



Experimental Validation Plan

Survey-driven efficacy modeling, protocol optimization, and phased research design
March 2026

Purpose. This plan describes how active listener surveys can be used to measure perceived efficacy, model which protocols work best for which entry states, and continuously improve future protocol design without overstating claims. The first phase relies on structured self-report; later phases add physiological measures such as HRV and EEG when feasible.

1. Why active surveys matter

The project's strongest near-term validation path is repeated structured feedback collected immediately after each listening session. Because the protocols are intended to support regulation in real-world conditions, survey data can capture outcomes that matter clinically and practically: settling speed, perceived calm, focus, sensory load, emotional grounding, and whether the protocol felt mismatched or helpful.

Used correctly, these surveys do three jobs at once: they create an evidence base, they guide protocol refinement, and they generate the labeled training data needed to model future protocol recommendations.

2. Core Rhythmic Regulation hypothesis

Rhythmic Regulation Hypothesis: structured rhythmic stimuli can provide an external timing scaffold that supports reorganization of dysregulated neural timing networks through auditory entrainment, sensorimotor coupling, and reduced predictive uncertainty.

Operationally, the first validation question is not whether a track 'changes brainwaves' in a deterministic sense. It is whether listeners consistently report meaningful improvement in their target state after exposure to a protocol designed for that state.

3. Phase 1 study design: survey-first pilot

Phase 1 should be a lightweight observational study embedded directly into normal use. Every session becomes a data point. The key is consistency: the same small set of questions, asked the same way, at the same moments.

Element	Recommendation	Why it matters	Minimum target
Population	Open real-world listeners with basic safety exclusions	Captures ecological validity early	100+ users
Session unit	One completed listening session = one observation	Allows repeated-measures analysis	500+ sessions
Timing	Pre-session + immediate post-session + optional delayed follow-up	Measures both acute and lingering effects	70% post completion
Protocol ID	Every track needs a stable protocol identifier	Makes outcomes attributable	100% tagged
Entry state	Short self-report state selection before listening	Lets you model matching quality	100% recorded

4. Minimum survey instrument

The survey should be brief enough to preserve completion rates and structured enough to support analysis. A good starting instrument is 8–12 items total.

Moment	Question set	Response format
Pre	Current state; desired direction; intensity; context (overstimulated, anxious, distracted, tired, etc.)	buttons + 0–10
Post	Did you feel more settled / focused / grounded? How strong was the change? How quickly did it begin?	0–10 scales
Post	Was the protocol a good match for your state?	0–10 scale
Post	Would you use this protocol again for the same state?	yes / maybe / no
Optional +24h	Any rebound, fatigue, or durable benefit?	short scale + comment

5. High-value outcome variables

The first analytics layer should focus on a few interpretable outcomes rather than trying to model everything at once.

- Primary outcome: change in target-state rating from pre to post session.
- Match quality: whether the assigned protocol felt appropriate for the listener’s entry state.
- Settling latency: how long the listener reports it took before the protocol started helping.
- Repeat-use intent: whether the listener would choose the same protocol again.
- Adverse response flag: agitation, headache, distress, sensory overload, or perceived mismatch.

6. Data structure for future modeling

To support recommendation modeling later, each session record should combine listener context, protocol metadata, and outcomes. This turns the survey system into a training dataset for future protocol assignment.

Field group	Examples	Use in modeling
Listener context	entry state, intensity, age band, neurotype optional, context of use, headphones/speakers	Defines who the protocol is working for
Protocol metadata	protocol ID, intended use case, rhythmic density band, duration, percussion profile, transition type	Defines what was delivered
Outcome data	pre/post ratings, settling latency, match quality, repeat intent, free text	Defines how well it worked

7. Analytics roadmap

Stage A: descriptive analytics

Start with dashboards and simple summaries. Which protocols have the best average post-session improvement? Which entry states show the strongest response? Which tracks produce the highest mismatch or adverse-response rates?

Stage B: repeated-measures analysis

Because many listeners will use multiple sessions, analyze within-person change over time. This can test whether particular protocols become more effective with familiarity and whether settling latency decreases across repeated exposure.

Stage C: recommendation modeling

Once enough labeled sessions exist, train simple predictive models to estimate which protocol is most likely to help a given entry state and desired direction. Begin with interpretable models before moving to more complex approaches.

8. First three pilot experiments

Pilot	Question	Method	Success signal
Pilot 1	Do matched protocols outperform self-chosen mismatched tracks?	Compare post-session change and match quality across matched vs. unmatched sessions	Higher average improvement for matched sessions
Pilot 2	Does settling latency fall over repeated use?	Track the same listener-protocol pairs across multiple sessions	Reported onset of benefit occurs earlier over time
Pilot 3	Which protocol features predict benefit by entry state?	Use protocol metadata + survey outcomes in regression/classification models	Stable feature patterns linked to stronger outcomes

9. Suggested survey questions

A practical starter set is below. It is intentionally short.

- What best describes how you feel right now?
- How intense is that state right now? (0–10)
- What do you want help with most right now: calming, grounding, focusing, easing overload, sleep transition, other?
- After listening, do you feel more settled / focused / grounded than before? (0–10)
- How strong was the overall benefit? (0–10)
- How quickly did the protocol begin to help? (within minutes / partway through / only near the end / not at all)
- How well did this protocol match your starting state? (0–10)
- Would you use this protocol again for the same state? (yes / maybe / no)
- Did anything feel unpleasant or activating? (none / mild / moderate / severe)

10. Ethics, safety, and claims discipline

The survey system should include an adverse-response path and a clear statement that these protocols are supportive listening tools rather than a substitute for medical care. Any public-facing interpretation of survey results should avoid deterministic language. Strong self-report improvement is meaningful, but it is not the same as proving a neural mechanism.

For listeners with seizure disorders, severe sound sensitivity, acute psychiatric instability, or worsening distress, use should be conservative and discontinuation guidance should be explicit.

11. Recommended implementation sequence

- Finalize a stable protocol naming and metadata schema.
- Deploy the short pre/post survey with one protocol ID per session.
- Collect 300–500 sessions before making strong comparative claims.
- Build descriptive dashboards first; only then move to predictive modeling.
- Identify the best and worst performing protocol–entry–state pairs.
- Use findings to refine future protocol design and navigation logic.

12. Bottom line

An active survey system is the right bridge between concept and evidence. It allows THE DRUM PROTOCOLS to become a living research program: every completed session improves the understanding of efficacy, exposes mismatches, and provides the data needed to build better future protocols.