INDEPENDENT RESEARCH PROPOSAL

Self-Inflicted Pain as Error Correction in Childhood and Adolescence

A staged research program to define self-administered punitive error correction and test a nonpunitive learning intervention

Prepared by Boomer Rawlings

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> *Portfolio research concept. This document is not an approved human-subjects protocol, a diagnostic standard, or clinical guidance.*

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Abstract

Some children and adolescents may intentionally hurt themselves after a perceived mistake because they believe pain will make the lesson memorable, restore discipline, deter repetition, or repay wrongdoing. The same behaviors, including head banging and self-hitting, can also arise from affect regulation, sensory reinforcement, communication difficulty, sleep-related rhythmic movement, physical pain, compulsion, trauma-related distress, psychosis, or suicidal intent. Existing research on nonsuicidal self-injury recognizes self-punishment as a reported function, but the literature reviewed for this proposal does not clearly isolate the narrower belief that bodily punishment improves learning or behavioral control. Targeted searches completed August 27, 2026, found no intervention trial that selected participants for that explicit belief or tested change in it as a mechanism.

This proposal defines a provisional function, self-administered punitive error correction, as a deliberate self-directed painful act after a perceived error, repeated lapse, or rule violation, performed with the expectation that pain or injury will improve memory, discipline, deterrence, control, or moral repair. The term describes a hypothesized function, not a diagnosis. The program begins with adult retrospective discovery because the originating observations concern experiences between ages 5 and 20 reported by adults approaching 30. It then advances through measure development, prospective developmental research, a pain-free learning experiment, and treatment development. Younger children enter only through a separate clinically embedded observational pathway because reflective intent cannot be inferred from head impact alone.

The proposed intervention, Structured Nonpunitive Error Correction, keeps responsibility central while replacing bodily punishment with incident analysis, identification of the failed process, cue-linked rehearsal, repair, and review of recurrence. Dialectical behavior therapy skills may support safety and emotion regulation when indicated. Other psychological, family, behavioral, or medical components would be added only when assessment indicates a need.

The principal tests are whether the belief that pain aids learning predicts later urges and episodes beyond established self-punishment and emotion-regulation functions, and whether reducing that belief is associated with fewer qualifying episodes without more mistakes or substitution of another harmful method. If the construct adds no predictive value, it should not be retained as a separate framework. The aim is to improve functional assessment without inferring motive from appearance alone.

1. Proposal status and point of origin

This proposal was prompted by separate retrospective accounts from two adults approaching age 30. Both recalled using self-inflicted pain, including head-directed impact, between about ages 5 and 20 after repeating a perceived mistake. Each remembered believing that ordinary regret had failed and that punishment would make the correction last. These accounts motivated the narrower question of

whether some young people understand self-inflicted pain as a learning strategy rather than only as an expression of shame or self-hatred.

Those accounts are hypothesis-generating. They do not establish prevalence, cause, developmental course, diagnostic status, or treatment response. Memory for childhood events can be incomplete, reconstructed, and influenced by later understanding. If either originator contributes a formal narrative, each account should be recorded independently before either person reads the other's account. Because both helped generate the research question, their accounts should be reported as project provenance or analyzed outside the primary discovery sample.

The proposal addresses experiences occurring from ages 5 through 20, not current behavior in the two originators. It does not presume that head banging has one function across development. It asks whether a specific punitive learning rule can be identified reliably in a subset of intentional episodes and, if so, whether a safer form of error correction can provide equal or greater accountability with less harm.

1.1 Reader safety and clinical boundary

The studies described here concern self-injury and possible head trauma. A research protocol cannot substitute for medical or mental health care. Current injury, escalating self-harm, or uncertainty about suicidal intent will trigger each site's prespecified safety procedures. Emergency warning signs after a possible head injury, including loss of consciousness, repeated vomiting, confusion, seizure-like activity, visual change, worsening severe headache, or inability to remain safe, require immediate escalation under local protocols (Centers for Disease Control and Prevention, 2025). Suicidal intent will be assessed directly; no risk score will substitute for clinical judgment.

2. Central question, construct, and scope

2.1 Central research question

Does a distinct, measurable belief that self-inflicted pain improves learning, accountability, memory, or behavioral control help explain some episodes of childhood and adolescent self-injury, and can a nonpunitive error-correction intervention reduce those episodes without weakening repair, retention, or responsible behavior?

2.2 Provisional construct

For this program, self-administered punitive error correction means a deliberate act directed at one's own body following a perceived mistake, repeated lapse, failure, or rule violation, performed with the expectation that pain, injury, or another aversive bodily consequence will improve memory, strengthen discipline, prevent recurrence, restore control, or make the lesson sufficiently serious.

An episode qualifies only when all of the following are supported:

1. The act was intentional rather than accidental, involuntary, or sleep-related.
2. A perceived mistake, lapse, failure, or violation was recognized before the act.
3. The person expected the act to change later learning, memory, deterrence, control, or accountability.
4. The act involved self-inflicted physical pain or bodily impact.
5. Suicidal intent, indifference to survival, and mixed intent were assessed separately for that episode.
6. The account was not explained solely by a medical condition, acute pain, sleep phenomenon, seizure, tic, stereotypy, psychosis, intoxication, or externally coerced injury.

The definition is broader than a narrow nonsuicidal self-injury definition because some deliberate impacts are intended to hurt without an expectation of tissue damage. Each episode will therefore receive two classifications: whether it meets the provisional functional definition and whether it meets established criteria for nonsuicidal self-injury. Head-directed impact will be recorded separately from other methods because its medical consequences and differential assessment differ.

2.3 Functions that must remain separable

The qualitative phase will not collapse all punitive meanings into one category. At minimum, coding will distinguish:

- mnemonic error correction, in which pain is expected to make the lesson memorable;
- deterrent error correction, in which pain is expected to prevent repetition;
- disciplinary control, in which punishment substitutes for mistrusted intention or willpower;
- moral retribution, in which suffering is treated as deserved because the self is bad;
- closure or atonement, in which punishment makes the incident feel settled;
- affect regulation, in which pain is expected to reduce distress, shame, anger, or numbness;
- social or communicative functions, including escape, attention, access, protest, or signaling distress;
- automatic or sensory reinforcement; and
- suicidal, ambivalent, or death-indifferent intent.

One episode may serve several functions. Separate measurement of the proposed construct would be warranted only if its learning or accountability component can be distinguished from established self-punishment, affect regulation, and broad self-criticism.

2.4 Developmental scope

The age span cannot be treated as one population. The program uses the following strata:

Developmental stratum	Primary interpretive issue	Research route
Ages 5 to 7	Intent may be difficult to report; pain, sleep, communication, sensory, and environmental functions require priority	Clinically embedded observation, caregiver and clinician data, brief child questions when developmentally appropriate
Ages 8 to 11	Intent may be reportable in concrete terms, but parent awareness can be incomplete and adolescent tools are not validated	Separate child and caregiver interviews, medical and functional assessment, no induction
Ages 12 to 14	Intentional self-injury becomes a more prominent differential; assent and family confidentiality require careful planning	Private youth interview, parent permission and youth assent, prospective monitoring with age-adapted language
Ages 15 to 17	Greater capacity for episode reconstruction, with continuing legal and developmental protections	Prospective cohort and later intervention only after adult safety milestones
Ages 18 to 20	Adult consent permits initial mechanism and treatment testing while retaining developmental relevance	Full prospective, experimental, and intervention pathway

3. Scientific premise and evidence gap

3.1 What current evidence supports

Functional accounts of self-injury show that outwardly similar acts can be maintained by different consequences. In adolescent samples, broad classes include reduction of aversive internal states, generation of sensation, escape from social demands, and access to social outcomes (Nock & Prinstein, 2004). The Inventory of Statements About Self-Injury includes banging or hitting oneself among methods and identifies self-punishment as one of several reported functions (Klonsky & Glenn, 2009). One ecological momentary assessment study found higher and more variable self-critical and self-punishment cognitions among young adults with a history of nonsuicidal self-injury; a second linked those cognitions concurrently and prospectively with urge intensity (Burke, Fox, Kautz, Rodriguez-Seijas, et al., 2021; Burke, Fox, Kautz, Siegel, et al., 2021).

These findings make self-punishment a plausible function, but they do not show that people use pain to improve learning, that such a belief has a common developmental pathway, or that the behavior improves later performance. Existing self-punishment items emphasize deserving pain, anger at oneself, worthlessness, or disgust; they do not directly assess repeated mistakes, distrust of ordinary correction, memory, deterrence, or the seriousness attributed to pain.

Research on maltreatment, harsh parenting, shame, and self-criticism provides possible developmental contexts. Retrospective and longitudinal studies have linked maltreatment or harsh parenting with later self-injury through self-criticism, dissociation, or depressive symptoms (Glassman et al., 2007; Liu et al., 2021; Yates et al., 2008). These associations do not show that punishment from others becomes self-administered punishment. Similar histories may lead to different behaviors, and the same behavior may arise without such a history.

3.2 Why head banging requires separate attention

Head banging is a method, not an explanation. It can occur as waking intentional self-injury, developmentally mediated self-injurious behavior, an automatically reinforced sensory act, communication, escape, a response to pain, a compulsive or involuntary action, sleep-related rhythmic movement, or behavior during acute psychiatric or neurological disturbance. In young children and people with developmental disability, individualized functional assessment has shown that similar forms can have different maintaining variables (Iwata et al., 1994; Kurtz et al., 2003). Sleep-related rhythmic movement has a distinct pattern near sleep onset or during sleep and often declines with age (Gogo et al., 2019; Lam & Veeravigrom, 2023).

Repeated head-directed impact can cause serious injury, including traumatic cataract, retinal detachment, and lasting visual impairment (Felfeli et al., 2021). Clinical series do not establish a safe threshold. The proposal therefore assesses head impact and medical escalation separately from other self-harm methods.

3.3 Intervention evidence and the unresolved mechanism

Dialectical behavior therapy for adolescents has reduced repeated self-harm, nonsuicidal self-injury, and suicide attempts in randomized trials of high-risk youth, with evidence that improved emotion regulation contributes to change (Asarnow et al., 2021; McCauley et al., 2018; Mehlum et al., 2014). Internet-delivered emotion regulation individual therapy has also reduced adolescent nonsuicidal self-injury relative to enhanced usual care (Bjureberg et al., 2023). These treatments offer an evidence-based foundation for safety, behavioral analysis, coping, and emotion regulation, but published intervention descriptions did not center the belief that pain is necessary for learning.

Compassion-focused work is relevant when shame, hated-self responses, or fear of leniency is present. Experimental work in adults suggests self-compassion can increase motivation to improve after mistakes rather than reduce it (Breines & Chen, 2012). Direct treatment evidence for adolescent nonsuicidal self-injury is still preliminary (Gholizadeh & Pourmohammad, 2026; Hu et al., 2026), and a dialectical behavior therapy adjunct targeting self-criticism did not establish that self-criticism mediated treatment response (Ramsey et al., 2021). Compassion should therefore be a selected component, not the entire intervention or a substitute for accountability.

Imagery may be relevant when a participant reports a punitive memory, internal critic, anticipated punishment scene, or image that intensifies the urge. One ecological momentary assessment study identified flash-forward imagery as a possible treatment target, while a separate seven-patient case series tested imagery rescripting; the clinical evidence remains early and small (Ji et al., 2024; Schmied et al., 2024). Trauma-focused treatment has an evidence base for diagnosed posttraumatic stress disorder, but trauma exposure alone does not establish the proposed function. Family intervention should be tied to assessed safety, co-regulation, communication, and responses to mistakes rather than presumed to treat the mechanism (Asarnow et al., 2017). For young children with developmental self-injury, the relevant evidence supports function-based behavioral treatment and functional communication training rather than a cognitively demanding punishment-belief module.

3.4 The research gap

Targeted searches of PubMed and ClinicalTrials.gov completed August 27, 2026, located trials targeting self-criticism, self-hatred, or self-punishment more broadly (Dobias et al., 2021; Ramsey et al., 2021), but none that recruited participants for the explicit belief that pain prevents repeated mistakes or tested change in that belief as a mechanism. The searches also found no prospective test of whether that belief predicts later self-injury beyond emotion regulation and established self-punishment functions, or any comparison of perceived learning with observed recurrence or retention. Without a validated measure, prevalence, prospective associations, and treatment selection cannot yet be evaluated directly.

The proposal addresses that gap without assuming the construct will survive testing. It may prove to be a narrower expression of existing self-punishment, shame, compulsivity, or affect regulation. That result would argue against a separate scale or treatment module and would still improve conceptual economy.

4. Conceptual model

The working model proposes that, after an important error is repeated, a person may lose confidence in ordinary intentions, reminders, or promises and conclude that regret is insufficient. Self-inflicted pain may then produce a short-term sense of seriousness, closure, relief, control, or moral settlement. That short-term consequence could reinforce the punitive rule even when the original error continues. The studies will test whether perceived certainty about learning differs from observed improvement.

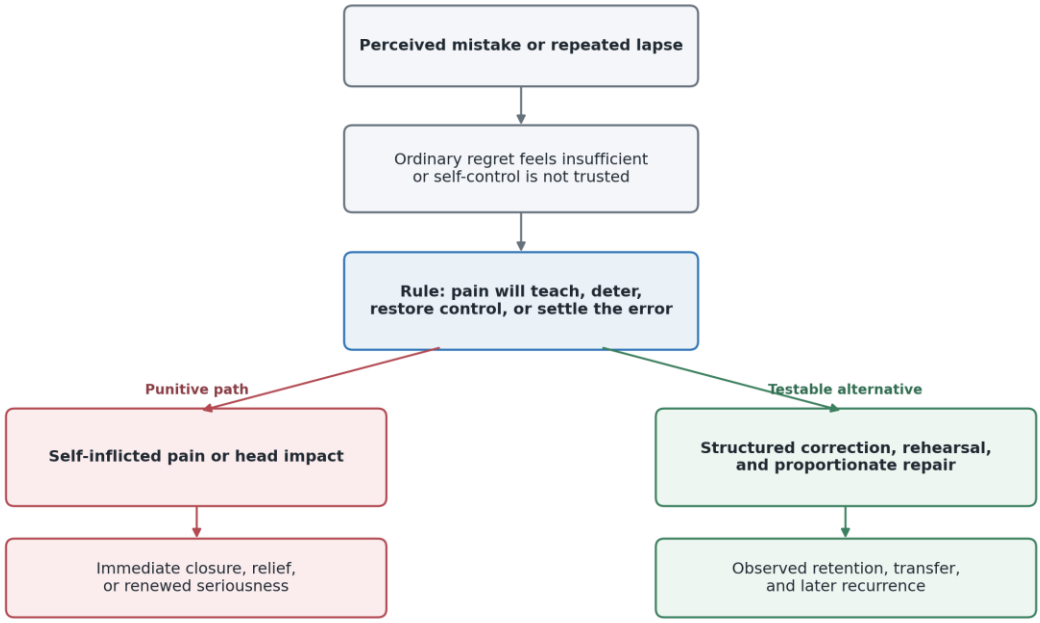

Figure 1. Working model of self-administered punitive error correction and its testable alternative.

After an error, the intervention identifies a plausible reason for recurrence, such as incomplete knowledge, a missed cue, limited skill, executive overload, environmental friction, emotional conflict, or an unrealistic rule, and selects a corresponding observable response. The participant rehearses that response, completes proportionate repair where relevant, and checks later performance. The study compares this correction process with the participant's predicted benefit from punishment.

The model permits several rival explanations. Self-injury may occur primarily because pain reduces intense affect; the teaching explanation may be a later narrative. A compulsive rule may drive both the belief and the act. Harsh self-criticism may create the belief without any genuine concern about learning. A family contingency may maintain the behavior. The longitudinal and experimental phases are designed to separate these possibilities where possible.

5. Specific aims and hypotheses

Aim 1. Define the phenomenon and its boundaries

Use independent adult narratives and incident-level reconstruction to determine whether a recognizable punitive learning rule appears across cases, how it differs from moral self-condemnation and affect regulation, and how it changes from childhood into early adulthood.

Hypothesis 1a: A subset of participants will describe pain as instrumental for memory, deterrence, discipline, or accountability rather than solely as deserved suffering or emotion relief.

Hypothesis 1b: Immediate closure, relief, or restored seriousness will be more consistently reported than verified improvement in the original behavior.

Aim 2. Develop and validate episode and belief measures

Create a structured episode interview and a brief belief scale that can be tested against established measures of self-injury function, suicidal intent, self-criticism, shame, compassion fear, emotion regulation, compulsive symptoms, and sensory or developmental functions.

Hypothesis 2a: Punitive learning items will show incremental association with independently adjudicated error-contingent episodes beyond the general self-punishment score of the Inventory of Statements About Self-Injury.

Hypothesis 2b: If a distinct factor is supported, it will show acceptable reliability and at least partial measurement comparability across older adolescent and emerging-adult groups. No group mean comparison will be made when invariance is unsupported.

Aim 3. Test the proposed sequence prospectively

Use repeated assessments to examine whether a perceived repeated mistake predicts loss of trust in ordinary correction, followed by stronger pain-as-teacher belief, punitive urge, and later self-injury.

Hypothesis 3a: Within a person, higher pain-as-teacher belief after a mistake will predict greater risk of a qualifying urge or episode in the subsequent interval after adjustment for prior behavior and concurrent negative affect.

Hypothesis 3b: An episode will be followed by short-term closure or relief, while objective recurrence of the original mistake will not improve relative to matched nonpunitive correction episodes.

Aim 4. Test a noninjurious correction mechanism

In adults, compare structured error correction with simple review and compare compassionate accountability language with neutral language during an ordinary learning task.

Hypothesis 4a: Structured correction will reduce repeated errors and improve delayed retention without increasing punitive urge.

Hypothesis 4b: Compassionate accountability will not impair learning or perceived responsibility. Its benefit is expected to be greatest among participants who fear that leniency permits failure.

Aim 5. Develop a mechanism-focused clinical adjunct

Determine whether Structured Nonpunitive Error Correction can be delivered safely and credibly alongside usual care, and whether a definitive efficacy trial is warranted.

Hypothesis 5a: Participants will view the module as a serious form of accountability rather than avoidance of responsibility.

Hypothesis 5b: Change in the pain-as-teacher belief will precede change in qualifying episode rate, without an increase in the targeted mistakes or substitution to another self-harm method. This mediation hypothesis remains exploratory until temporal and confounding assumptions are supported.

6. Overall research strategy

The phases are sequential: each supplies evidence needed to decide whether the next is warranted. Treatment testing begins only if episodes can be classified with acceptable reliability, prospective data show that the proposed belief precedes at least some episodes, and the pain-free learning task shows that nonpunitive correction can preserve accountability.

Phase	Primary question	Population	Decision produced
0. Protocol and safety development	Can the construct be asked about without priming, confusion, or unsafe monitoring?	Adult and youth advisors, caregivers, clinicians, ethics and medical specialists	Final definitions, scripts, response pathways, stopping rules
1. Retrospective discovery	What did participants believe the pain would accomplish at the time?	Adults ages 25 to 40 recalling episodes from ages 5 to 20, plus comparison groups	Construct map, negative cases, candidate items
2. Measurement	Can the proposed belief and episode type be assessed reliably and distinctly?	Adult and youth clinical and community samples	Validated interview fields and scale, or decision to abandon separate measurement
3. Prospective development	Does the belief precede urges and behavior in daily life?	Ages 12 to 20, analyzed in developmental strata	Temporal estimates, event distribution, moderator and safety data
4. Pain-free experiment	Does structured correction improve actual learning, and does compassionate language weaken accountability?	Adults ages 18 to 30	Mechanism evidence and treatment refinement
5. Intervention development	Is the adjunct safe, acceptable, feasible, and ready for efficacy testing?	Ages 18 to 20 first, then ages 14 to 17 conditionally	Manual, fidelity measure, nuisance parameters, progression decision
Conditional child cohort	Can intentional punitive error correction be distinguished from other causes of head impact?	Clinically referred ages 5 to 11	Developmental classification evidence, not an intervention claim

7. Phase 0: protocol development and safeguarding

7.1 Advisory structure

Separate advisory groups will include adults with relevant histories, current youth, caregivers, clinicians, developmental and disability specialists, and research ethics representatives. Youth and caregivers will meet separately for topics involving privacy and family notification. Members will review recruitment language, consent and assent materials, interview questions, safety thresholds, burden, compensation,

and dissemination language. Advisory participation will be compensated at a fixed rate unrelated to disclosure or self-injury history.

7.2 Cognitive and safety testing

Before formal recruitment, 8 to 12 participants in each relevant language and developmental band will complete cognitive interviews about the words mistake, repeated, punishment, teaching, memory, deterrence, accountability, pain, injury, relief, and deservingness. The interviewer will test whether each term refers to the person's belief at the time of the event or a later adult interpretation.

Simulation exercises will test responses to suicidal intent, mixed intent, recent head impact, suspected abuse, acute intoxication, psychosis, caregiver conflict, remote-participant location failure, and loss of contact after a high-risk disclosure. Staff will be trained in direct suicide assessment, supported assent, mandated reporting, head-injury recognition, trauma-informed interviewing, and accessible communication. The protocol will not open to current self-harming minors until an independent safety monitor or data and safety monitoring board has reviewed the response system.

7.3 Prespecified boundaries

The definition, exclusion rules, comparison groups, primary qualitative questions, episode adjudication standard, and progression gates will be registered before data collection. Recruitment materials will seek people who remember intentionally hurting or hitting themselves after childhood or adolescent mistakes. They will not advertise for people who used pain to teach themselves, because that wording would reveal the target explanation and inflate apparent confirmation.

8. Study 1: retrospective adult discovery

8.1 Design and sample

The study will use purposive maximum-variation sampling among adults ages 25 to 40. The primary group will include 40 to 60 adults who recall deliberate self-hitting, head-directed impact, or another physically punitive act between ages 5 and 20 after a perceived error or repeated lapse. Two comparison groups will include 15 to 20 adults with childhood or adolescent self-injury used for other stated functions and 15 to 20 adults with severe self-criticism after mistakes but no physical self-punishment.

Variation will be sought in age of onset, sex and gender, race and ethnicity, cultural and religious context, neurodevelopmental status, family discipline, type of perceived mistake, co-occurring self-injury, and whether the practice stopped, persisted, or shifted into nonphysical punishment. The range is a planning target. Final adequacy will be judged by information power, account specificity, model

complexity, and the presence of credible negative cases rather than by a claim of universal saturation (Malterud et al., 2016).

8.2 Eligibility

Participants must be able to provide informed consent with reasonable communication support and describe at least one eligible event in enough detail for reconstruction. Current therapy, psychiatric diagnosis, autism, attention-deficit/hyperactivity disorder, trauma history, and past suicidal ideation will not be automatic exclusions. Participation will be postponed when intoxication, disorganization, acute medical injury, or imminent psychiatric risk makes research secondary to care.

Accounts limited to accidental, involuntary, sleep-related, or medically explained behavior will not enter the primary construct group. With consent, they may contribute to differential comparison data. Suicidal and mixed-intent episodes will be retained as separately classified events unless participation is unsafe.

8.3 Procedure

Each participant will complete two interviews one to two weeks apart. Before the investigator explains the proposed mechanism, the participant will provide a written, typed, or audio account in their own words. A life-history calendar will anchor approximate age to residences, school years, caregivers, and major events. The first interview will reconstruct one representative episode. The second will test consistency, explore variation, and examine how the behavior ended or changed.

For each episode, the interviewer will record the perceived mistake, whether it had happened before, why repetition mattered, the thought immediately before the act, the expected purpose of pain, the method, suicidal or mixed intent, immediate consequences, later recurrence, and confidence in each remembered detail. The interviewer will ask separately about shame, guilt, anger, fear, frustration, self-disgust, control, memory, deterrence, closure, and atonement. Participants will distinguish what they remember believing as a child from how they interpret the event now.

The interview will also examine whether the rule persisted after physical self-injury stopped through harsh self-talk, deprivation, overwork, punitive exercise, refusal of comfort, deliberate social withdrawal, or self-sabotage. These behaviors will not be classified as self-injury, but they may show continuity in the punitive learning rule.

8.4 Analysis

Framework analysis will combine a prespecified incident matrix with inductive coding. At least two trained researchers will code the behavior, antecedent, expected consequence, immediate consequence, later outcome, suicidal intent, and alternative explanation separately. Disagreement will

prompt review of the source account and code definitions. Uncertain cases will remain uncertain rather than being forced into a binary category.

Analysis will compare instrumental learning accounts with moral retribution, closure, affect regulation, compulsive neutralization, and retrospective reinterpretation. Negative-case analysis will seek episodes that appear punitive but lack a teaching expectation, episodes with a teaching expectation but no physical harm, and cases in which pain was perceived as effective. The two originating accounts will not contribute to theme frequency or case counts.

Study 1 is intended to refine the operational definition, describe overlapping functions, develop age-appropriate language and candidate items, and identify rival explanations. It cannot estimate prevalence or developmental causation. Adult retrospective reports can inform phenomenology and item generation, but are less reliable for exact timing, frequency, and objective childhood conditions (Baldwin et al., 2019; Hardt & Rutter, 2004; Klimes-Dougan et al., 2022).

9. Study 2: measure development and validation

9.1 Measurement system

The program will develop two linked tools rather than one diagnostic scale:

1. A structured episode interview that records antecedent, perceived error, expectation, method, suicidal intent, immediate consequence, later recurrence, injury, and alternative explanation.
2. A brief belief scale that measures whether pain is seen as necessary for learning, memory, discipline, accountability, control, or closure.

The episode interview will extend established self-injury interviews rather than replace them. The Inventory of Statements About Self-Injury will supply method and function comparisons. The Self-Injurious Thoughts and Behaviors Interview or its revised version will classify suicidal and nonsuicidal thoughts and acts. A head-impact supplement will capture force, surface, frequency, symptoms, protective behavior, medical care, and cumulative exposure. The Self-Injury Trauma Scale can supplement surface-tissue coding in developmental presentations without being treated as a measure of motive (Iwata et al., 1990).

9.2 Item development

Qualitative findings will generate an initial pool two to three times longer than the expected final scale. Items will separate the following propositions: regret did not feel sufficient; repetition showed that ordinary intention could not be trusted; pain would make the lesson memorable; punishment would deter recurrence; suffering would restore seriousness; the incident would remain unresolved without punishment; and self-kindness would permit carelessness.

Contrast items will assess nonpunitive accountability, confidence in practice, repair, cue-based planning, and willingness to review an error without bodily punishment. Reverse wording will be used sparingly because complex negation can reduce comprehension. Three rounds of cognitive interviews, with approximately 8 to 12 participants per relevant age group in each round, will test relevance, comprehensibility, emotional impact, and response options in line with COSMIN content-validity guidance (Terwee et al., 2018).

9.3 Adult psychometric study

The adult study will target 500 to 600 history-positive participants from clinical and community sources, plus comparison participants without the proposed history. Screening numbers may need to be much larger because the base rate is unknown. The sample will be divided into genuinely independent exploratory and confirmatory sets or recruited in two waves.

Ordinal factor analysis will use polychoric correlations, oblique rotation, parallel analysis, and an estimator suitable for ordered categories such as weighted least squares with mean and variance adjustment. The final sample requirement will be determined by simulation after item count, loadings, factor correlations, category distributions, and missingness are known. A simple participant-per-item rule will not be used (MacCallum et al., 1999; Wolf et al., 2013).

Reliability will be reported with coefficient omega and confidence intervals rather than Cronbach alpha alone. A subsample of approximately 150 participants will repeat trait-like belief items after two weeks. The interview will be double-rated in a stratified subsample, with confidence intervals for agreement. Criterion testing will use independently adjudicated episodes, not self-identification with the proposed label.

Convergent measures will include established self-punishment, self-criticism, hated-self responding, shame, perfectionism, fear of compassion, and emotion dysregulation. Discriminant measures will include sensory regulation, compulsive symptoms, general distress, suicidal intent, and interpersonal functions. Incremental validity requires prediction of qualifying episodes beyond general self-punishment and negative affect.

9.4 Youth validation

Only after adult item performance is understood will the measure be adapted for ages 12 to 20. An independent multisite sample of approximately 400 to 600 participants will include adequate representation in ages 12 to 14, 15 to 17, and 18 to 20. Private youth report will be primary for internal states. Caregiver report will provide developmental and safety context, not a substitute, because parent-youth agreement about self-injury can be limited (Gratch et al., 2022).

Measurement invariance will be evaluated across age strata and, where sample sizes support it, sex or gender, language, cultural group, and neurodevelopmental status. Group means will not be compared when threshold or scalar invariance is unsupported. A cutoff will not be created unless later work establishes a clinical decision that a cutoff improves. Enriched samples will not be used for prevalence claims.

9.5 Decision rule

Separate measure development will stop if items reduce to general self-punishment, show poor interview agreement, fail to predict independently classified episodes, or cannot be understood consistently across the intended age range. In that event, the research question will be pursued using episode-level qualitative fields within established self-injury instruments rather than a new scale.

10. Study 3: prospective developmental cohort and momentary assessment

10.1 Cohort design

The prospective cohort will enroll approximately 360 participants, with about 120 in each stratum of ages 12 to 14, 15 to 17, and 18 to 20. Recruitment will be case-enriched through outpatient mental health services, pediatric or primary care, and community channels. Participants must report at least one recent deliberately self-directed painful act or recurrent urge within the prior six months and at least one indexed urge or event following a perceived mistake. A comparison stratum will include participants whose recent self-injury or urges were not error-contingent.

Assessments will occur at baseline and 6, 12, 18, and 24 months. The design will describe onset, persistence, cessation, shifts between methods, developmental moderators, family response, treatment exposure, and functional change; it is not intended to estimate population prevalence. Participants with neurodevelopmental conditions will be included using accessible procedures and analyzed in prespecified strata.

10.2 Momentary assessment substudy

Approximately 200 participants ages 12 to 20 will enter a 28-day ecological momentary assessment substudy, with an expectation of at least 150 to 160 analyzable participants after run-in and attrition. A 20 to 30 participant run-in will test burden, comprehension, response latency, floor and ceiling effects, event frequency, and safety workflow. It will not estimate the target effect.

The schedule will include three brief random prompts each day, one evening summary, and optional participant-initiated entries after a mistake, urge, or episode when it is safe to respond. This design

builds on prior real-time assessment of self-injurious thoughts and behavior while adding the error-contingent fields required by the present question (Nock et al., 2009). Prompts will also ask about mistakes that did not lead to self-harm so that attention and compensation are not contingent on injury. Participants will be paid for assessment time and completion, never per episode.

Each prompt will assess whether a mistake occurred, whether it felt repeated, its importance, trust in ordinary correction, pain-as-teacher belief, shame, guilt, anger, frustration, self-disgust, punitive urge, self-injury, method, suicidal or mixed intent, immediate closure or relief, nonpunitive correction, and expected learning. Later prompts will ask whether the original error recurred and whether any repair or rehearsal was completed.

10.3 Primary prospective model

The primary within-person sequence is:

1. A mistake or repeated mistake during interval t.
2. Reduced trust in ordinary correction and stronger pain-as-teacher belief during or immediately after interval t.
3. Punitive urge during the next measured interval.
4. Qualifying behavior in a later interval.
5. Immediate closure, relief, control, or atonement.
6. Recurrence of the original error or renewed self-punishment in a subsequent window.

Person-mean centering or an equivalent multilevel decomposition will separate within-person changes from between-person differences. Mixed-effects logistic models will analyze occurrence, with hurdle or negative-binomial models for counts when supported by the distribution. Models will include prior outcome, time of day, day in study, lag duration, concurrent negative affect, baseline self-injury, age stratum, and identified random slopes. Emotion regulation, shame, compulsive belief, and interpersonal events will be tested as rival mediators or moderators.

Missed prompts will never be coded as no event. Likelihood-based multilevel models will state the missing-at-random assumption. Response probability will be modeled from prior observed distress and urges, with inverse-probability or pattern-mixture sensitivity analyses when high-distress nonresponse is plausible. Power will be selected by Monte Carlo simulation across realistic event rates, compliance, intraclass correlation, autocorrelation, overdispersion, excess zeros, random-slope variation, and differential missingness. The number of prompts alone will not be treated as the effective sample size.

10.4 Interpretation

A lagged association would strengthen temporal plausibility but would not prove that the belief causes behavior. Contemporaneous mediation will not be presented as a causal mechanism. The strongest

observational support would require the belief to rise after a mistake, precede the urge and act, predict the act beyond negative affect and general self-punishment, and be followed by immediate reinforcement without superior later performance.

11. Study 4: pain-free experimental mechanism study

11.1 Purpose and design

The experiment will test whether a safer correction procedure improves actual learning and whether compassionate accountability reduces perceived seriousness. It will begin with adults ages 18 to 30, including participants with and without a retrospective punitive error-correction history. It will not instruct punishment, deliver pain, humiliate participants, or provoke self-injury.

A calibrated rule-learning task will produce ordinary errors without moral content. Equivalent item sets will permit delayed retention and transfer tests. Participants will be randomized in a 2 by 2 factorial design:

Factor	Condition 1	Condition 2
Error response	Structured correction: identify the failure mechanism, state the replacement response, and rehearse it under the original cue	Simple review: see the correct answer and continue
Accountability language	Compassionate accountability: acknowledge the error, reject bodily punishment, and specify responsible repair	Neutral language: factual task instructions without compassion framing

Primary outcomes will be repeated-error rate, 24-hour retention, seven-day retention, and transfer to new items. Secondary outcomes will include punitive urge, pain-as-teacher belief, perceived accountability, confidence in future control, distress, and perceived seriousness. Immediate confidence will not be treated as evidence of learning.

11.2 Sample planning

An initial pilot of 48 to 64 participants, or 12 to 16 per cell, will evaluate manipulation separation, task difficulty, burden, safety, and floor or ceiling effects. It will not support an efficacy conclusion. A confirmatory experiment will be powered from a prespecified smallest effect of interest. Under an illustrative two-sided adjusted alpha of .025, 90 percent power, standardized effect of 0.35, 40 percent outcome variance explained by baseline performance, and 15 percent attrition, the planning requirement is approximately 300 randomized participants. The interaction will receive a separate simulation because main-effect power does not guarantee interaction power.

11.3 Decision rule

The intervention program will proceed only if structured correction is credible and safe, does not increase punitive urge, and performs at least as well as simple review on delayed learning. Compassionate language will remain optional if it lowers perceived responsibility or adds no benefit among participants who fear leniency.

12. Study 5: intervention development

12.1 Treatment target

Structured Nonpunitive Error Correction is a four- to eight-session adjunct to appropriate clinical care for participants meeting the functional criteria in Section 2.2. It preserves responsibility through a precise incident account, an observable correction, proportionate repair, and follow-up on actual performance.

The core sequence is:

1. Reconstruct a representative event and classify all functions.
2. Separate the mistake from a global judgment of the person.
3. Identify what actually caused recurrence.
4. Choose a replacement response that can be observed and rehearsed.
5. Link the response to the original cue through an implementation intention.
6. Complete proportionate interpersonal or practical repair when relevant.
7. Compare predicted learning from punishment with observed learning from structured correction.
8. Plan for urges, setbacks, and substitution to other self-harm methods.

Common failure mechanisms include missing knowledge, inadequate skill, weak cue detection, memory load, executive overload, environmental friction, emotional conflict, conflicting goals, and an unrealistic standard. The clinician and participant select a correction that matches the mechanism. Examples include deliberate practice, environmental prompts, task redesign, graded exposure, communication, restitution, or revision of an impossible rule. Development proceeds through definition, refinement, proof of concept, and feasibility in keeping with staged behavioral treatment development (Czajkowski et al., 2015).

12.2 Selected supporting components

All participants receive appropriate safety planning and coordination with usual care. Additional components are selected by assessment:

- Dialectical behavior therapy skills for acute urges, emotion regulation, and behavior-chain analysis.
- Compassion-focused work for hated-self responses, shame, or fear that kindness causes carelessness.
- Imagery rescripting for recurrent punitive memories, internal voices, or anticipated punishment scenes.
- Trauma-focused treatment when a trauma disorder or trauma-linked trigger is established and the participant is ready.
- Family sessions for safety, co-regulation, responses to mistakes, confidentiality planning, communication, and repair.
- Treatment for depression, anxiety, obsessive-compulsive symptoms, psychosis, substance use, or another co-occurring condition when clinically indicated.
- Medical, neurological, sleep, dental, vision, or developmental assessment when the presentation suggests another cause or injury.

This modular structure prevents a single developmental story from being imposed on every participant. It also allows emotion regulation to be tested as a competing mediator rather than attributing all change to the new module.

12.3 Open feasibility study

The first clinical test will enroll 24 to 30 participants ages 18 to 20 who report recent qualifying urges or episodes. Usual care will continue. The study will assess recruitment, retention, session completion, comprehension, credibility, adverse events, head-impact symptoms, suicidal and mixed intent, method substitution, and ability to complete weekly episode interviews.

Qualitative exit interviews will ask whether the intervention felt accountable, whether any exercise resembled invalidation or moral absolution, and which procedures were used during actual mistakes. The manual, training, fidelity checklist, and outcome schedule will be revised before randomization.

12.4 Randomized feasibility trial

The preferred external pilot will randomize approximately 140 participants ages 18 to 20 to usual care plus Structured Nonpunitive Error Correction or usual care plus an attention-matched supportive module. With 15 percent attrition, about 60 measured participants per arm are expected. The sample is intended to estimate feasibility, event distributions, overdispersion, adherence, fidelity, and missingness. It is not powered to establish efficacy.

Randomization will be stratified by site, baseline episode frequency, and head-impact history. Outcome assessors will be blind to assignment. Separate therapists or contamination controls will be used where feasible. Follow-up will occur after treatment and at 3, 6, and 12 months.

The principal clinical outcome collected for later trial planning will be the weekly rate of independently adjudicated qualifying episodes. The principal candidate mediator will be weekly endorsement that pain is necessary for learning, accountability, memory, or control, measured before the subsequent outcome window. Secondary outcomes will include all nonsuicidal self-injury, head-directed impact, urges, recurrence of the original error, closure or relief, self-criticism, fear of compassion, shame and guilt as separate states, emotion regulation, behavioral repair, functioning, suicidal behavior, and substitution to another harmful method.

12.5 Progression criteria

Final thresholds will be set with sites, clinicians, statisticians, and lived-experience advisors before recruitment. The following values provide a planning framework:

Domain	Proceed	Modify and reassess	Stop or independent review
Planned enrollment rate achieved	At least 80%	50% to 79%	Below 50%
Eligible participants who consent	At least 60%	40% to 59%	Below 40%
Primary outcome completion	At least 85%	70% to 84%	Below 70%
Intervention initiation	At least 90%	75% to 89%	Below 75%
Participants receiving at least 75% of core sessions	At least 75%	55% to 74%	Below 55%
Sampled sessions meeting fidelity standard	At least 85%	70% to 84%	Below 70%
Median scheduled momentary-assessment completion	At least 70%	50% to 69%	Below 50%
Intervention-attributed withdrawal	No more than 10%	11% to 20%	Above 20%

Any serious adverse event judged probably or definitely related to the intervention will trigger independent safety review regardless of the numeric thresholds. A correctable recruitment problem will not be treated as equivalent to a safety signal. The feasibility report will follow the CONSORT extension

for pilot and feasibility trials (Eldridge et al., 2016), and exploratory treatment estimates will be reported with confidence intervals without an efficacy claim.

12.6 Later efficacy trial

A definitive trial will begin only after the adult feasibility criteria are met and the event distribution supports a defensible primary endpoint. Expansion to ages 14 to 17 will require a separate youth adaptation, acceptability work, caregiver and confidentiality protocol, and safety review. Ages 5 to 11 will not enter this trial.

The definitive study would be multisite, assessor-blinded, and individually randomized. Sample size will be selected by simulation using a patient-informed minimum clinically important rate ratio, baseline event frequency, zero inflation, negative-binomial dispersion, follow-up duration, therapist and site effects, repeated-measure correlation, and attrition. The pilot's observed treatment effect will not be used as the target effect because small pilot estimates are unstable and often exaggerated (Kraemer et al., 2006).

13. Conditional observational study for ages 5 to 11

13.1 Rationale

The first question in younger children is classification, not treatment of a presumed belief. Preadolescent nonsuicidal self-injury is less studied than adolescent self-injury but cannot be assumed absent (Liu et al., 2022). A child may strike the head because of pain, sleep movement, sensory reinforcement, communication difficulty, escape, attention, a compulsive rule, acute distress, modeled punishment, or intentional self-punishment. Timing after an adult-defined mistake does not prove that the child expected pain to teach a lesson.

13.2 Design

After the adult definition and safety procedures are established, a clinically embedded observational study will recruit 40 to 60 children with naturally occurring head-directed self-injury. Ages 5 to 7 and 8 to 11 will be analyzed separately. Comparison strata will include developmentally or sensory mediated self-injury, sleep-related head banging, behavior linked to pain or medical conditions, and intentional self-injury where explicit intent can be established.

No episode will be induced. Research staff will not run a functional analysis that permits dangerous head impacts for data collection. The study will use existing clinical observation, caregiver diaries, medical and developmental assessment, safe functional-behavioral information, and the child's account when communication permits. Autism or intellectual disability will not lead to automatic exclusion. Instead,

the protocol will contain a verbal cognitive-attribution arm, an adapted communication arm, and an informant or observational arm.

For ages 5 to 7, questions will be concrete, brief, and nonleading. A reflective teaching belief will be recorded only when the child communicates it or convergent evidence is unusually strong. For ages 8 to 11, the child will be interviewed privately when feasible using simple event reconstruction and visual response scales, with a separate caregiver interview. Caregiver nonawareness will not be treated as evidence that an episode did not occur.

13.3 Clinical routing

Every case will be screened for pain, hearing and dental problems, headache, sleep pattern, seizure signs, medication effects, developmental regression, movement disorder, sensory function, communication, demands, family contingencies, trauma exposure, abuse, compulsive symptoms, mood disturbance, psychosis, and suicidal intent. Suspected causes will be referred to the appropriate medical, neurological, sleep, developmental, behavioral, or mental health pathway.

For suicide screening, the protocol will follow age-specific clinical guidance. Children age 8 and older may use the Ask Suicide-Screening Questions pathway with clinical follow-up. No brief screener is validated for children under 8, so suspected risk requires a full clinical mental health evaluation rather than a research score (National Institute of Mental Health, n.d.).

13.4 Treatment implication

When a functional behavioral assessment identifies communication, escape, access, or automatic reinforcement, treatment should match that function. Functional communication training, differential reinforcement, environmental modification, caregiver coaching, pain treatment, and protective procedures may be appropriate. The cognitive error-correction module will not be used unless the child's intention can be assessed reliably and a separate developmentally adapted feasibility study has been completed.

14. Outcomes and measurement schedule

14.1 Episode-level primary outcome

The primary outcome is the weekly count of episodes meeting the Section 2.2 criteria, adjudicated independently. Blinded adjudicators will code qualifying status, confidence, method, injury, suicidal intent, immediate consequence, and recurrence of the original error.

Head-directed impact will be reported as a separate method count and severity profile. The study will also report all self-injury because a reduction in head banging with substitution to cutting, hitting

another body area, deprivation, dangerous exercise, or another harmful practice is not a successful outcome.

14.2 Candidate mediator

The principal mediator is the belief that pain or injury is necessary for learning, memory, discipline, control, accountability, or closure. It will be measured weekly during treatment. Mediator and outcome windows will be separated. One primary sequence will use belief change during weeks 1 to 4 to predict qualifying episodes during weeks 5 to 12 while controlling baseline belief and behavior. A finer model will use belief at week t to predict urge and behavior at week t plus 1.

Randomization identifies the effect of treatment assignment, not the mediator itself. The mediator-outcome association can remain confounded. Mediation will therefore be labeled mechanism evidence unless causal assumptions are defended and sensitivity analyses are completed.

14.3 Secondary outcomes

Secondary outcomes include:

- all nonsuicidal self-injury methods, frequency, severity, and medical care;
- head-impact frequency, surface, symptoms, cumulative exposure, and injury;
- suicidal ideation, attempts, ambivalence, and mixed-intent episodes;
- punitive urges and urge intensity;
- recurrence of the specific mistake that preceded the indexed event;
- objective retention and transfer in the experimental task;
- immediate closure, relief, control, seriousness, or atonement;
- behavioral repair and completion of the selected replacement response;
- self-criticism, hated-self responding, and self-reassurance;
- shame and guilt measured separately;
- fear of compassion and belief that kindness permits failure;
- emotion regulation and distress tolerance;
- compulsive rules, perfectionism, and intolerance of mistakes;
- family responses to errors and safety disclosures;
- school, work, social, and daily functioning;
- treatment use, medication changes, and co-interventions; and
- method substitution, including nonphysical punitive behavior that becomes dangerous.

15. Statistical analysis

15.1 General principles

Confirmatory questions, outcomes, contrasts, covariates, and analysis windows will be registered before access to outcome data. Analyses will follow intention-to-treat assignment. Effect estimates will be reported with 95 percent confidence intervals and absolute as well as relative measures. Model selection will follow the observed distribution under prespecified rules rather than choosing the most favorable result.

15.2 Count outcomes

Weekly episode counts are expected to be overdispersed and to contain many zeros. The primary trial model will be a negative-binomial mixed model with an offset for observed follow-up time, unless prespecified diagnostics support a hurdle model that separates any episode from frequency among those with episodes. Fixed effects will include baseline rate, randomization strata, time, treatment arm, and arm by time interaction. Random effects will represent repeated observations and therapist or site clustering where identified.

Results will include rate ratios, modeled absolute rates, the risk difference for remaining episode-free, and distribution plots. Head impacts and all self-injury will receive separate estimates. Safety events will be described individually and by arm rather than compressed into a significance test.

15.3 Missing data

Outcome collection will continue after intervention discontinuation when consent remains. Records will distinguish a missed prompt, missed visit, treatment discontinuation, study withdrawal, technical failure, and inability to respond during distress. Last observation carried forward will not be used.

Likelihood or full-information methods and multiple imputation will be used under explicit missing-at-random assumptions, preserving count distributions, nesting, and temporal order. Controlled imputation, delta adjustment, or pattern-mixture analyses will examine plausible missing-not-at-random departures. The estimand will be stated before unblinding, with a treatment-policy estimand as the default practical question (International Council for Harmonisation, 2019; Little et al., 2012).

15.4 Multiplicity and heterogeneity

One primary clinical outcome and one primary experimental learning outcome will anchor each confirmatory study. Secondary outcomes will be grouped by domain with an explicit multiplicity plan. Age, head-impact history, baseline emotion dysregulation, fear of compassion, trauma-linked

symptoms, compulsive beliefs, and neurodevelopmental status are candidate moderators. Subgroup estimates will be presented as exploratory unless powered and prespecified.

16. Ethics, consent, and participant protection

16.1 Risk minimization

The program will never assign pain, self-punishment, harsh self-talk, humiliation, or deliberate self-injury. Laboratory tasks will use ordinary errors without moral content. No participant will be asked to reproduce a harmful movement. Interviewers will avoid unnecessary detail about methods and will redirect from graphic description to function, intent, and safety.

The protocol will include scheduled safety reviews, a 24-hour clinical contact plan provided by the care team where applicable, emergency procedures for each site, and an independent monitor for studies involving current self-harm. Research staff will state clearly whether momentary entries are reviewed in real time, on a schedule, or only later. The app will never be represented as a crisis service.

16.2 Suicide and mixed intent

Suicidal intent will be assessed for each episode, including desire to die, expectation of death, indifference to survival, and mixed motives. Participants with nonimminent suicidal ideation will not be excluded automatically, since systematic exclusion can produce unrepresentative findings and deny participation without improving safety. Imminent risk, inability to follow an emergency plan, or a need for urgent clinical care will pause research until care takes priority.

Safety planning will be collaborative and action-specific. No-suicide contracts will not be used. Repeated contacts may use the Columbia-Suicide Severity Rating Scale as a structured aid, followed by clinical assessment (Posner et al., 2011). Screening scores will not be used alone to predict suicide, deny care, or determine discharge. Clinical judgment, current presentation, prior behavior, collateral information, access to means, protective factors, and local policy will guide response.

16.3 Head injury and medical response

Baseline and event assessments will record force, surface, frequency, symptoms, loss of consciousness, visual change, vomiting, confusion, severe headache, seizure-like activity, dental or eye injury, and medical evaluation. Prespecified symptoms will trigger urgent medical referral. A participant with suspected concussion or serious injury will stop research procedures until medically cleared.

16.4 Minors, assent, and confidentiality

Studies with minors will follow HHS 45 CFR 46 Subpart D and local law (Office for Human Research Protections, n.d.). Parental permission and affirmative child assent will be obtained unless an institutional review board approves a lawful alternative. Failure to object is not assent. The child will meet privately with research staff, use teach-back, and be told that a parent cannot require participation. Dissent will be honored throughout the study.

The consent process will explain limits to confidentiality before self-harm questions are asked, including imminent danger, suspected abuse or neglect, and other mandatory reporting duties. The protocol will specify what information may be shared with caregivers and when. Participants who turn 18 during follow-up will provide adult consent. Separate permission will cover audio recording, deidentified quotation, medical-record access, and future contact.

16.5 Digital privacy

Momentary-assessment data will avoid exact geolocation, continuous sensing, and unnecessary device metadata. Direct identifiers and study data will be stored under separate keys. Raw narratives will have restricted access because indirect identifiers can remain even after names are removed. Notifications will use neutral wording. Data transmission and storage will be encrypted, with role-based access, access logs, retention limits, and a documented breach response.

16.6 Compensation and research burden

Compensation will reflect time and inconvenience, not event count or disclosure intensity. Participants can skip a question, pause, or withdraw without losing payment already earned. Interviews will include breaks, a distress check, and a closing transition. Recruitment will not imply that a participant has a rare syndrome or that the study can provide treatment before treatment is actually available.

17. Rigor, reproducibility, and governance

The study will register protocols, primary hypotheses, coding rules, analysis plans, and progression criteria. Qualitative revisions to the codebook will be dated and justified. Quantitative code will be version-controlled and independently checked. Outcome assessors and episode adjudicators will remain blind to treatment assignment. Randomization sequences will be generated and concealed by personnel without enrollment duties.

Measures and analysis scripts will be shared when licensing permits. Deidentified quantitative data will be released only when participant consent, reidentification risk, and governance review allow it. Raw narratives, precise event details, and small-cell combinations will remain restricted. Publications will report null findings, protocol deviations, recruitment denominators, missingness, adverse events, and

model convergence. The proposed construct will not be named a disorder, used as a clinical label, or assigned a prevalence estimate without population-based validation.

A steering committee will include the principal investigator, a clinical lead, a developmental specialist, a biostatistician, a qualitative-methods lead, a pediatric or adolescent medicine clinician, a neurodevelopmental or behavioral specialist, a data-security lead, and compensated lived-experience representatives. An independent safety body will review accumulating adverse-event and protocol data without directing outcome interpretation.

18. Anticipated limitations and informative alternatives

Retrospective accounts may preserve meaning while misplacing timing, frequency, or context. The first study can establish neither developmental cause nor objective learning. Prospective monitoring reduces recall interval but can change attention to mistakes, miss episodes during high distress, and burden participants. Head-directed impact may be too infrequent for a method-specific primary endpoint, requiring a broader qualifying-episode outcome with head impact reported separately.

The proposed belief may not form a distinct psychometric factor. It may be fully explained by general self-punishment, shame, compulsivity, or emotion regulation. That result would favor integration into existing assessment rather than a new instrument. The belief may precede urges but not acts, suggesting that opportunity, habit, or emotion intensity determines behavioral transition. Immediate closure may reinforce the act even when participants do not claim better learning, shifting the treatment target from teaching belief to closure and repair.

Structured correction may improve laboratory learning without changing clinical behavior. A morally neutral task cannot reproduce the shame, family context, or personal stakes of real mistakes. Compassionate language may help participants who fear leniency and irritate those who experience it as minimizing. The modular design permits removal of an unhelpful component, but it also increases fidelity and analysis demands.

Developmental interpretation will remain limited for children who cannot communicate reflective intent. Their data can clarify form, context, and maintaining consequences without supporting a cognitive attribution. Cultural beliefs about discipline, responsibility, suffering, and repair may alter item meaning. Translation and invariance work are therefore substantive requirements, not administrative steps.

19. Timeline and milestones

The following schedule is a program estimate rather than a promise that all phases belong in one grant.

Period	Work	Milestone
Months 0 to 6	Advisory review, protocol development, cognitive testing, staff simulation, registration	Safety and classification procedures approved for adult discovery
Months 7 to 18	Retrospective adult recruitment, two-wave interviews, framework analysis	Operational definition, negative cases, candidate item pool
Months 16 to 36	Adult cognitive interviews and psychometrics; youth adaptation begins after adult results	Reliable episode interview and scale, or decision against a separate measure
Months 30 to 54	Prospective cohort launch and 28-day momentary substudy	Temporal estimates, event distribution, burden and safety data
Months 42 to 60	Pain-free task pilot and confirmatory experiment	Evidence that structured correction preserves or improves learning
Months 54 to 66	Open clinical feasibility study	Revised manual, fidelity tool, finalized randomized-pilot protocol
Months 64 to 84	Randomized feasibility trial and follow-up	Proceed, modify, or stop decision for a definitive trial
Conditional after Month 36	Clinically embedded ages 5 to 11 observational cohort	Developmental classification findings without treatment claim

20. Resource framework

Costing should be completed after sites, languages, jurisdictions, and clinical partnerships are known. The proposal requires the following resource categories:

Area	Principal needs
Personnel	Clinical investigators, qualitative interviewers, developmental specialists, statisticians, research coordinators, therapists, blinded assessors, medical consultants, data managers
Participant partnership	Separate adult, youth, caregiver, disability, and clinical advisory groups with compensation
Safety	Independent monitoring, on-call clinical coverage, emergency coordination, head-injury consultation, mandated-reporting training
Data collection	Secure interview recording, transcription with human verification, electronic data capture, momentary-assessment platform, accessible formats
Measurement	Cognitive interviewing, translation and back-translation, psychometric recruitment, licensed measures where required

Area	Principal needs
Intervention	Manual development, therapist training, supervision, fidelity rating, attention-matched control
Analysis	Monte Carlo power simulation, multilevel and count modeling, missing-data sensitivity analysis, independent code review
Governance and dissemination	Registration, secure storage, restricted-data process, open materials where permitted, participant summaries, publication costs

21. Expected contribution and decision standard

This program will evaluate whether some young people use self-inflicted pain in an attempt to improve learning or control, whether that expectation can be distinguished from other functions, and whether structured correction can reduce harmful behavior without weakening responsibility.

Several outcomes would be informative. Evidence for a distinct construct could support a focused assessment field and further testing of a mechanism-specific adjunct. Failure to distinguish it from established self-punishment would argue against creating a separate label or intervention. Evidence of short-term closure without improved learning would shift attention toward reinforcement, closure, and repair. Evidence that structured correction improves retention while reducing punitive urges would support further mechanism testing. Decisions at each stage will depend on prespecified evidence of added value, not on the plausibility of the originating accounts.

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Appendix A. Episode Classification Decision Rules

A.1 Purpose and unit of classification

These rules define a provisional research category, not a diagnosis. The unit of classification is one discrete episode, or one continuous cluster of acts that the participant experiences as a single event. Classification concerns the function expected at the time of the act. It does not infer motive from the form of the behavior, injury severity, diagnosis, family history, or an adult's later explanation alone.

The proposed category is **self-administered punitive error correction**. An episode falls within this category when a person deliberately causes physical pain or impact to themselves after a perceived mistake and, before or during the act, expects the consequence to improve learning, memory, discipline, deterrence, or future control. A belief that suffering is deserved, restores fairness, or closes the event may occur at the same time. Those meanings are coded separately because they do not necessarily imply an expectation of better future performance.

Head impact is recorded as a distinct behavior class. It is never used as a synonym for the broader construct. The same classification rules apply to other forms of deliberately self-inflicted physical pain, while the medical risk and clinical response are assessed for the behavior that actually occurred.

A.2 Required evidence

An episode receives the primary classification only when all five core conditions are supported.

1. **A deliberate act occurred.** The person intentionally performed an action that they expected would cause physical pain or bodily impact. Accidents, involuntary movements, sleep-related rhythmic movement, seizures, and pain caused solely by another person do not meet this condition.
2. **A perceived error preceded the act.** The person identified a mistake, repeated lapse, broken rule, failure, omission, or harmful action before the episode. The perceived error may be objectively minor or may not be an error from another person's perspective. Its significance is defined by the participant's interpretation at the time.
3. **The person linked the act to that error.** The act followed the perceived error closely enough that the participant experienced the two as connected. No fixed time window is imposed during construct development. Delayed acts require an explicit account that the earlier error remained the reason for the later action.
4. **A forward-looking expectation was present.** Before or during the act, the person expected pain or impact to help prevent recurrence, make the lesson memorable, force attention, strengthen control, or impose a consequence that would improve later conduct. A justification developed only after the event is insufficient unless other contemporaneous evidence supports it.
5. **The account is sufficiently specific.** The participant can describe what they believed the act would accomplish, or contemporaneous records and developmentally valid communications support that expectation. A global statement such as "I was angry with myself" does not establish an error-correction function by itself.

A.3 Sequential decision process

Rule 1: Establish that an event can be evaluated

Record the date or developmental period, setting, people present, precipitating event, and whether the participant was awake and aware. If the account combines several years of behavior into one general description, ask for one first, typical, or otherwise memorable episode. A broad pattern may be coded at the person level later, but the event code must be based on a reconstructable episode.

If the participant cannot recall enough detail, assign **insufficient episode detail**. Do not press for a more vivid account and do not treat missing detail as evidence against the construct.

Rule 2: Confirm deliberate self-inflicted pain or impact

Ask whether the participant meant to cause pain or bodily impact at that moment and what they expected to feel. Record the behavior in one of two nonexclusive topography fields:

- **Head impact:** deliberate impact involving the head or face.
- **Other self-inflicted pain:** deliberate physical pain or impact not involving the head.

The interviewer records only the level of behavioral detail needed for classification and medical risk review. The protocol does not request demonstrations, comparisons of methods, or information that could teach a new method.

Assign **nonqualifying: no deliberate pain or impact** when the event was accidental, symbolic, purely verbal, or intended only to inconvenience the person without expected physical pain. Noninjurious self-denial, overwork, or sabotage can be recorded as related punitive behavior, but it is not counted as a qualifying physical episode.

Rule 3: Identify the antecedent without imposing a moral judgment

Classify the reported antecedent as one or more of the following:

- factual or performance error
- repeated lapse or forgotten task
- rule violation
- interpersonal harm or perceived harm
- inability to meet a personal standard
- intrusive thought or internal experience interpreted as wrongdoing
- unclear or no identifiable error

The code describes the participant's appraisal. It does not endorse the rule, standard, or degree of responsibility. If no perceived error preceded the act, the episode does not meet the proposed error-correction category, although it may meet another self-injury classification.

Rule 4: Determine the expected function at the time

Begin with an open question: "At that moment, what did you expect the action to change or accomplish?" Follow with: "What did you think would happen if you did not respond that way?" Only after the open account is complete may the interviewer ask standardized contrast questions.

Code each expected function independently:

- **Instruction:** pain was expected to make the lesson clearer or easier to remember.
- **Deterrence:** anticipation of another painful consequence was expected to prevent recurrence.
- **Discipline or control:** pain was expected to prove or restore the ability to control future behavior.
- **Moral payment:** suffering was expected to repay wrongdoing or restore fairness, without a necessary prediction about future performance.
- **Closure:** the act was expected to settle the matter or permit the person to move on.
- **Affect change:** the act was expected to reduce, interrupt, or replace an emotional state.

- **Sensory change:** the act was expected to create, block, or regulate physical sensation.
- **Escape or communication:** the act was expected to end a demand, change another person's behavior, or convey distress.
- **Suicidal function:** the person wanted death, was indifferent to survival, or held mixed intent.
- **Other or uncertain:** the reported expectation does not fit the current coding frame.

Multiple codes are permitted. The primary category requires instruction, deterrence, or discipline and control that is explicitly tied to future conduct. Moral payment or closure alone is coded as **punitive but not error corrective**. Affect regulation, sensory regulation, communication, and escape are not treated as competing explanations that must displace the punitive code. An episode can have several functions.

Rule 5: Separate contemporaneous expectation from later interpretation

Code the source of the functional account:

- **contemporaneous:** the participant recalls thinking or saying it before or during the act
- **near-contemporaneous:** a journal, message, disclosure, or witness record from the same period supports the expectation
- **reconstructed:** the participant now believes this was the function but cannot recall a thought, statement, or other evidence from the time
- **uncertain:** the participant offers more than one plausible account and cannot distinguish them

A reconstructed account can inform qualitative theory development. It should not, by itself, qualify as a confirmed event for a primary prospective outcome.

Rule 6: Assess suicidal intent on its own axis

The interviewer assesses desire to die, expectation of death, indifference to survival, planning, and ambivalence for every reported act. Assign one of four codes:

- **S0:** no suicidal intent reported
- **S1:** intent uncertain or not remembered
- **S2:** mixed intent or indifference to survival
- **S3:** some or clear intent to die

The functional category and suicidal-intent code remain separate. An episode with S2 or S3 may still contain an error-correction expectation, but it is not described as nonsuicidal self-injury. Primary analyses should report S0 events separately and include mixed-intent events only under a prespecified sensitivity analysis. Any current risk response takes precedence over research classification.

Rule 7: Screen alternative medical and developmental explanations

Record whether the event occurred during sleep or sleep transition, altered awareness, intoxication, possible seizure activity, acute pain, agitation, or another medical state. For head impact, record loss of consciousness, confusion, vomiting, severe or worsening headache, vision change, seizure signs, neck pain, or other symptoms that activated the protocol's medical response.

For participants with developmental or communication differences, code observable antecedents and consequences before assigning a reflective teaching belief. Neurodevelopmental status is not an exclusion and does not determine function. It indicates that language, informants, and functional assessment may need adaptation.

A.4 Final episode codes

Code	Label	Minimum basis
PEC-C	Confirmed punitive error-correction episode	Deliberate self-inflicted pain or impact, a preceding perceived error, an explicit contemporaneous instruction, deterrence, or control expectation, and adequate episode detail
PEC-P	Probable punitive error-correction episode	Core elements are present, but the functional account is near-contemporaneous or one element remains moderately uncertain
PEC-R	Retrospectively reconstructed punitive error-correction episode	The adult account supports the theory, but the expected function cannot be tied confidently to thoughts or communications at the time
PNEC	Punitive, not error corrective	Pain or impact was intended as deserved suffering, payment, or closure without an expectation of improved future conduct
OTH-F	Other identified function	Deliberate self-inflicted pain or impact occurred, but the reported function was affective, sensory, interpersonal, escape-related, suicidal, or another nonqualifying function
IND	Indeterminate	An act probably occurred, but detail is insufficient to classify intent, antecedent, or expected function
NQ	Nonqualifying event	No deliberate self-inflicted pain or impact, no preceding perceived error, or no temporal link between the two

Each code is accompanied by separate fields for head impact, other physical pain, injury severity, suicidal intent, co-occurring functions, developmental period, evidence source, and current safety action.

A.5 Developmental rules

For ages 5 to 7, a reflective teaching belief is assigned only when the child communicated that expectation in language, symbolic communication, or a repeated, context-specific pattern that qualified clinicians and caregivers can interpret with reasonable agreement. An adult's later theory is not enough. Assessment should prioritize pain, sleep, neurological factors, sensory regulation, communication, and environmental contingencies.

For ages 8 to 11, use concrete questions about one event, brief response options, child-generated language, and caregiver or teacher observations as supplementary evidence. Do not administer an adolescent belief scale unchanged. A disagreement between child and caregiver is retained, not averaged into a single account.

For ages 12 to 20, interview the young person privately before gathering caregiver information, subject to the stated limits of confidentiality. The participant's report is primary for internal expectations. Caregiver information remains important for observable events, injury, development, and safety.

For adult retrospective interviews, age of onset and developmental sequence are treated as estimates. Concrete episodes, records, stable contextual details, and acknowledged uncertainty carry more weight than a smooth life narrative. Adults who helped formulate the hypothesis should not be included in the primary discovery sample.

A.6 Adjudication

Two trained raters independently code de-identified event summaries. At least one rater is a clinician with youth self-harm assessment experience. Raters receive the participant's words needed to judge timing and expected function, but not the study arm in an intervention trial. Disagreements are resolved through a third rater or a recorded consensus process. The study reports interrater agreement for the final category, suicidal-intent axis, topography, and major function codes.

The manual should include difficult cases, including moral payment without teaching, affect relief plus deterrence, later reinterpretation, mixed suicidal intent, unclear childhood language, sleep-related movement, and head impact prompted by physical pain. These examples must remain abstract and must not describe techniques for causing injury.

Appendix B. Neutral Adult Retrospective Interview Guide

B.1 Scope and administration

This semistructured interview is designed for adults recalling experiences between ages 5 and 20. Its purpose is to describe how young people responded to mistakes, rules, distress, and perceived failure. It does not presume self-injury, punishment, family mistreatment, trauma, or a teaching motive. Recruitment and consent materials should use similarly neutral language.

The interview lasts approximately 75 to 100 minutes and may be completed in two meetings. The interviewer should be trained in qualitative interviewing, suicide-risk procedures, safeguarding, and the limits of retrospective inference. The interview is audio recorded only with separate consent. Participants may skip any question, use general language instead of behavioral detail, take a break, or stop without losing compensation.

The interviewer first obtains an open narrative. Standardized function probes come later so that the proposal's theory does not shape the participant's initial account.

B.2 Opening script

This study asks how people responded to mistakes, broken rules, strong feelings, or difficult standards while growing up. Some people remember ordinary correction, some remember harsh self-criticism, and some remember actions that caused physical pain. There is no expected story. I am interested in what happened, what you thought at the time, and what you are unsure about now. You do not need to name or describe a method in detail. You may pause, skip a question, or end the interview at any point. If you tell me something that suggests an immediate safety concern, I will follow the safety steps we reviewed during consent.

Before beginning, confirm the participant's preferred terms, privacy, present ability to continue, and understanding of confidentiality and its limits.

B.3 Developmental timeline

1. What were the main places, schools, households, or groups in your life between ages 5 and 20?
2. Which people were responsible for teaching rules or responding to mistakes during those years?
3. When you made an ordinary mistake, what usually happened next?
4. Did that response change across childhood, early adolescence, and later adolescence?
5. Were there periods when your standards for yourself became stricter, more flexible, or different in some other way?

Use neutral anchors such as school years, moves, activities, relationships, or major transitions. Do not use an adverse event as the first anchor unless the participant introduces it.

B.4 First open account of self-directed responses

1. Think of a time before age 20 when you believed you had made a mistake that mattered. What happened from the mistake through the rest of that event?
2. What did you say to yourself or believe about yourself at the time?
3. What, if anything, did you do in response?
4. What did you expect that response to accomplish?
5. What changed immediately afterward?

6. What happened the next time a similar situation arose?

If no self-directed physical act is reported, continue with ordinary error responses and comparison experiences. Do not introduce self-injury merely to obtain a qualifying account.

B.5 First episode involving deliberate physical pain or impact

Use this section only after the participant independently reports such an experience.

1. How old do you think you were the first time this happened?
2. What had happened just before it?
3. What made the event count as a mistake or failure to you then?
4. What did you intend your response to do?
5. Before you acted, what did you think would happen if you did nothing?
6. What did you expect to be different afterward or the next time?
7. Did the action involve impact to your head, physical pain elsewhere, or both? A general answer is enough.
8. Were you trying to die, uncertain whether you survived, indifferent to the outcome, or trying to accomplish something else?
9. What physical effects followed? Did you receive medical attention or tell anyone?
10. How certain are you that these were your thoughts at the time rather than an explanation that became clearer later?

The interviewer does not request force, duration, surfaces, instruments, or comparisons between methods unless a clinician needs limited information to evaluate an immediate medical concern.

B.6 Representative repeated episode

1. Please choose one later episode that represents the pattern well. What was the setting and what had happened?
2. Was this a new mistake or something you believed you had repeated?
3. What rule did you believe applied?
4. Did you decide on the response, feel driven toward it, or experience both?
5. What result did you predict before acting?
6. What result actually followed in the next minutes or hours?
7. Did you repair the original mistake, practice a different response, avoid the situation, or do something else afterward?
8. Did the same error recur? If so, how did that affect what you believed about punishment or correction?
9. Was anyone present, aware, or expected to learn about it?
10. What else was the action doing for you at that time, if anything?

B.7 Standardized function contrasts

Introduce these questions only after open accounts have been completed.

People can have several reasons at once, and reasons can change between events. I will name some broad possibilities so we can distinguish them. Please tell me whether each fits this episode, partly fits, or does not fit.

Ask whether the person expected the act to:

- make a lesson memorable
- prevent repetition through a consequence
- restore discipline or control
- repay wrongdoing or restore fairness
- create a sense that the matter was finished
- reduce or interrupt an emotion
- change physical sensation or awareness
- communicate distress or affect another person's response
- end a demand or escape a situation
- cause death, risk death, or make survival irrelevant

For each endorsed expectation, ask: "Was that present before the act, during it, afterward, or only in your current interpretation?" Then ask the participant to identify which expectation was most important at the time. Do not force a single primary function when the participant cannot choose one.

B.8 Origin and development of the rule

1. Where do you think your idea about the proper response to mistakes came from?
2. Was it ever stated directly by another person, or did you infer it?
3. Were there books, religious ideas, school practices, family rules, peer norms, media, or private conclusions that influenced it?
4. Did anyone teach you that physical pain improves learning or discipline? What exactly do you remember, and how certain are you?
5. Did anyone respond to your mistakes in a way you later applied to yourself?
6. Were there important examples that contradicted the punitive rule?
7. Did the rule apply to every mistake, repeated mistakes, moral failures, loss of control, or only particular situations?
8. Did you apply the same standard to other people? Why or why not?

These questions do not assume that an external punishment was internalized. The interviewer records direct instruction, modeled practice, inferred rule, private experimentation, and unknown origin as different possibilities.

B.9 Context, development, and competing accounts

1. Did these events happen only while fully awake, or also around sleep, illness, intense physical discomfort, substance use, or altered awareness?
2. Were sensory overload, understimulation, communication difficulty, repetitive movement, or relief from physical discomfort part of any event?
3. Did the pattern differ when you were alone and when other people were present?

4. How did caregivers, teachers, clinicians, peers, or partners respond when they knew?
5. Did attention, conflict, escape from demands, reassurance, punishment from others, or access to something change afterward?
6. Were there experiences of shame, guilt, anger, fear, numbness, or agitation that seemed more central than learning?
7. Were there occasions when you caused pain without a preceding mistake? What was different about those events?
8. Were there mistakes that did not lead to pain? What helped you respond differently?
9. Looking back, what other explanation might fit the same behavior?

B.10 Change and cessation

1. How did the pattern change between childhood and age 20?
2. Did the form of self-punishment change even if the rule stayed the same?
3. What first weakened the belief that pain was necessary, if it weakened?
4. What response to mistakes replaced it?
5. Did any therapy, relationship, educational experience, responsibility, injury, or realization contribute to change?
6. Was there a period when the behavior stopped but the belief remained?
7. Did the rule later appear in nonphysical forms such as deprivation, overwork, refusal of comfort, or sabotage?
8. What evidence convinced you that a nonpainful correction could or could not work?

B.11 Present-day meaning and uncertainty

1. What words would you use for these experiences now?
2. Which parts of your explanation feel well supported, and which parts are uncertain?
3. Has telling the story changed your interpretation of it?
4. What might researchers misunderstand if they used a single explanation for every event?
5. What question should have been asked but was not?

B.12 Closing and safety check

We have discussed experiences that may be difficult to revisit. How are you feeling now compared with the start of the interview? Is there any current urge, injury concern, or safety issue that needs attention before we finish?

Follow the study's current-risk procedure when indicated. Otherwise, offer a brief grounding interval, confirm the participant's plan for the next hour, provide the agreed support information, and remind the participant how to withdraw recordings or quotations within the consented time window. The interviewer documents distress, pauses, early termination, safety actions, and whether the participant wants the second interview rescheduled.

Appendix C. Candidate Punitive Error-Correction Belief Item Pool

C.1 Status and intended use

This item pool is a starting point for cognitive interviewing and psychometric reduction. It is not a validated measure, has no diagnostic meaning, and should not be given a clinical cut score. The pool tests several related possibilities rather than assuming one factor. Items that appear clear to researchers may carry different meanings across age, culture, disability, religion, family context, and past treatment.

The initial validation study should use the pool with participants ages 12 to 20 after age-appropriate safety review. It should not be administered unchanged to children ages 5 to 11. Investigators should test whether direct reference to physical pain is understandable without being suggestive, and should use the least graphic wording that preserves construct validity.

C.2 Proposed instructions and response format

Think about situations in which you make a mistake that matters to you. Rate what you actually believe, even if you have never acted on the belief. In these statements, physical pain means pain a person deliberately causes to themselves. The questions do not ask how pain could be caused. You may skip any statement.

Response options:

0. Strongly disagree
1. Disagree
2. Neither agree nor disagree
3. Agree
4. Strongly agree

For momentary or weekly use, a shortened version may replace general belief wording with "Since the last check-in" or "Right now." That version requires separate validation and should not be assumed equivalent to the trait measure.

C.3 Candidate target items

Expected learning and memory

1. Physical pain would make the lesson from a mistake stay with me.
2. A painful consequence would help me notice what I need to change.
3. If I repeated an error, pain would make the correction easier to remember.
4. Pain would turn an intention to improve into something I could not ignore.
5. The seriousness of a lesson depends partly on how much the consequence hurts.
6. After causing harm, I would remember the needed change more clearly if I also experienced pain.

Expected deterrence and discipline

7. The prospect of a painful consequence could stop me from repeating a mistake.
8. I would be more careful if I knew another error would have a physical cost.
9. Some repeated mistakes require pain before my behavior will change.

10. A promise to improve would not feel dependable unless I imposed a hard consequence on myself.
11. If an error brought no painful consequence, I might become careless about it.
12. I would trust my self-control more after proving that I can enforce a painful consequence.

Distrust of leniency

13. Responding kindly to my own mistake could make it too easy to excuse.
14. A correction that does not hurt may feel too weak to count.
15. Moving on quickly after an error can feel like avoiding responsibility.
16. Forgiving myself before I have suffered could increase the chance that I do it again.
17. Looking for the reason behind a mistake can feel like making excuses for it.
18. If I reduce my distress without a consequence, I have not fully faced what I did.

Accountability, payment, and closure

19. After a serious mistake, I need a consequence before the matter feels settled.
20. Suffering can feel like a way to repay the wrong in what I did.
21. A painful response could restore fairness after I failed someone.
22. I can feel unable to move forward until I have paid for an error.
23. Once I have suffered enough, I may be able to stop reviewing the mistake.
24. Pain could give me a sense of control when the original error cannot be undone.

C.4 Candidate reverse and nonpunitive-correction items

These items test whether accountability, memory, and behavior change can be represented without pain. An item is marked **R** only to identify its intended direction during development. Reverse scoring should not begin until cognitive testing confirms that participants understand the item as intended.

25. Naming the exact failed step can teach me without pain. **R**
26. Practicing the corrected action is a real consequence of a mistake. **R**
27. Repairing harm holds me accountable more directly than hurting myself would. **R**
28. A specific plan can make a lesson memorable even when it is not painful. **R**
29. I can be firm with myself without causing physical pain. **R**
30. Treating myself fairly after an error does not make me careless. **R**
31. Repeated practice is more dependable than punishment for changing my behavior. **R**
32. When an error happens again, I can examine the failed step before deciding that I need a harsher consequence. **R**

C.5 Construct-contrast items

The following items distinguish error correction from adjacent functions. They should be analyzed as contrasts, not automatically added to a total score.

33. When thoughts of pain follow a mistake, the main purpose may be to reduce overwhelming emotion rather than to learn.

34. Physical sensation can feel important even when no mistake has occurred.
35. Making myself suffer can feel deserved even when I do not expect it to change my later behavior.
36. The wish for a painful consequence can be about ending the event, not preventing another one.
37. Fear of another person's response can matter more than any lesson I am trying to teach myself.
38. At times, I may want someone to recognize my distress rather than change my future conduct.
39. Thoughts about physical pain can occur without any belief that pain will improve performance.
40. My urge to respond physically can rise with intense emotion even when my views about accountability stay the same.

C.6 Supplemental event-level items

These items refer to one participant-identified episode and are intended for ecological or weekly assessment after separate validation. They should be asked only after the participant has disclosed an eligible event through the approved assessment process.

1. Before the event, how strongly did you believe a painful consequence would help prevent the same error?
2. How strongly did you believe pain would make the lesson easier to remember?
3. How confident were you that a nonpainful correction would work?
4. How much did you want to repay or make up for what happened?
5. How much did you want the event to feel finished?
6. How much did you want to change an overwhelming feeling?
7. Afterward, how accountable did you feel?
8. Afterward, how clear was your plan for the next similar situation?
9. Since the event, did you practice, repair, or change the part of the situation that produced the error?
10. Did the same error recur before the next assessment?

The event form separately records head impact, other self-inflicted pain, suicidal intent, injury symptoms, and safety action. The belief items are not a substitute for event classification or risk assessment.

C.7 Cognitive interview prompts

For each item under review, ask:

- What does this statement mean in your own words?
- What situation did you think about while answering?
- What does "mistake," "pain," "consequence," "accountability," or "careless" mean here?
- Did the item ask about what you believe, what you have done, or what you think other people believe?
- Was any phrase judgmental, confusing, upsetting, or too easy to answer in a socially acceptable way?
- Could someone agree for a reason unrelated to error correction?
- Which response option fits your view, and what separates it from the option next to it?

Items should be revised or removed when participants interpret them mainly as external punishment, exercise, medical pain, ordinary inconvenience, suicidal intent, or emotion regulation. Content validity requires representation of the full proposed belief system, but internal consistency alone is not a reason to retain semantically repetitive items.

Appendix D. Six-Session Structured Nonpunitive Error-Correction Module

D.1 Clinical position and eligibility

Structured Nonpunitive Error Correction is an experimental adjunct for people who report at least one episode in which deliberate self-inflicted pain or impact followed a perceived mistake and was expected to improve learning, deterrence, discipline, or control. The module does not replace risk-appropriate treatment, medical assessment, dialectical behavior therapy, trauma treatment, functional behavior assessment, or care for another identified condition.

The first clinical study should enroll adults or participants ages 18 to 20. Adolescent testing may follow after feasibility and safety are established, beginning with ages 14 to 17. A six-session cognitive module is not presumed suitable for children ages 5 to 11. Younger children require developmentally appropriate, multi-informant, function-based care.

Participants continue their established safety plan and usual clinical contact. Acute suicide risk, a possible head injury, rapidly escalating self-injury, psychosis, intoxication, or inability to participate safely triggers the parent protocol. The research session pauses while the appropriate clinical or medical response occurs.

D.2 Change model

The module preserves the participant's stated aims of learning, responsibility, repair, and prevention while testing whether physical pain contributes to those aims. It replaces a global punitive response with a sequence that identifies the failed process, changes one controllable feature, practices the corrected response, repairs consequences where possible, and checks whether the same error recurs.

The central test is practical. If a structured nonpainful correction produces equal or better memory, accountability, and performance, then the predicted instructional necessity of pain has less support. No session induces pain, asks a participant to simulate self-injury, or compares one harmful act with another. Behavioral exercises use low-stakes tasks selected for safety and emotional tolerability.

D.3 Common session structure

Each 50 to 60 minute session includes a brief safety and injury check, review of qualifying episodes and urges since the prior meeting, examination of one correction attempt, new material, guided practice, and agreement on one between-session task. The therapist records belief strength, confidence in a nonpunitive plan, original-error recurrence, repair behavior, and any self-harm or substitution. Missed monitoring entries are recorded as missing, not as evidence that no event occurred.

Therapists use collaborative language without endorsing the premise that pain teaches. They also avoid arguing that self-kindness is inherently superior. The participant is invited to compare predictions with observable results.

D.4 Session 1: Define the pattern and the participant's purpose

Aim. Establish a shared, episode-specific formulation and identify what the participant is trying to protect or accomplish.

In-session work.

1. Review confidentiality, safety procedures, current treatment, and the experimental status of the module.
2. Reconstruct one recent or well-recalled event in the sequence: perceived mistake, interpretation, predicted consequence of doing nothing, urge, action, immediate result, later result, and recurrence of the original error.

3. Code possible functions without requiring a single motive. Separate teaching, deterrence, moral payment, closure, emotion change, sensory change, communication, escape, and suicidal intent.
4. State the participant's working rule in their own language. An example form is: "When I repeat this kind of mistake, I believe a painful consequence is needed so that I will remember and change."
5. Identify the valued purpose beneath the rule, such as responsibility, competence, safety, trust, or repair.
6. Select one ordinary, low-risk error pattern that can be observed during the module. Do not select trauma memories, severe interpersonal harm, or situations with irreversible consequences for the initial test.

Between-session practice. Record one mistake using brief fields: what occurred, what seemed to fail, predicted value of punishment, action taken, immediate effect, and what happened next. The participant does not delay needed clinical help in order to complete the form.

Fidelity marker. By the end of the session, the record contains a specific error, a testable prediction about pain, at least one possible co-function, and a nonpunitive outcome the participant considers worth measuring.

D.5 Session 2: Diagnose the failed process

Aim. Replace the global judgment "I failed" with an account of the process that produced the error.

In-session work.

1. Review the selected error without debating whether the participant is a good or bad person.
2. Classify the likely failure source:

- missing knowledge
- insufficient practice or fluency
- missed cue or memory failure
- attention or executive load
- environmental design
- emotional conflict or avoidance
- competing goals
- unrealistic standard or ambiguous rule
- intentional choice with a foreseeable consequence

3. Distinguish explanation from excuse by asking whether the account identifies a point at which action can change and whether the participant takes the indicated corrective action.
4. Choose one observable adjustment matched to the failure source. For example, a knowledge gap calls for instruction, while a missed cue calls for a prompt or environmental change. The therapist does not prescribe a generic consequence.
5. Predict what should improve if the process account is correct.

Between-session practice. Apply the classification to two ordinary mistakes, including one that does not trigger a punitive urge. Record whether the selected adjustment changed performance.

Fidelity marker. The therapist and participant identify a plausible failure source, a matched correction, and a measurable result. Moral language alone does not count as a process analysis.

D.6 Session 3: Build and rehearse a complete correction

Aim. Create a repeatable response that delivers learning and accountability without physical pain.

In-session work.

The participant practices six operations:

1. **Specify:** describe the action and consequence without a global identity judgment.
2. **Locate:** identify the failed step, cue, skill, choice, or environmental condition.
3. **Adjust:** select one concrete change that fits the failure source.
4. **Rehearse:** perform or mentally practice the corrected response in a safe, ordinary scenario.
5. **Repair:** address harm to another person, a task, or an obligation when repair is possible and appropriate.
6. **Review:** schedule a later check of memory, transfer, and recurrence.

The therapist models firm, descriptive language. "I missed the reminder and need a second cue" is compared with a global condemnation, but the participant chooses wording that feels credible rather than artificially positive.

Between-session practice. Use the complete correction once, then conduct the scheduled review. Record whether the plan was remembered, whether the relevant behavior changed, whether repair occurred, and whether the participant still believed pain was necessary.

Fidelity marker. The plan includes a behaviorally specific adjustment, at least one rehearsal or implementation opportunity, and a defined time for review. Feeling better is not the sole criterion for success.

D.7 Session 4: Test the prediction without pain

Aim. Compare the participant's prediction about punishment with observed learning under structured nonpunitive correction.

In-session work.

1. Select a low-stakes task that can produce ordinary errors without humiliation, interpersonal harm, or clinically meaningful loss.
2. Before the task, record predicted error rate, memory, accountability, and confidence under a simple review condition and under the structured correction routine.
3. Complete the task and apply the assigned safe correction. No condition includes pain, threatened pain, self-denial, or exposure to self-harm cues.
4. Test immediate retention or a parallel response and schedule a delayed check.
5. Compare prediction with observed performance. Discuss what the result does and does not establish.
6. Plan a naturalistic test in an ordinary daily situation where the participant can use the correction routine promptly and safely.

This session does not ask the participant to recreate a severe mistake, suppress an active urge without support, or prove that they can tolerate distress. If the task evokes a clinically significant urge, the experiment stops and the established safety response begins.

Between-session practice. Complete the delayed check and one naturalistic, low-risk test. Record recurrence, memory, repair, distress, and belief strength.

Fidelity marker. Predictions are recorded before results are known, the task remains pain free, and interpretation addresses performance as well as emotion.

D.8 Session 5: Revise punitive rules while retaining accountability

Aim. Address beliefs that make a nonpainful correction feel unsafe, dishonest, weak, or undeserved.

In-session work.

1. Review evidence collected across sessions rather than debating the belief in the abstract.
2. Identify the strongest objection to nonpunitive correction. Common forms include fear of carelessness, fear of excusing harm, a need for moral payment, distrust of memory, or the belief that suffering proves sincerity.
3. Separate four questions: What happened? What responsibility belongs to the participant? What repair is possible? What response best reduces recurrence?
4. Compare the effects of a punitive rule and a process-based rule on attention, concealment, help seeking, repair, practice, and future behavior.
5. Develop a firm alternative statement that the participant considers accurate. It should name the standard, the corrective action, and the evidence that will show whether change occurred.
6. If shame or a hated-self response blocks correction, introduce a brief compassion-focused exercise as a way to reduce threat enough to complete repair and practice. Compassion is not presented as absolution.

Recurrent imagery, punitive voices, trauma memories, or obsessive guilt require separate assessment. Imagery rescripting, trauma treatment, or condition-specific care may be added by qualified clinicians when indicated, but none is assumed to be a universal part of this module.

Between-session practice. Use the alternative statement and complete one matched act of correction or repair. Note any urge to add suffering after the practical work is finished.

Fidelity marker. The revised rule preserves a clear standard and observable accountability while removing physical pain as a required ingredient.

D.9 Session 6: Consolidate evidence and plan for future errors

Aim. Evaluate the working theory, retain useful procedures, and prepare for recurrence of both mistakes and punitive urges.

In-session work.

1. Review the participant's original prediction and all available observations of error recurrence, memory, repair, confidence, distress, and self-injury.
2. Identify which parts of the punitive belief changed, remained, or were not adequately tested.
3. Write a future-error plan covering early recognition, immediate safety, process diagnosis, matched correction, rehearsal, repair, and later review.
4. Identify conditions in which the six-step routine is not enough, including acute risk, head injury symptoms, severe trauma activation, compulsive rituals, developmental needs, or environmental reinforcement.
5. Specify who can support safety or practical correction and what information may be shared. For minors, caregiver participation occurs only within consent, assent, confidentiality, and safeguarding requirements.
6. Arrange ongoing care and research follow-up. Ending the module does not imply that risk has ended.

Between-session continuation. Use the future-error plan as needed and complete outcome assessments at the prespecified follow-up points.

Fidelity marker. The final plan states what the participant will do after a mistake, how effectiveness will be checked, when outside help is required, and how physical pain or impact will be handled as a safety event rather than a teaching procedure.

D.10 Module measures and interpretation

At each session, record:

- qualifying punitive error-correction episodes, adjudicated independently
- head impacts and other self-inflicted pain as separate counts
- all other self-harm and any method substitution
- suicidal intent, urges, injuries, and emergency care
- strength of the belief that pain is necessary for learning, deterrence, accountability, memory, or control
- confidence that a nonpunitive correction will work
- recurrence of the original error or lapse
- completion of rehearsal, repair, and environmental change
- shame, guilt, self-criticism, emotion regulation, and functioning as secondary or competing mechanisms

A clinically useful reduction in self-harm would matter even if the proposed belief does not change. It would not, however, confirm the error-correction mechanism. Mechanistic support requires belief change to precede fewer qualifying episodes without worse error recurrence, weaker repair, or substitution into another harmful behavior.

D.11 Therapist adherence and prohibited practices

Adherence ratings should verify that the therapist reconstructed at least one event, elicited the participant's prediction, matched correction to a failure source, used a pain-free behavioral test, assessed actual recurrence, and retained established safety care. Independent raters should score a sample of recorded sessions.

The module prohibits:

- deliberate pain, threatened pain, aversive stimulation, or simulated self-harm
- demonstrations or detailed comparison of harmful methods
- assigning a shame-inducing or humiliating error task
- presenting self-compassion as a requirement for moral worth
- treating retrospective certainty as proof of childhood mechanism
- interpreting reduced disclosure as reduced behavior
- continuing a research exercise during a safety or medical emergency
- using the module as a stand-alone response to acute suicidality or serious head injury

These boundaries are part of the intervention protocol. All procedures must remain consistent with its test of whether learning and accountability can be achieved without injury.