TECHNICAL DISCLOSURE:
SYSTEM AND METHOD FOR LYRIC-BASED COGNITIVE STATE ANALYSIS AND NEURO-ADAPTIVE AUDIO GENERATION

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1 ABSTRACT

The present disclosure relates to a computational system and method for analyzing the psycholinguistic impact of musical content on a user's cognitive and physiological state. The system utilizes Natural Language Processing (NLP) to calculate a "Lyrical Toxicity Score" based on semantic valence, cognitive distortions, and linguistic triggers. Furthermore, the system generates or recommends remedial audio content ("Protocols"), incorporating High-Fidelity Sensory Stems to facilitate Constructive Simulation (mental imagery) engineered with specific psychoacoustic parameters (BPM, frequency, semantic structure) to optimize the user's Heart Rate Variability (HRV) and reduce cortisol levels.

2 FIELD OF THE INVENTION

This invention relates generally to the fields of Psychoacoustics, Natural Language Processing (NLP), Digital Therapeutics (DTx), and Affective Computing.

3 BACKGROUND AND PROBLEM STATEMENT

Existing music recommendation algorithms (e.g., Collaborative Filtering) prioritize user engagement and genre preference. They do not account for the **neurobiological impact** of lyrical content.

Research indicates that repeated exposure to "negative semantic priming" (lyrics depicting hopelessness, poverty, aggression) activates the brain's Default Mode Network (DMN) and the Amygdala, potentially leading to increased anxiety and rumination.

There is currently no system that audits a user's musical library for "Lyrical Toxicity" and automatically prescribes a bio-adaptive audio remedy.

4 SYSTEM ARCHITECTURE

The disclosed system consists of three primary modules:

4.1 Module A: The Semantic Audit Engine ("The Sonic Mirror")

A software component that ingests textual data (lyrics) from a user's playlist.

- **Mechanism:** The engine parses lyrics using a custom NLP model trained on a dataset of "limiting beliefs" and "cognitive distortions."
- **Output:** It calculates a specific metric—the **Lyrical Positivity Score (LPS)** or **Toxicity Index**. This score is derived from the density of negative semantic markers (e.g., negation, passive voice, trauma-related keywords) versus resource-oriented markers (e.g., active voice, present tense, growth mindset keywords).

4.2 Module B: The Neuro-Acoustic Generator ("The Protocols")

A generation engine that creates audio content designed to induce specific neural states (e.g., Alpha, Theta waves).

- **Semantic Engineering:** The system utilizes a proprietary linguistic structure called **"Direct Command Language"** (DCL). DCL rules exclude negations (e.g., "I am not afraid" is rejected; "I am brave" is accepted) and utilize present-tense imperative verbs to bypass the user's critical factor.
- **Psychoacoustic Layering:** The system embeds sub-audible layers (e.g., binaural beats, isochronic tones, brown noise) into the track to stimulate the Vagus Nerve and regulate the Autonomic Nervous System.
- **Predictive Error Engine:** The system introduces acoustic cues of 'Safety' and 'Grandeur' that conflict with the user's negative internal predictions, forcing a neural model update.

4.3 Module C: The Bio-Feedback Loop ("Bio-Sync")

An interface that connects to wearable biometric devices (e.g., Oura, Apple Watch).

- **Function:** The proposed system monitors the user's HRV and Pulse in real-time during audio playback.
- **Adaptation:** If the biometric data does not show a shift towards the target state (e.g., increased HRV), the system dynamically alters the audio parameters (e.g., lowering BPM, removing percussion) to force physiological entrainment.

5 DETAILED DESCRIPTION OF THE METHOD

Step 1: Data Ingestion and Tokenization

The system receives a list of tracks. Lyrics are scraped and tokenized. The system identifies "Semantic Clusters" associated with specific emotional states (e.g., Cluster A: Anxiety/Lack; Cluster B: Confidence/Abundance).

Step 2: Calculation of the Hygiene Score

The system computes a ratio of Destructive vs. Constructive semantic inputs.
Formula (Simplified):

$$Score = \frac{(PositiveTokens \times WeightA) - (NegativeTokens \times WeightB)}{TotalDuration}$$

Step 3: Protocol Prescription

Based on the Score, the system assigns a remedial Audio Protocol.
Example: High Toxicity Score → Prescription: **"Protocol: The Blade"** (High BPM, Aggressive Catharsis) followed by **"Protocol: The Trance"** (Low BPM, Regulation).

Step 4: Human-in-the-Loop Generation

The system utilizes Generative AI to create the melodic structure but enforces a "Human Touch" verification layer where a human operator modulates the vocal resonance to ensure natural prosody, essential for psychological trust.

6 CLAIMS (NON-PATENT)

The following concepts are disclosed herein as the intellectual property of Manifest Music Studio:

1. The method of scoring a music library based on the "neuro-linguistic toxicity" of lyrics rather than musical genre.
2. The use of "Direct Command Language" in song lyrics specifically engineered to bypass the critical faculty of the conscious mind.
3. The dynamic adaptation of generated music based on real-time HRV feedback to maximize "Vagal Tone."
4. The concept of "Sonic Hygiene" as a measurable metric of mental wellness.
