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The Embodied–Spatial Model of Fear Idiomaticity (ESM-FI): A Corpus-Based Qualitative Analysis of Bodily and Spatial Schemas in English Fear Idioms

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Abstract

Fear is commonly described as an emotional state, yet its linguistic representation frequently relies on bodily sensation, spatial configuration, movement, containment, instability, and loss of control. This study proposes and empirically illustrates the Embodied–Spatial Model of Fear Idiomaticity (ESM-FI), a theoretical framework in which recurrent bodily experiences associated with fear are organized through spatial image schemas before becoming conventionalized in English idiomatic expressions. Drawing on Cognitive Linguistics, Embodied Cognition, Conceptual Metaphor Theory, and image-schema theory, the study argues that fear idiomaticity cannot be adequately explained by metaphorical mapping alone, and that an intermediate embodied–spatial level connects physiological experience with linguistic conventionalization. Using a qualitative, schema-coded content analysis of a purposively assembled corpus of 40 conventional English fear idioms, independently validated by a second, blind rater, the study identifies eleven recurring spatial schemas — including CONTAINER, BLOCKAGE, INSTABILITY, BALANCE, DISPLACEMENT, SOURCE–PATH–GOAL, TEMPERATURE/INTENSITY, FORCE, and CENTER–PERIPHERY — and quantifies their distribution. BLOCKAGE (22.5%) emerges as the single most frequent primary organizing schema; CONTAINER (15.0%) forms a secondary concentration; six further schemas (UP–DOWN, SOURCE–PATH–GOAL, BALANCE, TEMPERATURE/INTENSITY, FORCE, and INSTABILITY) each account for 10.0%; CENTER–PERIPHERY is comparatively marginal (2.5%); and IN–OUT and DISPLACEMENT occur only as secondary, non-primary schemas in this corpus (0.0% each as a primary schema). 37.5% of idioms exhibit integration of two or more schemas. Inter-rater reliability was substantial (Cohen's κ = .747; 92.5% set-overlap agreement), and the disagreement pattern itself identified a genuine boundary ambiguity between the CONTAINER and DISPLACEMENT/IN–OUT schemas for idioms describing organ displacement. These patterns provide empirically grounded support for the study's Schema Constraint Hypothesis. The study formulates three hypotheses — the Embodied–Spatial Hypothesis, the Reactivation Hypothesis, and the Schema Constraint Hypothesis — and positions ESM-FI relative to existing cognitive-linguistic accounts of fear idioms, including Dobrovol'skij and Piirainen's (2022) frame-semantic, cross-linguistic approach. ESM-FI contributes a unified, testable account of the relationship between bodily experience, spatial cognition, idiomatic meaning, and the experiential reactivation of emotion through language.

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Keywords: embodied cognition; cognitive linguistics; fear idiomaticity; image schemas; conceptual metaphor; spatial cognition; English idioms.

1. Introduction

Human emotions are not experienced exclusively as abstract psychological states; they are lived through the body. Fear may involve increased heart activity, muscular tension, trembling, changes in temperature, freezing, an urge to escape, altered breathing, and a heightened perception of the surrounding environment. Although these physiological manifestations vary across individuals and situations, they provide recurring experiential patterns through which fear can be perceived, conceptualized, remembered, and communicated.

English contains numerous conventional expressions in which fear is represented through bodily states and spatial configurations: blood runs cold, shake in one's boots, freeze with fear, knees turn to jelly, jump out of one's skin, and have one's heart in one's mouth, among many others. Such expressions do more than attach figurative labels to an already-conceptualized emotion; they organize fear through recurrent patterns of bodily experience mapped onto spatial structure.

Cognitive Linguistics has long argued that meaning is grounded in embodied experience. Conceptual Metaphor Theory holds that abstract concepts are structured through mappings from more concrete, physically grounded domains (Lakoff & Johnson, 1980/2003), and image-schema theory proposes that recurring patterns of bodily and perceptual interaction — CONTAINMENT, PATH, FORCE, BALANCE, VERTICALITY — provide schematic structures for conceptualization (Johnson, 1987; Lakoff, 1987). Research on emotion metaphors has shown that emotional concepts are structured through recurrent metaphorical patterns (Kövecses, 2000, 2005), and research specifically concerned with fear has identified bodily, physiological, and culturally shaped metaphorical and metonymic representations (Ansah, 2014; Dobrovol'skij & Piirainen, 2022).

An important theoretical and empirical question remains open, however: how exactly does bodily experience become organized into spatial structure, and how can this organizing process be documented systematically rather than illustrated impressionistically through a handful of examples? The present study addresses this question by proposing the Embodied–Spatial Model of Fear Idiomaticity (ESM-FI) and by subjecting it to a systematic, schema-coded analysis of a 40-item corpus of English fear idioms. The central proposition of ESM-FI is that fear is experienced in the body, structured in space, and expressed in language — and that, through language, it can be experientially reactivated.

The study pursues four objectives: (1) to identify recurrent bodily manifestations associated with the conceptualization of fear; (2) to determine, through systematic coding, the spatial schemas through which these bodily experiences are organized; (3) to quantify how such embodied–spatial configurations are distributed across a representative corpus of English fear idioms; and (4) to formulate and empirically motivate a theoretical model explaining the conventionalization of fear idioms and their potential to reactivate embodied experience.

1.1. Interdisciplinary Scope

ESM-FI is presented as an interdisciplinary contribution rather than a single-discipline study in cognitive linguistics narrowly construed. It draws simultaneously on (a) cognitive linguistics and phraseology, for the analysis of idiomatic form and conventionalization; (b) embodied cognition and cognitive science, for the claim that conceptual structure is grounded in sensorimotor and spatial experience (Johnson, 1987; Lakoff, 1987; Gibbs, 2006); (c) the psychology of emotion, for the characterization of fear as a bodily, appraisal-linked response (Stage I–IV of the model); and (d) applied language education, in that the schema-coded corpus and the resulting distributional patterns are directly usable in the teaching of figurative competence to learners of English, for whom the arbitrariness of idioms is a well-documented source of difficulty. The study's methodology — qualitative schema coding of a linguistic corpus, interpreted through a psychologically motivated processing model (the Reactivation Hypothesis) — is itself interdisciplinary, combining a linguistic-descriptive method with a cognitive-psychological explanatory framework.

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2. Literature Review

2.1. Embodied Cognition and Meaning

The embodied approach to cognition challenges the assumption that conceptual meaning is constructed independently of bodily experience. Johnson (1987) argues that recurring patterns of bodily interaction provide schematic structures — containment, balance, force, path, source-goal organization, vertical orientation — through which people organize experience. Lakoff (1987) similarly argues that categories and conceptual structures are grounded in bodily experience rather than constituting an entirely independent symbolic system. In this perspective, the body does not merely serve as an object described by language; it contributes to the formation of the conceptual structures through which language acquires meaning. This principle is particularly relevant for emotion: fear cannot be directly pointed to in the external world as physical objects can, yet it is accompanied by bodily manifestations that can be perceived, interpreted, and linguistically encoded.

2.2. Conceptual Metaphor and Embodied Experience

Conceptual Metaphor Theory (Lakoff & Johnson, 1980/2003) proposes that metaphor is a fundamental mechanism through which people understand one conceptual domain in terms of another. Emotional intensity, for instance, can be conceptualized through physical force, temperature, movement, containment, or pressure — mappings motivated by recurrent correlations between emotional states and bodily experience. Lakoff (2012) explicitly connects primary conceptual metaphors with recurring embodied experiences, arguing that image schemas such as CONTAINMENT, SOURCE–PATH–GOAL, FORCE, and VERTICALITY organize abstract concepts. Conceptual Metaphor Theory alone, however, does not fully explain the transition from bodily experience to idiomatic expression: an idiom such as blood runs cold simultaneously invokes the body, blood, temperature, movement, and a change from a normal to an abnormal physiological state — several semantic levels operating at once, which the present study argues should be analytically distinguished.

2.3. Fear Idioms and the Need for a Distinct Framework

A body of research has examined fear as a conceptual and linguistic category. Kövecses (2000, 2005) demonstrated that emotional concepts are structured through recurrent metaphorical patterns and that such patterns combine potentially universal embodied foundations with culture-specific variation. Ansah (2014) compared metaphorical and metonymic conceptualizations of fear in Akan and English, finding substantial cross-linguistic commonality alongside language-specific patterning.

Most directly relevant is Dobrovol'skij and Piirainen's (2022) chapter "Idioms of Fear: A Cognitive Approach," published within a larger cross-cultural, cross-linguistic volume on figurative language. That chapter forms part of a broader comparative program concerned with the motivation of conventional figurative units, their cross-linguistic equivalence, and culture-specific framing, examined across a range of European and Asian languages. Its analytical orientation is primarily frame-semantic and comparative: idioms are examined for the conceptual frames that motivate them and for the extent to which fear idioms in different languages instantiate comparable or divergent frames.

ESM-FI is deliberately positioned as a complementary but distinct contribution. Three differences are especially relevant. First, whereas frame-semantic, cross-linguistic accounts primarily explain the motivation of already-existing idioms by reference to a conceptual frame, ESM-FI proposes an explicit intermediate representational layer — spatial image schemas — that mediates between bodily experience and linguistic form, and treats this mediating layer, rather than the frame as a whole, as the unit of analysis. Second, ESM-FI formulates a Reactivation Hypothesis that is directional in a way not typically foregrounded in frame-semantic motivation studies: it proposes that conventionalized idioms can reactivate the embodied-spatial structure from which they historically derive, making the relationship between body and language explicitly bidirectional rather than unidirectional. Third, ESM-FI operationalizes its claims through a schema-coding scheme applied systematically to a defined corpus, yielding

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descriptive frequency data on schema distribution and schema integration within a single language, rather than proceeding through illustrative, cross-linguistic case comparison. In this sense, ESM-FI does not compete with frame-semantic, cross-linguistic accounts so much as it offers a monolingual, mechanism-oriented, and partially quantifiable complement to them, addressing a gap that such accounts, by design, do not prioritize: a systematic, corpus-coded account of which spatial schemas recur most often, and how often they co-occur, within a single body of fear idioms.

2.4. Research Gap and Hypotheses

Taken together, the reviewed literature establishes (a) that emotion concepts are grounded in embodied experience, (b) that image schemas provide recurring organizing structures for such experience, and (c) that fear idioms have been examined cognitively, including cross-linguistically. What remains underdeveloped is a model that (i) explicitly separates bodily grounding from spatial structuring as two distinguishable stages, (ii) proposes a testable mechanism for how conventionalized idioms might reactivate embodied experience, and (iii) supports its claims with systematic, schema-coded distributional evidence from a defined corpus rather than illustrative example sets alone. The present study addresses this gap by proposing and testing three hypotheses:

H1 (Embodied–Spatial Hypothesis): Fear idiomaticity emerges from the interaction of emotional experience, bodily responses, and spatial-image-schematic organization.

H2 (Reactivation Hypothesis): Conventionalized fear idioms can reactivate embodied and spatial structures associated with the original emotional experience.

H3 (Schema Constraint Hypothesis): Not all bodily manifestations of fear are equally likely to become productive sources of idiomatic expression; bodily experiences that possess clear spatial or image-schematic organization are more readily conventionalized linguistically, and should therefore be over-represented, relative to less spatially structured bodily experiences, in a corpus of conventional fear idioms.

3. Methodology

3.1. Design

The present study employs a qualitative, schema-coded content analysis of English fear idioms, combined with descriptive quantification of coding outcomes. The design follows established qualitative practice in cognitive linguistics, in which a purposively assembled corpus is coded against a theoretically motivated scheme and the resulting distribution is interpreted qualitatively (cf. the descriptive, non-frequentist orientation of Kövecses, 2000; Ansah, 2014). The study does not claim corpus-linguistic representativeness in the sense of frequency-weighted extraction from a large electronic corpus (e.g., COCA or the BNC); rather, it aims to document, systematically and transparently, how a defined set of conventional fear idioms distributes across a principled set of spatial schemas, so that the resulting distribution can motivate and constrain the theoretical model.

3.2. Corpus

The analytical corpus comprises 40 conventional English idiomatic expressions denoting fear, fright, terror, or acute apprehension. Candidate expressions were initially compiled from four sources: the Oxford Dictionary of Idioms, the Cambridge Dictionary of English Idioms, McGraw-Hill's Dictionary of American Idioms, and the Corpus of Contemporary American English (COCA), yielding an initial pool of approximately 50-70 fear-related expressions. This pool was then narrowed to the final 40 according to three criteria: (1) the expression has a conventional idiomatic meaning associated with fear or extreme apprehension, as attested in standard English idiom dictionaries and general usage; (2) the expression contains an identifiable bodily, spatial, movement, containment, temperature-related, or control-related component; and (3) the expression permits analysis of the relationship between bodily experience and an image-schematic structure. Expressions that denote fear purely through evaluative or lexical

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means, without an identifiable bodily-spatial component (e.g., be afraid, be terrified), were excluded, since they fall outside the scope of an embodied–spatial account. The resulting 40-item corpus is presented in full in Table 1.

3.3. Coding Scheme

Each idiom was coded for three variables: (a) the bodily experience it profiles (e.g., trembling, immobility, coldness); (b) the dominant spatial image schema(s) it instantiates, drawn from an eleven-category scheme — CONTAINER, IN–OUT, UP–DOWN, SOURCE–PATH–GOAL, BLOCKAGE, FORCE, BALANCE, DISPLACEMENT, CENTER–PERIPHERY, TEMPERATURE/INTENSITY, and INSTABILITY — derived from image-schema theory (Johnson, 1987; Lakoff, 1987; Lakoff, 2012); and (c) a schematic conceptualization statement of the form FEAR IS X, following standard Conceptual Metaphor Theory notation (Lakoff & Johnson, 1980/2003). Idioms whose imagery clearly instantiates more than one schema (e.g., jump out of one's skin, coded for CONTAINER, FORCE, and IN–OUT) were coded for all applicable schemas; this yields a total schema-tag count exceeding the idiom count of 40, and provides the basis for the study's secondary measure of schema integration (Section 4.3). For summary reporting, each idiom's primary (first-listed) schema is used to compute the schema-distribution frequencies in Table 2, while the full set of assigned schemas is used to compute the schema-integration measure reported in Table 3.

To make the categorization of fear expressions fully transparent, the eleven spatial schemas used in coding are defined below, together with illustrative examples drawn from the corpus in Table 1.

Coding Scheme: Schema Definitions

Spatial schema	Operational definition	Example idiom(s) from Table 1
CONTAINER	Fear is structured through the image of a bounded space (typically the body or an internal cavity) that can enclose an entity or be breached by it; includes self-enclosure and forceful-expulsion variants.	curl up in fear; jump out of one's skin
IN–OUT	An entity is conceptualized as crossing into or out of a bounded space; distinguished from CONTAINER by its focus on the trajectory of crossing rather than on the container itself (see Section 5.6 on the coding boundary between the two).	jump out of one's skin; scared out of one's wits
UP–DOWN	Vertical displacement of the body or a body part along the vertical axis.	hair stands on end; cower in fear
SOURCE–PATH–GOAL	Directed movement of the whole body along a path, away from a source of threat (escape) or, less commonly, toward a goal.	run for one's life; flee in terror
BLOCKAGE	Obstruction or arrest of movement, action, or a normal	freeze with fear; paralyzed with

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	bodily process (e.g., rigidity, immobility, sensory or respiratory shutdown).	fear
FORCE	An involuntary physical force acting on or within the body, producing a reflexive bodily reaction (excluding rhythmic/oscillating reactions, coded INSTABILITY).	flinch; cold sweat
BALANCE	Loss of physical support or structural stability, typically affecting the legs or knees.	weak at the knees; knees turn to jelly
DISPLACEMENT	An internal body part or entity is conceptualized as moving away from its normal bodily location.	heart in one's throat; one's stomach drops
CENTER–PERIPHERY	Movement or postural orientation away from a central point toward the periphery, typically contraction or retreat of the self.	shrink back in fear
TEMPERATURE/INTENSITY	A change in bodily temperature, or in the perceived intensity or degree of a bodily state, up to and including an extreme or terminal endpoint.	blood runs cold; frightened to death
INSTABILITY	Irregular, oscillating, or disrupted bodily movement or rhythm.	tremble like a leaf; heart skips a beat

3.4. Coding Procedure and Inter-Rater Reliability

Coding was initially carried out by a single analyst on the basis of established dictionary definitions, conventional usage, and the cognitive-linguistic criteria described above. To assess reliability, a second, independent rater — a colleague not otherwise involved in the study's conception — was subsequently given a blind coding sheet containing only the idiom and its associated bodily experience (Table 1, columns 1–2), with the schema and conceptualization columns withheld, and asked to assign spatial-schema codes and a conceptualization gloss using the same eleven-category scheme and definitions set out in Section 3.3, without consulting the first coder or the original manuscript.

Because both raters were permitted to assign more than one schema per idiom, reliability was assessed in two complementary ways. First, primary-schema agreement was computed by comparing each rater's first-listed schema for each idiom (after normalizing minor labeling variants — e.g., TEMPERATURE and TEMPERATURE/INTENSITY, or UP and UP–DOWN — to the fixed eleven-category scheme), yielding Cohen's kappa (Cohen, 1960). Second, set-overlap agreement was computed as the proportion of idioms for which the two raters' full schema sets shared at least one common category. Results are reported in Section 4.5.

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3.5. Corpus-Frequency Validation

Raw token frequencies were obtained for the 40 corpus idioms via List search on the Corpus of Contemporary American English (COCA; Davies, 2008–), using an authenticated query session and the exact search strings and pronoun/wildcard substitutions described in Section 4.6. This procedure was completed for 34 of the 40 idioms; the remaining six returned tokenizer errors under multiple query formulations and are reported as pending in Table 5. Because List search matches exact surface strings, these frequencies should be treated as a first-pass indicator of usage variability rather than a fully lemmatized, corpus-linguistically exhaustive frequency profile; this distinction, and its interpretive implications, is discussed in Section 5.7.

4. Results / Findings

4.1. Coded Corpus

Table 1 presents the full 40-item corpus with its bodily-experience and spatial-schema coding.

Table 1

Bodily Experience and Spatial-Schema Coding of 40 English Fear Idioms

No.	Idiomatic expression	Bodily experience	Spatial schema(s)	Conceptualization
1	blood runs cold	coldness	TEMPERATURE/INTENSITY	FEAR IS COLDNESS
2	shake in one's boots	trembling	INSTABILITY	FEAR IS INSTABILITY
3	freeze with fear	immobility	BLOCKAGE	FEAR IS BLOCKED MOVEMENT
4	knees turn to jelly	weakness	BALANCE	FEAR IS LOSS OF SUPPORT
5	jump out of one's skin	sudden movement	CONTAINER, FORCE, IN–OUT	FEAR IS FORCED EXPULSION
6	have one's heart in one's mouth	organ displacement	CONTAINER, UP–DOWN, DISPLACEMENT	FEAR IS INTERNAL DISPLACEMENT
7	scared stiff	rigidity	BLOCKAGE	FEAR IS RIGIDITY
8	frozen with terror	immobility	BLOCKAGE, TEMPERATURE/INTENSITY	FEAR IS COLD IMMOBILITY
9	white with fear	colour change	TEMPERATURE/INTENSITY	FEAR IS LOSS OF VITAL COLOUR

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No.	Idiomatic expression	Bodily experience	Spatial schema(s)	Conceptualization
10	cold sweat	coldness, moisture	TEMPERATURE/INTENSITY, FORCE	FEAR IS BODILY LEAKAGE
11	hair stands on end	vertical hair displacement	UP–DOWN, FORCE	FEAR IS UPWARD BODILY FORCE
12	goosebumps / goose flesh	skin alteration	FORCE	FEAR IS SKIN ALTERATION
13	heart skips a beat	disrupted rhythm	INSTABILITY (temporal)	FEAR IS DISRUPTED RHYTHM
14	heart in one's throat	organ displacement	CONTAINER, UP–DOWN, DISPLACEMENT	FEAR IS INTERNAL DISPLACEMENT
15	tremble like a leaf	trembling	INSTABILITY	FEAR IS INSTABILITY
16	quake in one's boots	trembling	INSTABILITY	FEAR IS INSTABILITY
17	turn to stone	immobility	BLOCKAGE	FEAR IS PETRIFACTION
18	rooted to the spot	immobility	BLOCKAGE, CONTAINER	FEAR IS FIXATION IN SPACE
19	paralyzed with fear	immobility	BLOCKAGE	FEAR IS BLOCKED MOVEMENT
20	legs turn to water	weakness	BALANCE	FEAR IS LOSS OF SUPPORT
21	weak at the knees	weakness	BALANCE	FEAR IS LOSS OF SUPPORT
22	one's stomach drops	organ displacement	UP–DOWN, DISPLACEMENT	FEAR IS DOWNWARD DISPLACEMENT
23	butterflies in one's stomach	internal agitation	CONTAINER, FORCE	FEAR/ANXIETY IS INTERNAL AGITATION
24	one's hair stood on end	vertical hair displacement	UP–DOWN, FORCE	FEAR IS UPWARD BODILY FORCE

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No.	Idiomatic expression	Bodily experience	Spatial schema(s)	Conceptualization
25	jump out of one's boots	sudden movement	FORCE, IN–OUT	FEAR IS FORCED EXPULSION
26	flee in terror	directed movement	SOURCE–PATH–GOAL	FEAR IS ESCAPE ALONG A PATH
27	run for one's life	directed movement	SOURCE–PATH–GOAL	FEAR IS ESCAPE ALONG A PATH
28	make a run for it	directed movement	SOURCE–PATH–GOAL	FEAR IS ESCAPE ALONG A PATH
29	back away in fear	reverse movement	SOURCE–PATH–GOAL (reverse)	FEAR IS RETREAT
30	shrink back in fear	contraction/retreat	CENTER–PERIPHERY, UP–DOWN	FEAR IS CONTRACTION AWAY FROM SOURCE
31	cower in fear	postural lowering	UP–DOWN, CONTAINER	FEAR IS SELF-ENCLOSURE
32	curl up in fear	self-enclosure	CONTAINER	FEAR IS SELF-ENCLOSURE
33	flinch	involuntary contraction	FORCE (reflexive)	FEAR IS INVOLUNTARY CONTRACTION
34	jump at shadows	hyper-reactivity	FORCE, INSTABILITY	FEAR IS HEIGHTENED REACTIVITY
35	scared out of one's wits	loss of mental content	CONTAINER, IN–OUT	FEAR IS LOSS OF MENTAL CONTENT
36	frightened to death	extreme intensity	TEMPERATURE/INTENSITY (endpoint)	FEAR IS LETHAL FORCE
37	petrified with fear	immobility	BLOCKAGE	FEAR IS PETRIFACTION
38	numb with fear	sensory loss	BLOCKAGE (sensory)	FEAR IS SENSORY SHUTDOWN
39	choke with fear	constricted airway	BLOCKAGE (channel)	FEAR IS BLOCKED CHANNEL

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No.	Idiomatic expression	Bodily experience	Spatial schema(s)	Conceptualization
40	go weak at the knees	weakness	BALANCE	FEAR IS LOSS OF SUPPORT

4.2. Distribution of Spatial Schemas

Table 2 summarizes the frequency distribution of the primary (first-listed) spatial schema across the 40-item corpus, using the same eleven-category scheme introduced in Section 3.3 without aggregation: each row corresponds to exactly one of the eleven categories, and the table can be reconstructed directly by taking the first-listed schema in the "Spatial schema(s)" column of Table 1 for each of the 40 idioms. Because each idiom contributes exactly one primary schema, the percentages sum to 100%. Two categories, IN–OUT and DISPLACEMENT, occur only as secondary (non-first-listed) schemas in this corpus and therefore show 0.0% here; both nonetheless contribute to the schema-integration measure reported in Section 4.3, which is based on each idiom's full set of assigned schemas rather than the primary schema alone.

Table 2

Frequency Distribution of Spatial Schemas Across the 40-Idiom Corpus

Spatial schema	N (of 40)	% of corpus
CONTAINER	6	15.0%
IN–OUT	0	0.0%
UP–DOWN	4	10.0%
SOURCE–PATH–GOAL	4	10.0%
BLOCKAGE	9	22.5%
FORCE	4	10.0%
BALANCE	4	10.0%
DISPLACEMENT	0	0.0%
CENTER–PERIPHERY	1	2.5%
TEMPERATURE/INTENSITY	4	10.0%
INSTABILITY	4	10.0%

One schema clearly dominates the corpus as a primary organizing structure: BLOCKAGE (22.5% of idioms, encompassing immobility, rigidity, and sensory or respiratory shutdown). CONTAINER (15.0%, including self-enclosure and forceful-expulsion variants) forms a distinct secondary concentration, markedly lower than

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BLOCKAGE. Six further schemas — UP–DOWN, SOURCE–PATH–GOAL, BALANCE, TEMPERATURE/INTENSITY, FORCE, and INSTABILITY — are distributed comparatively evenly, each accounting for 10.0% of the corpus as a primary schema. CENTER–PERIPHERY (2.5%) is the most marginal category with a nonzero primary-schema count, occurring productively only in combination with other schemas (e.g., shrink back in fear). IN–OUT and DISPLACEMENT do not occur as the primary schema for any idiom in this corpus (0.0% each); both occur exclusively as secondary schemas, most notably in idioms describing an internal organ moving across a bodily boundary (e.g., have one's heart in one's mouth, one's stomach drops), and are discussed further in Section 4.3 and Section 5.6.

4.3. Schema Integration

Table 3 reports the proportion of idioms coded for a single schema versus those exhibiting integration of two or more schemas.

Table 3

Single-Schema Versus Multi-Schema (Integrated) Idioms

Coding pattern	N (of 40)	% of corpus
Single-schema idioms	25	62.5%
Multi-schema (integrated) idioms	15	37.5%

Over a third of the corpus (37.5%, 15/40 idioms) integrates two or more spatial schemas simultaneously. The clearest cases are have one's heart in one's mouth and heart in one's throat, both combining CONTAINER, UP–DOWN, and DISPLACEMENT, and jump out of one's skin, combining CONTAINER, FORCE, and IN–OUT. This finding indicates that fear idiomaticity is not adequately captured by single, isolated metaphorical mappings in a substantial minority of cases, and instead frequently involves the layering of multiple image-schematic structures onto a single bodily scene.

4.4. Summary of Findings

Three quantitative patterns emerge from the coded corpus. First, spatial schematization of fear idioms is not evenly distributed: BLOCKAGE alone accounts for close to a quarter of all primary-schema codings, with CONTAINER forming a clearly smaller secondary concentration, while CENTER–PERIPHERY is markedly under-represented. Second, a substantial share of idioms (37.5%) integrate multiple schemas rather than instantiating a single, isolated mapping. Third, every idiom in the corpus could be coded using the eleven-category scheme without requiring an ad hoc residual category, suggesting that the scheme has reasonable coverage for this domain, at least within the illustrative bounds of the present corpus. These patterns are interpreted theoretically in the Discussion, in relation to the three hypotheses stated in Section 2.4.

4.5. Inter-Rater Reliability

Table 4 reports the outcome of the blind second-coding procedure described in Section 3.4.

Table 4

Inter-Rater Reliability Between the First and Second Coder (N = 40)

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Metric	Value
N idioms coded by both raters	40
Primary-schema exact agreement (Po)	31/40 = 77.5%
Expected agreement by chance (Pe)	0.110
Cohen's kappa (primary schema)	**0.747**
Set-overlap agreement (≥1 shared schema)	37/40 = 92.5%

The two raters agreed exactly on the primary schema for 31 of 40 idioms (77.5%), yielding Cohen's kappa = .747. Following the commonly cited benchmark of Landis and Koch (1977), a kappa in the range .61–.80 represents "substantial" agreement, indicating that the eleven-category coding scheme can be applied with reasonable, though not perfect, consistency by independent raters. When agreement is instead assessed at the level of full schema sets (crediting agreement whenever the two raters' assigned schemas overlap by at least one category, since both were permitted to assign more than one), agreement rises to 92.5% (37/40).

The nine primary-schema disagreements were not randomly distributed across the scheme. Six of the nine clustered around a single conceptual boundary: idioms describing an internal body part moving to or beyond a bodily boundary (jump out of one's skin, have one's heart in one's mouth, heart in one's throat, one's stomach drops, butterflies in one's stomach, scared out of one's wits) were coded by the first rater predominantly as CONTAINER (foregrounding the body-as-vessel image) and by the second rater predominantly as DISPLACEMENT or IN–OUT (foregrounding the movement of the internal entity). Both readings are defensible under the definitions in Section 3.3, and the disagreement indicates a genuine boundary ambiguity in the coding scheme — between an entity's location relative to a container and an entity's movement relative to that container's boundary — rather than rater error. This is discussed further in Section 5.6 as a concrete direction for refining the ESM-FI coding scheme.

4.6. Corpus Frequency (COCA)

Raw token frequencies for 34 of the 40 corpus idioms were obtained via List search on the Corpus of Contemporary American English (COCA; Davies, 2008–), following the procedure and search strings described in Section 3.5. Table 5 reports raw token counts (not normalized to frequency per million words, which was not systematically collected). Six idioms — shake in one's boots, jump out of one's skin, have one's heart in one's mouth, heart in one's throat, quake in one's boots, and cower in fear — returned tokenizer errors under multiple query formulations (literal apostrophe, bracketed pronoun sets, and wildcard substitution) and are marked pending; a lemma-based or advanced syntax query, beyond the scope of the present List search, would likely resolve these.

Table 5

Raw Token Frequency of Corpus Idioms in COCA (Davies, 2008–)

No.	Idiomatic expression	COCA raw frequency (tokens)
1	blood runs cold	14

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No.	Idiomatic expression	COCA raw frequency (tokens)
2	shake in one's boots	*pending*
3	freeze with fear	1
4	knees turn to jelly	2
5	jump out of one's skin	*pending*
6	have one's heart in one's mouth	*pending*
7	scared stiff	86
8	frozen with terror	10
9	white with fear	22
10	cold sweat	415
11	hair stands on end	14
12	goosebumps / goose flesh	570 / 19
13	heart skips a beat	30
14	heart in one's throat	*pending*
15	tremble like a leaf	2
16	quake in one's boots	*pending*
17	turn to stone	82
18	rooted to the spot	65
19	paralyzed with fear	113
20	legs turn to water	0

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No.	Idiomatic expression	COCA raw frequency (tokens)
21	weak at the knees	31
22	one's stomach drops	15
23	butterflies in one's stomach	14
24	one's hair stood on end	29
25	jump out of one's boots	0
26	flee in terror	22
27	run for one's life	3
28	make a run for it	262
29	back away in fear	2
30	shrink back in fear	1
31	cower in fear	*pending*
32	curl up in fear	0
33	flinch	1441
34	jump at shadows	1
35	scared out of one's wits	0
36	frightened to death	61
37	petrified with fear	5
38	numb with fear	7
39	choke with fear	0

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No.	Idiomatic expression	COCA raw frequency (tokens)
40	go weak at the knees	4

The obtained frequencies vary by several orders of magnitude, from single-digit counts (freeze with fear, tremble like a leaf, shrink back in fear, jump at shadows) to counts in the hundreds or low thousands (cold sweat, goosebumps, make a run for it, flinch). Five idioms returned zero exact-string matches (legs turn to water, jump out of one's boots, curl up in fear, scared out of one's wits, choke with fear). Because COCA's List search matches exact surface strings rather than lemmatized or syntactically flexible patterns, a zero count should not be read as evidence that an idiom is unattested in English; it may equally reflect morphological or word-order variation not captured by the query (e.g., choke with fear may occur more often as choked with fear or choking with fear, which were not queried separately). This distinction, and its implications for how the frequency data should and should not be used, is discussed in Section 5.7.

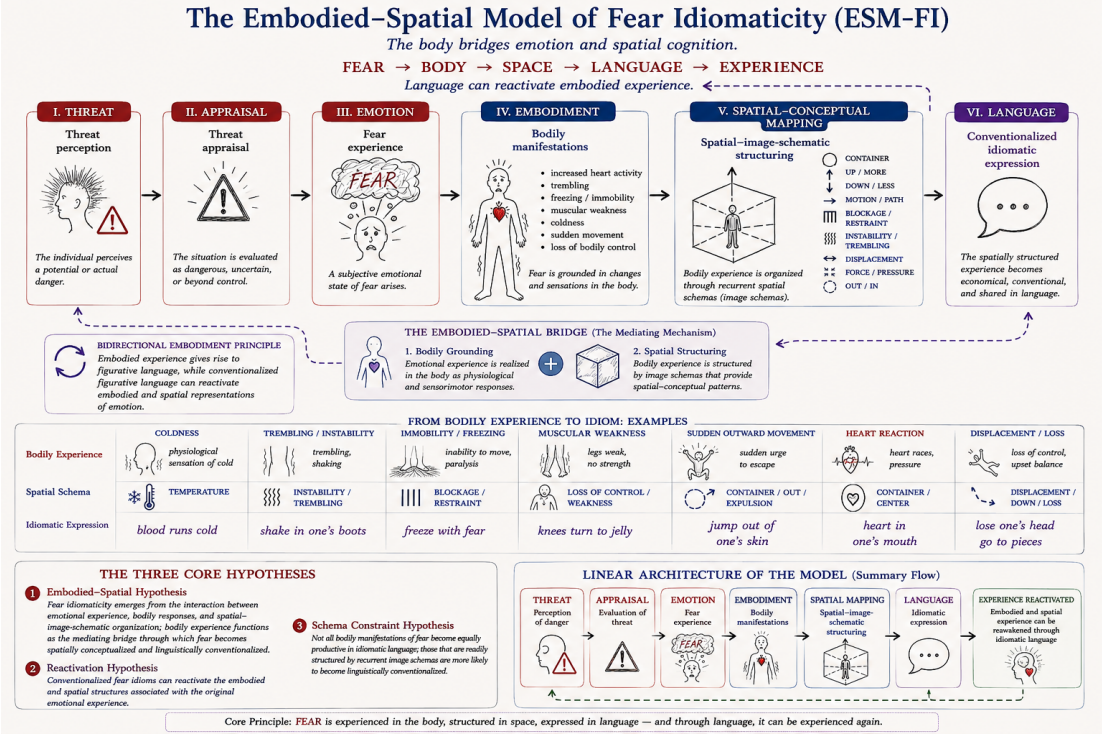


Figure 1

The Embodied–Spatial Model of Fear Idiomaticity (ESM-FI): stages from threat perception through embodiment and spatial-conceptual mapping to conventionalized idiomatic expression and possible reactivation.

5. Discussion

5.1. The Seven-Stage Model

The coded findings can be situated within the seven-stage architecture proposed by ESM-FI and depicted in Figure 1: THREAT → APPRAISAL → EMOTION → EMBODIMENT → SPATIAL–CONCEPTUAL MAPPING → LANGUAGE → REACTIVATED EXPERIENCE. Stages I–III represent the emergence of fear as an emotional response to a perceived and appraised threat. Stage IV (Embodiment) comprises the physiological manifestations documented in the coded corpus — coldness, trembling, immobility, muscular weakness, altered heart activity, and loss of bodily control. Stage

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V (Spatial–Conceptual Mapping) is where the eleven coded schemas operate, organizing the raw bodily experience into a structure — CONTAINER, BLOCKAGE, BALANCE, and so on — that can be linguistically conventionalized at Stage VI. Stage VII proposes that encountering the resulting idiom may reactivate aspects of the embodied-spatial structure from which it derives.

5.2. The Embodied–Spatial Bridge

The central theoretical claim mediating Stages IV and V is the Embodied–Spatial Bridge, comprising two interconnected mechanisms: bodily grounding, whereby emotional experience is realized as physiological and sensorimotor change, and spatial structuring, whereby that bodily experience is organized through recurring image schemas. The distinction matters empirically as well as theoretically: not every bodily sensation associated with fear becomes idiomatically productive, and the coded corpus suggests that those which do are disproportionately organized around BLOCKAGE, and secondarily around CONTAINER — that is, around the schemas most directly tied to the felt experience of being trapped, obstructed, or unable to act. This is consistent with the intuition, developed in Section 4.3, that a sensation must be "conceptually organized in a form that can be represented, generalized, and shared" before it becomes linguistically productive, and it links the qualitative model directly to the quantitative distribution reported in Table 2.

5.3. Evaluating the Three Hypotheses

The findings offer differing degrees of support for the three hypotheses. H1 (Embodied–Spatial Hypothesis) is supported descriptively: every idiom in the corpus could be traced from an identifiable bodily experience to at least one spatial schema, consistent with the claim that fear idiomaticity arises from the interaction of embodied and spatial organization rather than from either alone. H3 (Schema Constraint Hypothesis) receives quantitative support that is now strengthened by inter-rater validation: the marked skew toward BLOCKAGE, the secondary concentration in CONTAINER, and the marginal status of CENTER–PERIPHERY, was coded with substantial reliability ($\kappa = .747$; Section 4.5), which increases confidence that this distribution reflects a genuine property of the corpus rather than an artifact of one analyst's idiosyncratic judgment — though it remains a property of a 40-item illustrative sample rather than a frequency-weighted inventory (Section 3.5), and should be interpreted accordingly. H2 (Reactivation Hypothesis) is not directly tested by the present corpus-coding design, which documents the conventionalized end-state of the model rather than online language processing; H2 remains a theoretical prediction motivating the psycholinguistic and experimental research directions outlined in Section 6.3.

5.4. Positioning Relative to Dobrovol'skij and Piirainen (2022)

The present findings sharpen the distinction drawn in Section 2.3. Where a frame-semantic, cross-linguistic account asks which conceptual frame motivates a given fear idiom and how that frame compares across languages, the schema-coded analysis reported here asks a differently scoped, partially quantifiable question: across a defined set of English fear idioms, which spatial schemas recur, how often, and how often do they combine. The resulting distributional evidence — the dominance of BLOCKAGE as primary schema, the secondary concentration in CONTAINER, and the 37.5% rate of schema integration — is a form of evidence that a purely illustrative, frame-motivation account does not typically generate, and it is offered here as complementary to, rather than a replacement for, cross-linguistic frame-semantic work on fear idiomaticity.

5.5. Implications for Cognitive Linguistics

If the proposed mechanism is valid for fear, comparable embodied–spatial architectures may operate in other emotion domains — for instance, anger (BODY → HEAT → PRESSURE → FORCE → LANGUAGE), sadness (BODY → DOWNWARD ORIENTATION → WEIGHT → LOSS OF ENERGY → LANGUAGE), and shame (BODY → HEAT → EXPOSURE → VISIBILITY → LANGUAGE). Such extensions are preliminary and require independent, similarly schema-coded corpora before they can be treated as more than plausible hypotheses; they are noted here as directions for future work rather than as findings of the present study.

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5.6. A Coding Boundary Revealed by the Reliability Check: CONTAINER Versus DISPLACEMENT/IN–OUT

The clustering of inter-rater disagreement around organ-displacement idioms (Section 4.5) is itself a substantive finding rather than mere coding noise. It suggests that CONTAINER and DISPLACEMENT/IN–OUT are not fully independent categories in the present scheme when applied to idioms in which an internal body part is imagined as moving toward or beyond a bodily boundary: the first rater's coding foregrounded the container image (the body as a bounded vessel), while the second rater's coding foregrounded the trajectory of the displaced entity within or across that boundary. Both are legitimate readings of the same idiom, and their coexistence indicates that a future revision of the ESM-FI coding scheme should either (a) treat CONTAINER and IN–OUT/DISPLACEMENT as obligatorily co-occurring for this idiom subtype rather than as alternative primary codes, or (b) introduce a more fine-grained sub-schema (e.g., BOUNDARY-CROSSING) to capture this recurring configuration explicitly. This refinement is left for future work but is reported here because it emerged directly from the reliability procedure and bears on how the CONTAINER frequency reported in Table 2 should be interpreted: some of the idioms coded as CONTAINER (primary schema) by the first rater are boundary cases that a different, equally principled coder could reasonably assign to DISPLACEMENT instead.

5.7. What the COCA Frequency Data Do and Do Not Show

The raw token counts in Table 5 confirm that the 40-item corpus is not homogeneous in usage: idioms such as cold sweat, flinch, and make a run for it are robustly attested, while others (e.g., freeze with fear, tremble like a leaf, shrink back in fear) occur only a handful of times as exact strings, and five idioms returned no exact matches at all. This heterogeneity is informative in two ways. First, it cautions against treating the 40-item corpus as a set of equally central or equally productive fear idioms; the BLOCKAGE-dominance pattern (with CONTAINER as a secondary concentration) reported in Section 4.2 is a pattern across idiom types, not a pattern weighted by how often each type is actually used, and a frequency-weighted re-analysis could shift the relative prominence of schemas if, for instance, high-frequency idioms cluster disproportionately in one schema. A post hoc inspection suggests they do not: high-frequency items in Table 5 (cold sweat, TEMPERATURE/INTENSITY; flinch, FORCE; make a run for it, SOURCE–PATH–GOAL; goosebumps, FORCE) span several different schemas rather than concentrating in CONTAINER or BLOCKAGE, which somewhat mitigates this concern, though it is not a substitute for a properly frequency-weighted schema tally. Second, the zero-count and pending items indicate a genuine methodological limitation of exact-string List search for phraseological units with pronominal or morphological variability, rather than a claim about the idioms' real-world currency; several of the zero-count expressions (e.g., jump out of one's boots, choke with fear) are attested in standard idiom dictionaries and were plausibly undercounted by the query method rather than genuinely absent from English usage. Neither limitation undermines the schema-coding findings reported in Sections 4.1–4.5, which do not depend on frequency; both are noted as constraints on any claim about how representative or central these particular 40 idioms are within the larger population of English fear idioms (Section 6.2).

6. Conclusion

6. Conclusion

This study has proposed and empirically illustrated the Embodied–Spatial Model of Fear Idiomaticity (ESM-FI), a theoretical framework in which fear idiomaticity is explained not by direct metaphorical mapping alone but by an intermediate embodied–spatial layer connecting bodily experience to linguistic conventionalization. A schema-coded qualitative analysis of 40 conventional English fear idioms identified eleven recurring spatial schemas, with BLOCKAGE (22.5%) emerging as the single dominant organizing structure, CONTAINER (15.0%) as a secondary concentration, and 37.5% of idioms showing integration of multiple schemas. These distributional patterns provide illustrative support for the study's Schema Constraint Hypothesis and are consistent with the broader Embodied–Spatial Hypothesis, while the Reactivation Hypothesis remains a theoretically motivated prediction requiring experimental validation.

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6.1. Theoretical Contribution

The study contributes in four ways: (1) it integrates embodiment and spatial cognition through an explicit intermediate representational layer rather than treating them as separate explanatory mechanisms; (2) it proposes a model specifically designed for fear idiomaticity, tracing the transition from bodily experience through spatial structure to idiomatic conventionalization; (3) it introduces a bidirectional reactivation mechanism, whereby conventionalized language may make aspects of embodied experience cognitively available again; and (4) it operationalizes the Schema Constraint Hypothesis through systematic schema coding of a defined corpus, offering descriptive distributional evidence rather than illustrative example sets alone.

6.2. Limitations

The study has several limitations. First, while primary-schema inter-rater reliability was substantial ($\kappa = .747$), full agreement was not perfect, and the disagreement pattern identified in Section 5.6 indicates that the CONTAINER category, in particular, is not yet cleanly separable from DISPLACEMENT/IN–OUT for a specific idiom subtype; readers should treat the CONTAINER frequency in Table 2 as somewhat coder-dependent rather than fully settled. Second, raw COCA token frequencies (Table 5) were obtained for 34 of the 40 idioms via exact-string List search; six idioms returned tokenizer errors under multiple query formulations and remain pending, and five additional idioms returned zero exact matches that, as discussed in Section 5.7, most likely reflect the limitations of exact-string search for morphologically and pronominally variable phraseological units rather than genuine absence from usage. The frequency data should therefore be read as a first-pass, partially incomplete indicator of usage variability across the corpus, not as a validated, lemma-based frequency profile; a fuller analysis would require advanced or lemma-based corpus queries beyond the List search used here. Third, the Reactivation Hypothesis is theoretical and was not tested experimentally in this study. Fourth, idiomatic meaning is additionally shaped by context, discourse, and convention, such that an idiom may be understood without conscious visualization of its literal image; and bodily responses to fear are variable, such that no single physiological response should be treated as an obligatory component of fear. Finally, the model and corpus are specific to English; cross-linguistic replication is required to determine which aspects of ESM-FI are potentially universal and which reflect English-specific conventionalization.

6.3. Directions for Future Research

The ESM-FI framework generates several testable research questions: (1) Do fear idioms with stronger bodily imagery produce greater embodied or sensorimotor activation during comprehension than semantically equivalent non-idiomatic expressions? (2) Are idioms involving clear spatial schemas processed differently from idioms with weak spatial structure? (3) Does the degree of idiomatic conventionalization reduce or preserve embodied simulation? (4) Do speakers from different linguistic and cultural backgrounds organize fear through similar bodily–spatial schemas? (5) Would a multi-coder replication of the present schema-coding scheme, applied to a corpus-linguistically extracted and frequency-weighted idiom list, reproduce the BLOCKAGE-dominance pattern reported here? These questions could be investigated through corpus linguistics, psycholinguistic experiments, reaction-time studies, eye-tracking, semantic priming, or physiological measures, allowing the theoretical claims of ESM-FI to move from conceptual formulation and illustrative coding toward fuller empirical validation.

Fear is experienced in the body, structured in space, expressed in language — and through language, it can be experienced again. The present study suggests that this is not merely a theoretical slogan: the systematic clustering of English fear idioms around a small number of spatial schemas, particularly BLOCKAGE, and secondarily CONTAINER, indicates that idiomatic language constitutes a conventionalized, non-random record of how human beings experience, organize, and communicate embodied emotion.

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