

Tracing Psychosocial Development and Onset of Mental Disorders in the Film ‘Inside Out’

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Abstract—This paper analyses the film ‘Inside Out’ through the lenses of visual narrative, trauma studies, and psychosocial studies. It examines the film’s visual elements in relation to theoretical perspectives on identity, personality disorders, and psychosocial development. Focusing on the use of colour, shapes, and personified neurotransmitters, it shows how the film conveys the gradual emergence of trauma within the protagonist’s personality. Drawing on trauma studies and psychosocial perspectives, the analysis considers how the film represents the effects of disruption on memory, identity, interpersonal relationships, and emotional regulation.

I. INTRODUCTION

Inside Out is a metaphorical, personified journey through the mind of its protagonist, Riley, an eleven-year-old girl. The film follows Riley as she faces a crisis brought on by a major life event, resulting in a personality crisis, a mood disorder, and hormonal imbalance. Through characters inside Riley’s brain and events in the world around her, the film reveals the psychological and social forces shaping her life. It offers insight into how the brain processes sudden shocks and trauma, ultimately showing the protagonist’s acceptance of essential mood imbalances and the release of grief.

Riley, the film’s central protagonist, is introduced to viewers through five characters: Joy, Sadness, Fear, Disgust, and Anger. They can be understood as personifications of neurotransmitters that regulate certain moods and responses in the body. Because multiple neurotransmitters perform overlapping functions, these characters cannot be assigned simple, specific labels. For instance, serotonin regulates both Joy and Sadness, whose extremes are ecstasy and depression. Adequate serotonin levels can elevate mood, while insufficient production can contribute to

depression. Joy can also result from the production of dopamine, endorphins, and oxytocin. Similarly, Riley’s other mood regulators are represented by colour-coded characters, each of which catalyses a different emotional and physical response in her.

In the film, Joy and Sadness are the central protagonists within the body of Riley. The rising tension in the story centres on Joy’s acceptance of Sadness as an essential trait of their host’s personality. At the beginning, Joy tries to be the centre of Riley’s mind and sidelines Sadness. This causes Sadness to act impulsively, unknowingly disrupting the host’s mind and triggering the protagonist’s personality crisis. The film is a transition from avoiding a specific mood response to accepting that response as a natural part of human pathology.

II. VISUAL ANALYSIS

Within the first five minutes of the film, the five emotions are introduced to the viewers, each performing a specific set of overlapping functions for Riley. The personification of these neurotransmitters is colour-coded so that it becomes easier for the viewers to distinguish between each of them. The characters of Fear and Anger, which might be personifications of the neurotransmitters adrenaline and norepinephrine, evoke a fight-or-flight response and anger within Riley. They are colour-coded with purple and red, respectively. Similarly, other colours, Joy being yellow, Sadness being blue, and Disgust being green, become thematic in conjunction with reader response within the film.

According to Daniel Holland, the film’s art director, the team responsible for creating the world of Riley’s mind drew on physiology as a reference. He states, “We were inspired by shapes—the hypothalamus,

pituitary gland, cells under a micro scope Everything was heavily caricatured, but we wanted to start from somewhere that made sense” (Pixar). According to a trivia note published on IMDb, “According to director Pete Docter, each emotion is based on a shape: Joy is based on a star, Sadness is a teardrop, Anger is a fire brick, Fear is a raw nerve, and Disgust is broccoli” (Inside Out). Such visual cues allow viewers to form associations with the characters based on their preconceived notions of those shapes and colours. The characters’ associative design enables the intended young audience to form binary oppositions between the positive and negative attributes of these characters.

The animated film’s primary audience is children, and it is rated ‘PG’ (Parental Guidance). Hence, colour distinctions help distinguish one character from another. According to Ralph B. Hupka et al., certain colours evoke specific mood responses in viewers’ minds. The research conducted by Hupka and others, published in the *Journal of Cross-Cultural Psychology*, states, “Both Anglos and Navajos” associated patches of black and Red with angry and green, red, white, and yellow with happy. They differed in that the Anglos, but not the Navajos, related black and blue to sad. Japanese connected red with anger and jealousy, fear with black and purple...” (158). The research highlights the universal applicability of colours that humans associate with different feelings, invoking pity, fear, happiness, and so on. The colours therefore serve a dual purpose in the film, evoking similar responses in viewers’ minds as they do in the protagonists.

Joy introduces viewers to personality development through the concept of core memories. She explains that Riley’s core memories power specific aspects of her personality. In the film, Riley has five personality cores, which she calls Personality Islands: “Hockey Island,” representing athleticism; “Goofball Islands,” representing fun and frivolousness; “Friendship Island,” representing social bonding; “Honesty Island,” representing righteousness and guilt; and, lastly, “Family Island,” representing family bonding. Together, these traits shape Riley’s personality, and each is based on the protagonist’s long-term memory associations.

Riley’s personality crisis stems from her mood swings caused by the physical relocation of her house. The parents, caught up in the process of moving, fail to

pay adequate attention to their daughter, causing the embodiment of Sadness to undergo a meltdown. Sadness complains to Joy that she feels she is having a breakdown, but Joy, dominating the emotions, tries to suppress her melancholy. In addition, Joy represses Riley’s nightmares, blocking her subconscious venting mechanism. The repression and the conflicting emotions within the host become the chief cause of her temporal mood disorder. Until the point of this traumatic event, Riley’s personality abides by the healthy traits of a personality largely accepted by psychologists. But post-traumatic event, Riley falls dangerously close to a ‘Cluster C’ type of personality disorder, which makes her dismissive, fearful and avoidant of people in her social vicinity.

III. PERSONALITY ALTERATIONS OF THE PROTAGONIST

The traumatic events in Riley’s life before the film are given very little prominence. As a result, characterising her personality is speculative, based on the few details presented. Using Robert McCrae and Paul Costa’s Big Five personality framework, Riley appears psychologically healthy. She scores high in openness, as she is ‘focused on tackling new challenges’ and ‘happy to think about abstract concepts. Before her first day at school, she is open to welcoming change, highlighting both her openness and the ‘Extraversion’ aspects of her personality. She also appears high in ‘Agreeableness’, as she looks forward to making friends. The film provides too little background to assess the ‘Conscientiousness’ trait, while her ‘Neuroticism’ seems to fluctuate between the high and low ends of the spectrum. Notably, the film deliberately makes this fluctuation the story’s central conflict. The tension between Joy and Sadness, before they come to terms with each other, reflects this neuroticism.

In addition to Riley’s personality type, she can also be understood through Erik Erikson’s theory of psychosocial development. Erikson divided psychosocial development into eight stages that children pass through at different ages. The theory explores how the human mind develops alongside life’s social influences. The first stage lasts from infancy to 18 months and is called ‘Trust vs. Mistrust’. At this stage, children depend on their caregivers and develop trust or mistrust based on the

care they receive. They also develop a sense of safety and security. Riley's brief story about this age suggests that her parents provide adequate care, helping her develop trust. This experience also shapes the Family and Goofball Islands within her psyche. The second stage of Erikson's theory is 'Autonomy vs. Shame and Doubt'. It lasts from the toddler years until about age five. During this stage, children learn to control their bodies. Shame and guilt during this formative stage can cause them to lose a sense of personal or subjective decision-making power in their lives. The third stage, 'Initiative vs. Guilt', lasts from three years to about five years. Most social bonding and social interaction skills are developed during this time. For Riley, her friendship island is a by-product of this stage. Her core memories that power this island come from her social bonding and friendships. The most vital stage for Riley, the one that she inhabits, is the fourth stage, 'Industry vs. Inferiority'. It lasts from age six to eleven. In this stage, children learn accomplishments through their schooling. They develop ideas of success, accomplishment, and a sense of pride during this stage. From teachers to parents, reinforcement through encouragement becomes essential. In the absence of essential reinforcement, children develop self-doubt, an inferiority complex, and a lack of confidence during this stage. As Riley is 11 in the film, she is right at the edge of falling into the fifth stage, 'Identity vs. Confusion'. However, due to a sudden change in her school and her physical space, her personality is jolted, and she would have to renew this stage in this new setting.

In the 'Industry vs Inferiority' stage, school and proving oneself among peers are especially important. The sudden traumatic event in Riley's life affects her experience of this stage. In the film, we see that, without Joy and Sadness, she struggles to move into Erikson's next stage, 'Identity vs Role Confusion', and experiences a full identity crisis. She fails to make new friends, struggles to function within her family, and becomes distracted during sports. Fear, disgust, and anger are the dominant emotions affecting her at this stage. She snaps easily and finds everyone repulsive. Fear also stays with her, contributing to a strong sense of inferiority and role confusion. Age 11 is also a common age for the onset of puberty.

Although the film does not explicitly explore the child protagonist's psychosexual development, it subtly

hints at her desire for intimacy as Joy and Sadness travel through the 'Imaginary Land' in her mind. They discover that Riley subconsciously imagines aspects of a boyfriend. Her longing to belong stems from her natural drive at the cusp of puberty, as well as moments of neglect by her parents. At the fragile boundary between stages 4 and 5 of Erikson's psychosocial development, Riley is torn between an identity crisis and role confusion. Unable to identify her emotions because of the absence of essential neurotransmitters, she cannot form an identity. Her repressed emotions emerge in her dreams.

Dreams are an essential way of coping with stress. A study by Dante Pichoni and fellow psychologists, involving 412 psychology students, found that people experiencing high stress had more nightmares, which, overall, positively affected their mood in the long run. In *Inside Out*, Joy's active intervention in Riley's nightmare represses her emotions and further suppresses her subconscious coping mechanisms. Riley's inability to confront negative emotions works against her before she experiences a mental breakdown. Sadness's absence and Joy's hyperactivity throw the host's mood off balance.

It would not be appropriate to describe Riley's stress and identity crisis as a disorder. However, Riley shows all the signs and symptoms of PTSD. To understand the onset of her temporal mood and personality disorder, we can examine the subject through the lens of trauma theory. Cathy Caruth defined PTSD as "a response, sometimes delayed to an overwhelming event or events, which takes the form of repeated intrusive hallucinations, dreams, thoughts, or behaviors stemming from the event, along with numbing that may have begun during or after the experience, and possibly also increased arousal to stimuli recalling the event (4)". When trauma takes root in our young victim's mind, it does not immediately register as victimization. Freud called the interval between the original event and the first appearance of trauma symptoms the "Incubation period" (Caruth 7). The delay in recognizing the trauma and its impact on the subject's mind deepens the process of thought, while the memory of the event begins to recede from conscious awareness into the subconscious. Riley's trauma is different because it results not only from sociological factors but also from the biological absence of neurotransmitters and core memories. Riley's condition aligns directly with

Caruth's idea of PTSD. Her overwhelming experiences stem from the move and her parents' neglect. Along with being unable to process her thoughts immediately, she faces a constant battle between Joy and Sadness in her mind, which prevents her from grieving. Furthermore, her two dreams reveal her developing social anxiety and fear of her new home. She sleeps more than usual to run away from her thoughts, while the remaining three personified neurotransmitters cannot regulate Riley's emotions, signalling her numbness.

According to Dori Laub, "there is in each survivor, an imperative need to tell and thus to come to know one's story, unimpeded by ghosts from the past against which one has to protect oneself" (Caruth 63). The survivor must restore fragmented and suppressed memories through speech or another preferred form of representation. Riley cannot find such an outlet because her personality is in crisis and she lacks social support. Both the Family and Friendship islands have collapsed in her mind, causing a personality meltdown. Because trauma is characterized by silent brooding, Riley remains silent for most of the film's latter half. As an animated film, it allows viewers to witness this inner turmoil and understand how trauma takes root in the mind.

The film allows viewers to observe what goes on in Riley's mind during her silent episodes throughout the day. Her inability to find someone to talk to further represses her trauma. Through non-verbal cues, the film emphasizes the expressions of this traumatized figure; observable throughout the latter half of the film.

IV. TRACING ONSET OF MOOD DISORDERS

Riley is depressed, and the film introduces viewers to the onset of her mood disorder. If mood disorders persist, particularly during the early teenage years, they can develop into long-term personality disorders. The film's primary audience—parents and children—can learn to recognise the onset of mood imbalances through its combination of technical, scientific, and literary elements. Three sociological factors contribute to Riley's mood disorder: her sudden relocation, parental neglect, and her breakdown on the first day at a new school. As discussed earlier, these factors affect the protagonist's day-to-day ability to recognise herself and find her place in the wider

world. On a personal level, however, she initially suffers mainly from anxiety disorder. According to DSM V, "anxiety disorders include disorders that share features of excessive fear and anxiety related behavioral disturbances. Fear is the emotional response to real or perceived imminent threat, whereas anxiety is anticipation of future threat" (American 189). In addition, DSM V explains that the dominance of fear leads to fight-or-flight responses, avoidance, and escape behaviors. In Riley's mind, we see that, with Joy and Sadness absent, Fear, Disgust, and Anger are the only emotions guiding her. When her parents first ask about her day at school, her immediate reaction is to evade the question and respond selectively. This behavior marks the onset of 'selective mutism'. DSM V defines selective mutism as, "when encountering other individuals in social interactions, children with selective mutism do not initiate speech or reciprocally respond when spoken to by others" (American 195). The definition further notes that in such situations, children may respond to their parents but not to anyone else. In Riley's case, her responses are driven by avoidance, but this gradually escalates until she stops responding to family members as well. DSM V adds, "Associated features of selective mutism may include excessive shyness, fear of social embarrassment, social isolation and withdrawal, clinging, compulsive traits, negativism, temper tantrums, or mild oppositional behavior" (American 195). The film allows viewers to observe these developments through the internal characters in Riley's mind. Riley's temper tantrums result from Anger overpowering her, with Fear and Disgust helping him.

In addition to selective mutism, Riley also shows symptoms of 'Social Anxiety Disorder', a subcategory within the anxiety disorder spectrum. DSM V defines S.A.D. as - "The essential feature of social anxiety disorder is a marked, or intense, fear or anxiety of social situations in which the individual may be scrutinized by others. In children the fear or anxiety must occur in peer settings and not just during interactions with adults" (American 203). During a video call with a friend from her hometown, Riley finds herself neglected by her friends and withdraws from her peer group. She also deliberately sits apart from everyone during school recess. As a result, Riley loses her metaphorical friendship island, marking her social isolation from her peers.

Riley's second onset could be classified under 'Depressive Disorders.' Depressive disorders require proper medical and psychiatric evaluation, since almost all types require medical intervention with medication. This paper only suggests some possible ways Riley's mood imbalance could have led to a depressive disorder. In the absence of the neurotransmitters Joy and Sadness, one might speculate that Riley lacks serotonin—the neurotransmitter responsible for both happiness and sadness. Her mental state could be further classified as "anhedonic," meaning "Lack of enjoyment from, engagement in, or energy for life's experiences; deficits in the capacity to feel pleasure and take interest in things" (American 817). Anhedonia is generally classified under 'major depressive episode' in DSM V. Riley's lack of social support and inability to grieve bring her close to this kind of disorder.

Because Riley metaphorically lacks core memories and personality islands, she loses herself to certain personality traits. Personality disorders are divided into three categories: clusters A, B, and C. The protagonist falls under cluster C, which includes avoidant personality disorder, dependent personality disorder, and obsessive-compulsive disorder. Riley can be viewed as having an avoidant type, as the DSM V states: "The essential feature of avoidant personality disorder is a pervasive pattern of social inhibition, feelings of inadequacy, and hypersensitivity to negative evaluation that begins by early adulthood and is present in a variety of contexts" (American 673). In addition to the points discussed above, the protagonist plans to leave home at the end of the film. She steals money from her mother's purse and books a ticket to her hometown in Minnesota. Riley believes the new place is rejecting her and that her inability to feel anything stems from being there. Taking this bold step is her way of leaving everything behind. Her feelings of inadequacy and hypersensitivity to criticism overpower her. According to the DSM, the associated features of avoidant personality type include being shy, timid, lonely, and isolated, all of which are observable in the protagonist.

The film ultimately resolves these signs of emotional imbalance as Joy and Sadness complete their journey back to the mind's headquarters, where they can restore Riley's core memories. Joy realizes that sadness is also an essential part of Riley's mind and

finally steps aside, giving Sadness control. With Sadness guiding Riley's emotions, Riley is finally able to move from numbness to grief. When she returns home, she breaks down in her parents' arms. This catharsis helps restore her personality. The film concludes with a message of acceptance: sadness and joy are both essential parts of personality, while an excess of any emotion—and an attempt to escape sadness—can lead to a personality crisis. The film's viewers can be divided into three groups: children, parents, and professionals. Children can learn to accept their range of emotions, emotional imbalances, and anxiety triggers. They can also learn the importance of peers and support networks. Parents and professionals, meanwhile, can learn to recognize the early signs of emotional imbalance in preteens and intervene before symptoms develop into a personality disorder.

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