to be representational (Furnham and Avison 1997). Tests of creativity on

HSS individuals show that they have a greater capacity for original thinking and are attracted to speculative, bizarre, pseudoscientific ideas (Twomey et al 1998). In the introduction to *Dreamscapes and Nightmares*, King asserts, 'I believed all that weird stuff because I was built to believe in weird stuff[...] during the years from six to eleven, crucial years in which the human imagination is largely formed, they were very real to me'(King 1993:9). They tend to engage in primary process, oneiric thinking (Schultz and Schultz 2016: 383).

Sometimes for a kid, the shortest distance between two points is not a straight line and that's the way that we think and dream [...] and because I equate that sort of dream state with a heightened sort of mental state [...]. (Smith 1989)

In the introduction to *Dreamscapes and Nightmares* King asks, 'Waking? Sleeping? Which side of the line are the dreams really on?' (King 1993:12). He further adds that when he stops working on a book, after completing it the stream of thought that drives his creativity still surges on. According to King,

When I go to bed at night, I have all these crazy dreams, usually not very pleasant ones because whatever machinery that you have that goes into writing stories, it doesn't want to stop. So if it's not going on the page, it has to go somewhere, and I have these mind dreams (Green 2014).

Studies show that across cultures, Sensation Seeking subscales correlate with a capacity for vivid imagery (Blankstein 1976; Rao 1978). As King describes it, 'My imagination was too big for my head at that point, and so I spent a lot of miserable hours[...] With the kind of imagination, I had, you couldn't switch off the images once you'd triggered them[...] (Norden 1983).

King also displays many features associated with the trait. For example, SS is a more powerful predictor of initial drug use and abuse across drug categories than any other measure of one's personality or psychopathology (Donohew et al. 1999; Jaffe and Archer 1987). King was a smoker from his teen years. He smoked two packs a day, even in dire poverty. Alcohol is another common problem for individuals with HSS. King confesses, 'I started drinking by age 18 [...] I was drinking like, a case of beer a night' (Green 2014). He then migrated to cocaine, which is also popular among those exhibiting HSS traits, as documented by an interview:

'Yeah, coke. I was a heavy user from 1978 until 1986, something like that.' 'Did you write on coke?' 'Oh, yeah, I had to. I mean, coke was different from booze. Booze, I could wait, and I didn't drink or anything. But I used coke all the time.' (Green 2014).

Talking about *Misery*, he said, 'Misery is a book about cocaine. Annie Wilkes is cocaine. She was my number-one fan' (Green 2014). As his addiction worsened, consistent with the impulsivity displayed by HSS individuals, his drug abuse became polymorphous. King ingested anything from analgesics to mouthwash. He admits, 'I loved Listerine. I loved NyQuil. You name it' (Gross 2000). Another feature of HSS is the preference for aggressive and arousing music (Nater et al. 2005). King writes to music playing at full volume. He shares, 'I work to loud music – hard-rock stuff like AC/DC, Guns N' Roses, and Metallica have always been particular favourites' (King 2014:156). HSS is a highly heritable trait, as shown by genetic studies (Derringer et al. 2010). King's father's restless wanderings, as evidenced by his extensive travels and the impulsive abandonment of his family, multiple infidelities and addictions may be expressions of the trait of HSS.

## Flow

Describing his act of writing, King states,

Once I start work on a project, I don't stop, and I don't slow down [...] Writing is at its best – always, always, always – when it is a kind of inspired play [...] I like it best when it's fresh and almost too hot to handle. (King 2014: 53)

A phenomenon associated with SS is the state of flow. Psychologist Mihaly Csikszentmihalyi (1990) describes the flow state as 'being fully immersed, holding an energized focus, full involvement, and enjoyment of the moment. In a flow state, a person is hyper-focussed and connected to what they are doing'. He has also termed it the 'optimal experience' that is the holy grail of those who engage in dangerous sports. King has spoken of the manic pressure of thoughts under which he sometimes writes. Therefore, his thoughts may be an expression of this mental state. King reports that most of *The Running Man* 'was written during a period of 72 hours', which for him was 'a fantastic, white-hot experience' (Brookes 2013). He has no memory of writing *Cujo*. Arguably, drugs were a factor, as they were in *The Tommyknockers*, where the townsfolk swap their souls for the gift of being amoral geniuses: 'In the spring and summer of 1986, I wrote "The Tommyknockers", often working until midnight with my heart running at a hundred and thirty beats a minute' (King 2014: 37). He comments on the flood of words that was *Firestarter*:

There's really a good book in here, underneath all the sort of spurious energy that cocaine provides, and I ought to go back. The book is about 700-pages long, and I'm thinking, 'There's probably a good 350-page novel in there.' (Green 2014).

About *The Shining*, he says, 'The book ran itself off in, I would say, four to six weeks [...] There was never any hold on it [...] I had no idea what I was going to write' (King et al. 1989: 74). Many authors utilize the

strategy of outlining the plot to structure their creativity. However, the inference that King may be driven by flow is evidenced by his distaste for outlining. As he articulates, 'Outlines are the last resource of bad fiction writers who wish to God they were writing masters' theses' (King 2014: 58). King appears to begin with an observation of real events or self-imposed 'what if ?' puzzles and then lets the words pour out of his typewriter. Like Roland the Gunslinger, a character from his *The Dark Tower* series, he embarks on an ontological journey of discovery towards an end he cannot foresee. This endeavour is encapsulated in his aphorism: 'The writer is a pilgrim' (Underwood and Miller 1982: 35). The obsessive nature of his writing state is evidenced by two anecdotes. On one occasion, his wife discovered him covered in blood, bleeding profusely from an incision wound after a vasectomy. When she tried to intervene, he told her, 'Hold on, let me finish this paragraph!' (Rozak 2008: 158). Even when faced with what he calls his greatest fear, the death of his child, the compulsive nature of his writing state takes precedence. King testifies,

Unless something catastrophic happens, like the house explodes, in which case I would stop. My wife might say Owen fell down the stairs and broke his neck, and I'd say, 'Fine, go take him to the emergency room and let me finish this page.' (King et al. 1989: 75).

### **Sensation Seeking Creativity and Madness**

Whilst there are aspects of his personality and creative process that are consistent with HSS and states suggestive of flow, it must be noted that King is a highly disciplined workaholic who writes and lives his life to a strict schedule. Says King, 'I work about two hours a day, but I work seven days a week. I write six pages a day, and that's like engraved in stone' (King et al 1989: 75). The personality trait of high sensation seeking is made up of four components (Zuckerman 2007). These are Thrill- and Adventure-seeking (TS), in which there is a desire to engage in physically risky activities; Experience-seeking (ES) indicating the love for a variety in sensations of the mind and senses; Disinhibition (DIS), which is a lack of self-control or desire to be out of control; and finally Boredom susceptibility (BS), that is, the dislike of repetition and lack of stimulation.

The impulsivity associated with HSS is often expressed as recklessness, risky sex, gambling and drugs (Zuckerman 2005). Except for his drug abuse, King appears to have a low expression of this element, though it may have been an issue for his father. Regarding the low boredom threshold, King states that 'boredom is an excellent opportunity to get things done'. Thrill seeking (TS) usually manifests as the love of dangerous activities, such as sky diving and mountain climbing. Whilst eschewing physical risks, King does display the desire to leap off the cliff of his imagination. In the *Dark Tower* series, he discards all maps and embarks on epic journeys that traverse multiple universes that are full of threats and dangers. The trait of experience seeking (ES) has been shown to be associated with the drive to seek out the novel and the exciting in the spheres of imagination, fantasy dreams, aesthetics and values. The previous paragraphs have laid out a body of evidence to show that even from a very early age despite his fears, he felt impelled to seek out intense challenging experiences in the dark and dangerous. It becomes possible, therefore, to advance a hypothesis that these two components, that is, TS and ES, are the subterranean streams that serve as drivers of the diversity of his creativity. The shaping and channeling of forces by an obsessively rigid work ethic could be the basis of his immense productivity.

The HSS trait is associated with several adverse psychiatric outcomes. However, King's ferocious commitment to his mother's work ethic and the unwavering support of his wife Tabitha have cradled his creativity, protecting him from a descent into madness. Articulates King,

I was also experiencing a range of nasty emotions, from resentment to anger to occasional outright hate, even surges of mental violence ... I don't know what would have happened to my marriage and my sanity if it hadn't been for the totally unexpected news, in 1973, that Doubleday had accepted 'Carrie'. (Norden 1983)

Biographer Tony Magistale recounts, 'In a conversation, he once told me that it is likely he wouldn't be alive today without Tabby's presence in his life' (Magistale 2009:139). These feelings are fictionalized by King in his novel, *The Shining*:

And he kept wanting to take it out on Wendy and Danny. His temper was like a vicious animal on a frayed leash. He had left the house in terror that he might strike them. Had ended up outside a bar, and the only thing that had kept him from going in was the knowledge that if he did, Wendy would leave him at last and take Danny with her. He would be dead from the day they left. (King 1977:25)

### **Anxious Attachment**

The human infant is the most vulnerable in nature. Its survival growth and development depends on nurturing bonds with a caregiver. Adverse childhood experiences interact with genetics to alter the structure and function of the brain, compromising emotional and cognitive development. Research has delineated four main patterns of attachment, namely, secure, avoidant, anxious and disorganized (Bretherton 1992). There is evidence to indicate that secondary to his childhood experiences, King shows the features of anxious attachment. They find expression in his life and work. There are protective factors such as the responsiveness of his mother's love

and the unconditional support of his wife that have shielded him from many of the deleterious consequences of this type of attachment.

A critical event in King's life occurred at the age of two when his father abruptly abandoned his family. It left his mother destitute, homeless, saddled with debt and stigmatized as a single mother. It generated in King an intense existential fear that she too would abandon him, just as his father did. His sense of insecurity was aggravated by the constant change of domicile, as his mother crisscrossed the country for the next six years, staying with relatives on both sides of the family until the tensions become intolerable. At a young age he and his brother were often left alone at home as the mother went out to work to put food on the table. This anxious existence may have triggered in King the pattern of attachment known as anxious attachment (Bretherton 1992). People with this style of attachment are characterized by a deep craving for closeness and intimacy, which they anxiously seek (Hudson and Fraley 2017). They crave high levels of approval and responsiveness from their attachment figure. They are extremely sensitive to the slightest changes in emotions expressed by others (Fraley et al. 2016). In emerging adulthood, they tend to exhibit signs of avoidance, emotional dysregulation, interpersonal difficulties and alcohol problems (Abby et al. 2018). In his teenage years, King was depressed, angry and addicted to alcohol. He perceived himself and was perceived by others as an outsider, a loner buried in his books. People with anxious attachment are often plagued by insecurities and prone to depression.

What appears to have partially protected him from his anxieties related to abandonment and satiated some of his needs is the intensity of his mother's devotion. Despite working long, exhausting hours in menial jobs, she found the time to read to her children and actively nurtured King's aspirations to be an author. The desire for the dark and the impulse to turn his fantasies into fiction, which became his life's ambition, he inherited from his father. Later, he would go on to say, 'I had no idea of how to live any other life' (King 2014: 36). King obsessively pursued this goal from early childhood, spending every available moment in reading and writing. His self-identification as an author and its subsequent affirmation, first by his mother and then his wife, may have served to ameliorate the low self-esteem that many people with anxious attachment experience. His brother David appears to have taken on a parentified role, caring for him and playing publisher to his schoolboy writings. His mother, instilled in him an unyielding work ethic that provided him with structure through the years of grinding poverty, rejection and alcoholism.

A pivotal day in King's life was when he met Tabitha Spruce, who was to become his muse and mainstay. She appears to have been able to satisfy his existential hunger, as well as his need for intimacy and security. She supported him as he struggled to write during the turbulent years of poverty, parenthood, addiction and inner rage. We are given a glimpse of this in his construction of the character Wendy in *The Shining*. Tabitha also executed two pivotal actions that dramatically altered the course of King's life. The first was fishing the manuscript of *Carrie* out of the trashcan. The second was organising an intervention that stopped him from going over the tipping point of drug abuse. An author in her own right, she remains his closest critic and is central to his life.

The enduring effects of childhood adversity are echoed in King's life and work. The need to combat the ghosts of anxious insecurity with fixed constancy has been a feature of his adult life. This is evidenced in the obsessively scheduled structure of his daily life, the fidelity of his marriage, intensity of the bonds he has built and nurtured with his children and choice to live in the landscape of his childhood in Maine. *Pet Sematary*, a book he found too disturbing to release, can be read as a testament to the depth of his feelings for his children. In his works, alcoholic insecure authors abound (e.g., *The Shining*), children, often with superpowers, battle adults who are evil (e.g., *The Shining*, *Firestarter*), loners hit back at their tormentors (e.g., *Carrie*) and it is the strength of individual and group bonds that often carry the day (e.g., *Rita Hayworth and the Shawshank Redemption*, *The Stand*). It has been said,

'Stephen King has never gotten over feeling like an abandoned child, and he never stopped being a child permanently haunted by his father's absence. That's something that will never change. It has affected his entire life, from his childhood and his marriage to his books. Especially his books' (Rojak 1962: 13).

### **Narrative Transportation**

King has proved himself to be a master at immersing his readers in his narrative world, however fantastic it may be. Studies (Hakemulder et al. 2017) demonstrate that narratives can focus a viewer's perception and attention on the actions and concerns of characters to such an extent that they can tune out all awareness of the external environment. This state then serves as an escape from everyday reality, be it humdrum or stressful. Research (Balint et al. 2017; Bezdek et al. 2015) also highlights that suspense is one of the factors linked to increased transportation. Suspense arises when potential threats to characters become important to the reader. It is characterized by a mixture of fear for a negative outcome and hope for a positive resolution (Ortony et al. 1990). Research on human emotion by Bezdek et al. (2015) indicates that narratives with negative content and high emotional intensity, as in horror novels, intensify the focus of attention. This serves to heighten the

suspension of disbelief, making the fictional world appear real to the reader (Gable and Harmon-Jones 2010). As King puts it,

The horror story makes us children. That's the primary function of the horror story – to knock away all of this stuff, all of the bullshit we cover ourselves up with, to take us over taboo lines, to places we aren't supposed to be. (King et al. 1989: 93)

A functional brain imaging study (Nijhof and Willems 2015) has delineated two types of narrative transportations that constitute the poles of a continuum. Some people are drawn into a story by mentalising the thoughts and beliefs of the characters—the mentalising pole. Others, on the other hand, engage with a novel by becoming enthralled by the action and events in a novel, even simulating it—the action pole. King's comments on two of his early novels written under the pen-name Richard Bachmann, can be seen as examples of this continuum. The action mode is represented by King's assertion that “‘The Running Man’ (is) nothing but a story – it moves with the goofy speed of a silent movie, and anything which is not a story is cheerfully thrown over the side’ (King 1985:4). The mentalising mode corresponds to his statement that “‘The Long Walk’ and ‘Rage’ are full of windy psychological preachments (both textual and sub-textual)’ (King 1985:4). King's success may, in part, be attributed to his ability to fill his novels with exciting action on the one hand and to populate his novels with psychologically complex characters on the other. He, thus, targets both these pivotal mechanisms in the brain. Taking into account the sex differences in the enjoyment of horror, found in other studies (Heffner and Levine 2005), it can be hypothesized that there are two definable groups in the spectrum of King enthusiasts. One group is formed by mainly male readers who enjoy the action and horror, constituting the action end of the continuum. At the other pole of mentalisation is the group, possibly mainly comprising women, that can become enthralled by the suspense and story by empathising with the struggles of the characters. Most of his vast army of readers probably experience a combination of these patterns of responses.

### **Theory of Mind**

Lisa Zunshine (2006) has postulated that people are predisposed to appreciate works of fiction that encourage them to speculate about the minds of others because people's brains are structured to attribute goals and intentions to them. She argues that people derive pleasure from the stimulation and satisfaction of these cognitive cravings through fiction. In research terms, this is a brain function that Simon Baron-Cohen calls ‘Theory Of Mind’ (TOM) (Baron-Cohen et al. 2013). Often known as mindreading, our ability to divine the thoughts, emotions and dispositions of others is a fundamental necessity of our social existence. People with autism spectrum disorders who lack this capacity experience social difficulties. King conceptualizes TOM as a paranormal power he terms as ‘the shining’ and makes it the central feature of his 1978 masterpiece. In the novel, he invests Danny and Halloran with a turbocharged version of TOM, enabling them not only to know the minds of others but also communicate telepathically, even at a distance. King views the brain function of TOM as ‘what writing is’ (King 2014:39). He further states that ‘all the arts depend upon telepathy to some degree, but I believe that writing offers the purest distillation[...]’ (King 2014:39). He compares fiction to a mind reading act, where the author telepathically transmits his thoughts to the mind of the reader, explaining, ‘We're not even in the same year together, let alone the same room [...] Do we see the same thing? [...] I think we do [...] we are together. We're close. We're having a meeting of the minds’ (King 2014:39).

### **The Neurobiology of Narrative**

Evolutionary psychologists postulate that the human brain is a narrative-seeking machine, programmed to seek out and construct stories that shape our identities (Habermas and Bluck 2000). It is a fundamental component of consciousness, communication and culture. We are born with story-oriented brains into a story-oriented human culture (Yuan et al. 2018). King has long argued for the primacy of the story. In his foreword to *Night Shift*, King contends, ‘All my life as a writer, I have been committed to the idea that in fiction, the story value holds dominance over every other facet of the writer's craft’ (King 1978: 6). Stories can elicit powerful emotions. A key emotional response to narrative plots is suspense. Suspense appears to be a variant of fear that mobilizes the brain mechanisms mediating expectation, anticipation and prediction. A brain imaging study (Lehne et al. 2015) on individual ratings of suspense experienced after reading found suspense to be associated with the activation of brain structures involved in TOM and predictive inference. The intensity of the activation has been discovered to be related to the levels of conflict, disturbance or crisis in the contents of the story. As King puts it, ‘[...]stories of “high conflict” [is] an arty way of saying suspense stories’ (King 2014: 82). He further argues, ‘a suspense novel is basically a scare novel [...] I see the horror novel as only one room in a very large house, which is the suspense novel’ (King et al.: 91). Contingent on the reader's motivation and the way the brain evaluates the content, even tales that are tragic or horrific can be read with pleasure (Lewis et al. 1991). King sees the processes of reader engagement and arousal of their curiosity as necessary procedures before confronting horror. He says,

The trick is to be able to get the reader's confidence ...I want to be your friend. I want to come up to you and put my arm around you and say, 'Hey, you want to see something? It's great! Wait till you see it! You'll really like this thing.' Then I get them really interested and lead them up the street and take 'em around the corner and into the alley where there's this awful thing and keep them there until they're screaming!(King et al. 1989: 4)

### **The Chemistry Empathy**

Paul Zak, in his research based on the story of a child named Ben who is dying of cancer, found that the narrative elicited two responses, namely, stress and empathy. Stress was mediated by hormones such as cortisol and noradrenaline, which arouse attention and emotions such as fear and suspense. Empathy was mediated by the hormone oxytocin, the levels of which paralleled the fluctuating degrees of engagement. Elucidates Zak,

We also found that the change in oxytocin was associated with concern for the characters in the story. If you pay attention to the story and become emotionally engaged with the story's characters, then it is as if you have been transported into the story's world. This is why your palms sweat when James Bond dodges bullets. And why you stifle a sniffle when Bambi's mother dies (Zak 2015: 5).

The oxytocin release induced by the film subsequently resulted in an increase in acts of altruistic generosity (Barazza et al. 2015). This suggests that impactful stories can cause more permanent changes in brain function. As in Zaks's research, King echoes the affirmative role that fiction can play in our lives: 'I still see stories as a great thing, something which not only enhances lives but actually saves them' (King 1993:10). Like Zak, he places a high value on altruistic human bonds. It is the peer bonding of the 'losers' that defeats Pennywise the maleficent clown in *It*. It is the bond between an adult and a child that defeats evil in *The Shining* and *Salem's Lot*. King builds bonds between the reader and his characters by inducing projective identification with their plight. He states,

You must feel that the characters are deep. And I don't mean deep in the sense that they have a lot of deep thoughts. They must have thickness. Do they stand off the page? Then the writer puts them into a position where they can't get out. *You don't get scared of monsters; you get scared for people.* ( King et al.1989: 79, emphasis added)

### **Conducting the Cognitive Orchestra**

An important issue that critics such as Harold Bloom fail to acknowledge is the psychological complexity of King's characters and the care with which he communicates their thoughts, feelings and, above all, motives in language that is authentic, direct and accessible to a mass audience. King eschews the literary flourishes so loved by the literati and instead focusses on constructing characters in narratives the reader will care about. In his introduction to *Night Shift*, he writes, 'Diligence, word-lust, empathy [and] equal growing objectivity and then what? Story. Story. Dammit, story! A story is something happening to someone you have been led to care about' (King 1978:4). He engineers identification by casting easily recognized, ordinary, usually blue-collar characters as his protagonists, painting their physical and psychological lives in a language rich in cultural references and then taking them into a battle with the dark and dragging horrors on the night side of the universe. Jack Torrance in *The Shining*, for example, is a psychologically astute and clinically accurate picture of a man suffering from post-traumatic stress disorder and comorbid alcoholism, secondary to abuse at the hands of a violent father. King draws on his own experiences to transport his readers into the mind of an alcoholic by employing the technique of internal dialogue. He is also empathic enough to use the same technique to paint for the reader a graphic picture of what it is like to live with a disturbed, deteriorating addict by mapping the thoughts and fears of Jack's wife Wendy and son Danny.

A theory known as the 'Simulation Hypothesis' postulates that by utilising mirror neurons, we represent other people's mental states in our own minds (Gallese and Goldman 1998). We do this by adopting their perspective and tracking or matching their states with resonant states of our own. King transports us into the minds and worlds of his characters, whether a rabid dog or the epitome of evil. By doing so, he implants them in our consciousness. He is a master conductor of the brain orchestra that constitutes the human capacity to empathize.

## **II. CONCLUSION**

This paper has aimed to demonstrate that studies of brain function can substantiate Stephen King's keen insights into the nature of human consciousness, as revealed in his fiction. Advances in neuroscience are now enabling us to better understand these hitherto mysterious mechanisms that move us. King's creativity is also haunted by his history. Reflecting his own struggles as well as those of his mother, Ruth, his fiction contains a heroic arc that affirms the resilience and essential goodness of his protagonists. In nurturing one another through adversity, just as he, Ruth and Tabitha have done, the protagonists he creates exemplify the values of



perseverance, courage and altruism. In making the reader vulnerable and invested in the struggles of other characters, he activates critical brain mechanisms. He, thus, alters our brains structurally and chemically in ways that make us more human and socially caring. As Andre Dubois puts it, 'Writing is a sustained act of empathy'.

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