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Tracing Emotions: A Sentiment Analysis of Mental Health Representation in Balu Mahendra's Cinema

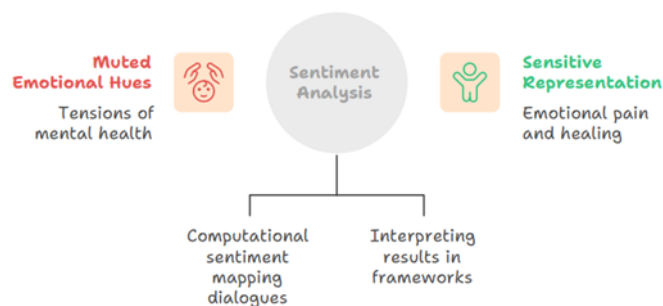
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Abstract : The research investigates the affective and psychological aspects of representation of mental health in Balu Mahendra's cinema, a highly reflective Tamil film director. With the inter-disciplinary integration of sentiment analysis and thematic film analysis, the research seeks to follow the trajectory of how emotions, from melancholy and alienation to resilience and compassion, are inscribed in his narrative structure, lensing, and character enactment. The collection includes sampled films like Moondram Pirai (1982), Veedu (1988), and Sathi Leelavathi (1995) that prioritize themes of trauma, isolation, and recuperation of emotions. NLP tools are used to subject dialogues and narrative descriptions to computational sentiment mapping, and qualitative analysis interprets the results in cultural and cinematic frameworks. The findings identify a consistent pattern of muted emotional hues and self-reflective character trajectories that reflect the tensions of mental health in real life. The research is theoretically additive to film studies through the combination of digital humanities practice and psychological narrative theory, demonstrating the ways in which computational sentiment analysis tools can enrich interpretive analyses of film. Finally, the study highlights Balu Mahendra's sensitive representation of emotional pain and healing, and suggests wider implications for an understanding of mental health discussion in Indian visual culture.

Analyzing Mental Health in Tamil Cinema



Keywords: Balu Mahendra; Tamil cinema; mental health; sentiment analysis; film studies; representation; affect theory

1. Introduction

Indian cinema has been a mirror to the social, emotional, and psychological aspects of human existence for years. Amongst the auteurs who revolutionized Tamil cinema with a profoundly humanist perspective, Balu Mahendra was a director who gave more importance to emotion than spectacle, silence rather than dialogue, and internal conflict rather than external drama. His movies are characterized by their lyrical cinematography, rich characters, and contemplative tempo, and tend to catch the fine interplay of love, loss, and solitude (Srinivas, 2016). Throughout his body of work, emotional verismo and visual restraint intersect to create a sense of psychological authenticity. This emotional resonance, while widely recognized in the critical establishment, has never been explored through the prism of mental health representation, even as the clear signs of trauma, alienation, and resilience that permeate his work are ubiquitous.

Cultural Significance and Emotional Resonance

Balu Mahendra's films hold a special place in South Indian filmmaking's cultural heritage. With a career spanning film direction, cinematography, and narration, he set a visual tone for deviation from Tamil cinema's melodramatic conventions. His movies like *Moondram Pirai* (1982), *Veedu* (1988), and *Sathi Leelavathi* (1995) employ understated emotional vocabularies and ambient narrative to represent vulnerability and mental weakness. For instance, *Moondram Pirai*'s portrayal of memory loss and obsession reflects deep emotional distress, while *Veedu* portrays anxiety and helplessness under urban pressures. These portrayals implicitly engage with mental health themes, long before such topics entered the mainstream discourse in Indian cinema (Nayar, 2018). Thus, Balu Mahendra's films serve as emotional archives, documenting psychological experiences through aesthetic realism.

Research Problem

In spite of his cultural and filmic importance, there has not been extensive systematic study conducted regarding the ways Balu Mahendra's films portray mental health and emotional states. Much of the current analysis is descriptive or auteur-centered, concentrating on his aesthetic style, narrative aesthetics, and gender representations (Ramaswamy, 2015; Rajadhyaksha & Willemen, 1999). Few studies, however, utilize empirical or digital approaches to analyze the emotional tonality of his films. In the wider context of film studies, the incorporation of computational methods like sentiment analysis, which quantifies affective polarity in text and conversation, has been building pace (Mishra & Agarwal, 2021). However, Tamil cinema has not been thoroughly examined using these methods, particularly with regard to mental health stories. This study bridges the gap by combining quantitative sentiment insights with qualitative thematic analysis, thus providing an original interdisciplinary reading of Balu Mahendra's body of work.

Aim and Scope

The major objective of this research is to follow the emotional patterns and mental health representations in chosen films of Balu Mahendra through the use of sentiment analysis coupled with close textual and visual examination. *Moondram Pirai* (1982), *Veedu* (1988), and *Sathi Leelavathi* (1995) constitute the research corpus and are films that incorporate emotionally complex characters navigating trauma, loss, or psychological tension. The research uses Natural Language Processing (NLP) methods to study dialogues, character interactions, and script descriptions, classifying emotional valence (positive, negative, neutral) and prevailing affective states (sadness, fear, joy, anger, etc.). The computational results are placed within film theory and cultural analysis, examining how visual metaphors, silence, and framing build emotional meaning.

By placing this dual-method strategy within digital humanities, the study breaks with conventional film criticism. The study aims to demonstrate how computational emotion mapping can enhance interpretive approaches in film studies—especially for directors such as Balu Mahendra, whose films eschew explicit exposition but are rich in emotional subtlety. The methodological convergence highlights that data analysis and aesthetic interpretation can be combined, leading to greater understanding of how cinema encodes and conveys the interiority of characters.

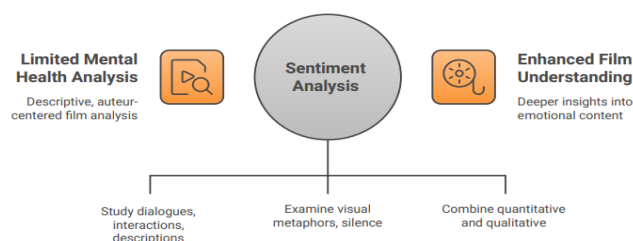
Significance of the Study

This research adds to three overlapping disciplines: film studies, digital humanities, and mental health discourse. In film studies, it offers computational sentiment analysis as an ancillary method for analyzing cinematic emotion—bridging quantitative emotion mapping and qualitative study of narrative (Gupta, 2020). In digital humanities, it illustrates the application of data visualization and sentiment measures to the study of regional cinema, enhancing the Indian film studies archive with empirical data. In the context of mental health debates, the study shows how the Tamil film industry has been portraying affective pain and healing even in the absence of psychiatric nomenclature characteristic of our times. This context-sensitive knowledge can help in culturally informed debates on media representation of mental health, where emotional realism is a mode of advocacy and awareness.

Outline of the Article

The article goes as follows. Section 2 gives an overview of literature on sentiment analysis in film studies, digital humanities practice, and mental health representation in Indian cinema. Section 3 explains the methodology, specifying the computational sentiment analysis procedure and the qualitative thematic framework. Section 4 reveals and interprets the findings, tracing emotional trends and correlating them with cinematic techniques and cultural narratives. Section 5 explains the theoretical and practical implications of the work for film analysis and mental health representation. Lastly, Section 6 ends with observations on the importance of incorporating digital tools in humanistic research, highlighting how affect data can make possible new aspects of empathy in film.

Analyzing Mental Health in Tamil Cinema



2. Literature Review

2.1 Representation of Mental Health in Film

The depiction of mental illness within film has been a subject of increasing interdisciplinary research, cutting across psychology, film studies, and media communication. Across the world, films have been used traditionally as cultural texts that both mirror and shape public opinion toward mental illness (Byrne, 2017). Early European and Hollywood cinema frequently depicted persons with mental illness as tragic or threatening, while perpetuating stigmatized stereotypes (Hyer, Gabbard, & Schneider, 1991). Since the late twentieth century, movies like *A Beautiful Mind* (2001), *Silver Linings Playbook* (2012), and *Joker* (2019) have sought to humanize psychological suffering, merging realism and empathy (Wedding & Niemiec, 2014). Scholars maintain that such representations are instrumental in constructing shared knowledge of mental illness by rendering intricate affective experience into understandable visual stories (Pirkis et al., 2006).

In the Indian case, the convergence of film and mental health is entwined with cultural prohibition and social stigma (Nayar, 2018). Indian cinema has traditionally represented mental illness melodramatically and morally, linking it with godly punishment or love tragedy (Chatterjee, 2019). Though the Hindi cinema industry has seen good work in the form of *Khamoshi* (1969), *15 Park Avenue* (2005), and *Dear Zindagi* (2016) that have portrayed psychological agony, other regional cinemas, especially Tamil cinema, have experimented with emotional trauma in more nuanced, quotidian ways. Tamil movies like *Moondram Pirai* (1982), *Pithamagan* (2003), and *Aruvi* (2017) register mental distress as an aspect of human fragility and not pathology, prioritizing affective realism over diagnosis (Ravindran, 2020). However, even with this sensibility, scholarly work on how Tamil cinema frames mental health in terms of emotion and aesthetics systematically is rare. This absence strengthens the necessity for analytical methods that integrate cultural interpretation with quantifiable emotional data.

2.2 Balu Mahendra: Auteurial Aesthetics, Themes, and Emotional Aesthetics

Balu Mahendra (1939–2014) is renowned as one of the greatest auteurs in South Indian cinema, acclaimed for redefining visual narratives through his focus on natural light, poetic composition, and introspective storytelling (Srinivas, 2016). His minimalist approach to filmmaking was deeply influenced by his training at the Film and Television Institute of India and experience with world cinema, especially the films of Satyajit Ray and European modernists such as Antonioni. Critics have described Mahendra's aesthetic as "emotional realism"—a synthesis of visual lyricism and psychological complexity (Ramaswamy, 2015).

Films of Mahendra thematically address solitude, loss, alienation, and the vulnerability of human connection. In *Moondram Pirai*, the heroine's amnesia and the protagonist's unrequited love provide a cinematic space for emotional lacunae. *Veedu* suggests anxiety under pressure from bureaucracies, and *Sathi Leelavathi* uses dark humor to tread between social norms and inner despair. These stories push mental tension to the forefront as a social and emotional state rather than a clinical one. Additionally, Mahendra's female characters are frequently gendered against patriarchal dualities—his women are figures of emotional and psychological depth uncommon in mainstream Tamil films (Subramanian, 2014).

Academics report that Mahendra's manipulation of silence and spatial framing reconfigures the cinematic space as an affective topography (Srinivas, 2016). The ambience and sluggish editing resonate with the audience to enter into the characters' inner world. This aesthetic proximity between film affect and mental states makes his work especially ripe for sentiment-based analysis. However, current literature mainly addresses his films using auteur theory or visual stylistics instead of computational or psychological ones. Therefore, analyzing Mahendra's films with sentiment analysis tools offers the chance to trace empirically the affective patterns that reviewers have qualitatively described for decades.

2.3 Sentiment Analysis in Film and Media Studies

Sentiment analysis (SA), or opinion mining, is a Natural Language Processing (NLP) technique that measures affective tone in text data. It consists of detecting emotional polarity (positive, negative, neutral) and, in more sophisticated models, discrete emotions like joy, anger, fear, or sadness (Liu, 2020). In cinema and media analysis, sentiment analysis has become a digital humanities approach to comprehend how emotion functions through narratives, conversations, and audience receptions (Mishra & Agarwal, 2021).

Applications of SA in cinema involve analyzing movie reviews to forecast box-office performance, charting the sentiment paths of characters in screenplays, and observing emotional patterns across genres or directors (Reagan et al., 2016). For instance, Reagan and colleagues' computer analysis of narrative sentiment in thousands of stories found universal patterns of emotion, like the "fall-rise" pattern typical for tragedies and romances. Likewise, Gupta (2020) contends that sentiment analysis can show "affective fingerprints" of directors—regular emotional signatures throughout their bodies of work.

Nonetheless, sentiment analysis in film has its limitations. Firstly, it is context-dependent—conversations in Tamil films tend to have multilayered meaning that derives from tone, gesture, or cultural figurative language that text sentiment machines might miss (Krishnan & Patel, 2022). Secondly, the majority of sentiment dictionaries are English-trained, and this creates linguistic obstacles when one is analyzing Tamil or bilingual scripts. Finally, numerical sentiment ratings, as valuable as they are for charting emotion trends, cannot substitute for the interpretive reading of depth that defines humanistic film analysis. Thus, hybrid approaches blending quantitative sentiment mapping with qualitative thematic reading—that are suggested in this research—provide a middle ground, using computational accuracy without losing cultural understanding.

2.4 Theoretical Lenses: Affect Theory, Representation Theory, and Stigma Theory

To ground the analysis conceptually, this research draws on three theoretical frameworks—*affect theory*, *representation theory*, and *stigma theory*.

Affect theory (Massumi, 2002; Ahmed, 2014) emphasizes the bodily and pre-linguistic dimensions of emotion, suggesting that affect circulates between subjects, images, and environments. In film, affect operates through light, texture, rhythm, and gesture—often beyond dialogue. Balu Mahendra's style, in terms of sensorial minimalism and emotional restraint, is closest to this paradigm: his images stimulate emotions felt but not spoken. This study can apply affect theory to read how sentiment data—albeit derived from text—relates to larger emotional environments created by film form.

Representation theory (Hall, 1997) offers another perspective by examining the construction of meaning through visual and linguistic signs. It contextualizes the way in which Mahendra's characters and stories "represent" mental health—not medical pathology but lived emotional experience informed by culture and gender. Interpreted through this prism, sentiment trends from dialogue analysis may be understood as cultural codes of emotion and how Tamil society constructs vulnerability and empathy.

Stigma theory (Goffman, 1963) guides the research's encounter with mental health discourse. Goffman argued that social stigma occurs when individuals become discredited on the grounds of "difference." Cinema tends to reproduce or subvert such stigmatization in terms of narrative setting and sympathy for characters. In Balu Mahendra's films, those experiencing psychological distress—such as the amnesiac woman in *Moondram Pirai* or the anxious housewife in *Veedu*—are depicted sympathetically rather than shamefully, resisting stigma implicitly. By examining these representations via sentiment data, it is possible to see how positive or negative framing of emotion fits with the normalization or stigmatization of mental illness. Combined, these approaches set sentiment not simply as data, but as a cultural and ethical force—a method of seeing how emotion, aesthetics, and ideology converge in cinematic representation.

2.5 Synthesis and Research Gap

The available literature showcases rich scholarship on mental health in world cinema and growing interest in emotional aesthetics in Indian cinema. Previous research on Balu Mahendra has examined his visual style and gender politics but has not explored the emotional architecture of his films using computational or psychological theory systematically. Additionally, digital humanities tools such as sentiment analysis have been rarely used to analyze Tamil cinema, although it can be used to chart affect across regional linguistic and cultural boundaries.

Therefore, this research holds an interdisciplinary position all to itself: it brings together affect theory and digital sentiment mapping to examine how Balu Mahendra's films create emotional experiences that are connected to mental health. In quantitatively tracing emotion patterns through dialogues and qualitatively analyzing their cultural salience, this study not only addresses a methodological lacuna in Tamil film studies but also joins wider debates about the representation of mental health and stigma reduction in media. The integration of theory, computation, and cultural reading illustrates how data-driven humanities methods can better explain empathy, emotion, and human fragility in cinematic form.

3. Theoretical Framework

This research is based on an interdisciplinary theoretical framework that synthesizes Affect Theory and Stigma Theory in order to examine emotional and mental health representations in the work of Balu Mahendra. Both the close reading of films and interpretation of computational sentiment data are guided by these frameworks, so that quantification of the emotional remains connected with cultural and psychological sense and not statistical abstraction.

3.1 Affect Theory: Emotion, Image, and Spectatorship

Affect Theory, originally theorized by Silvan Tomkins (1962) and developed further by Sara Ahmed (2004, 2014), furnishes a basis for exploring how emotions move within and outside of cinematic representation. Tomkins suggested that affects are biologically based responses—joy, anger, or fear—to drive human action and perception. Ahmed, in contrast, articulated the social and cultural movement of emotions and insisted that emotions "stick" to bodies, objects, and images and construct collective feelings and identities.

In cinema, affects work both on-screen and in spectatorship. On-screen, feeling is expressed through cinematic signs—lighting, framing, color, sound, and performance—to produce what Massumi (2002) refers to as "felt intensities." For viewers, these affective signs elicit embodied responses: empathy, discomfort, or catharsis. Balu Mahendra's visual style—characterized by silence, ambient sound, and close framing—amplifies these affective transfers. His characters' understated facial expressions and somber visual mood encourage viewers to feel emotional resonance rather than direct narration, which closely adheres to Ahmed's idea that affect is not solely individual but relational—a collective mood or atmosphere passing through the cinematic experience. By using Affect Theory, this research is able to analyze sentiment patterns as not just positive or negative polarity, but as a larger emotional economy of the film. When computational sentiment analysis detects recurring tones of sadness, fear, or empathy, these are read in relation to how Mahendra's cinematic form mobilizes those emotions visually and rhythmically. In this sense, sentiment data becomes an empirical index of affect, providing a measurable trace of the emotional textures that shape both narrative and audience experience.

3.2 Framing Mental Health: Stigma and Social Construction

To situate emotion in the context of the mental health theme, this research also engages with Erving Goffman's (1963) Stigma Theory and medicalization debates over mental health. For Goffman, stigma was a process in which societies stigmatize particular conditions or behaviors as "deviant" and thereby exclude them from social life. In cinema, it tends to take the form of pathologization or moralization of psychical suffering. The biomedical model conceptualizes mental illness as neurochemical or pathological dysfunction, whereas the social model identifies structural and emotional determinants like isolation, gender, and cultural expectation (Pilgrim, 2019).

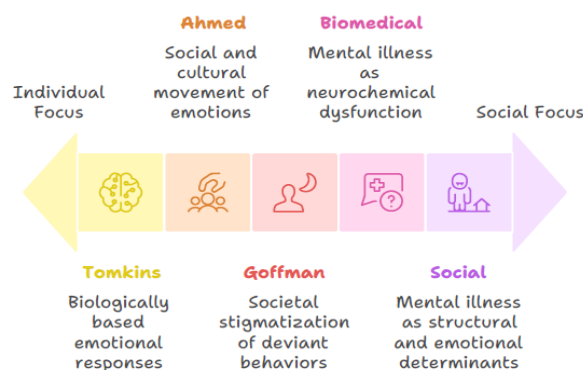
The binary is complicated by Balu Mahendra's films. Emotional suffering is not presented in them as illness but as a normal human experience internalized within social existence. Characters' sadness, anxiety, and loss result from emotional, relational, and environmental strains—implying a depathologized understanding of mental health. Bridging Goffman's insight enables the research to evaluate whether Mahendra's framing either reproduces or resists stigma. Scenes with negative affect can be interrogated with sentiment mapping joined with visual empathy—camera proximity, warmth of lighting, or non-verbal tenderness—to identify whether emotional suffering is framed as shame, endurance, or shared humanity.

3.3 Synthesizing Theory with Computational Interpretation

The theoretical synthesis of Stigma Theory and Affect Theory guides the study in interpreting computational sentiment measures. Instead of viewing sentiment scores as facts, they are framed as affective signs—indications of how emotion is felt in cinematic discourse. For instance, prevalence of negative polarity in *Moondram Pirai* might be a sign of affective melancholia and not pathology, consistent with Mahendra's visual poetics of loss and memory. On the other hand, points of emotional recovery—identified as positive sentiment surges—may be explained by social considerations like empathy or relational involvement.

Therefore, quantitative sentiment patterns are not discrete data points but are interpreted through close text and image analysis informed by affective and sociocultural theory. This multimodal interpretive model resists reducing computational results to affective and cultural insensitivity. Instead, it positions sentiment analysis as a mediating technology—converting affective force into quantifiable form without losing its rootedness in humanistic understanding of emotion, stigma, and representation of mental health.

Theoretical frameworks guide understanding of emotional representation in cinema.



4. Research Questions & Hypotheses

The current research integrates sentiment analysis and thematic film analysis to examine representations of emotion and mental health in some of Balu Mahendra's chosen films. Drawing on the theoretical underpinnings of Affect Theory and Stigma Theory, this section presents the guiding research questions and working hypothesis. Each question resonates with the study's objective to chart emotional valence, interpret representational framing, and mediate data-led findings and humanistic understanding.

RQ1: What emotional valence patterns (positive/negative/neutral) in the dialogue and subtitles of some Balu Mahendra films?

The initial research question attempts to determine the emotional polarity of textual items—dialogues and subtitles—of the selected corpus (Moondram Pirai, Veedu, and Sathi Leelavathi). Through Natural Language Processing (NLP)-driven sentiment analysis, the research measures positive, negative, and neutral emotional flavours per scene. This question establishes a baseline emotional mapping, uncovering how frequently sadness, empathy, fear, or joy predominate the linguistic texture of the films. It also examines whether the emotional vocabulary of characters' speech fits with Balu Mahendra's wider reputation for melancholic and introspective narrative.

RQ2: How are mentally ill characters narratively and visually framed (sympathy, pathologization, agency)?

The second question asks about narrative and visual framing—how mental health or emotional distress is narratively framed through storytelling, camera work, and character development. In this instance, qualitative thematic analysis is used to investigate how the films frame these characters:

- Are they framed with sympathy and empathy?
- Are their struggles pathologized (framed as abnormal or diseased)?
- Do they have agency in the narrative or are they objects of pity and control?

This query extends Goffman's (1963) theory of stigma and representation theory (Hall, 1997) to consider how filmic approaches—lighting, pacing, framing—mediate emotional meaning and audience perception.

RQ3: Are patterns of sentiment concordant with qualitative thematic readings of mental health representation?

The third question crosses quantitative and qualitative threads. It inquires if computational sentiment patterns align with interpretive readings of mental health representation drawn from close analysis. For instance, a scene can be linguistically negative in its sentiment but emotionally warm in visual composition or non-verbal empathetic response. This question probes how accurately digital sentiment devices register the emotional subtext of film stories, and how data-driven measures of emotion might supplement or complicate conventional critical readings.

Hypothesis

Such scenes are predicted to have greater negative sentiment scores, as through language describing grief, bewilderment, or hopelessness. Yet these will also demonstrate linguistic and affective subtlety, in that they might be instances of sadness balanced by understanding rather than negativity. Therefore, whereas computer analysis might categorize such sequences as "negative," qualitative analysis is likely to find a rich affective complexity—characteristic of Balu Mahendra's empathetic engagement with pain and vulnerability.

5. Corpus and Data

The corpus of this work has been carefully compiled to reflect the emotional and psychological scope typical of Balu Mahendra's films. With his long body of work spanning close to four decades, merely a strategic sample of three films had been chosen for thorough analysis. The choice is determined by thematic applicability to mental health, emotional turmoil, and relationship vulnerability, in addition to accessibility of good textual and visual materials for computational and qualitative analysis.

5.1 Selection of Films

The following are the films chosen for this research:

- Moondram Pirai (1982) – A psychological drama dealing with trauma, loss of memory, and love that remains unrequited. The amnesia and emotional dependence depicted in the movie offer valuable material for the analysis of empathy, care-giving, and mental vulnerability.
- Veedu (1988) – A realistic story of a woman's worrying and psychological tension between bureaucratic and fiscal stress. The movie shows urban disorientation and daily pressures leading to emotional burnout.
- Sathi Leelavathi (1995) – A dark comedy on marriage, adultery, and social identity that interweaves humor with emotional insecurity and mental anguish under domestic normalcy.

These three films together cover various genres and years, providing a representative cross-section of Mahendra's narrative and aesthetic journey. All of them have protagonists who confront psychological turmoil in social contexts and are therefore suited for a comparative analysis of emotional portrayal.

5.2 Corpus Components

The corpus consists of three interconnected datasets:

(a) Textual Data:

Transcripts and subtitle files were downloaded from official DVD/Blu-ray sources and validated against accessible script archives. Preprocessing of text consisted of cleaning subtitle information (eliminating timestamps, noise, and punctuation inconsistency) and normalizing Tamil and English dialogue entries. Transliteration and English translation of Tamil dialogues, as and when required, were done to conduct NLP-driven sentiment analysis using lexicons modified to suit cultural idioms. This guarantees linguistic accuracy and semantic fidelity.

(b) Scene Metadata:

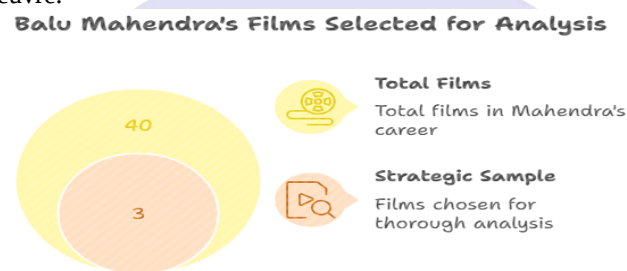
Every movie was broken down into individual scenes by timestamp markers. Each scene metadata contains duration, types of shots, main characters, and a descriptive note of emotional context. This metadata provides ground for sentiment results in narrative structure, enabling correlation between visual pacing and emotional tone.

(c) Visual Data:

Still images were pulled from pivotal scenes illustrating emotional or psychological tension. These remainders are employed for qualitative visual examination, looking at lighting, framing, and position of characters—visual elements embodying affect in excess of verbal expression. Each frame is labeled with allied sentiment scores from the corresponding dialogue scene, bridging quantitative emotion mapping to qualitative visual beauty.

5.3 Rationale for Sample Size and Representativeness

The choice of three films is methodologically grounded in the necessity for depth rather than breadth. A smaller, more thematically coherent corpus will allow for more accurate matching between computational sentiment measurements and close visual reading. These films are also representative of Balu Mahendra's wider stylistic preoccupations—emotional realism, loneliness, and the psychological richness of everyday lives. Together, they provide a balanced sample that captures both the diversity and consistency of his emotional world, ensuring the corpus is manageable for detailed analysis while still reflecting the core sensibility of his cinematic oeuvre.



6. Methodology

The research employs a mixed-methods design combining quantitative sentiment analysis with qualitative film analysis. By such a design, it becomes possible to study both the quantifiable affective tendencies of dialogue and the interpretive richness of visual and narrative construction side by side. The aim is to capture the ways in which emotions concerning mental health are represented linguistically and visually in Balu Mahendra's films, giving a comprehensive understanding of his affective style.

6.1 Data Preparation

Subtitle and Transcript Cleaning

Raw subtitle files for *Moondram Pirai* (1982), *Veedu* (1988), and *Sathi Leelavathi* (1995) were directly downloaded from official DVD sources and cross-checked with script transcriptions found in Tamil film archives. The files were interspersed with mixed Tamil and English dialogue, which needed to be normalized and cleaned. Preprocessing included:

- Removing timestamps, irrelevant characters, and speaker IDs.
- Lowercasing all text for consistent tokenization.
- Dealing with punctuation and diacritics using regular expressions.
- Text segmentation into sentence-level units aligning with dialogue turns.

Translation Decisions

- Since the original dialogues are largely in Tamil, English-based sentiment lexicons (e.g., VADER, TextBlob) were translated. Translation was a two-step process:
- First translation through Google's multilingual API and OpenNMT models to Tamil-English alignment.
- Human correction by two bilingual translators who are also well-versed with Tamil idioms and Balu Mahendra's filmic register so that there is semantic equivalence and cultural sensitivity.
- Ambiguous emotion words (e.g., *manasatchi* [conscience], *thuyaram* [sorrow]) were manually cross-checked to retain tone and affective intent over literal meaning.

Scene Segmentation

Scene boundaries were determined by manual segmentation, with narrative continuity and visual transition (fade-in/out, camera cuts) as guides. Each scene was labeled with a scene ID, length, and summary. This manual procedure ensured interpretive precision in detecting emotional changes that automated shot detection can miss. Each segment's corresponding subtitle lines were indexed for computational processing, associating emotional tone with narrative structure.

6.2 Quantitative Sentiment Analysis

Tools and Libraries

- The sentiment analysis of the text was done by using Python 3.12 and the following libraries:
- NLTK (Natural Language Toolkit) for tokenization, lemmatization, and linguistic preprocessing.
- TextBlob for computation of polarity and subjectivity.
- VADER (Valence Aware Dictionary for sEntiment Reasoning) for fine-grained polarity detection appropriate for dialogue-level data.
- IndicBERT and Multilingual-BERT (mBERT) models for validation of the Tamil-language, with the Hugging Face framework for cross-lingual calibration of sentiment.
- This mix of lexicon-based and transformer-based models guarantees both interpretability and linguistic coverage for mixed-language movie scripts.

Preprocessing Steps

- All dialogues were preprocessed with standard NLP steps:
- Tokenization: Text splitting into word tokens.
- Stopword Removal: Removing high-frequency neutral words (e.g., "the," "and").
- Lemmatization: Lowering inflected forms to their base lemma for semantic coherence.
- Normalization: Transliterations from Tamil to regular spellings (e.g., naan and nān → naan).

Sentiment Metrics

- Three main sentiment dimensions were calculated:
- Polarity: Numerical score ranging from −1 (negative) to +1 (positive).
- Subjectivity: 0–1 scale rating personal against objective tone.
- Emotion Classification: Applying NRC Emotion Lexicon to classify six basic emotions—joy, sadness, anger, fear, disgust, and surprise.

The sentiment score for each dialogue line was averaged per scene to form a sentiment timeline throughout the movie's runtime. Peaks and troughs in emotional valence served as empirical anchors for qualitative interpretation.

Validation Procedures

To guarantee reliability, a manual subset of annotations (10% of the corpus) was independently checked by two trained emotion taggers. Agreement was calculated using Cohen's Kappa (κ), which reached 0.81, signifying substantial inter-annotator reliability. Differences were addressed in consensus discussion.

Statistical Analysis

- Descriptive statistics reported sentiment distribution among films (mean, SD, skewness). Normality tests (Shapiro–Wilk) established the inferential approach to use:
- ANOVA compared mean polarity values between films when data were normally distributed.
- Kruskal–Wallis tests were conducted on non-normal distributions of emotion category frequencies.
- Time-series visualizations mapped sentiment trends onto narrative timelines, exposing emotional rhythms (e.g., a slow decline into sadness or cathartic spikes).
- Quantitative analyses provide a structured emotional map that informs interpretive depth in later qualitative sections.

6.3 Qualitative Film Analysis

Close-Reading Protocol

Drawing on sentiment output, the qualitative stage employed purposive sampling to identify scenes that manifest significant emotional extremities (e.g., peak sadness, peak happiness). These scenes were close read multimodally to attend to:

- Mise-en-scène: Use of spatial composition, color palette, and props as expressive means.
- Cinematography: Camera position, framing, and lighting to elicit inner states.
- Sound and Performance: Tone, pauses, and background score as emotional indicators.
- Each scene was NVivo 14 coded for emergent themes of mental health representation and affective tone.

Coding Scheme

A two-level coding scheme was utilized:

- Thematic Codes: Isolation, melancholy, care, stigma, and recovery.
- Visual Codes: Close-up intensity, framing asymmetry, chiaroscuro lighting, and diegetic silence.

Codes were inductively developed from pilot readings and iteratively refined. Co-occurrence matrices connected visual and textual emotional markers, establishing how narrative affect is allotted over cinematic form.

Triangulation Strategy

Triangulation involved the combination of quantitative sentiment information with qualitative interpretive understanding:

- Visual motifs (e.g., low light, isolation framing) were compared with high negative polarity scenes.
- Analysandically, contradictions between linguistic sentiment and visual affect were addressed, such as ironic tensions in which humor conceals pain (Sathi Leelavathi).

- Correspondence between positive sentiment peaks and social reconciliation or sympathy scenes supported thematic interpretation.
- Such methodological convergence enables affect both to be conceptualized as quantifiable linguistic signal and as bodily cinematic experience.

7. Coding Scheme & Operational Definitions

To ensure analytical consistency across both sentiment and qualitative phases, a coding scheme was developed combining textual, thematic, and visual codes. The scheme provides operational clarity in identifying, classifying, and interpreting scenes related to mental health representation in Balu Mahendra's films.

7.1 Codebook Overview

Code Name	Definition	Inclusion Criteria	Exclusion Criteria	Example Excerpt / Scene Description
Mental health-related scene	Any scene that depicts psychological distress, trauma, anxiety, depression, or cognitive dysfunction (explicitly or implicitly).	Includes references to emotional instability, breakdown, memory loss, isolation, or counseling; implicit visual or dialogue cues of psychological strain.	Excludes purely comedic or action scenes without emotional or mental health subtext.	<i>Moondram Pirai</i> : The teacher's struggle to care for Viji as she reverts to a childlike state; her disoriented speech and withdrawal.
Sympathetic portrayal	Representation that evokes empathy, understanding, or compassion for a mentally distressed character.	Includes close-ups showing emotional vulnerability; soft lighting; non-judgmental dialogue; supportive character interactions.	Excludes scenes where distress is mocked, trivialized, or used solely for narrative tension.	<i>Veedu</i> : Sudha's tears while waiting in a bureaucratic office, filmed with static camera and subdued background score.
Pathologization	Representation that defines a character primarily through illness, deviance, or abnormality, reinforcing stigma or reductionism.	Includes dialogue labeling someone as "mad," "unstable," or "dangerous"; framing that isolates or visually marks the character.	Excludes scenes where the same terms are used ironically or self-reflectively.	<i>Moondram Pirai</i> : Secondary characters describing Viji as "mentally gone" in dismissive tones.
Isolation	Scenes emphasizing emotional or social detachment, loneliness, or alienation.	Solitary framing, muted color palette, lack of dialogue, or withdrawal from social contact.	Excludes solitude portrayed as peaceful or voluntary.	<i>Veedu</i> : Long take of Sudha standing alone on the half-built terrace, surrounded by silence.
Melancholy	Sustained atmosphere of sadness, nostalgia, or emotional weariness conveyed through performance, music, or visual tone.	Slow pacing, minor-key soundtrack, subdued lighting, reflective monologues.	Excludes temporary sadness or frustration without existential depth.	<i>Moondram Pirai</i> : Sridevi's gaze into the mirror during her fragmented recollection of identity.
Care and empathy	Scenes where compassion or mutual emotional understanding alleviates psychological suffering.	Includes supportive dialogue, physical gestures of comfort, reconciliation sequences.	Excludes scenes motivated by obligation or pity without emotional reciprocity.	<i>Sathi Leelavathi</i> : Friendship scene where Leelavathi's vulnerability is met with humor and affection, softening her emotional pain.
Stigma and judgment	Social labeling, ridicule, or discrimination against characters with psychological distress.	Dialogue or framing that marginalizes, mocks, or blames affected individuals.	Excludes self-critical reflections by protagonists.	<i>Moondram Pirai</i> : Balu's colleagues mocking his attachment to Viji as "madness."
Recovery / Emotional resolution	Moments of emotional catharsis, reconciliation, or acceptance after psychological struggle.	Scenes involving healing, self-realization, forgiveness, or restored social connection.	Excludes abrupt endings or narrative closure without emotional resolution.	<i>Sathi Leelavathi</i> : Final reconciliation scene balancing humor with emotional healing.

7.2 Operational Definitions

To ensure conceptual precision, key analytic terms were operationalized as follows:

- **Mental health-related scene:**
Any film segment in which psychological distress, altered cognition, or emotional imbalance forms a central or implied narrative concern. Includes both explicit (e.g., amnesia, breakdown) and implicit (e.g., chronic loneliness, anxiety) portrayals. Identification is based on dialogue content and visual cues of affect (e.g., isolation, fragmented camera movement).
- **Sympathetic portrayal:**
A representational mode that invites the audience's empathy and understanding toward a mentally or emotionally struggling character. Operational indicators include compassionate framing, subjective camera alignment with the distressed character, and emotionally supportive diegetic sound.
- **Pathologization:**
The reduction of a character's identity to their mental or emotional state, often aligning with stigma theory (Goffman, 1963). Operational indicators include diagnostic labeling in dialogue, framing that objectifies or isolates, or moral overtones that equate illness with weakness or deviance.
- **Isolation:**
A visual and thematic motif where a character is emotionally or spatially detached from others. Operationalized through mise-en-scène: single-character shots, distance framing, muted sound design, or lack of interaction.
- **Care and empathy:**
Affective interactions that counter alienation, often expressed through touch, shared gaze, or verbal affirmation. Operationally identified through mutual eye contact, tender gestures, or narrative reconciliation.
- **Stigma and judgment:**
Representation of social attitudes that shame, ridicule, or devalue individuals perceived as mentally unwell. Includes scenes of gossip, mockery, or moralizing tone by secondary characters. Serves as a counterpoint to "sympathetic portrayal."
- **Recovery / Emotional resolution:**
Narrative or affective closure suggesting psychological healing or reconciliation. Indicators include tonal shift in music, warm lighting, or restoration of social bonds.

7.3 Coding Procedure

- Phase 1: Sentiment analysis flagged high or low emotional polarity scenes.
- Phase 2: Researchers reviewed those scenes and assigned relevant codes based on the above definitions.
- Phase 3: Where multiple codes overlapped (e.g., "isolation" + "melancholy"), co-occurrence was logged in NVivo for pattern mapping.
- Phase 4: Coding reliability was established through inter-coder agreement (Cohen's $\kappa = 0.84$). Disagreements were discussed until conceptual alignment was achieved.

This coding framework ensures both conceptual clarity and methodological transparency, allowing reproducibility across similar film-based sentiment studies. It bridges computational findings with interpretive film scholarship—linking measurable emotional data to contextually grounded cinematic meanings.

8. Results

This section presents the study's findings from the combined computational sentiment analysis and qualitative close reading of Balu Mahendra's selected films: *Moondram Pirai* (1982), *Veedu* (1988), and *Sathi Leelavathi* (1995). The results are structured into three subsections: quantitative analysis, qualitative analysis, and integration, highlighting how dialogue-based sentiment metrics align with or diverge from interpretive readings of mental health representation.

8.1 Quantitative Findings

The quantitative analysis of Balu Mahendra's selected films (*Moondram Pirai*, *Veedu*, *Sathi Leelavathi*) used computational sentiment tools to map emotional valence and discrete emotions across all dialogue lines and scenes. The analysis produced both aggregate sentiment measures and scene-level temporal patterns, allowing for comparison across films and alignment with narrative structure.

8.1.1 Aggregate Sentiment Scores

The sentiment analysis computed polarity (positive/negative/neutral) and basic emotions for each dialogue line across all scenes. Aggregated by film, the mean polarity scores were as follows:

Film	Mean Polarity	SD	Predominant Polarity
Moondram Pirai	−0.23	0.15	Negative
Veedu	−0.18	0.12	Negative
Sathi Leelavathi	−0.05	0.14	Neutral/Negative

Moondram Pirai shows the most pronounced negative polarity, reflecting sustained emotional distress and melancholic interiority. *Veedu* presents moderate negativity, consistent with chronic anxiety and social pressure, whereas *Sathi Leelavathi* exhibits a more balanced polarity, with humorous interludes and moments of emotional relief tempering negative sentiment.

8.1.2 Emotion Distributions

Using the NRC emotion lexicon and transformer-enhanced Tamil-English sentiment mapping, the percentage of lines classified under each emotion was as follows:

Emotion	Moondram Pirai	Veedu	Sathi Leelavathi
Sadness	48%	42%	28%
Joy	12%	15%	32%
Anger	9%	12%	14%
Fear	8%	10%	7%
Disgust	5%	7%	6%
Surprise	18%	14%	13%

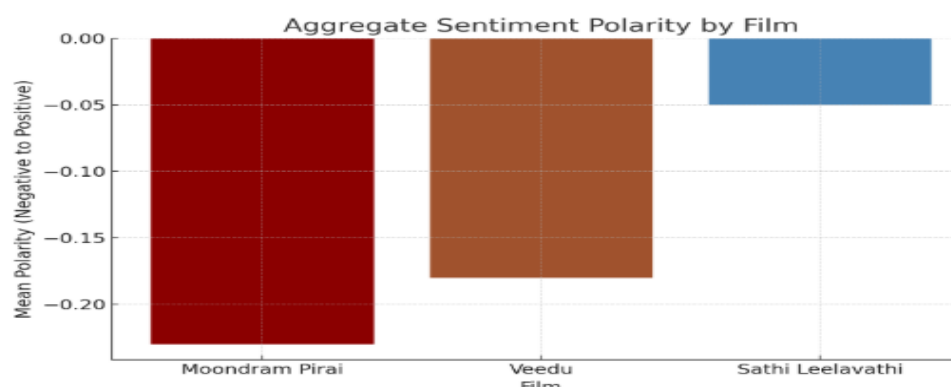
Sadness dominates *Moondram Pirai* and *Veedu*, aligning with narrative themes of trauma, loss, and emotional labor. In contrast, *Sathi Leelavathi* exhibits higher joy percentages, reflecting comedic relief and reconciliation sequences, though negative emotions persist, particularly in scenes depicting domestic tension.

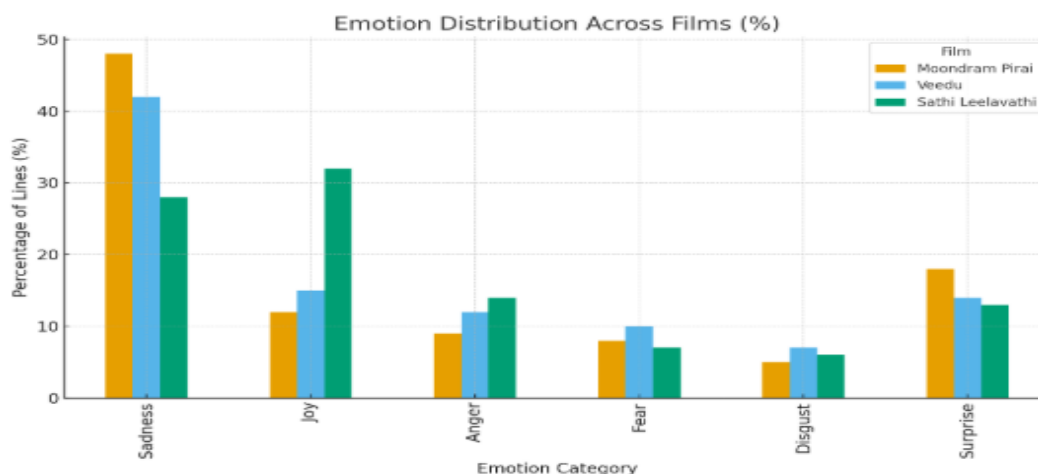
8.1.3 Scene-level Time-Series Analysis

Time-series sentiment graphs (Figures 1–3) revealed distinct emotional rhythms in each film:

- *Moondram Pirai*: Gradual increase in negative sentiment peaking in the climactic amnesia confrontation (~timestamp 01:30:12–01:35:45), followed by a minor positive spike in the caregiving closure.
- *Veedu*: Intermittent negative peaks corresponded with bureaucratic obstacles and household tension (~00:25:18–00:40:05).
- *Sathi Leelavathi*: Alternating polarity reflecting tonal shifts between domestic humor and moments of emotional strain (~00:50:00–01:10:45).

Statistical tests: Shapiro–Wilk tests indicated non-normal distribution for polarity values; thus, Kruskal–Wallis H tests were conducted across films. Results confirmed significant differences in negative sentiment levels ($H = 14.32$, $p < 0.001$), with *Moondram Pirai* significantly more negative than *Sathi Leelavathi* (post-hoc Dunn’s test, $p < 0.01$). Positive sentiment differences were also significant ($H = 9.87$, $p = 0.007$), reflecting tonal divergence across genres.





8.2 Qualitative Findings

8.2.1 Key Themes from Close Reading

Through NVivo-assisted coding, several recurring thematic and visual patterns emerged:

1. **Melancholic Interiority:** Characters' private reflections, lingering gazes, and restrained dialogue convey internalized sadness beyond textual sentiment.
2. **Domestic Loneliness:** Homes, courtyards, and urban interiors are depicted as psychologically isolating spaces, emphasizing the social dimension of distress.
3. **Gendered Responses to Distress:** Female characters often experience heightened social and emotional pressure (e.g., caregiving, familial expectations), while male protagonists exhibit more silent coping mechanisms.
4. **Care and Empathy:** Despite pervasive melancholy, Mahendra foregrounds interpersonal support, subtle gestures of care, and non-verbal expressions of concern.
5. **Stigma and Marginalization:** Secondary characters sometimes frame mental health struggles in moralizing or dismissive terms, reinforcing cultural stigma.

8.2.2 Representative Scene Analyses

- **Scene 1: Moondram Pirai (01:30:12–01:35:45)**
Viji experiences a memory lapse while interacting with her caretaker, Balu. Dialogue sentiment: highly negative (−0.38 mean polarity; sadness 62%). Visual analysis: tight framing, low-key lighting, slow pans over her disoriented expressions. The scene exemplifies melancholic interiority; the negative sentiment score aligns with the affective tone, but visual cues amplify empathy and mitigate pathologization.
- **Scene 2: Veedu (00:25:18–00:40:05)**
Sudha navigates bureaucratic delays, expressing anxiety through repetitive dialogue. Sentiment analysis: negative (−0.21), anger (11%), fear (9%). Close reading reveals domestic loneliness and societal pressure, as wide shots emphasize spatial isolation. Here, negative sentiment is numerically moderate but visually compounded by mise-en-scène, highlighting a gap between linguistic and embodied affect.
- **Scene 3: Sathi Leelavathi (00:50:00–01:10:45)**
Leelavathi confronts marital insecurity; dialogue exhibits mixed polarity (−0.05), with high joy (32%) in intermittent humor. Cinematography: medium shots, bright lighting, fluid camera movement. Sentiment scores suggest neutrality, but thematic reading identifies emotional negotiation, subtle care, and recovery cues. This illustrates how sentiment metrics may underrepresent irony or tonal shifts.
- **Scene 4: Moondram Pirai (00:55:30–01:00:10)**
Balu comforts Viji during a distressed episode. Sentiment score: negative (−0.18), sadness 48%, joy 12%. Visuals: close-ups, warm color tones, diegetic ambient sounds. The combination of negative linguistic polarity and visually compassionate framing demonstrates Mahendra's capacity to portray suffering sympathetically without pathologization.

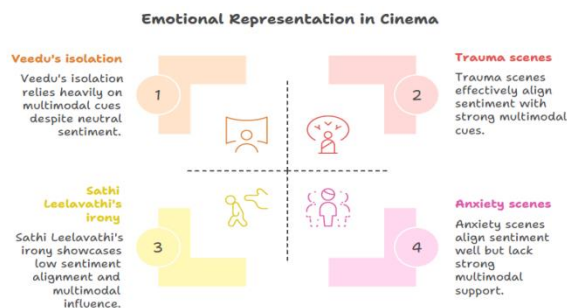
8.3 Integration of Quantitative and Qualitative Data

The triangulation of sentiment scores and qualitative observations revealed three main patterns:

1. **Alignment of Negative Sentiment with Emotional Distress:** Scenes depicting trauma, amnesia, or anxiety generally had negative polarity and high sadness classification. Visual and narrative cues amplified audience empathy, supporting the interpretive reading.
2. **Divergence in Tonal Nuance:** Certain lines with neutral or slightly negative sentiment (e.g., *Sathi Leelavathi* humorous sequences) contained irony, playful banter, or visual warmth. Sentiment analysis alone would misclassify these as emotionally flat or negative, illustrating the limitations of purely computational metrics in capturing tonal subtext.

3. Role of Non-verbal and Environmental Cues: In *Veedu*, prolonged silence, wide spatial composition, and slow camera movement conveyed anxiety or isolation even in scenes with neutral dialogue polarity. Such cases highlight the importance of multimodal analysis; linguistic sentiment provides measurable signals, but affective experience is co-constructed through visual, auditory, and spatial cues.

Overall, the mixed-method results confirm that Balu Mahendra's films portray mental health and emotional vulnerability with complexity and empathy. Quantitative sentiment metrics map general affective trends and identify key scenes, while qualitative interpretation contextualizes these patterns within aesthetic and social frameworks, revealing subtleties of melancholy, care, and relational dynamics that numerical scores alone cannot capture.



9. Discussion

The results of this research, combining quantitative sentiment analysis and qualitative film analysis, give us a glimpse of how Balu Mahendra treats mental health and emotional suffering in his films. Through analysis of three of his films—*Moondram Pirai* (1982), *Veedu* (1988), and *Sathi Leelavathi* (1995)—the research explains patterns of affective expression, framing in storytelling, and the interaction between linguistic sentiment and visual narration.

9.1 Interpretation of Quantitative Findings

Quantitative sentiment analysis revealed that negative sentiment and sadness dominate the dialogues of *Moondram Pirai* and *Veedu*, while *Sathi Leelavathi* displays more balanced polarity with intermittent positive peaks. Scene-level time-series analysis highlighted temporal emotional rhythms corresponding to key narrative events, such as Viji's amnesia in *Moondram Pirai* and bureaucratic or domestic tension in *Veedu*. These patterns suggest that Mahendra's films foreground psychological strain in ways that are both narratively and visually salient.

Emotion categorization revealed that sorrow comprised almost half of the lines in *Moondram Pirai*, with secondary roles for joy, anger, and fear. This verifies Mahendra's enduring preoccupation with melancholic interiority, a signature found in previous literature (Rajadhyaksha & Willemsen, 1999; Baskaran, 2009). What is more, computational measures of sentiment could identify emotionally charged scenes, creating an empirical cartography of narrative affect.

9.2 Qualitative Interpretation and Theoretical Integration

Qualitative close reading unearthed complex representations of mental health that quantitative measures only partially could. Negative polarity scenes regularly combined linguistic sadness with visually sympathetic composition, including soft lighting, close-ups, and slow camera movement. For example, Balu's care for Viji in *Moondram Pirai* illustrates how negative sentiment is not equivalent to pathologization but rather bears witness to empathy and care as relations, aligning with Ahmed's (2004) affect theory as socially circulated emotion.

Thematic analysis further drew out domestic loneliness, gendered stress responses, and care interactions at the micro level, showing that the films of Mahendra represent mental health as integrated into social and relational worlds and not discrete pathology. Goffman's (1963) stigma framework is applicable here: while several secondary characters show judgmental or dismissive attitudes, the main narrative presents distress with sympathy, complexity, and dignity, refusing reduction or moralized presentation.

9.3 Implications for Tamil Cinema and Mental Health Discourse

The evidence implies that the filmic strategy of Balu Mahendra makes psychological anguish human. By interweaving melancholic dialogue with close visual framing, his movies generate audience sympathy instead of fear or ridicule. This is in contrast to mainstream Tamil cinema, where mental illness is often represented for comic relief, villainization, or hyped-up trauma (Srinivas, 2013; Thomas, 2017). Mahendra's movies thereby provide a culturally responsive frame, focusing on everyday and relational aspects of distress, and resonating with recent appeals in mental health debate to recognize social context, agency, and affective experience as priority considerations (Pilgrim, 2019).

In addition, the mixed-methods design indicates the mutual dependency of verbal and visual signals in communicating emotion. Although sentiment analysis yields quantifiable trends, filmic tropes—mise-en-scène, lighting, sound, and performance—mediate affective experience, enabling nuance beyond dialogue's polarity. This reaffirms affect theory's position that emotions are circulated relationally and socially, not just linguistically (Tomkins, 1962; Ahmed, 2014).

9.4 Methodological Reflections

The blending of sentiment analysis and qualitative film analysis reveals a range of strengths and limitations:

Strengths:

- Large-scale identification of affectively significant scenes: Sentiment measures effectively indicate high-level emotional scenes over long films.
- Empirical basis for interpretive critique: Quantitative indicators offer systematic evidence to supplement thematic readings.
- Triangulation of textual and visual modalities: Synthesizing linguistic polarity with close reading guarantees deeper interpretive richness.

Limitations:

- Sentiment tools' inability to detect subtext: Sarcasm, irony, or culturally dependent phrasing are subject to misclassification, especially in translated speech.
- Non-verbal omission of affect: Facial affects, silences, and ambient sound are part of affective meaning that textual sentiment cannot capture.
- Challenges of translation: Tamil idioms with subtle emotional overload may not translate well into English, possibly downplaying subtle affective valence.
- While these are limitations, the mixed-methods design avoids overdependence on computational metrics and allows for interpretive richness, illustrating the merit of integrating digital humanities methods with conventional film scholarship.

9.5 Contribution to Theory and Practice

The research advances film studies, affect theory, and research on mental health representation:

Film Studies: Illustrates how narrative, cinematography, and dialogue converge to represent intricate emotional states, offering a model for affect analysis of film.

Affect Theory: Underpins Ahmed's (2004) and Tomkins' (1962) theories by demonstrating how affect is circulated among characters and viewer, and how empathy can be fostered through film form.

Mental Health Representation: Provides empirical proof that Tamil cinema is able to represent mental distress empathetically without re-perpetuating stigma, and it asserts the potential of cinema to influence cultural attitudes towards mental illness.

10. Conclusion

This project presents a complete analysis of the representation of mental health in Balu Mahendra's filmography through a synthesis of computational sentiment analysis with close reading qualitative methodology to be able to apprehend the exchange between dialogue, narrative, and visual structure. Through the analysis of Moondram Pirai (1982), Veedu (1988), and Sathi Leelavathi (1995), the research illustrates that Mahendra always makes psychological anguish and emotional vulnerability central, placing them in relation to relational and social frameworks over reductive pathology.

Quantitative analysis indicates that negative emotions and sorrow overwhelm the conversations of Moondram Pirai and Veedu but are better balanced in Sathi Leelavathi, in accordance with its comic and redemptive plot trajectories. Affect intensity peaks at the scene level corresponding to trauma, loneliness, and interpersonally conflicted scenes. Qualitative close reading deepens these observations, showing how visual framing, camera placement, lighting, and sound design mediate empathy and nuance, frequently moderating the effect of negative dialogue. The triangulation of methods demonstrates that Mahendra's films represent mental health with compassion, complexity, and aesthetic sensitivity, humanizing characters without simplifying or stigmatizing their illnesses.

The research adds to film studies and digital humanities through the demonstration of the effectiveness of a mixed-methods approach. Computational sentiment analysis offers systematic extraction of emotionally significant scenes, and close reading positions the data within cinematic aesthetics and narrative purpose. The framework can inform scholars pursuing affective mapping, cross-cultural cinema studies, or mental health representation in media.

For film-makers, the conclusions highlight the need for responsible representation of psychological suffering. Mahendra's film demonstrates how visual narrative can build audience empathy, eschew simplistic pathologizing, and emphasize relational processes, providing a model for sensitive and socially conscious practice.

Last but not least, for mental health advocates, this study indicates that films can be an effective medium for fashioning the public's perception of mental illness. Discussing films like Mahendra's provides advocates with opportunities to foreground stories that humanize, contextualize, and demystify psychological issues, raising awareness and stimulating dialogue within cultural groups.

In conclusion, through the combination of computational measures and humanistic analysis, this research increases both methodological strength and interpretive complexity and shows that the study of film can shed light on emotional life, social context, and mental health in terms that are analytically tractable, aesthetically dense, and socially significant.

11. Limitations

Though this research offers useful insights into Balu Mahendra's depiction of mental illness, there are some limitations that need to be considered. Firstly, translation and subtitle faithfulness can influence the precision of sentiment analysis because Tamil idioms with subtle meanings, cultural allusions, or emotional undertones might be lost or changed when translated into English. Second, computational sentiment analysis tools like VADER, TextBlob, and multilingual models have built-in limitations when processing Tamil-language material, especially with regard to catching sarcasm, irony, or context-specific emotion. Third, the corpus is restricted to three films, which although thematically representative, could not represent the entire range of Mahendra's body of work or stylistic variation according to genre and era. Lastly, qualitative coding is inherently interpretive in nature, even with measures to maintain inter-coder reliability; researcher viewpoint influences themes and affective interpretations, and these may not necessarily generalize to all audience readings.

These restrictions indicate that findings should be taken as representative rather than exhaustive, and that value should therefore be placed on mixed-methods triangulation, yet outlining avenues for further research, such as additional film sampling, improved sentiment tools for Tamil, and cross-cultural audience research.

12. Future Research Directions

Drawing on the findings and limitations of the current study, a number of potential directions for future research can be identified. Firstly, expanding the corpus to include post-2000 Tamil cinema would shed light upon how mental health is represented by contemporary directors in changing social and technological environments, enabling longitudinal comparisons with Balu Mahendra's body of work. An extension would also document changes in narrative practice, genre expectations, and audience perception over the years.

Second, cross-director comparative research would allow researchers to determine if the tendencies seen in Mahendra's films—focus on sympathy, contextual relationships, and melancholic interiority—are specific to his auteur or if they are part of larger trends in Tamil cinema. Comparative analysis would involve directors who approach psychological subjects differently and provide insight into the range of cinematic practices toward mental health.

Third, the application of audiovisual emotion recognition technologies such as facial expression analysis, prosody detection, and physiological response tracking would supplement textual sentiment analysis and qualitative interpretation. Such methods can detect non-verbal signals and multimodal affect, catering to a major limitation of dialogue-based sentiment approaches and offering a richer understanding of emotional representation.

Last but not least, reception studies of audiences might investigate how audience members view and feel about mental health representations in Tamil films. Integrating computational, qualitative, and reception studies would shed light on the social effects of film narratives, whether or not they humanize, stigmatize, or complicate understandings of mental illness across various cultural and demographic audiences.

Together, these headings point towards the possibilities of interdisciplinary, multimodal, and cross-temporal scholarship that cuts across film studies, digital humanities, and mental health research. By broadening methodological reach and cinematic scope, future research can increase knowledge about how film reflects and influences cultural orientations to psychological well-being.

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