The Eye Movement–Somatic Attachment Protocol: A Neuro-Somatic Model of Attachment Repair and Autonomic Regulation

Nicole S Y TANG ✉ ✉
https://orcid.org/0009-0002-7455-8878
Swinburne University of Technology, Australia
Nicole Holistic Therapy, Singapore & Western Australia

Article's history:
Received 21st January, 2025; *Revised* 27th of February, 2025; *Accepted*: 14th of March, 2025; *Available online*: 24th of March, 2025; Published as research article in Volume IV, Issue 4, 2026.

Cite this article:
Tang, S. Y. N. (2026). The Eye Movement–Somatic Attachment Protocol: A Neuro-Somatic Model of Attachment Repair and Autonomic Regulation. *Journal of Contemporary Approaches in Psychology and Psychotherapy*, Volume IV, Issue 4, 19 – 33. https://doi.org/10.57017/jcapp.v4.i4.02

Abstract

This paper introduces the Eye Movement–Somatic Attachment Protocol (SAP), a neuro-somatic framework that conceptualizes attachment trauma primarily as a disturbance of autonomic regulation rather than memory content alone. SAP integrates eye-movement–based neural interruption, somatic tracking, and regulation-first sequencing to stabilize autonomic states and facilitate adaptive reorganization of implicit attachment patterns. Grounded in affective neuroscience, polyvagal theory, and memory reconsolidation research, SAP emphasizes bottom-up sensory processing and bilateral stimulation without relying on prolonged exposure or cathartic emotional processing.

The paper formalizes SAP as a theoretical framework, outlines its proposed mechanisms of change, and distinguishes it from exposure-based eye-movement, somatic, and emotion-focused approaches. By reframing attachment repair as autonomic re-patterning supported by neuro-somatic integration, SAP proposes a regulation-centered approach for clients with attachment-related dysregulation and limited tolerance for exposure-based interventions.

Keywords: attachment trauma, autonomic regulation, somatic psychotherapy, eye movements, memory reconsolidation, polyvagal theory.

Introduction

Attachment trauma is increasingly recognized as a foundational contributor to chronic emotional dysregulation, relational instability, and treatment resistance across a range of clinical presentations. While attachment-oriented psychotherapy has traditionally emphasized narrative integration, insight, and corrective relational experiences, accumulating evidence from affective neuroscience suggests that early relational trauma is primarily encoded at the level of implicit physiological regulation rather than explicit autobiographical memory (Bowlby,

1980; Schore, 2001, Hinz, 2015). As a result, many individuals presenting with attachment-related distress demonstrates limited capacity to engage with insight-driven or exposure-based interventions despite strong cognitive awareness of their difficulties.

Contemporary trauma research increasingly conceptualizes attachment trauma as a disorder of autonomic organization. Early disruptions in caregiver attunement shape right-hemispheric development, interoceptive awareness, and autonomic responsivity, resulting in enduring patterns of hyperarousal, hypoarousal, or oscillation between defensive states (Porges, 2011; Hinz, 2015). These disruptions are also expressed behaviourally as attachment disorganisation, characterized by contradictory or unpredictable relational strategies that can persist from infancy into adulthood (Lyons-Ruth & Jacobvitz, 2016). These physiological patterns often persist independently of conscious memory and are expressed through affect intolerance, relational threat sensitivity, and somatic symptoms (Craig, 2002, 2009; van der Kolk, 2014). From this perspective, attachment trauma is less a failure of memory processing and more a failure of nervous-system regulation.

Despite this shift in understanding, many trauma treatment models continue to privilege exposure-first or affect-intensive paradigms. While effective for some individuals, such approaches presuppose a degree of autonomic stability, affect tolerance, and present-moment capacity that is not universally available among clients with complex or developmental trauma histories (Cloitre et al., 2011; Courtois & Ford, 2013). Clinical observations and empirical findings suggest that premature exposure to traumatic material may exacerbate dysregulation, reinforce defensive responses, or lead to dissociative disengagement when regulatory capacity is insufficient (Herman, 1992; Ogden et al., 2006).

In response to these limitations, regulation-first models have gained increasing traction within trauma-informed psychotherapy. Somatic and phase-based approaches emphasize the importance of establishing physiological safety and autonomic flexibility prior to deeper emotional or memory-focused work (Fisher, 2017; Payne et al., 2015). However, existing models vary considerably in how they operationalise regulation, integrate attentional processes, and sequence interventions. Moreover, few frameworks explicitly articulate how neurophysiological regulation interfaces with attachment repair and memory reconsolidation within a unified theoretical model.

Recent scholarship extends this picture further. Predictive-processing accounts increasingly frame trauma and attachment disturbance as disruptions in the brain's ongoing modeling of bodily and relational safety, in which overly rigid expectations about threat resist revision despite disconfirming experience (Putica & Agathos, 2024). This framing is complemented by neuropsychotherapy scholarship proposing memory reconsolidation as a unifying, transtheoretical mechanism of therapeutic change that spans regulation-focused and memory-focused modalities alike (Ecker, 2024; Ecker & Vaz, 2022). Together, this literature reinforces the conceptual rationale for a model, such as SAP, in which autonomic stability is treated as a precondition for durable relational change rather than as secondary to memory processing.

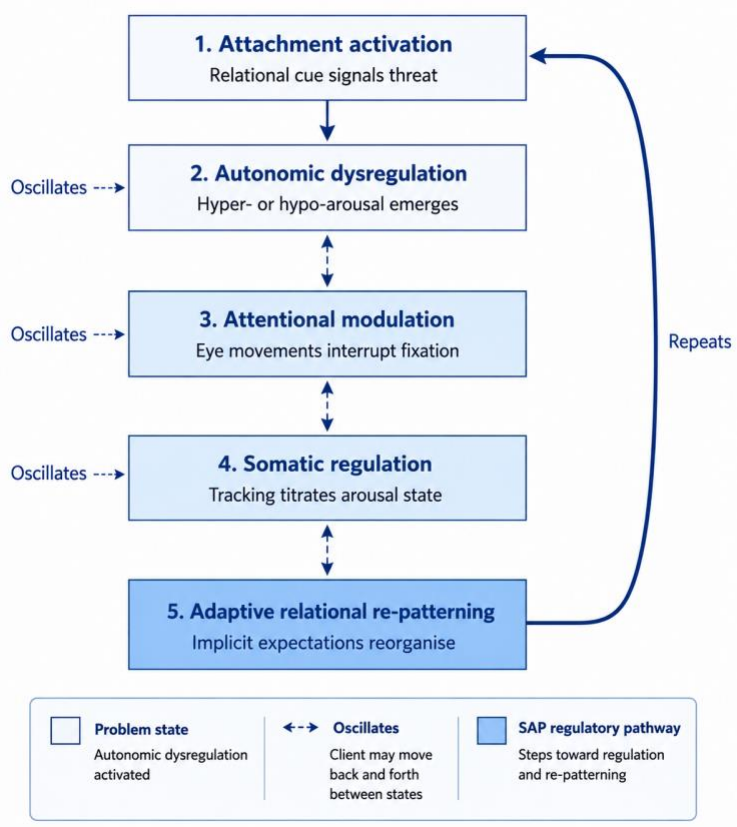
The Eye Movement–Somatic Attachment Protocol (SAP) is proposed as a neuro-somatic model designed to address this conceptual and clinical gap. SAP conceptualizes attachment repair as a process of autonomic re-patterning supported by structured attentional modulation and somatic tracking, rather than as a direct function of exposure or narrative processing. Eye movements within SAP are employed not primarily as desensitisation tools, as in standard eye-movement-based therapies, but as mechanisms of neural interruption and orienting

support that facilitate state shifts during autonomic activation (Christman et al., 2003; Propper & Christman, 2008; Stickgold, 2002). Somatic tracking functions as a method of monitoring and titrating physiological change rather than eliciting cathartic emotional discharge.

While SAP shares certain surface features with established modalities such as eye-movement therapies, somatic experiencing, and affect-focused relational approaches, it is not reducible to any single existing framework. Rather than positioning itself as a technique or hybrid protocol, SAP is articulated here as a theoretical model that integrates autonomic regulation, attentional modulation, and attachment-informed relational safety as preconditions for adaptive memory updating. Within this model, memory reconsolidation is understood as a process contingent on nervous-system state and contextual safety, not as a guaranteed outcome of technique application (Ecker et al., 2012; Lane et al., 2015; Nader et al., 2000).

The aim of this paper is therefore not to demonstrate the clinical effectiveness of SAP, which has been addressed elsewhere, but to formalize its theoretical foundations and mechanisms of change. By reframing attachment trauma as a problem of autonomic organization and articulating a regulation-first, neuro-somatic pathway to attachment repair, this paper positions SAP as a conceptually necessary contribution to trauma-informed psychotherapy. In doing so, it seeks to clarify how SAP complements, rather than replaces, existing modalities while addressing a population for whom exposure-based or affect-intensive approaches may be insufficient or contraindicated.

Figure 1: Proposed Conceptual Sequence of the Eye Movement–Somatic Attachment Protocol



Note. Gray boxes indicate autonomic problem states and teal boxes SAP's regulatory pathway. Double-headed arrows reflect oscillation between dysregulation and regulatory stages, while the curved arrow represents recursive relational re-patterning and renewed attachment activation.

1. Theoretical Model and Clinical Illustration

Design and Theoretical Orientation

This paper adopts a theory-informed clinical methodology to illustrate how the Eye Movement–Somatic Attachment Protocol (SAP) is operationalised in practice. Rather than functioning as an outcome evaluation, the methodology is designed to demonstrate *model coherence* - specifically, how SAP's regulation-first, neuro-somatic sequencing is applied to attachment-related autonomic dysregulation. A single clinical vignette is used to exemplify the model's mechanisms of change, consistent with established practices in psychotherapy theory development and clinical illustration (Herman, 1992; Nadel & Lane, 2020).

SAP is grounded in a neuro-somatic understanding of attachment trauma, conceptualizing distress as arising from persistent patterns of autonomic dysregulation rather than unresolved memory content alone (Hinz, 2015; Porges, 2011). The protocol integrates structured eye-movement–based neural interruption, somatic tracking of physiological states, and relationally attuned regulation to support adaptive reorganization of implicit attachment responses. Within this framework, memory reconsolidation is viewed as a contingent process that may emerge when conditions of physiological safety and affect tolerance are met, rather than as a guaranteed or technique-driven outcome (Ecker et al., 2012; Nader et al., 2000).

Participant and Clinical Context

The vignette describes "Karin," a 29-year-old female client who presented with chronic relational distress, emotional reactivity, and difficulty establishing boundaries with her parents. Karin reported a long-standing pattern of enmeshment characterized by heightened emotional involvement, frequent conflict, and persistent feelings of anger following interactions with her parents. Despite cognitive insight into these dynamics, Karin described feeling unable to regulate her emotional responses during or after family encounters.

In sessions following contact with her parents, Karin often presented in states of elevated autonomic arousal, including irritability, agitation, and rigid, dichotomous thinking. These presentations were understood within the SAP framework as manifestations of attachment-related autonomic activation rather than resistance, defiance, or unresolved narrative content (Craig, 2009; van der Kolk, 2014).

SAP Intervention Process

Phase 1: Autonomic Assessment and Stabilization. Initial sessions focused on identifying Karin's autonomic patterns in relational contexts, particularly following interactions with her parents. Rather than immediately engaging cognitive restructuring or exposure to relational memories, the therapist prioritized stabilization and state awareness. Somatic tracking was introduced to support Karin's capacity to notice shifts in bodily sensation, arousal, and breath without attempting to change or analyze them (Ogden et al., 2006; Payne et al., 2015).

During this phase, Karin demonstrated limited tolerance for sustained emotional exploration, with rapid escalation into anger or withdrawal. This response informed the clinical decision to adopt a regulation-first approach, consistent with SAP's sequencing principles and phase-based trauma treatment models (Cloitre et al., 2011; Fisher, 2017).

Phase 2: Neural Interruption and State Modulation. Once a baseline level of autonomic awareness was established, SAP interventions incorporating eye movements were introduced. Eye movements were used not as a desensitisation procedure targeting specific memories, but as a form of neural interruption and orienting support during moments of activation. This

approach is informed by research suggesting that bilateral eye movements can modulate attentional fixation and interhemispheric integration, thereby reducing autonomic lock-in during threat states (Christman et al., 2003; Propper & Christman, 2008).

During sessions, Karin was guided to attend to emerging somatic cues while engaging in brief sets of eye movements when activation increased. The therapist continuously monitored arousal levels, adjusting pacing to maintain regulation rather than emotional flooding. This process aimed to interrupt habitual autonomic responses associated with attachment threat, allowing for increased flexibility in physiological state rather than immediate emotional discharge.

Phase 3: Integration and Relational Re-Patterning. As Karin's capacity for self-regulation improved, SAP sessions increasingly focused on integrating these regulatory skills within relational contexts. Rather than revisiting specific autobiographical memories in detail, attention was directed toward present-moment bodily responses that arose when Karin anticipated or recalled interactions with her parents. Somatic tracking and eye-movement interventions were used to support regulation while exploring shifts in internal responses to relational cues.

Over subsequent sessions, Karin reported a growing ability to notice early signs of activation and to regulate her physiological state during real-time interactions with her parents. Despite ongoing verbal conflicts, she described a reduced intensity and duration of anger, increased capacity to remain present, and greater flexibility in her behavioral responses. These changes were understood within the SAP framework as indicators of autonomic re-patterning rather than symptom suppression or cognitive reframing alone.

Methodological Rationale

This vignette illustrates SAP's central theoretical premise: that attachment repair is mediated through changes in autonomic organization supported by neuro-somatic integration. By prioritizing regulation before exposure and utilizing eye movements as tools for state modulation rather than desensitisation, SAP addresses limitations observed in exposure-first or affect-intensive models for clients with attachment-related dysregulation (Courtois & Ford, 2013; Herman, 1992).

Importantly, while Karin demonstrated meaningful shifts in relational functioning, this paper does not attribute change to a single technique or assume uniform memory reconsolidation. Instead, the vignette is presented to demonstrate how SAP creates conditions under which adaptive reorganization of attachment responses may occur, consistent with contemporary understandings of reconsolidation as a state-dependent and context-sensitive process (Lane et al., 2015; Phelps et al., 2014).

2. Clinical Observations and Theoretical Interpretation

Observed Clinical Shifts

Across the course of SAP-informed intervention, Karin demonstrated observable changes in autonomic regulation, relational reactivity, and behavioural flexibility. Prior to SAP sequencing, sessions following contact with her parents were consistently characterized by heightened irritability, sustained anger, and cognitive rigidity. Karin often appeared physiologically activated, with rapid speech, narrowed attentional focus, and difficulty tolerating reflective dialogue. These presentations were understood as indicators of attachment-triggered autonomic activation rather than resistance or lack of insight (Hinz, 2015; Porges, 2011).

Following the introduction of regulation-first SAP interventions, Karin began to demonstrate increased capacity to remain present during discussions of her parents without escalating into overt anger or withdrawal. While verbal conflict with her parents continued to occur, Karin reported a reduction in the intensity and duration of emotional reactivity, alongside an increased ability to self-regulate during and after these interactions. Notably, these changes emerged without explicit exposure to detailed autobiographical memories or prolonged affective catharsis.

From a behavioural perspective, Karin described greater flexibility in how she responded to parental criticism or intrusion. Rather than becoming immediately reactive or dysregulated, she reported being able to pause, notice bodily sensations associated with activation, and modulate her responses in real time. These shifts suggest a change in underlying autonomic organization rather than the suppression of emotional expression or reliance on cognitive control strategies alone (Craig, 2009; van der Kolk, 2014).

3. Analysis Through the SAP Model

Autonomic Re-Patterning as Primary Change Mechanism

The clinical changes observed in Karin are most coherently understood within SAP's conceptualisation of attachment trauma as autonomic dysregulation. Prior to intervention, Karin's anger and rigidity appeared to function as defensive states organized around relational threat. Within the SAP framework, such responses are viewed as implicit physiological patterns rather than maladaptive beliefs or unresolved narrative memories (Schore, 2001; Hinz, 2015).

The introduction of somatic tracking allowed Karin to develop awareness of early physiological cues associated with activation, increasing her capacity for affect tolerance without requiring immediate emotional processing. This aligns with research suggesting that interoceptive awareness plays a critical role in emotional regulation and self-agency (Craig, 2002, 2009). Importantly, the development of this awareness preceded noticeable changes in cognition or relational behaviour, supporting SAP's regulation-first sequencing.

Role of Eye Movements in State Modulation

Within SAP, eye movements are utilized as tools for neural interruption and attentional modulation rather than as desensitisation procedures targeting traumatic memory content. In Karin's case, the use of eye movements during moments of rising activation appeared to support state shifts that reduced autonomic lock-in. These interventions were associated with visible decreases in agitation and increased capacity to remain engaged in the therapeutic process.

This observation is consistent with findings that bilateral eye movements may facilitate interhemispheric communication and reduce perseverative attentional focus, thereby supporting regulatory flexibility during emotional activation (Christman et al., 2003; Propper & Christman, 2008; Stickgold, 2002). Within SAP, these effects are understood as creating conditions that allow adaptive reorganization of attachment-related responses rather than directly altering memory representations.

Regulation Without Exposure: Implications for Attachment Repair

A notable feature of Karin's progress was the absence of prolonged exposure to emotionally charged memories or relational narratives. Despite this, she demonstrated meaningful improvements in her ability to regulate herself in vivo during interactions with her parents. This finding challenges the assumption that exposure or affective intensity is a necessary prerequisite for attachment repair in all cases (Cloitre et al., 2011; Herman, 1992).

Within the SAP model, these changes are interpreted as evidence that autonomic re-patterning can occur through state-based interventions that interrupt habitual defensive responses. By repeatedly experiencing moments of activation followed by successful regulation within a relationally attuned therapeutic context, Karin may have developed increased confidence in her capacity to tolerate attachment-related stress without entering dysregulated states. This process is consistent with contemporary understandings of learning and adaptation as embodied and state-dependent rather than purely cognitive (Siegel, 2012).

Memory Reconsolidation as Emergent Process

Although Karin reported shifts in how she perceived and responded to her parents, this paper does not assert that discrete memory reconsolidation occurred. Instead, changes are conceptualized as emerging from repeated experiences of regulated engagement with attachment-related cues. From a memory reconsolidation perspective, such experiences may create conditions under which implicit relational expectations are updated over time (Ecker et al., 2012; Lane et al., 2015; Nader et al., 2000).

Importantly, SAP does not frame reconsolidation as a guaranteed outcome of technique application. Rather, it is understood as a probabilistic process contingent on nervous-system state, relational safety, and timing (Elsey & Kindt, 2017; Phelps et al., 2014). Karin's reported improvements therefore support SAP's position that regulation-first interventions can facilitate adaptive change without necessitating explicit memory processing or emotional catharsis. Taken together, the results of this clinical illustration support SAP's theoretical propositions:

- Attachment-related distress may be effectively addressed through interventions targeting autonomic regulation rather than memory content alone.
- Regulation-first sequencing can enable meaningful relational change even in the absence of exposure-based processing.
- Eye movements, when conceptualized as tools for state modulation, may support autonomic flexibility and interrupt entrenched attachment responses.

These findings do not establish efficacy, but they provide conceptual coherence between SAP's theoretical framework and its observed clinical application. As such, they support the positioning of SAP as a neuro-somatic model of attachment repair that complements existing trauma-informed modalities while addressing limitations inherent in exposure-first paradigms.

3. Discussion

The present paper sought to formalize the Eye Movement–Somatic Attachment Protocol (SAP) as a neuro-somatic model of attachment repair and autonomic regulation, addressing a conceptual gap between contemporary neuroscience and clinical practice. By reframing attachment trauma as a disorder of autonomic organization rather than primarily of memory content, SAP offers an explanatory framework for clients who struggle to engage with exposure-based or affect-intensive interventions despite insight and motivation.

The clinical illustration presented supports SAP's central premise that meaningful relational change can occur through regulation-first sequencing without reliance on prolonged emotional exposure. Karin's reported improvements in self-regulation and behavioural flexibility emerged alongside increased autonomic awareness and reduced physiological reactivity, suggesting that attachment-related distress may be mediated through shifts in nervous-system organization rather than narrative resolution alone (Hinz, 2015; Porges, 2011). These observations align with growing evidence that implicit physiological processes

play a foundational role in emotional regulation and relational functioning (Craig, 2009; van der Kolk, 2014).

A key contribution of SAP lies in its reconceptualisation of eye movements as tools for attentional modulation and neural interruption rather than as mechanisms solely for desensitisation. When embedded within a somatic and relationally attuned framework, eye movements may support autonomic flexibility and interrupt habitual threat responses without eliciting overwhelming affect. This distinction allows SAP to incorporate elements commonly associated with eye-movement therapies while remaining theoretically distinct from exposure-driven models (Christman et al., 2003; Stickgold, 2002).

This position is consistent with more recent evidence on bilateral eye-movement effects. A comprehensive state-of-the-science review of EMDR therapy notes that, while the working-memory taxation account remains the most widely cited explanation for the effects of eye movements, it does not fully account for the range of observed outcomes, and researchers continue to investigate complementary mechanisms (de Jongh et al., 2024). Electrophysiological research further suggests that bilateral eye movements may enhance, rather than simply disrupt, the concurrent neural processing of perceptual and memory information, pointing to attentional and orienting mechanisms broadly compatible with SAP's conceptualisation of eye movements as tools for state modulation rather than desensitisation (Wang et al., 2024).

Importantly, SAP does not position memory reconsolidation as an inevitable or technique-driven outcome. Instead, it conceptualizes reconsolidation as a contingent process that may emerge when conditions of physiological safety, relational attunement, and attentional flexibility are present. This stance aligns with contemporary neuroscience literature cautioning against deterministic interpretations of reconsolidation and emphasizing the role of state-dependent learning (Ecker et al., 2012; Lane et al., 2015). By prioritizing regulation and safety, SAP may create conditions under which adaptive reorganization of attachment-related expectations becomes possible over time.

Taken together, SAP contributes a regulation-centered framework that complements existing trauma-informed modalities while addressing limitations inherent in exposure-first paradigms. Rather than competing with established approaches, SAP offers a conceptual lens through which clinicians may better understand treatment resistance, affect intolerance, and relational dysregulation in attachment-traumatised populations. Table 1 summarizes these distinctions across theoretical assumptions, mechanisms of change, regulation strategy, use of eye movements, and clinical indications.

Table 1: Comparative Overview of SAP and Established Trauma-Informed Modalities

Dimension	SAP	EMDR	SE	SP	IFS	EFT
Theoretical assumption	Attachment trauma = disorder of autonomic organization, not memory content	Trauma = maladaptively stored memory (AIP model)	Trauma = incomplete biological defense responses	Trauma organized as implicit body memory; attachment-informed	Mind is naturally multiple; trauma held by protective parts	Emotion schemes drive psychopathology; emotion is an adaptive signal

Dimension	SAP	EMDR	SE	SP	IFS	EFT
Primary mechanism of change	Autonomic re-patterning; reconsolidation treated as contingent, not assured	Adaptive reprocessing via bilateral stimulation	Titrated discharge of thwarted defensive energy	Completion of truncated defensive action; tri-level integration	Self-led unburdening of exiled parts	Adaptive emotion activated to transform maladaptive emotion
Regulation strategy	Somatic tracking; regulation strictly precedes deeper processing	Stabilization in early phases; memory targeting follows relatively quickly	Pendulation between activation and resourced states	Window-of-tolerance-based phased stabilization	Self-leadership as the regulatory container	Relational attunement; structured experiential tasks
Use of eye movements	Central: neural interruption / state modulation, not desensitisation	Central: bilateral stimulation drives desensitisation	Not used	Not a defining feature	Not used	Not used
Primary clinical indications	Attachment-related hyper-/hypo-arousal; limited capacity for exposure work	Single-incident and complex PTSD	Shock trauma; somatic/physiological symptom presentations	Complex/developmental trauma, dissociation	Complex trauma, parts-based/internal conflict presentations	Depression, complex trauma (EFTT), attachment injury (couples)

Note: SE = Somatic Experiencing; SP = Sensorimotor Psychotherapy; IFS = Internal Family Systems; EFT = Emotion-Focused Therapy.

SAP is likely to be most appropriate for clients presenting with attachment-related hyper- or hypo-arousal, marked affect intolerance, and a demonstrated history of destabilisation or dissociative withdrawal in response to exposure-based or affect-intensive interventions. Given its regulation-first sequencing, SAP may be particularly indicated for individuals with complex or developmental trauma histories who have not benefited from, or have been unable to tolerate, first-line trauma-focused therapies. Conversely, SAP may be contraindicated, or require substantial modification, for clients presenting with acute psychosis, severe dissociative fragmentation without adequate internal resourcing, or active substance intoxication, where autonomic tracking and eye-movement-based interventions may be difficult to titrate safely. Clients with untreated seizure disorders or significant visual impairment may also require adapted protocols, consistent with established cautions in the eye-movement therapy literature (de Jongh et al., 2024).

Implementation of SAP further presupposes a specific set of therapist competencies beyond generic trauma-informed practice. Clinicians must be able to track subtle, moment-to-moment shifts in client autonomic state with sufficient precision to titrate pacing and avoid inadvertent flooding; possess working knowledge of autonomic-regulation theory sufficient to explain the rationale for regulation-first sequencing to clients; and be trained in the safe administration of eye-movement-based interventions, ideally through formal EMDR or

equivalent bilateral-stimulation training, given the overlapping procedural elements. Without this combination of competencies, SAP's reliance on clinician attunement (see Limitations) may introduce meaningful variability in both safety and outcome.

4. Research Limitations

Several limitations warrant consideration. First, and most fundamentally, SAP was developed by the author of this paper, who also served as the treating clinician in the case illustrated here. This dual role introduces a clear risk of confirmation bias in the interpretation of clinical presentation, the framing of therapeutic change as consistent with SAP's proposed mechanisms, and the selection and presentation of the case itself. No independent clinician or researcher was involved in data collection, case interpretation, or outcome assessment. Readers should therefore treat the theoretical coherence demonstrated in this paper as hypothesis-generating rather than confirmatory: independent replication by researchers and clinicians without a stake in SAP's development, ideally involving blinded assessment and pre-registered protocols, is required before conclusions can be drawn about the model's validity or clinical effectiveness. Second, the present paper relies on a single clinical illustration to demonstrate theoretical coherence rather than empirical efficacy. While case-based examples are valuable for theory development, they do not permit causal inference or generalisation beyond the specific clinical context (Herman, 1992). Future research will be required to examine SAP across diverse populations and settings.

Third, the absence of standardised outcome measures limits the ability to quantify change or compare SAP-informed interventions with alternative treatment approaches. Observed shifts in regulation and relational functioning were based on clinical observation and client self-report, which may be subject to bias or expectancy effects.

Fourth, SAP’s reliance on clinician attunement and moment-to-moment regulation introduces variability in implementation. Without formalized training protocols or fidelity measures, differences in practitioner skill may influence outcomes. This limitation underscores the need for clearer operational definitions and standardisation as the model evolves.

Finally, while SAP draws on established neuroscience and trauma theory, its proposed mechanisms of change remain inferential. Direct neurophysiological measurement was beyond the scope of this paper, and claims regarding autonomic re-patterning should be interpreted as theoretically grounded hypotheses rather than empirically verified processes.

A further limitation concerns SAP’s reliance on polyvagal theory as part of its explanatory account of autonomic organization (Porges, 2011). Several of polyvagal theory’s specific physiological claims – including the proposed phylogenetic separation of dorsal and ventral vagal pathways and the use of heart-rate variability as a direct index of vagal tone – have recently been the subject of sustained scientific critique from a large international group of physiologists (Grossman, 2023; Grossman et al., 2026), alongside a formal rebuttal from the theory’s originator (Porges, 2026). SAP’s central premise, that attachment trauma involves enduring patterns of autonomic dysregulation, does not depend on the specific anatomical claims under dispute and is also supported by interoceptive and predictive-processing literatures independent of polyvagal theory (Craig, 2009; Putica & Agathos, 2024). Nonetheless, as this debate develops, future refinements of SAP should draw on the broader and more contested autonomic-neuroscience literature explicitly, rather than relying on polyvagal theory as a singular framework.

5. Future Research Directions

Future research on SAP would benefit from systematic investigation across multiple methodological levels. First, qualitative and mixed-methods studies could explore client experiences of regulation-first interventions, particularly among populations who have previously struggled with exposure-based therapies. Such research may clarify for whom SAP is most appropriate and under what conditions it is most effective.

Second, quantitative studies incorporating psychophysiological measures (e.g., heart rate variability, respiratory patterns, interoceptive awareness indices) could provide objective indicators of autonomic change associated with SAP-informed interventions. These measures would strengthen claims regarding regulation and autonomic flexibility.

Third, comparative studies examining SAP alongside established modalities such as EMDR, somatic experiencing, or affect-focused therapies may help delineate differential mechanisms and indications. Rather than assessing superiority, such research could clarify clinical decision-making regarding sequencing and modality selection.

Finally, future work should address training, scalability, and fidelity. The development of formalized training pathways, supervision frameworks, and adherence measures will be essential for ensuring consistency and integrity as SAP is disseminated. Longitudinal research examining the durability of regulatory and relational changes over time would further contribute to SAP's credibility as a theoretically grounded and clinically relevant model.

Conclusion

This paper has articulated the Eye Movement–Somatic Attachment Protocol (SAP) as a neuro-somatic model of attachment repair grounded in contemporary understandings of autonomic regulation, attentional modulation, and relational safety. By reframing attachment trauma as a disturbance of physiological organization rather than solely of memory content, SAP offers a conceptual framework for understanding why some individuals struggle to benefit from exposure-based or affect-intensive interventions despite cognitive insight and therapeutic engagement.

Through theoretical synthesis and clinical illustration, SAP has been positioned not as a technique or hybrid protocol, but as a regulation-first model that prioritizes nervous-system stability as a precondition for deeper psychological change. The use of eye movements as tools for neural interruption and state modulation, combined with structured somatic tracking, distinguishes SAP from existing eye-movement and somatic therapies while remaining theoretically compatible with broader trauma-informed practice.

Importantly, SAP does not propose memory reconsolidation as an assured outcome of intervention. Instead, it conceptualizes reconsolidation as an emergent, state-dependent process that may occur when conditions of physiological safety, attentional flexibility, and relational attunement are present. This stance reflects a cautious and scientifically grounded approach to therapeutic change, avoiding deterministic claims while remaining consistent with current neuroscience. By formalising SAP as a theoretical model, this paper contributes to ongoing efforts to bridge gaps between neuroscience, attachment theory, and clinical practice. SAP is offered as a complementary framework for clinicians working with attachment-related dysregulation, particularly in cases where regulation capacity is limited and exposure-first approaches may be ineffective or contraindicated. Further empirical research is required to evaluate SAP's mechanisms, applications, and limits, but its conceptual foundations provide a coherent basis for such investigation.

Credit Authorship Contribution Statement

Tang S Y N: Conceptualisation, Methodology, Investigation, Writing – Original Draft, Writing – Review & Editing, Visualisation. As sole author, the corresponding author confirms this description is accurate.

Acknowledgments

The author declares that this research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Founding: N/A

Conflict of Interest Statement

The author declares no other conflicts of interest.

Data Availability Statement

The data that support the findings of this study are not publicly available due to confidentiality obligations to the client described in the clinical illustration, but de-identified case material is available from the corresponding author upon reasonable request, subject to client consent.

Ethical Approval Statement

Formal ethics committee approval was not required for private-practice case material under the author's registering body Australian Counselling Association (ACA) and Singapore Association for Counselling (SAC). Documented written client consent for publication was obtained, and all identifying client details have been fully anonymised.

References

Bowlby, J. (1980). *Attachment and Loss: Volume 3. Loss, Sadness, and Depression*. Basic Books. https://pep-web.org/browse/document/IPL.109.0000A

Christman, S. D., Garvey, K. J., Propper, R. E., & Phaneuf, K. A. (2003). Bilateral eye movements enhance the retrieval of episodic memories. *Memory & Cognition, 31*(3), 453–461. https://doi.org/10.3758/BF03194401

Cloitre, M., Courtois, C. A., Charuvastra, A., Carapezza, R., Stolbach, B. C., & Green, B. L. (2011). Treatment of complex PTSD: Results of the ISTSS expert clinician survey. *Journal of Traumatic Stress, 24*(6), 615–627. https://doi.org/10.1002/jts.20697

Courtois, C. A., & Ford, J. D. (2013). Treatment of complex trauma: A sequenced, relationship-based approach, 378 pp., 1st Edition, Guilford Press. ISBN 978-1462524600

Craig, A. D. (2002). How do you feel? Interoception: The sense of the physiological condition of the body. *Nature Reviews Neuroscience, 3*(8), 655–666. https://doi.org/10.1038/nrn894

Craig, A. D. (2009). How do you feel - now? The anterior insula and human awareness. *Nature Reviews Neuroscience, 10*(1), 59–70. https://doi.org/10.1038/nrn2555

de Jongh, A., de Roos, C., & El-Leithy, S. (2024). State of the science: Eye movement desensitization and reprocessing (EMDR) therapy. Journal of Traumatic Stress, 37(2), 205–216. https://doi.org/10.1002/jts.23012

Ecker, B., Ticic, R., & Hulley, L. (2012). *Unlocking the Emotional Brain: Eliminating Symptoms at their Roots Using Memory Reconsolidation*. Routledge. https://www.taylorfrancis.com/books/edit/10.4324/9780203804377/unlocking-emotional-brain-bruce-ecker-robin-ticic-laurel-hulley

Ecker, B. (2024). A proposal for the unification of psychotherapeutic action understood as memory modification processes. *Journal of Psychotherapy Integration*, *34*(3), 291–314. https://doi.org/10.1037/int0000330

Ecker, B., & Vaz, A. (2022). Memory reconsolidation and the crisis of mechanism in psychotherapy. *New Ideas in Psychology*, 66, 100945. https://doi.org/10.1016/j.newideapsych.2022.100945

Elsey, J. W. B., & Kindt, M. (2017). Breaking boundaries: Optimizing reconsolidation-based interventions for strong and old memories. *Current Opinion in Behavioural Sciences, 15*, 57–62. https://doi.org/10.1016/j.cobeha.2017.05.013

Fisher, J. (2017). *Healing the Fragmented Selves of Trauma Survivors: Overcoming Internal Self-Alienation*. Routledge. https://www.taylorfrancis.com/books/mono/10.4324/9781315886169/healing-fragmented-selves-trauma-survivors-janina-fisher

Grossman, P. (2023). Fundamental challenges and likely refutations of the five basic premises of the polyvagal theory. *Biological Psychology*, 180, 108589. https://doi.org/10.1016/j.biopsycho.2023.108589

Grossman, P., Ackland, G. L., Allen, A. M., Berntson, G. G., Booth, L. C., Burghardt, G. M., Buron, J., Dinets, V., Doody, J. S., Dutschmann, M., Farmer, D. G. S., Fisher, J. P., Gourine, A. V., Joyner, M. J., Karemaker, J. M., Khalsa, S. S., Lakatta, E. G., Leite, C. A. C., Macefield, V. G., … Zucker, I. H. (2026). Why the polyvagal theory is untenable. *Clinical Neuropsychiatry*, 23(1), 100–112. https://doi.org/10.36131/cnfioritieditore20260110

Herman, J. L. (1992). *Trauma and recovery: The aftermath of violence - from domestic abuse to political terror*. Basic Books/Hachette Book Group. https://ia803207.us.archive.org/14/items/radfem-books/Trauma%20and%20Recovery_%20The%20Afterm%20-%20Judith%20L.%20Herman.pdf

Hinz, L. D. (2015). The Science of the Art of Psychotherapy: by Allan N. Shore New York, NY: Norton, 2012 480 pp. ISBN: 978-0-393-70664-2. *Art Therapy, 32*(3), 152–153. https://doi.org/10.1080/07421656.2015.1060564

Lane, R. D., Ryan, L., Nadel, L., & Greenberg, L. (2015). Memory reconsolidation, emotional arousal, and the process of change in psychotherapy. *Behavioural and Brain Sciences, 38*, e1. https://doi.org/10.1017/S0140525X14000041

Nadel, L. & Lane, R.D. (Eds) (2020). Neuroscience of Enduring Change and Psychotherapy: An Introduction', in Richard D. Lane, and Lynn Nadel (eds), *Neuroscience of Enduring Change* (online edn, Oxford Academic, 19 Mar. 2020). https://doi.org/10.1093/oso/9780190881511.003.0001

Lyons-Ruth, K., & Jacobvitz, D. (2016). Attachment disorganization from infancy to adulthood. In J. Cassidy & P. R. Shaver (Eds.), Handbook of Attachment: Theory, Research, and Clinical Applications (3rd Edition, pp. 667–695). Guilford Press. https://ebookcentral.proquest.com/lib/ed/detail.action?docID=4338858

Nader, K., Schafe, G. E., & LeDoux, J. E. (2000). Fear memories require protein synthesis in the amygdala for reconsolidation after retrieval. *Nature, 406*(6797), 722–726. https://doi.org/10.1038/35021052

Ogden, P., Minton, K., & Pain, C. (2006). *Trauma and the Body: A Sensorimotor Approach to Psychotherapy*, 384 pages. Norton & Company. ISBN: 978-0-393-70457-0. https://wwnorton.com/books/9780393704570

Payne, P., Levine, P. A., & Crane-Godreau, M. A. (2015). Somatic experiencing: Using interoception and proprioception as core elements of trauma therapy. *Frontiers in Psychology, 6*, 93. https://doi.org/10.3389/fpsyg.2015.00093

Phelps, E. A., Kroes, M. C. W., Fernandez, G., & Henke, K. (2014). Extinction learning in humans: Role of the amygdala and vmPFC. *Neuron, 84*(1), 36–48. https://doi.org/10.1016/j.neuron.2014.09.028

Porges, S. W. (2011). *The Polyvagal Theory: Neurophysiological Foundations of Emotions, Attachment, Communication, and Self-regulation*. Norton. https://wwnorton.com/books/The-Polyvagal-Theory/

Porges, S. W. (2026). When a critique becomes untenable: A scholarly response to Grossman et al.'s evaluation of polyvagal theory. *Clinical Neuropsychiatry*, *23*(1), 113–128. https://doi.org/10.36131/cnfioritieditore20260111

Propper, R. E., & Christman, S. D. (2008). Interhemispheric interaction and saccadic horizontal eye movements: Implications for episodic memory, EMDR, and PTSD. *Neuropsychology, 22*(1), 106-111. https://doi.org/10.1037/0894-4105.22.1.106

Putica, A., & Agathos, J. (2024). Reconceptualizing complex posttraumatic stress disorder: A predictive processing framework for mechanisms and intervention. *Neuroscience & Biobehavioral Reviews*, 164, 105836. https://doi.org/10.1016/j.neubiorev.2024.105836

Schore, A. N. (2001). Effects of early relational trauma on right brain development, affect regulation, and infant mental health. *Infant Mental Health Journal, 22*(1–2), 201–269. https://doi.org/10.1002/1097-0355(200101/04)22:1<201::AID-IMHJ8>3.0.CO;2-9

Siegel, D. J. (2012). *The Developing Mind: How Relationships and The Brain Interact to Shape Who We Are* (2nd Ed.), 506 pp, Guilford Press. ISBN: 978-1462503926

Stickgold, R. (2002). EMDR: A putative neurobiological mechanism of action. *Journal of Clinical Psychology, 58*(1), 61–75. https://doi.org/10.1002/jclp.1129

van der Kolk, B. A. (2014). *The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma*. Viking, 462pp. ISBN: 978-1101608302

Wang, S., He, Y., Hu, J., Xia, J., Fang, K., Yu, J., & Wang, Y. (2024). Eye movement intervention facilitates concurrent perception and memory processing. *Cerebral Cortex*, *34*(5), bhae190. https://doi.org/10.1093/cercor/bhae190

Appendix A:

The Three Phases of the Eye Movement–Somatic Attachment Protocol (SAP)

The Eye Movement–Somatic Attachment Protocol is structured as a regulation-first sequencing model. Unlike exposure-based therapies, SAP prioritizes establishing autonomic stability and state awareness before or during any memory reconsolidation processes.

Phase 1: Autonomic Assessment and Stabilization

The primary goal of the initial phase is to identify the client's unique physiological patterns and build a foundation of safety.

- Focus: Identifying autonomic patterns (e.g., hyperarousal or hypoarousal) within specific relational contexts.
- Technique: Somatic Tracking is introduced to support the client's capacity to notice shifts in bodily sensations, arousal, and breath without attempting to change or analyse them.
- Clinical Goal: Prioritize stabilization and "state awareness" over cognitive restructuring or exposure to relational memories.
- Rationale: This phase is critical for clients with limited affect tolerance who may otherwise experience rapid escalation into anger or dissociative withdrawal during emotional exploration.

Phase 2: Neural Interruption and State Modulation

Once a baseline level of autonomic awareness is established, active neuro-somatic interventions are introduced to manage activation.

- Focus: Using eye movements as a form of "neural interruption" rather than a desensitization tool.
- Technique: Brief sets of eye movements are utilized to modulate attentional fixation and reduce "autonomic lock-in" during moments of threat or activation.
- Clinical Goal: The therapist continuously monitors arousal levels, adjusting the pacing of interventions to maintain regulation and prevent emotional flooding.
- Rationale: This process aims to interrupt habitual autonomic responses associated with attachment threat, allowing for increased physiological flexibility.

Phase 3: Integration and Relational Re-Patterning

The final phase focuses on applying improved self-regulation skills to real-world relational dynamics.

- Focus: Integrating regulatory capacity within the client's current relational context rather than revisiting detailed autobiographical memories.
- Technique: Somatic tracking and eye movements are used to support regulation while the client explores internal responses to present-moment relational cues.
- Clinical Goal: Facilitate "autonomic re-patterning," where the client can notice early signs of activation and modulate their physiological state in real-time interactions.
- Rationale: Success is defined by an increased capacity to remain present and flexible during conflict, rather than simply suppressing symptoms.