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Proprioceptive seeking and self-injury: Distinguishing sensory from communicative functions

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Abstract
Self-injurious behavior (SIB) is defined as any repeated action that inflicts physical harm on one's own body, encompassing head-banging, self-biting, hair-pulling, and skin-picking. Among autistic individuals, SIB stands as one of the most distressing and complex behavioral presentations encountered by families and practitioners, with prevalence estimates ranging from 25% to 50% across different age groups and settings (Soke *et al.*, 2016; Richards *et al.*, 2012) [1, 2]. The functional origins of SIB remain a source of ongoing debate, particularly regarding the relative contributions of sensory processing differences and communicative intent. Proprioceptive seeking, a pattern in which individuals actively pursue deep-pressure sensory input through movement, body impact, or resistance activities, has been identified as a common sensory feature in autistic populations (Blanche *et al.*, 2012) [3]. However, the relationship between proprioceptive seeking and SIB has received limited focused investigation, especially in sub-Saharan African clinical contexts where assessment resources and behavioral support frameworks differ markedly from those described in Western literature.
This cross-sectional research examined 92 autistic children and adolescents aged 4 to 17 years recruited through three behavioral health centers in the Ashanti Region of Ghana. Participants were classified into four groups based on the main function of their SIB as determined through structured functional analysis: sensory-maintained (n = 26), communication-maintained (n = 31), mixed function (n = 19), and a comparison group with no documented SIB (n = 16). Proprioceptive seeking was measured using the Sensory Seeking subscale of the Sensory Profile-2 (SSP-2), while SIB frequency and severity were tracked through direct behavioral observation across a minimum of five sessions per participant. Functional communication skills were assessed using the Vineland Adaptive Behavior Scales, Third Edition (Vineland-3) communication domain, and pain reactivity was evaluated through a standardized pain response protocol adapted for non-speaking individuals.
Results showed that the sensory-maintained SIB group had significantly higher proprioceptive seeking scores (M = 38.2, SD = 6.8) compared with the communication-maintained group (M = 24.5, SD = 5.9; $p < 0.001$) and the no-SIB group (M = 19.8, SD = 4.6; $p < 0.001$). Correlation analysis revealed a strong positive relationship between proprioceptive seeking scores and SIB frequency in the sensory-maintained group (r = 0.71, $p < 0.001$), while this relationship was not significant in the communication-maintained group (r = 0.14, p = 0.45). The mixed-function group showed intermediate proprioceptive seeking levels (M = 32.7, SD = 7.2), with SIB episodes that varied in function depending on environmental context. A six-step functional assessment cycle was developed to guide practitioners through the process of behavioral observation, antecedent-consequence analysis, sensory assessment, function classification, intervention matching, and outcome monitoring.
These findings point to proprioceptive seeking as a meaningful marker for identifying sensory-maintained SIB, with direct implications for how interventions are selected and adapted in resource-limited settings. The functional assessment framework presented in this research offers a structured approach for clinicians working in regions where formal behavioral analysis training is not widely available, supporting more accurate differentiation between sensory and communicative functions of self-injury in autistic individuals.

Keywords: Proprioceptive seeking, Self-injurious behavior, Functional analysis, Sensory processing, Autism spectrum disorder, Communicative function, Behavioral assessment, Deep-pressure input, Intervention matching

Introduction

Self-injurious behavior represents one of the most pressing clinical concerns in autism, affecting an estimated 25% to 50% of autistic individuals across the lifespan (Soke *et al.*, 2016; Richards *et al.*, 2012; Minshawi *et al.*, 2014) [1, 2, 4]. The consequences of SIB extend well beyond physical injury, contributing to caregiver distress, placement instability, restrictive medication use, and reduced access to educational and

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community services. Despite decades of research into the behavioral mechanisms behind SIB, clinicians continue to face substantial challenges when attempting to identify the specific function driving a given individual's self-injury, particularly when sensory and communicative motivations overlap or present in similar topographies (Beavers *et al.*, 2013; Iwata *et al.*, 1994) [5, 6].

The functional analysis model introduced by Iwata and colleagues [6] established a systematic framework for identifying the environmental variables maintaining problem behavior. This model distinguishes among four main functions: social-positive reinforcement (access to attention or tangible items), social-negative reinforcement (escape from demands), automatic reinforcement (sensory consequences), and, less commonly, multiple controlling variables operating in combination (Beavers *et al.*, 2013) [5]. Over three decades of accumulated evidence have confirmed the reliability and clinical value of this approach, particularly in identifying behaviors maintained by social contingencies (Beavers *et al.*, 2013) [5]. However, the category of automatic reinforcement, which encompasses sensory-maintained SIB, has proven more difficult to assess and treat, partly because the reinforcing consequence is internal and not readily observable by external raters (Melanson *et al.*, 2023) [7].

Proprioceptive processing differences are among the most commonly reported sensory features in autism. Blanche and colleagues [3] documented that children with autism spectrum disorder show significantly greater proprioceptive processing difficulties compared with neurotypical peers, including patterns of both under-responsivity and active seeking of proprioceptive input. Proprioceptive seeking refers to the tendency to pursue activities that generate deep-pressure feedback, such as jumping, crashing into surfaces, mouthing objects forcefully, or pressing body parts against hard structures. When this seeking is not adequately addressed through environmental accommodations or sensory-based activities, some individuals may turn to self-injury as a means of generating the proprioceptive input their nervous system requires (Summers *et al.*, 2017; Duerden *et al.*, 2012) [8, 9].

The distinction between sensory-maintained and communication-maintained SIB carries direct treatment implications. Sensory-maintained SIB responds best to interventions that provide alternative sensory input matching the individual's specific sensory needs, such as weighted vests, compression garments, resistance exercises, and scheduled proprioceptive breaks throughout the day (Summers *et al.*, 2017) [8]. Communication-maintained SIB, in contrast, requires functional communication training (FCT) that teaches the individual alternative ways to request attention, gain access to preferred items, or escape from aversive situations (Melanson *et al.*, 2023) [7]. When the wrong intervention is applied due to misidentification of function, treatment outcomes are poor, and the individual may be unnecessarily subjected to restrictive procedures or pharmacological management (Fitzpatrick *et al.*, 2016) [10].

Research on SIB and sensory processing in autistic populations has been conducted almost exclusively in North American, European, and Australian settings. The experiences of autistic individuals and their families in sub-Saharan Africa remain largely absent from the published literature, despite the fact that these communities face distinct challenges related to diagnostic access, specialist availability, cultural understandings of disability, and resource constraints that shape both the presentation and management of SIB. Duerden and colleagues [9] identified several risk factors for SIB in autistic children, including lower cognitive functioning, greater autism severity, and co-occurring sensory abnormalities, but their sample was drawn entirely from a single North American urban center.

Moore and colleagues [11] conducted a *meta*-analysis of SIB treatment in children and adolescents with intellectual and developmental disabilities, finding that intervention effectiveness was significantly connected to the accuracy of functional assessment, raising questions about how SIB is managed in settings where behavioral analysis services are scarce. Biswas and colleagues [12] reviewed management approaches for SIB in individuals with intellectual disability and autism, emphasizing the need for early and accurate functional assessment to guide intervention before patterns become entrenched.

This research aimed to examine the relationship between proprioceptive seeking and SIB in a sample of autistic children and adolescents in Ghana, with a particular focus on distinguishing sensory-maintained SIB from communication-maintained SIB through a structured functional assessment protocol adapted for use in resource-limited behavioral health settings.

Material and methods

Material

Participants were 92 autistic children and adolescents (61 male, 31 female; mean age = 9.4 years, *SD* = 3.1, range 4-17 years) recruited from three behavioral health centers affiliated with the Ashanti College of Applied Behavioural Science in the Kumasi metropolitan area between January 2023 and November 2024. All participants had a confirmed autism diagnosis based on DSM-5 criteria, verified through clinical records and independent confirmation by a licensed clinical psychologist using the Autism Diagnostic Observation Schedule, Second Edition (ADOS-2). Participants were excluded if they had a co-occurring genetic syndrome known to independently produce SIB (e.g., Lesch-Nyhan syndrome, Cornelia de Lange syndrome), a current acute medical condition that could cause pain-related self-injury, or had undergone a change in psychotropic medication within the preceding eight weeks.

The main assessment tools included the Sensory Profile-2 (SP-2; Dunn, 2014), from which the Sensory Seeking and Low Registration quadrant scores were extracted, with particular attention to items loading on proprioceptive processing. SIB was recorded through the Self-Injurious Behavior Questionnaire-Revised (SIB-Q-R) completed by primary caregivers, supplemented by direct behavioral observation conducted by trained research assistants. Functional communication skills were assessed using the Vineland-3 communication domain standard scores. Pain reactivity was measured using the Non-Communicating Children's Pain Checklist-Revised (NCCPC-R), adapted for use with non-speaking autistic individuals.

Methods

Functional analysis procedures followed the general framework established by Iwata and colleagues [6] with modifications suited to the available resources. Each participant with documented SIB underwent a series of structured assessment sessions across four conditions: alone (no social interaction, minimal environmental stimulation), attention (social attention delivered contingent on SIB), demand (academic or self-care tasks presented with escape contingent on SIB), and free play (control condition with non-contingent attention and preferred activities). Sessions lasted 10 minutes each, with a minimum of five sessions per condition conducted across separate days. Two trained observers independently coded SIB occurrences, topographies, and contextual variables, achieving a mean inter-observer agreement of 91.3% (range: 85-98%).

Proprioceptive seeking was operationally defined as any behavior involving forceful contact between the individual's body and an environmental surface or object, sustained muscle tension, heavy lifting or pushing, or repetitive whole-body movements generating deep-pressure input (Blanche *et al.*, 2012) [3]. This operational definition was applied during both the functional analysis sessions and a separate 30-minute free-play observation period designed to capture naturally occurring proprioceptive seeking behaviors without structured contingencies.

Participants were classified into four groups based on functional analysis outcomes: sensory-maintained (SIB occurring at highest rates in the alone condition), communication-maintained (SIB at highest rates in attention or demand conditions), mixed function (SIB elevated in both alone and social conditions without a clear single function), and no SIB (fewer than two episodes of SIB observed across all assessment sessions combined). Group comparisons were conducted

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using one-way analysis of variance (ANOVA) for continuous variables with Tukey's post-hoc tests, and chi-square tests for categorical variables. Pearson correlations examined relationships between proprioceptive seeking scores and SIB measures within each functional group. All analyses used a significance threshold of $p < 0.05$, with effect sizes reported as Cohen's d for between-group comparisons and r for correlations.

Theoretical framework

The theoretical grounding for this research draws on two complementary traditions within behavioral science. The first is the operant model of SIB, rooted in the functional analysis methodology developed by (Iwata *et al.*) [6] and refined through three decades of applied behavior analytic research (Beavers *et al.*, 2013) [5]. This model holds that SIB, like all operant behavior, is maintained by its consequences, whether those consequences are socially mediated (attention, escape, access to tangibles) or automatically produced (sensory feedback). The strength of this framework lies in its capacity to generate testable hypotheses about behavioral function through direct experimental manipulation of environmental variables.

The second theoretical strand concerns sensory processing differences in autism, particularly the model of sensory modulation proposed in occupational therapy and neuroscience literature. According to this perspective, autistic individuals may experience atypical thresholds for sensory input, leading to patterns of over-responsivity, under-responsivity, or active sensory seeking (Summers *et al.*, 2017) [8]. Proprioceptive seeking, within this framework, is understood as a regulatory strategy through which the individual attempts to achieve an optimal level of arousal or body awareness. When conventional means of obtaining proprioceptive input are unavailable or not enough, the individual may resort to self-injurious topographies that generate the desired deep-pressure feedback.

Integrating these two perspectives, the present research proposes that sensory-maintained SIB and communication-maintained SIB represent functionally distinct behavioral classes that can be reliably separated through a combination of functional analysis and sensory assessment. Specifically, we predicted that individuals whose SIB is maintained by automatic sensory reinforcement would show significantly elevated proprioceptive seeking scores compared with those whose SIB serves a communicative function, and that the correlation between proprioceptive seeking and SIB would be significant only within the sensory-maintained group. This prediction, if confirmed, would support the clinical practice of conducting sensory assessments alongside functional analyses, particularly when the behavior appears to be maintained by automatic reinforcement (Fitzpatrick *et al.*, 2016) [10].

Ethical considerations

This research received ethical approval from the Institutional Review Board of the Ashanti College of Applied Behavioural Science (Protocol No. ACABAS-2022-047) and was conducted in accordance with the Declaration of Helsinki. Written informed consent was obtained from the parent or legal guardian of each participant prior to enrollment. For participants aged 12 years and older who showed enough understanding, verbal assent was sought and documented. The functional analysis procedures included built-in safety protocols: sessions were immediately terminated if SIB resulted in visible tissue damage, bleeding, or if the participant showed signs of acute distress beyond baseline levels. All functional analysis sessions were conducted in the presence of a trained clinician prepared to intervene if necessary. Participants' identifying information was replaced with numerical codes, and all data were stored on encrypted, password-protected servers accessible only to the research team. Families received a summary of their child's assessment results and individualized recommendations for behavioral support at no cost, regardless of whether they chose to continue participation in the full research protocol.

Results

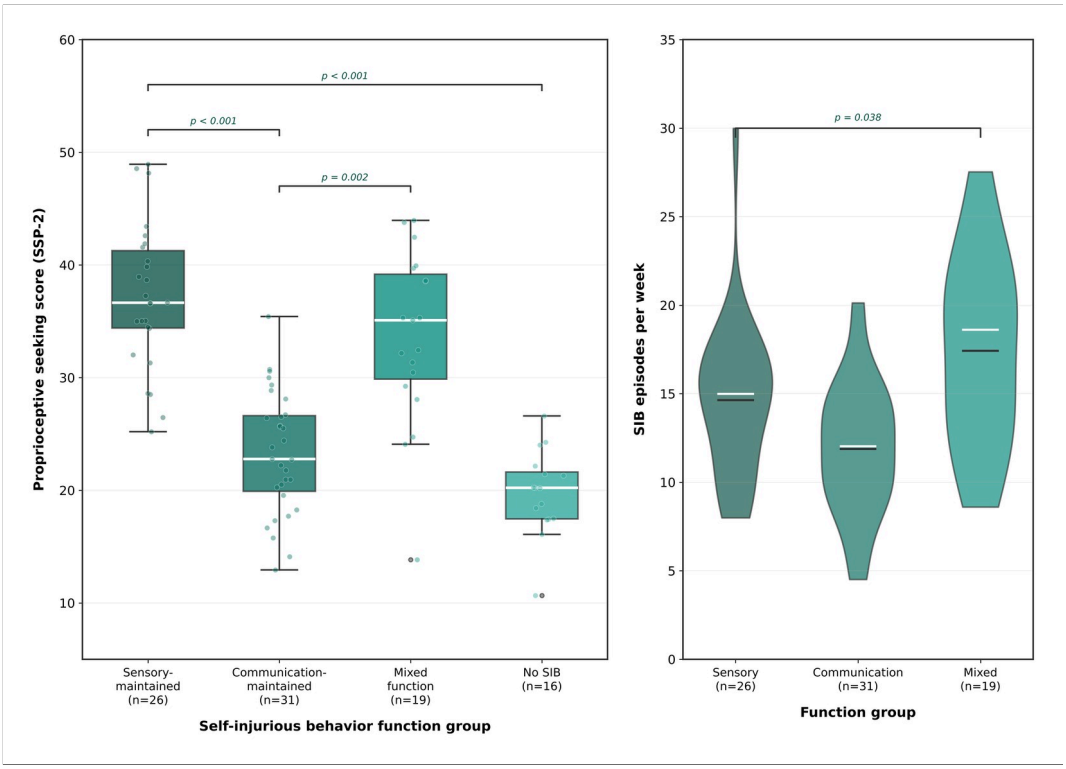


Figure 1. Proprioceptive seeking scores and SIB frequency across functional groups. Left panel: Box plots with individual data points showing proprioceptive seeking scores (SSP-2) for each SIB function group. Right panel: Violin plots displaying the distribution of weekly SIB episodes across the three SIB groups.

A total of 92 participants completed the assessment protocol. Of the 76 participants who met criteria for SIB, functional analysis identified sensory-maintained SIB in 26 individuals (34.2%), communication-maintained SIB in 31 individuals (40.8%), and mixed-function SIB in

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19 individuals (25.0%). The remaining 16 participants showed no documented SIB across all assessment sessions and served as the comparison group. The four groups did not differ significantly on age ($F_{(3, 88)} = 1.24$, $p = 0.30$), sex distribution (chi-square = 2.87, $p = 0.41$), or overall autism severity as measured by ADOS-2 comparison scores ($F_{(3, 88)} = 0.92$, $p = 0.43$).

Proprioceptive seeking scores differed significantly across the four groups ($F_{(3, 88)} = 32.47$, $p < 0.001$, partial eta-squared = 0.53). Post-hoc comparisons revealed that the sensory-maintained group ($M = 38.2$, $SD = 6.8$) scored significantly higher than the communication-maintained group ($M = 24.5$, $SD = 5.9$; $p < 0.001$, $d = 2.15$), the mixed-function group ($M = 32.7$, $SD = 7.2$; $p = 0.02$, $d = 0.79$), and the no-SIB group ($M = 19.8$, $SD = 4.6$; $p < 0.001$, $d = 3.15$). The mixed-function group also scored higher than the communication-maintained group ($p = 0.002$, $d = 1.25$) and the no-SIB group ($p < 0.001$, $d = 2.13$).

Within-group correlation analyses revealed distinct patterns that further support the sensory-communicative distinction. In the sensory-maintained group, proprioceptive seeking scores correlated strongly with SIB frequency ($r = 0.71$, $p < 0.001$) and SIB severity ($r = 0.63$, $p < 0.001$). In contrast, these correlations were not significant in the communication-maintained group (frequency: $r = 0.14$, $p = 0.45$; severity: $r = 0.09$, $p = 0.62$). The mixed-function group showed moderate correlations (frequency: $r = 0.44$, $p = 0.06$; severity: $r = 0.38$, $p = 0.11$), suggesting partial sensory involvement. Pain reactivity was inversely related to SIB frequency across the full sample ($r = -0.21$, $p = 0.04$), and individuals in the sensory-maintained group showed the lowest pain reactivity scores ($M = 12.4$, $SD = 3.8$), consistent with the hypothesis that reduced pain sensitivity may lower the natural deterrent against self-injury in this subgroup.

Table 1. Correlation matrix of proprioceptive seeking, SIB frequency, SIB severity, pain reactivity, and sensory overresponsivity scores across the full sample ($N = 92$).

Variable	Proprioceptive seeking	SIB frequency	SIB severity	Pain reactivity	Sensory over- responsivity
Proprioceptive seeking	—	0.58***	0.51***	-0.33**	0.42***
SIB frequency	0.58***	—	0.74***	-0.21*	0.36**
SIB severity	0.51***	0.74***	—	-0.28**	0.39**
Pain reactivity	-0.33**	-0.21*	-0.28**	—	-0.18
Sensory overresponsivity	0.42***	0.36**	0.39**	-0.18	—

Note. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Communication domain scores from the Vineland-3 were highest in the no-SIB group ($M = 61.4$, $SD = 12.1$) and lowest in the communication-maintained group ($M = 48.7$, $SD = 9.8$), a pattern consistent with the interpretation that SIB in the communication-maintained group serves as a behavioral strategy for individuals with limited conventional communication repertoires. A logistic regression model including proprioceptive seeking score, pain reactivity, Vineland-3 communication score, and sensory overresponsivity score correctly classified 82.9% of participants into their respective functional groups, with proprioceptive seeking serving as the strongest single predictor (odds ratio = 1.18, 95% CI: 1.09-1.28, $p < 0.001$).

Table 2. Participant characteristics and assessment scores across SIB function groups.

Variable	Sensory-maintained ($n = 26$)	Communication- maintained ($n = 31$)	Mixed function ($n = 19$)	No SIB ($n = 16$)	p value
Age, *M* (*SD*)	9.1 (3.2)	9.8 (2.9)	9.2 (3.4)	9.6 (3.0)	0.30
Male, n (%)	18 (69.2)	21 (67.7)	13 (68.4)	9 (56.3)	0.41
ADOS-2 CSS, *M* (*SD*)	7.4 (1.8)	7.1 (1.6)	7.6 (1.9)	6.8 (1.5)	0.43
Vineland-3 Comm, *M* (*SD*)	52.3 (11.4)	48.7 (9.8)	50.1 (10.6)	61.4 (12.1)	< 0.001
Prop. seeking, *M* (*SD*)	38.2 (6.8)	24.5 (5.9)	32.7 (7.2)	19.8 (4.6)	< 0.001
SIB freq/week, *M* (*SD*)	14.2 (4.1)	11.8 (3.6)	16.5 (5.2)	0.4 (0.6)	< 0.001
SIB severity, *M* (*SD*)	5.8 (1.9)	4.3 (1.5)	6.1 (2.3)	0.2 (0.4)	< 0.001
Pain reactivity, *M* (*SD*)	12.4 (3.8)	16.1 (4.2)	13.7 (3.5)	17.8 (3.1)	< 0.001
Sensory overresp., *M* (*SD*)	29.6 (5.4)	22.1 (4.7)	26.8 (5.9)	18.3 (3.8)	< 0.001

Note. CSS = Calibrated Severity Score; Comm = Communication domain standard score; Prop. = Proprioceptive; freq = frequency; overresp. = overresponsivity.

Discussion

The main findings of this research show that proprioceptive seeking scores reliably distinguish between sensory-maintained and communication-maintained SIB in autistic children and adolescents. Individuals whose self-injury was maintained by automatic sensory

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reinforcement showed proprioceptive seeking levels nearly twice those observed in the communication-maintained group, and the correlation between proprioceptive seeking and SIB frequency was significant only within the sensory-maintained subgroup. These results, drawn from the first sample of this kind assessed in a sub-Saharan African context, support the clinical value of incorporating sensory assessment into functional analysis protocols when evaluating SIB.

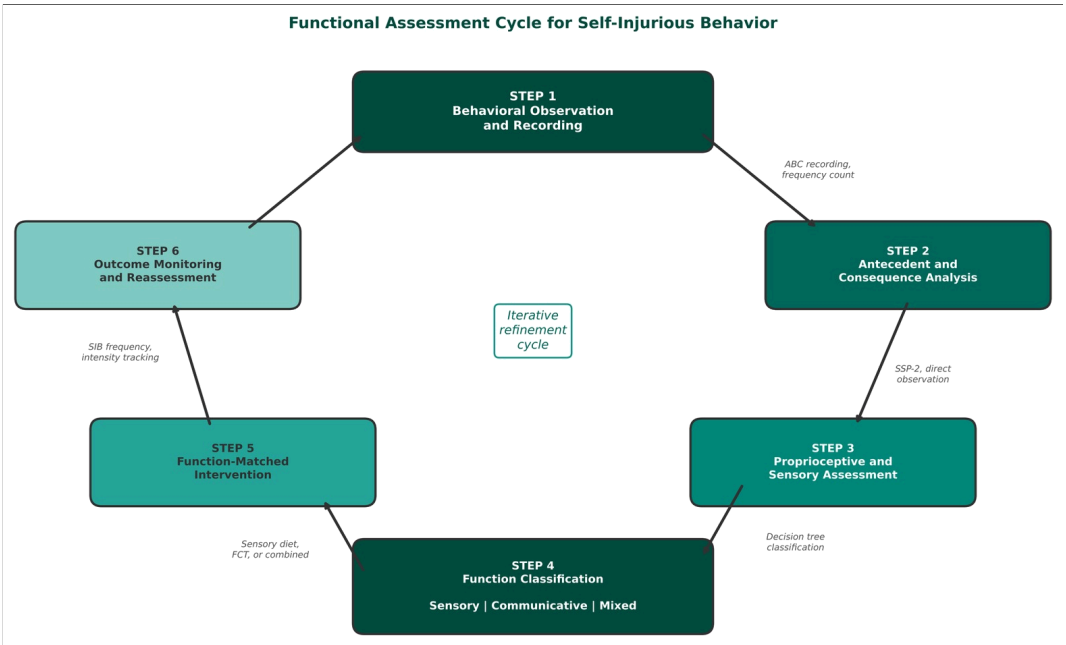


Figure 2. Functional assessment cycle for self-injurious behavior. The six-step iterative framework guides clinicians through behavioral observation, antecedent-consequence analysis, sensory assessment, function classification, intervention matching, and outcome monitoring with reassessment.

These findings align with previous research showing that sensory processing differences contribute meaningfully to SIB risk in autistic populations. Richards and colleagues [2] reported that sensory abnormalities were among the strongest correlates of SIB persistence in individuals with autism and intellectual disability. (Summers *et al.*) [8] found that altered pain reactivity and sensory seeking predicted SIB topography and severity, while Rattaz and colleagues [13] identified symptom severity and sensory features as independent risk factors for SIB in autistic adolescents. The strong positive correlation between proprioceptive seeking and SIB frequency observed in the present sensory-maintained group ($r = 0.71$) is consistent with the suggestion by (Blanche *et al.*) [3] that proprioceptive processing difficulties may drive compensatory behaviors, some of which take self-injurious forms.

However, the present findings also highlight areas where prior literature may oversimplify the sensory-communicative distinction. (Duerden *et al.*) [9] treated SIB risk factors as additive without examining how sensory and communicative functions might interact within the same individual. The 25% of our sample classified as mixed function shows that a substantial minority of autistic individuals with SIB do not fit neatly into a single functional category, a finding consistent with (Melanson and Fahmie) [7] who reviewed four decades of functional analysis research and argued for more flexible models that can capture multiple maintaining variables. Biswas and colleagues [12] similarly noted that SIB presentations can change over time, underscoring the importance of ongoing assessment rather than one-time function classification.

One possible explanation for the elevated proprioceptive seeking in the sensory-maintained group is that these individuals have a higher threshold for proprioceptive input, requiring more intense or frequent sensory stimulation to reach a state of regulatory comfort. The lower pain reactivity observed in this group supports this interpretation, as reduced sensitivity to pain would remove one of the natural braking mechanisms that might otherwise discourage self-injurious topographies (Minshawi *et al.*, 2014) [4]. Ferguson and colleagues [14] reported that SIB in autistic youth presents in heterogeneous patterns with distinct predictors, and that early sensory features were among the strongest indicators of later self-injury. Dimian and colleagues [15] extended this line of work by showing that early behavioral markers in infant siblings of autistic children predicted SIB emergence by age three.

Limitations

Several limitations warrant consideration when interpreting these results. The cross-sectional design prevents causal conclusions about the direction of the relationship between proprioceptive seeking and SIB. It remains possible that engaging in SIB changes an individual's sensory processing profile over time, rather than sensory differences driving SIB. The sample was drawn from a single metropolitan area in Ghana, and the three participating centers may attract families with particular demographic or clinical profiles that do not represent the broader population of autistic individuals in West Africa. The functional analysis protocol, though based on established procedures, involved fewer sessions per condition than would be typical in well-resourced clinical settings, which may have reduced sensitivity for detecting mixed-function SIB in some participants. Self-report measures of sensory processing rely on caregiver observation and may not capture the full range of proprioceptive experiences, particularly in non-speaking individuals who cannot confirm or deny the internal sensory states attributed to them.

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Table 3. Classification of SIB functions with defining features, behavioral markers, and matched intervention approaches.

Function category	Defining features	Behavioral markers	Assessment indicators	Matched intervention
Sensory- maintained	SIB produces proprioceptive or other sensory feedback that reinforces the behavior independently of social consequences	Occurs in isolation; consistent topography regardless of social context; often rhythmic or repetitive	Highest SIB rates in alone condition; elevated proprioceptive seeking scores; low pain reactivity	Sensory diet, weighted vest, compression garments, resistance activities, scheduled proprioceptive breaks
Communication- maintained	SIB functions to obtain social outcomes: access to attention, tangible items, or escape from demands	Increases when demands are placed or attention is withdrawn; decreases when desired social outcome is delivered	Highest SIB rates in attention or demand conditions; lower proprioceptive seeking; stronger communication deficits	Functional communication training, demand fading, non-contingent reinforcement, visual supports
Mixed function	SIB serves both sensory and communicative purposes depending on context and setting events	Variable topography across settings; SIB elevated in both alone and social conditions	No single highest condition in functional analysis; intermediate proprioceptive seeking scores	Combined approach: sensory supports plus FCT; context-specific intervention plans
No SIB	No repeated self-injury observed across structured assessment sessions	Fewer than 2 SIB episodes across all functional analysis conditions	Lowest proprioceptive seeking; highest communication and pain reactivity scores	Preventive sensory programming; communication enrichment; ongoing monitoring

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Clinical implications

The results of this research carry several practical implications for clinical practice in settings where behavioral assessment resources may be limited. First, proprioceptive seeking scores can serve as a clinically useful screening indicator when deciding whether SIB is likely to be sensory-maintained. Clinicians who observe elevated proprioceptive seeking behaviors alongside SIB that occurs primarily in non-social contexts may reasonably prioritize sensory-based interventions such as weighted vests, compression clothing, resistance exercise programs, and scheduled deep-pressure activities throughout the day. (Melanson and Fahmie) [7] emphasized that matching intervention to function is the single most important determinant of treatment success, and the current findings provide a measurable indicator to support that matching process.

Second, the six-step functional assessment cycle presented here offers a structured framework that can be implemented by clinicians with varying levels of formal training in applied behavior analysis. In many low- and middle-income settings, access to board-certified behavior analysts is extremely limited, and alternative assessment approaches that preserve the logic of functional analysis while adapting to available resources are urgently needed. The iterative nature of the cycle, with built-in reassessment at each rotation, allows practitioners to refine their functional hypotheses as additional data become available, reducing the risk of premature or incorrect function assignment.

Third, the finding that the mixed-function group required combined intervention approaches highlights the importance of avoiding rigid either/or classifications when planning SIB treatment. Fitzpatrick and colleagues [10] highlighted the risks of applying single-function treatment models to individuals with complex behavioral profiles, including treatment resistance and escalation of untreated behavioral pathways. Clinicians should remain alert to the possibility that SIB function may change over time or across settings, necessitating periodic reassessment using the structured cycle described in this research.

Conclusion

Self-injurious behavior remains one of the most difficult behavioral presentations faced by families and professionals working with autistic individuals, and the question of why a particular person engages in self-injury is rarely answered by surface-level observation alone. The tendency to treat all SIB as a single phenomenon, regardless of its underlying function, has long contributed to ineffective interventions, unnecessary medication use, and continued suffering for the individuals affected. This research was designed to address one specific aspect of that problem: whether proprioceptive seeking, a measurable and relatively accessible sensory feature, can help clinicians distinguish between self-injury that serves a sensory purpose and self-injury that serves a communicative one.

The findings from this sample of 92 autistic children and adolescents in Ghana confirm that proprioceptive seeking scores differ significantly across SIB functional groups, with the highest scores observed in individuals whose self-injury was maintained by automatic sensory reinforcement. The strength of the correlation between proprioceptive seeking and SIB frequency within the sensory-maintained group, and the absence of that correlation in the communication-maintained group, provides direct evidence that these two forms of SIB are driven by different behavioral mechanisms. The mixed-function group, representing a quarter of those with SIB in this sample, showed intermediate patterns that did not align cleanly with either single-function category, highlighting the complexity of SIB presentation in real clinical settings.

Practitioners working in resource-limited environments, where access to formal functional analysis expertise may be restricted, can make use of proprioceptive seeking assessments as a practical first step toward identifying sensory-maintained SIB. The Sensory Profile-2, already available in many clinical and educational settings worldwide, provides a standardized means of quantifying proprioceptive seeking that can be completed by a caregiver in about 15 minutes. When elevated proprioceptive seeking is identified alongside SIB that occurs predominantly in non-social contexts, clinicians can prioritize sensory-based interventions with reasonable confidence, while continuing to collect observational data that may confirm or modify the initial functional hypothesis.

The six-step functional assessment cycle developed through this research offers a structured yet flexible approach to SIB evaluation that does not require the full infrastructure of a specialized behavioral analysis clinic. Each step in the cycle builds on information gathered in the previous step, and the iterative return to outcome monitoring and reassessment builds in a self-correcting mechanism that can catch errors in function assignment before they lead to prolonged use of mismatched interventions. This framework is particularly well suited to clinical contexts in sub-Saharan Africa and other regions where trained behavior analysts are few, but where the need for systematic approaches to SIB is no less urgent.

Looking ahead, longitudinal research is needed to determine whether proprioceptive seeking measured at one time point predicts SIB function at later stages of development, and whether early intervention targeting proprioceptive needs can prevent the emergence of sensory-maintained SIB altogether. Cross-cultural validation of the functional assessment cycle across different African healthcare systems and cultural contexts would strengthen the generalizability of the present approach. Investigations into the neurobiological mechanisms linking proprioceptive processing thresholds to self-injurious topographies would add a biological dimension to the behavioral and sensory findings reported here. The integration of sensory assessment into routine functional analysis practice represents a concrete and achievable step toward more accurate, individualized, and effective treatment of self-injury in autistic populations worldwide.

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