

Linguistic and cognitive index of security-based selection (IBS) in simultaneous interpreting: Evidence from wartime Ukrainian discourse

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Abstract. This study introduces the Linguistic and Cognitive Index of Security-Based Selection (IBS) as a psycholinguistically grounded indicator of interpreters' regulatory choices under heightened communicative risk. Building on an episode-based analytical design, the paper examines 500 English→Ukrainian simultaneous interpreting episodes produced in high-stakes institutional settings during Russia's full-scale invasion of Ukraine (2022-2026), where discourse is shaped by crisis framing, emotional pressure, and escalation-sensitive evaluative language. From a psycholinguistic perspective, security-based selection is modelled as an interaction between attentional control, executive inhibition, and monitoring: interpreters dynamically suppress high-risk lexicalisations, reframe categorical judgments, and stabilise pragmatic meaning through controlled reformulation. IBS is considered as the proportion of risk-generating elements rendered in a security-appropriate manner and is analysed in relation to temporal coordination (EVS) and performance indicators. Quantitative analysis demonstrates a solid inverse association between temporal delay and security-based regulation (EVS-IBS), alongside a positive relationship between IBS and expert-rated overall quality. Qualitative micro-analysis of critical segments further shows that wartime discourse triggers a shift toward anticipatory-protective routines, where interpreters prioritise communicative stability and institutional appropriateness over maximal surface completeness. IBS contributes to resilience in crisis-driven multilingual communication reflecting adaptive psycholinguistic modulation under stress. The study expands cognitive accounts of simultaneous interpreting, accounting for crisis discourse constraints and developing measurable, episode-sensitive diagnostics, with implications for interpreter assessment and training in security-sensitive contexts.

Keywords: *simultaneous interpreting; executive control; wartime communication; index of security-based selection; crisis discourse.*

Скрильник Сергій. Лінгвокогнітивний індекс безпеково зумовленого відбору (IBS) у синхронному перекладі: на прикладі воєнного дискурсу України.

У статті обґрунтовано лінгвокогнітивний індекс безпекового відбору (IBS) – лінгвокогнітивний показник, що відображає стратегії регулятивного вибору перекла-

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дача в умовах високої комунікативної напруженості. Емпіричну базу дослідження становлять 500 фрагментів англо-українського синхронного перекладу, здійсненого в межах офіційного дискурсу протягом 2022–2026 років (період повномасштабної збройної агресії РФ проти України). Теоретичний фундамент роботи базується на концепціях виконавчого контролю, механізмах інгібіції та моніторингу мовлення, а також сучасних теоріях кризового дискурсу. Безпековий відбір інтерпретується як адаптивний механізм когнітивної регуляції: перекладач нейтралізує або трансформує потенційно дестабілізуючі елементи (категоричні судження, юридично вразливі дефініції, емотивну лексику) без утрати інформативно-комунікативної суті та прагматичної спрямованості тексту. Методологія дослідження спирається на епізодний аналіз за схемою «тригер – інтервенція – стабілізація». Індекс IBS операціоналізовано як відносну частоту безпеково орієнтованого опрацювання ризикогенних одиниць. Встановлено, що високі показники IBS корелюють із оптимізацією часових параметрів (скороченням EVS) та вищими оцінками якості перекладу, зокрема за критеріями прагматичної еквівалентності та стабільності мовленнєвого потоку. Доведено, що в умовах тривалого воєнного конфлікту селективна модифікація висловлення є не проявом когнітивного переважання, а рутинізованою формою виконавчої регуляції, що забезпечує інституційну стабільність комунікації. Запропонований індекс IBS доповнює психолінгвістичні та лінгвокогнітивні моделі усного перекладу категорією дискурсивної безпеки, що має прикладне значення для моніторингу та підготовки кадрів у кризових середовищах.

Ключові слова: синхронний переклад; виконавчий контроль; комунікація воєнного часу; індекс безпеково зумовленого відбору; кризовий дискурс.

Introduction

Simultaneous interpreting in crisis settings is shaped by two constraints at once: limited processing time and heightened pragmatic consequences. In war-related institutional communication, small wording choices may affect perceived stance (political and human), legal framing, or escalation potential. Interpreters, therefore, do not only transfer meaning; they regulate it in real time. What remains under-modelled, however, is how this regulation can be measured at the micro-level as a systematic response to communicative risk rather than treated as incidental deviation from surface equivalence.

In the Ukrainian context, this pressure has been intensified by Russia's full-scale invasion of Ukraine, which made diplomatic, humanitarian, and security-related messaging (speeches) a sustained crisis environment. In such conditions, interpreters face recurrent clusters of legally sensitive categorisations, stance-marking evaluations, and affect-laden appeals, where literal reproduction may increase pragmatic risk and destabilise institutional alignment.

This article examines one recurrent regulatory pattern: security-based selection—the tendency to filter, compress, neutralise, hedge, or reframe high-risk segments in order to keep the target output institutionally and pragmatically stable. The key point is simple: in wartime discourse, such selection is often not random information loss, but an adaptive control response.

From a psycholinguistic perspective, security-based selection can be described in terms of executive control in bilingual production. Models of executive functions and bilingual control highlight the roles of attentional selection, inhibitory suppression, and monitoring during goal-directed performance (Miyake et al., 2000; Green, 1998). In simultaneous interpreting, attention must be divided between source monitoring and target planning; inhibition helps suppress competing lexicalisations and prevents impulsive echoing; monitoring enables early detection of misalignment and timely self-repair. Under stress and affective load, attentional control becomes more fragile because executive resources are partly consumed by anxiety-related processing (Eysenck et al., 2007). These mechanisms provide a psycholinguistic basis for treating risk-sensitive reformulation as regulation rather than “mere style”.

To operationalise this regulatory layer, the article introduces the Linguistic and Cognitive Index of Security-Based Selection (IBS) as an episode-sensitive indicator of risk-driven decisions in interpreting. IBS is examined alongside indicators with observable risk-sensitive discourse operations (e.g., mitigation, neutralisation, reformulation, and repair) within a micro-level episode framework. The study analyses 500 English→Ukrainian simultaneous interpreting episodes (2022-2026) sampled from wartime and crisis-related institutional speeches. Each episode is treated as a time-bounded unit with a trigger, an intervention, and a recovery outcome (trigger → intervention → stabilisation), allowing psycholinguistic mechanisms to be linked to observable output patterns.

The study addresses three questions: (1) which executive control operations are most visible in high-risk episodes; (2) whether IBS can be measured reliably at the episode level and linked to temporal coordination and performance indicators; and (3) which crisis-discourse features most consistently trigger security-based selection in wartime institutional interpreting.

Theoretical Background

Executive Control As the Psycholinguistic Core of Simultaneous Interpreting

Psycholinguistic accounts increasingly converge on the view that simultaneous interpreting is best understood as a form of executive control under extreme temporal constraints, rather than as a purely linguistic or memory-based task. Foundational models of executive functioning describe goal-directed behaviour as the coordinated operation of attentional control, inhibition, updating, and monitoring (Miyake et al., 2000). In interpreting, these components are not sequential but continuously co-activated: attention must be split between source monitoring and target planning, inhibition must suppress competing

lexical and conceptual activations, and monitoring must detect mismatches early enough to trigger repair without interrupting production.

Within bilingualism research, the Inhibitory Control Model (Green, 1998) remains a central reference point. It conceptualises bilingual language use as constant competition between language systems, resolved through inhibitory mechanisms. Subsequent psycholinguistic research is showing that professional interpreting experience develops the specific executive functions that involve conflict monitoring and interference suppression (Yudes, Macizo, & Bajo, 2011; Hervais-Adelman et al., 2011). Particularly, these effects transcend verbal tasks, indicating that interpreting expertise fosters a more extensive executive adaptation.

Recent research supports this view of the executive control mechanism. Experimental and corpus-based research from East Asia demonstrates that interpreters display heightened resistance to lexical and semantic distractors compared to non-interpreting bilinguals, with this advantage being affected by task difficulty and stress (Dong & Xie, 2014; Dong & Lin, 2013). European research regarding cognitive load and parallel processing suggests that errors in interpretation are rarely due exclusively to linguistic ignorance. They occur when executive resources are temporarily exceeded or ineffectively redistributed (Seeber & Kerzel, 2011; Janikowski & Chmiel, 2025).

This executive-control model aligns with conventional cognitive-pragmatic and effort-based frameworks of simultaneous interpreting, which define performance as the continuous integration of attention, production, and monitoring within temporal limitations (Setton, 1999; Gile, 2009). Studies on neurocognition and expertise indicate that extensive interpreting practice reshapes control routines and monitoring costs (Moser-Mercer, 2010). For a concise synthesis of these converging strands in Interpreting Studies, see Szentirmay (2023).

In short, these results support the idea that interpreting competence is the same as regulatory competence: the ability to quickly allocate, suppress, and recalibrate cognitive resources. More generally, research on bilingualism shows that strict language rules lead to better conflict monitoring and resolution, which is important for interpreting as a high-conflict production task (Costa et al., 2007; Bialystok, 2017). There is some disagreement about the scope and mechanisms of the "bilingual advantage" literature, but it is a good way to think about interpreter training as a long-term executive adaptation (Bialystok et al., 2007). This point of view is important for understanding why interpreters often don't stick to the literal meaning in high-stakes situations without showing that they are losing control.

Attention, Inhibition, and Temporal Coordination Under Stress

While executive control models explain *how* interpreting is possible, stress research explains *why* it becomes unstable under certain circumstances.

Attentional Control Theory (Eysenck et al., 2007) proposes that anxiety and stress reduce processing efficiency by diverting executive resources toward threat-related monitoring. In interpreting, this distraction shows up as a longer ear-voice span, more pauses, and longer repair times. These are all things that psycholinguistic studies of performance under pressure have found to happen over and over again. Ear-voice span has been demonstrated to vary systematically with linguistic directionality, discourse difficulty, and individual factors, rendering it a sensitive temporal proxy for fluctuating control demands in SI (Lee, 2004; Collard & Defrancq, 2018).

Recent work confirms that stress effects are not uniform across interpreting modes or conditions. Studies on remote and technology-mediated interpreting show that altered sensory feedback and increased fatigue interact with executive load, amplifying attentional instability (Yang et al., 2025). Researchers consider that fatigue, monitoring costs, and delivery conditions are the causes of EVS and performance instability in the real world. It happens in schools and workplaces where students are very stressed out (Nguyen, 2024; Moneus et al., 2024). Other studies show that emotionally important information directly competes with working memory and the ability to stop yourself from doing something. This increases the likelihood that individuals will select words impulsively or implement excessively explicit modifications (Imbir et al., 2021; Kensinger & Schacter, 2008).

These results are especially important for speech during war, when emotional and evaluative cues are not just random but built into the structure of the speech. Interpreters must therefore suppress not only competing linguistic alternatives but also affective responses that jeopardize timing and pragmatic equilibrium.

In this sense, inhibition in interpreting is both linguistic and affective, operating across levels of representation. In classic working-memory terms, such regulation relies on central-executive control that prioritises task goals while limiting intrusions from competing activations (Baddeley, 1998). Contemporary emotion theory likewise emphasises that affective responses are dynamically constructed and can be modulated by contextual and linguistic cues, which is consistent with interpreters' need to maintain professional distance under emotionally saturated input (Barrett, 2017).

Crisis and Conflict Discourse As Cognitive Environments

Crisis communication research characterises crises as environments of heightened uncertainty, moral ambiguity, and accelerated sense-making. In such contexts, institutional talk becomes performative: wording choices can reframe events, redistribute responsibility, and recalibrate public expectations.

Translation and Interpreting Studies has developed a growing body of research on crisis translation and interpreting in conflict zones, highlighting that high-risk environments modify professional standards and decision-making criteria. Studies on interpreting in humanitarian, military, and post-conflict contexts indicate that a balance among accuracy, safety, institutional loyalty, and personal ethics has not yet been achieved (Tryuk, 2020; O'Brien, 2022; Todorova & Ruiz Rosendo, 2025). Although much of this work examines community and field settings, its core implication is consistent: communicative risk systematically reshapes lexical selection, mitigation routines, and self-monitoring criteria.

Research on interpreters who work in war zones shows that extreme danger, political sensitivity, and role ambiguity can consistently affect their choice of words, ways to deal with problems, and ability to keep an eye on themselves (Ruiz Rosendo & Persaud, 2016). These results suggest that selective reformulation is not a strange change but a change that happens because of the situation. Ukrainian scholarship adds a further dimension by foregrounding the sustained nature of crisis. Unlike short-term emergencies, the war against Ukraine has produced a prolonged communicative environment characterised by emotional saturation, legal argumentation, and strategic framing. Ukrainian researchers document how interpreters navigate emotional pressure, rapid shifts in discourse modality, and responsibility toward both institutional accuracy and public sensitivity (Herasymenko & Honcharenko, 2023; Herasymenko & Nazarian, 2023; Andriienko, 2016; Naumenko, 2023; Hrabovets & Chernous, 2025; Kochubei, 2016). This work underscores the need for models that integrate affective regulation with cognitive control.

From Descriptive Accounts to Operational Models

Despite rich descriptive accounts of interpreting under stress and in conflict, a methodological gap remains. Psycholinguistic models offer precise constructs (attention, inhibition, monitoring), while crisis-oriented studies emphasise ethics, risk, and discourse power—but these strands are rarely integrated at the level of measurable output behaviour.

Most existing quality models rely on global performance scores or error typologies, which obscure local breakdown-and-recovery dynamics. They capture *outcomes* but not *regulatory processes*. An episode-based methodology, conversely, perceives interpreting performance as a succession of minor events. This is in line with recent calls in interpreting research to move beyond mean values and toward diagnostics that are sensitive to time (Janikowski & Chmiel, 2025).

This study facilitates this transition by presenting the Linguistic and Cognitive Index of Security-Based Selection (IBS) as an operational framework at

the intersection of executive control and crisis discourse. IBS is not intended to replace existing load or timing indices. Instead, it captures a regulatory layer that is sensitive to security and comes into play when interpreters are working with high-risk segments and change their output to keep things stable.

The Place of IBS Within Cognitive Models of Interpreting

Conceptually, IBS extends cognitive-load and executive-control frameworks by adding a risk-evaluation dimension. It assumes that interpreters continuously assess not only processing feasibility, but also communicative safety. When there is a risk, output is changed or filtered using inhibition and monitoring systems. These shifts are observable at the episode level in compression patterns, reformulation choices, and repair profiles. IBS provides a way to describe and measure this intensification empirically within an episode-based framework.

This method aligns with situated and embodied views of cognition in translation, which hold that cognitive processes are shaped by factors such as the environment, institutional constraints, and emotional contexts (Risku & Rogl, 2020). IBS connects psycholinguistic theory and applied interpreting research by making these ideas easy to test. In short, the theoretical framework sees security-based selection as a natural extension of executive control in times of crisis. War-time interpreting does not suspend cognitive principles; it amplifies their observable consequences under sustained risk. IBS provides an empirical way to capture this intensification at the episode level.

Data, Episode Design, and IBS Computation

Dataset and Empirical Scope

The empirical material for this study consists of 500 English→Ukrainian simultaneous interpreting episodes extracted from recordings of institutional speeches delivered between 2022 and 2026. The upper bound reflects the most recent recordings available at the time of analysis, including early-2026 institutional briefings. The dataset reflects communicative conditions typical of wartime and crisis-related discourse, including diplomatic briefings, security-related statements, humanitarian appeals, and policy-oriented addresses.

The speeches were produced in international institutional contexts where public wording carries legal, political, or reputational weight (e.g., multilateral organisations, international forums, and official press briefings). All recordings were interpreted into Ukrainian in simultaneous mode and transcribed with temporal alignment. The dataset includes performances by 32 interpreters (MA students). Each interpreter contributed 15 episodes; episodes were sampled to

balance discourse types and speech-rate variation. To reach the target sample of 500 episodes and balance discourse types, an additional 20 episodes were sampled from the same interpreter pool using the same inclusion criteria. The dataset was constructed to ensure variation in speech rate, information density, and affective load, while maintaining comparability across episodes.

The decision to focus on English–Ukrainian interpreting is motivated by the sustained relevance of war-related institutional communication involving Ukraine following Russia’s full-scale invasion. This context provides a stable yet high-pressure environment for observing security-sensitive regulatory behaviour in interpreters’ output.

Episode-Based Analytical Unit

Rather than treating the full speech or the entire performance as the primary unit of analysis, the study adopts an episode-based design. An interpreting episode is defined as a short, time-bounded segment in which a potential destabilisation of processing or pragmatics becomes observable and is followed by an interpreter intervention.

Each episode comprises three analytically separable components:

1. Trigger – a local source-text feature that increases cognitive or pragmatic risk
2. Intervention – an observable regulatory action in the target output
3. Recovery outcome – stabilisation or continued disturbance following the intervention

Triggers include sudden increases in information density, evaluative escalation, legally sensitive formulations, emotionally charged wording, or abrupt tempo changes. Interventions include compression, reformulation, mitigation, hedging, delayed repair, or strategic omission. Recovery is operationalised as the return to stable temporal coordination and fluent delivery within the following segment.

This design allows the analysis to capture dynamic regulation rather than static performance quality, aligning with psycholinguistic models that treat interpreting as continuous adjustment rather than linear transfer.

Annotation Procedure

All recordings were transcribed and time-aligned using ELAN. Annotation focused on features that can be reliably identified in performance data:

- onset and offset of source and target segments;
- pauses exceeding 2 seconds;
- overt self-repairs and false starts;
- local compression or expansion relative to source length.

Expert quality assessment was conducted by two independent raters with professional experience in conference interpreting and interpreter training. Episodes were evaluated using an EMT-aligned analytic scale covering pragmatic adequacy, delivery stability, and overall communicative effectiveness. Inter-rater reliability was calculated using Cohen's κ , yielding a value of $\kappa = .81$, which indicates high agreement. Disagreements were resolved through discussion prior to statistical analysis.

Operationalising Security-Based Selection: The IBS Construct

The Linguistic and Cognitive Index of Security-Based Selection (IBS) is designed to capture interpreters' regulatory behaviour in episodes where pragmatic or institutional risk is elevated. IBS captures discourse-security regulation; temporal indicators (EVS, pauses, repairs) are used as external correlates and recovery markers:

- *temporal regulation*, reflected in timing and delay patterns;
- *discourse-level regulation*, reflected in risk-sensitive linguistic operations.

IBS is interpreted alongside temporal indicators (EVS, pauses, repairs), which serve as external correlates and recovery markers at the episode level.

Illustrative Episode Example

To clarify how episodes were identified and coded, two brief examples are provided below. These examples are illustrative rather than exhaustive.

Example 1: Evaluative escalation

Source (EN):

This attack constitutes a clear violation of international humanitarian law.

Observed trigger:

Evaluative escalation combined with legal categorisation.

Target (UKR, abridged):

Цей напад є серйозним порушенням міжнародних гуманітарних норм.

Intervention:

Lexical neutralisation ("clear violation" → "serious violation"), avoidance of categorical emphasis.

Recovery outcome:

Stable EVS and fluent continuation in subsequent segments.

This episode was coded as a case of security-based selection, as the interpreter moderated evaluative intensity while preserving propositional meaning.

Example 2: Emotionally charged appeal

Source (EN):

We cannot remain silent while innocent civilians are being slaughtered.

Observed trigger:

High emotional load and morally polarised framing.

Target (UKR, abridged):

“Ми не можемо залишатися осторонь, коли гинуть мирні цивільні.”

Intervention:

Compression and affective modulation (“being slaughtered” → “гинуть”).

Recovery outcome:

Shortened EVS and absence of extended pauses following the intervention.

Here, IBS reflects affective inhibition aimed at maintaining professional distance without suppressing core meaning.

IBS Computation and Variables

In addition to IBS, the analysis used temporal indicators (EVS deviation), intervention type, and recovery markers (pauses, repairs) as external correlates and episode-outcome descriptors:

- temporal indicators (relative EVS deviation within the episode),
- presence and type of risk-sensitive intervention (categorical weighting),
- recovery indicators (stabilisation vs. prolonged disturbance).

Each episode received a normalised IBS score, which was subsequently aggregated for statistical analysis at the participant and discourse-type levels.

Formal Definition of the IBS Index

In the present study, the Linguistic and Cognitive Index of Security-Based Selection (IBS) is operationalised in accordance with the multi-dimensional interpreting model (Authors, 2025). IBS is conceptualised as a proportional index reflecting how accurately and consistently an interpreter processes security-sensitive elements in wartime institutional discourse.

Formally, IBS is defined as:

$$IBS = \frac{N_{secure}}{N_{risk}} \quad (1)$$

where:

- Nrisk denotes the total number of potentially risk-generating elements identified in the source speech (e.g., evaluative escalation, legally sensitive formulations, modality shifts, emotionally charged categorizations);
- Nsecure denotes the number of such elements that are rendered in a security-appropriate manner in the target output.

IBS values range from 0 to 1, where higher values indicate a greater proportion of risk-sensitive elements that were processed in a way that preserves institutional appropriateness and pragmatic safety. Episodes with N_risk = 0 were excluded from IBS computations and retained only for descriptive timing analyses. Accordingly, IBS-based analyses report effective n (episodes with N_risk > 0), whereas general timing descriptives may refer to the full set of 500 episodes.

Identification of Risk-Generating Elements

Risk-generating elements were identified during source-text annotation prior to analysing interpreter output. Following the discourse-security layer of the MBIUP model (Skrylnyk, 2025a, 2025b), these elements included:

- categorical evaluative labels (e.g., *clear violation*, *criminal responsibility*, *unacceptable aggression*);
- modal constructions implying obligation, blame, or inevitability;
- legally sensitive terminology in international law and humanitarian law contexts;
- emotionally intensified metaphors and polarising lexical choices.

Each element was counted once per episode to avoid artificial inflation of risk density.

Criteria for Security-Appropriate Rendering

A risk-generating element was coded as security-appropriately rendered if the interpreter's output met at least one of the following criteria, as specified in the dissertation framework:

- preservation of propositional meaning with controlled modulation of evaluative force;
- reformulation that avoids unnecessary categorical emphasis while maintaining communicative intent;
- mitigation or neutralisation consistent with institutional norms;
- delayed or redistributed rendering that prevents pragmatic overload without omission of core content.

Crucially, security-appropriate rendering does not imply omission. Instead, it reflects the interpreter's ability to balance accuracy with institutional and pragmatic safety.

Relation of IBS to cognitive indices

Within the broader MBIUP framework, IBS functions as a discourse-security layer rather than a general cognitive-load index. While measures such as EVS and BKN capture attentional timing and load distribution, IBS isolates qualitative regulatory decisions triggered by pragmatic risk (Authors, 2025).

In the analysis, IBS is therefore interpreted in relation to, but not as a mathematical function of, temporal and cognitive indices. This distinction allows the study to differentiate between processing difficulty and risk-sensitive selection, which are often conflated in traditional error-based assessments.

Illustrative Micro-Episodes

Source (EN):

Russia's actions constitute a deliberate attempt to destabilise the region.

Target (UKR, SI)

Дії Росії спрямовані на підрив регіональної стабільності.

Commentary:

The interpreter leaves out the explicitly intentional attribution ("deliberate attempt") but keeps the main propositional content. This selective attenuation lowers the risk of escalation without changing the meaning of the institution. One thing that makes this episode risky is intentionality framing, which is done through security-oriented reformulation. This gives this segment a high IBS value.

Micro-episode B: Compression under legal-institutional risk

Source (EN):

Any further attacks on civilian infrastructure will be met with appropriate and proportionate measures.

Target (UKR, SI):

Подальші удари по цивільній інфраструктурі матимуть відповідну реакцію.

Commentary:

The interpreter here shortens a legally loaded threat by removing words like "appropriate" and "proportionate" that add judgment. The intervention prioritizes institutional neutrality and temporal stability while maintaining its deterrent significance. Even though the lexical correspondence is lower, a high IBS score comes from putting together a lot of risk-bearing factors into one controlled output.

Micro-episode C: Stabilisation through genericisation

Source (EN):

"This decision sends a clear signal to those responsible for the atrocities."

Target (UKR, SI):

"Це рішення є чітким сигналом відповідальним сторонам."

Commentary:

The interpreter replaces the emotionally and legally important noun "atrocities" with a general institutional term, "відповідальним сторонам." This choice is an example of anticipatory regulation that tries to keep emotions from getting worse. The risk factor is not copied; instead, it is neutralized. This demonstrates that security-based selection aligns with elevated IBS.

These short clips show how security-based selection works by making things less clear, smaller, and more general. They back up the idea that IBS is a sign of adaptive executive regulation instead of a loss of information.

Results

The results section reports quantitative and qualitative findings on security-based selection as captured by the IBS index. The analysis proceeds in three steps. First, descriptive statistics of IBS and related variables are presented. Second, differences across discourse types are examined. Third, the relationship between IBS and performance indicators is analysed.

Descriptive Statistics of IBS and Related Measures

Across the dataset of 500 interpreting episodes, IBS values showed substantial variation, reflecting differences in discourse conditions and regulatory demands. Table 1 summarises descriptive statistics for IBS and selected temporal and performance-related measures aggregated at the episode level. IBS statistics are based on episodes with $N_{risk} > 0$ (effective n), whereas timing descriptives may refer to the full set of 500 episodes.

Table 1

Descriptive Statistics of Main Variables (Episode Level, $N = 500$)

Measure	Mean	SD	Min	Max
IBS	.72	.18	.29	1.00
EVS (seconds)	2.68	0.44	1.51	3.91
Pause density (per min)	3.1	1.2	0.8	6.7
Self-repairs (per episode)	1.6	.9	0	5

IBS values clustered toward the upper half of the scale, indicating that in most episodes interpreters rendered a majority of risk-generating elements in a security-appropriate manner. However, the relatively large standard deviation confirms that security-based selection is *episode-sensitive* rather than a stable trait of individual performance.

Episodes with lower IBS values were typically associated with increased pausing and delayed repair, whereas high-IBS episodes were characterised by smoother recovery following risk triggers.

IBS Across Discourse Types

To examine whether security-based selection varies systematically with discourse conditions, episodes were grouped into four discourse categories based on source-text characteristics: (1) diplomatic statements, (2) security and military-related discourse, (3) humanitarian appeals, and (4) policy-oriented institutional briefings.

Table 2
IBS by Discourse Type

Discourse type	n	Mean IBS	SD
Diplomatic	132	.78	.15
Security / military	141	.69	.19
Humanitarian	119	.74	.17
Policy / institutional	108	.71	.18

The mean IBS values for diplomatic discourse were the highest, which suggests that regulatory control is more consistent when institutional conventions and phrasing norms are well established. The lowest mean IBS was seen in security and military-related discourse. This is because there were more categorical evaluations, legal terms, and words that were sensitive to escalation.

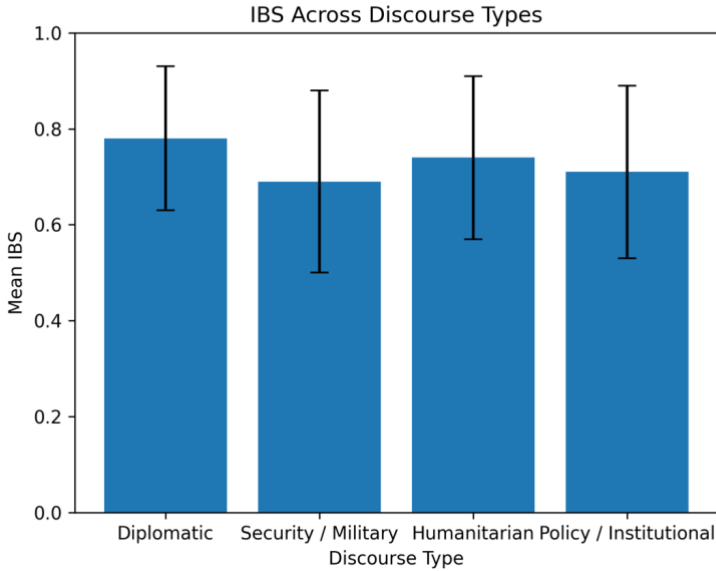
Humanitarian discourse displayed intermediate values, with IBS often affected by emotionally loaded segments that required affective modulation rather than lexical neutralisation. To visualise these differences across discourse categories, Figure 1 presents mean IBS values with standard deviation for each discourse type.

IBS and Temporal Coordination

To explore the relationship between security-based selection and temporal processing, IBS values were correlated with EVS at the episode level. The

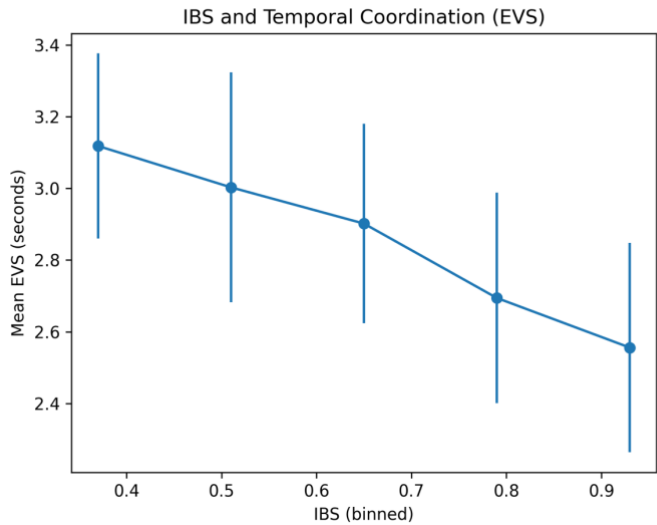
analysis revealed a moderate negative correlation between IBS and EVS ($r = -.41$, $p < .01$).

Figure 1
Mean Values of the Linguistic and Cognitive Index of Security-Based Selection (IBS) Across Discourse Types



Note. Error bars represent standard deviation. Diplomatic discourse shows the highest mean IBS, while security and military-related discourse exhibits lower values, reflecting increased regulatory demands.

Figure 2
Relationship Between IBS and EVS (episode level)



Note. Mean ear-voice span (EVS) across binned values of the Linguistic and Cognitive Index of Security-Based Selection (IBS). Error bars represent standard deviation.

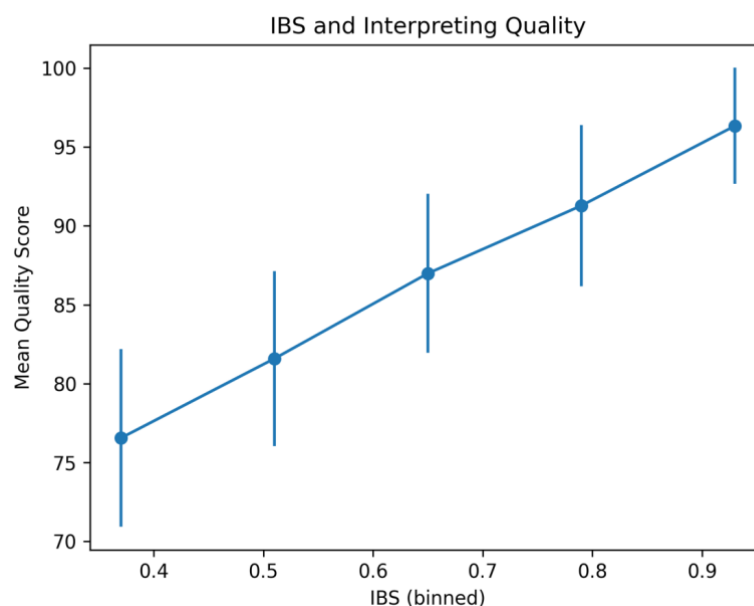
Episodes with higher IBS tended to have shorter and more stable EVS, which suggests that effective security-based regulation did not lead to longer delays. Conversely, episodes characterized by low IBS often exhibited prolonged EVS and delayed recovery, indicating that inadequate regulatory oversight of risky components may exacerbate temporal instability.

This finding supports the distinction between *regulation* and *overload*: security-based selection does not slow interpreting down; rather, it appears to stabilise temporal coordination.

IBS and Expert-Rated Performance

IBS values were further examined in relation to expert quality ratings assigned on EMT-aligned scales. A **positive correlation** was observed between IBS and overall quality scores ($r = .62$, $p < .001$). Expert ratings demonstrated high inter-rater agreement (Cohen's $\kappa = .81$).

Figure 3
IBS and Overall Interpreting Quality



Note. Mean expert-rated interpreting quality across binned IBS values. Error bars indicate standard deviation.

When analysed by quality dimension, the strongest associations were found for pragmatic adequacy and delivery stability, whereas the correlation with terminological accuracy was weaker but still significant. This pattern suggests that IBS primarily captures regulatory behaviour affecting pragmatic alignment rather than narrow terminological precision.

High-IBS vs. Low-IBS Episodes: Qualitative Contrast

To illustrate how IBS differentiates regulatory behaviour, episodes in the top and bottom quartiles of the IBS distribution were compared qualitatively.

High-IBS episodes typically displayed:

- early detection of evaluative or legal risk,
- controlled lexical modulation without omission of core meaning,
- rapid recovery and continuation with stable pacing.

Low-IBS episodes, by contrast, often showed:

- delayed or absent modulation of risk-generating elements,
- clusters of pauses and self-repairs following high-risk segments,
- temporary disruption of discourse coherence.

These contrasts reinforce the interpretation of IBS as a marker of adaptive control, not of simplification or information loss.

Summary of Results

Three main findings emerge from the analysis. First, security-based selection is a systematic and measurable phenomenon in wartime institutional interpreting, as evidenced by the distribution of IBS across 500 episodes. Second, IBS varies by discourse type, with lower values observed in contexts characterised by dense evaluative and legal framing. Third, higher IBS is associated with better temporal stability and higher expert-rated quality, particularly in pragmatic and delivery-related dimensions.

Taken together, the results support the view that security-based selection functions as a stabilising psycholinguistic mechanism under crisis conditions rather than as a source of degradation.

Discussion

This study set out to examine security-based selection as a psycholinguistically grounded regulatory phenomenon in simultaneous interpreting under war-time conditions. The results demonstrate that such selection is neither incidental nor purely stylistic. Instead, it reflects systematic control processes activated when temporal pressure, pragmatic risk, and affective load converge.

Security-Based Selection As Executive Regulation

One of the central implications of the findings concerns the interpretation of selective reformulation. In traditional quality assessment, departures from surface equivalence are often treated as omissions or inaccuracies. The present

results challenge this assumption. Episodes with higher IBS values were not associated with poorer performance; on the contrary, they correlated with more stable temporal coordination and higher expert ratings, particularly in pragmatic adequacy and delivery.

From a psycholinguistic perspective, this pattern is consistent with models of executive control in which inhibition serves not only to suppress competing lexical items, but also to filter responses that are inappropriate under current task demands. In wartime institutional discourse, the expectation is not for maximum explicitness but for regulated conformity to institutional norms. So, security-based selection works like adaptive inhibition: it lowers the chance of pragmatic overload while keeping propositional content.

This interpretation aligns with evidence that expert interpreters differ from novices not primarily in linguistic knowledge, but in their ability to regulate output under pressure. High-IBS episodes illustrate how interpreters anticipate downstream consequences and intervene early, rather than reacting through delayed repairs after destabilisation has already occurred.

Temporal Stability and The Role Of Anticipation

The negative association between IBS and EVS provides further insight into the timing of regulatory decisions. Higher IBS values were linked to shorter and more stable ear-voice span, suggesting that effective security-based selection does not rely on extended buffering. Instead, it appears to be supported by anticipatory processing.

This finding is important because it counters a common intuition: that careful modulation necessarily requires more time. The episode-level analysis shows the opposite. When interpreters identify risk early and apply controlled reformulation, temporal coordination improves rather than deteriorates. Low-IBS episodes, by contrast, often involved delayed recognition of risk, followed by clustered pauses or repairs that disrupted flow.

Psycholinguistically, this pattern suggests that security-based selection is integrated into the same predictive mechanisms that support fluent interpreting more generally. It does not constitute an additional “layer” added after comprehension, but rather an adjustment embedded in the planning stage.

Discourse Type and Differential Regulatory Load

Differences across discourse types further support the interpretation of IBS as a context-sensitive index. Diplomatic discourse yielded higher IBS values, while security and military-related discourse showed lower values and greater variability. This distribution reflects differences in risk density rather than differences in interpreter competence.

Diplomatic discourse tends to follow relatively stable conventions, which facilitate anticipatory regulation. Security and military discourse, by contrast, is characterised by categorical evaluations, legal framing, and escalation-sensitive wording, often delivered under time pressure. In such contexts, the margin for safe reformulation is narrower, and the cognitive cost of misalignment is higher. The lower IBS values observed in these episodes therefore reflect increased regulatory demand, not weaker control.

Humanitarian discourse was in the middle, and IBS values were often affected more by emotional load than by legal risk. This difference shows how important it is to think of emotional salience as a separate part of regulation instead of just a part of general cognitive load.

Communication During Wartime

One of the most important things this study does is look at communication during wartime as a normal part of life, not as something that happens only once in a while. In Ukraine, interpreters work with language that is emotionally charged, evaluative, and sensitive to institutions for long periods of time. This long-term situation is different from the short-term crisis situations that are often talked about in the literature.

Psycholinguistic studies conducted in Eastern Europe further substantiate the notion that wartime conditions constitute a prolonged cognitive environment rather than a collection of discrete stressors. Kapranov and Voloshyna (2023) show that students who are always on the lookout for air raids while learning English think and act differently. This is because being around noise and stress related to war for a long time changes how they think and act. Their results show that adaptive regulation is more important than just disruption. This is because the participants were able to make learning routines that would last even when they were always in danger.

Although the population and task differ from simultaneous interpreting, the underlying mechanism is comparable: prolonged crisis conditions foster the stabilisation of regulatory strategies that support task performance under stress. In this respect, security-based selection observed in the present study can be viewed as a professional analogue of the adaptive regulation documented by Kapranov and Voloshyna (2023), operating at the level of real-time bilingual executive control.

The findings suggest that under such conditions, regulatory strategies become stabilised and routinised. Security-based selection is not activated sporadically; it becomes part of the interpreter's default control repertoire. IBS captures this adaptation at the micro-level, making visible how prolonged crisis reshapes everyday interpreting behaviour.

This perspective helps reconcile insights from crisis translation research with psycholinguistic models. While conflict-oriented studies emphasise ethical and institutional pressures, IBS demonstrates how these pressures are realised through measurable control operations in real-time performance.

Implications for Psycholinguistic Modelling and Assessment

Methodologically, the episode-based approach adopted here addresses a limitation of many existing models that rely on global averages. By focusing on trigger–intervention–recovery sequences, the analysis captures regulatory dynamics that are otherwise obscured. IBS complements existing temporal and load-based measures by isolating a security-sensitive dimension of control.

For psycholinguistic theory, the results support a view of interpreting as a multi-layered regulatory system in which attention, inhibition, and affective control interact with discourse-level evaluation. Security-based selection should therefore be treated as a legitimate object of modelling, rather than as noise or deviation.

For assessment and training, the implications are equally clear. Interpreters working in high-stakes environments should not be evaluated solely on surface completeness. The ability to manage pragmatic risk without destabilising delivery constitutes a distinct competence. IBS provides a way to operationalise this competence and to integrate it into diagnostic feedback.

Limitations and Directions for Further Research

Several limitations should be acknowledged. The study focuses on a single language pair and on institutional interpreting contexts. While the episode-based design enhances internal validity, further research is needed to test the generalisability of IBS across languages and professional settings.

The wartime Ukrainian context provides a uniquely sustained crisis environment. The proposed IBS framework is not language- or context-specific and may be transferable to other conflict-sensitive interpreting settings, such as humanitarian or diplomatic mediation.

Future work could extend the model to professional interpreters, incorporate physiological or neurocognitive measures of stress, or examine how security-based selection interacts with cultural mediation and ethical decision-making. Nevertheless, the present findings establish IBS as a theoretically grounded and empirically supported index for analysing interpreting under sustained crisis conditions.

Conclusion

This study introduced the Linguistic and Cognitive Index of Security-Based Selection (IBS) as an episode-level indicator capturing how interpreters regulate linguistic output under conditions of heightened pragmatic risk. Drawing on 500 English–Ukrainian simultaneous interpreting episodes from war-time institutional discourse, the analysis demonstrated that security-based selection is a systematic and measurable phenomenon rather than an incidental stylistic choice.

The findings show that higher IBS values are associated with greater temporal stability and higher expert-rated performance, particularly in pragmatic adequacy and delivery. These results challenge deficit-oriented interpretations of selective reformulation and support a psycholinguistic view of security-based selection as adaptive executive regulation. Under conditions where institutional risk and emotional salience are elevated, interpreters deploy inhibition, monitoring, and anticipatory control to stabilise communication rather than to maximise surface correspondence.

By adopting an episode-based design, the study moves beyond global performance averages and makes visible the micro-dynamics of trigger detection, intervention, and recovery. IBS complements existing temporal and load-based measures by isolating a regulatory layer that becomes salient precisely when communicative safety competes with processing efficiency. This approach helps bridge psycholinguistic models of executive control with research on crisis and conflict discourse.

The war-time Ukrainian context underscores an additional insight: prolonged crisis does not merely increase cognitive load but reshapes the interpreter's control repertoire. Security-based selection becomes routinised and integrated into anticipatory processing, reflecting adaptation to a sustained high-risk communicative environment. IBS provides a tool for capturing this adaptation empirically.

Several limitations should be acknowledged. The analysis is confined to one language pair and institutional settings, and IBS relies on discourse-based identification of risk elements. Future research should test the index across languages, modalities, and professional populations, as well as explore its relationship with physiological or neurocognitive markers of stress.

Overall, the study contributes to psycholinguistic research on interpreting by reframing selective reformulation as a form of executive regulation shaped by discourse risk. IBS offers a theoretically grounded and empirically tractable way to analyse how interpreters maintain communicative stability when accuracy, timing, and institutional safety converge.

Disclosure Statement

The author reported no potential conflicts of interest.

Generative AI Statement

During the preparation of this work the author used Consensus (AI-assisted literature search service), Grammarly Pro (Desktop, macOS, v. 1.163.1.0) and Claude (Anthropic) in order to search for and verify bibliographic sources and format the reference list (Consensus); check the grammar and punctuation of the English and Ukrainian text, the bibliographic entries and the abstracts (Grammarly Pro); and language-edit individual passages after they had been written by the author, format tables and figures from the author's own data and drafts, and verify the bibliographic entries against publisher records at proof stage (Claude). After using these tools/services, the author reviewed and edited the content as needed and takes full responsibility for the content of the publication.

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