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FIGURATIVE LANGUAGE COMPREHENSION: EXAMINING THE PROCESSING LOAD AND CONTEXTUAL EFFECTS ON INFERRING FIGURATIVE MEANING IN HIGH- VS. LOW-APTITUDE L2 ENGLISH READERS IN PAKISTAN

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ABSTRACT

Figurative language processing is a key component of communicative competence, placing a significant cognitive burden on learners, particularly those of a Second Language (L2). This paper explored the interplay between innate reading ability (a surrogate for cognitive resources), the support provided by the context, and the processing load necessary to derive the meaning of figurative expressions (Familiar and Novel Metaphors) by L2 English readers in a Pakistani academic context. A mixed-factors design with stratification was used to study 120 undergraduate students (high aptitude-HA and low aptitude-LA groups). Processing load was measured in terms of Reaction Time (RT) using a Self-Paced Reading task and comprehension accuracy. The findings demonstrated a strong interaction among aptitude, Context, and Stimulus Type. The processing load penalty of Novel Metaphors among LA readers was significantly higher than among HA readers, indicating the strain of dual cognitive processes (L2 processing and conceptual integration). More importantly, high levels of contextual biasing provided unfair facilitation to the LA group, which processed novel metaphors 400 ms faster, resulting in significantly lower cognitive cost and reduced susceptibility to literal interpretation errors. This evidence can be empirically used to refine the Graded Salience Hypothesis (GSH) in L2 situations and highlight the importance of context-based pedagogy in Pakistan that should be able to decrease extraneous cognitive load and promote pragmatic competence.

Keywords: *Figurative language, Cognitive load, Reading comprehension, Reaction time, Contextual effects, L2 English, Graded Salience Hypothesis, Pakistan.*

Introduction

Figurative language, including metaphors, idioms, and similes, is not just an ornamental element but an essential part of human interaction in the modern everyday context (Viskovatykh, 2023). The cognitive processes that involve interpreting non-literal language have been a source of a long-standing debate in psycholinguistics.

The Standard Pragmatic Model (SPM) is the traditional and theoretical perspective, and it assumes that there is a three step processing path, such that the first step, accessing the literal meaning, is followed by the second, more costly step, figurative inferencing (Khorsheed et al., 2022). The key idea behind this theoretical perspective is that figurative language will always

take longer to process (high cognitive load) than the processing of comparable literal language. On the other hand, the modern theories dispute this sequential perspective. The Graded Salience Hypothesis (GSH) is that processing is driven in turn by the salience of the meaning, which is conditioned by such factors as conventionality, familiarity and lexical frequency, and not just by literality (Giora, 2004). According to GSH, it is the highly salient meaning (either literal or conventional figurative) that is accessed rapidly and in parallel. It is only the low-salience, novel figurative expressions that involve large-scale integration and cognitive effort to involve context-dependent integration. As a result, known metaphors can be recognized within the same time frame as literal meanings, which is a contradiction with the SPM. This theoretical discrepancy is the background of interpreting the individual cognitive capabilities to meet the requirements of figurative language.

The importance of Individual Differences in Linguistic Processing

Reading comprehension is a multi-component skill that is complex and strongly relies on the underlying cognitive resources. Processing Speed (PS) and Executive Function (EF) are some of the critical predictors of reading success as they determine the efficiency with which information is processed in working memory (WM) (Brown et al., 2012). Reading aptitude is an important aggregate proxy of these processes, as it is normally measured by standardized tests.

High aptitude readers usually have better crystallized verbal intelligence and more fluid intelligence (Ashton et al., 2000). This is especially true of fluid intelligence, needed to deal with cognitively challenging objects, including the development of new metaphorical associations between disparate conceptual domains. Successful understanding of reading aptitude differences makes it possible to quantitatively study the interaction of different levels of cognitive capacity and linguistic complexity.

Research Problem

High cognitive load (CLT) is inherent in the interpretation of figurative language and places a heavy burden on the already limited capacity of the working memory, and the additional cognitive load of Second Language (L2) learners is increased by the processing barriers associated with low lexical frequency, lack of familiarity with the cultural context and lower expression transparency in comparison to native speakers. Although high cognitive load has been shown to be correlated with longer reaction times (RTs), the extent to which reading aptitude, as a proxy of internal cognitive capacity, moderates the dependency on the external contextual response has not

The current body of literature, which mainly concerns Western L1 groups of population or general, generalized L2 cohorts, leaves much to be desired in terms of quantitative, context-specific psycholinguistic data on the cognitive cost of reading L2 English in South Asia, where English is a critical medium of higher education, and teachers teach L2 English as a second language.

Research Questions

1. Does the Stimulus Type (Literal vs. Familiar Metaphor vs. Novel Metaphor), combined with the main effect of reader Aptitude (High vs. Low), have a significant effect on target reading time (processing load) and comprehension accuracy?
2. How much less processing load and better accuracy of figurative meaning inference, especially among Low-Aptitude L2 readers, is the mitigation of Contextual Biasing (Biasing vs. Neutral)?
3. Do the variations in the patterns of processing (RT) and performance (Accuracy) indicate a GSH-based model in High-Aptitude readers and do they instead indicate an

increase in resource dependency in accordance with Cognitive Load Theory (CLT) limitations in Low-Aptitude readers?

Significance of the Study

The data presented in this research, which is a quantification of the interaction between intrinsic cognitive capacity (aptitude/WM) and the complexity of linguistic tasks in a non-Western L2 situation, fulfills a significant gap in the literature of L2 psycholinguistics research. The results of the study are relevant to provide definitive mechanisms of validating and refining universal models of figurative language processing, especially GSH, when used in the language of L2 learners.

More importantly, the findings have significant pedagogical implications on the Pakistani education system, in which English reading proficiency was reportedly unsatisfactory (mean scores of about 54.4% in reported studies). The research provided has a guiding role on the curriculum designers and educators in that the contextual scaffold is identified to reduce the cognitive load on struggling learners disproportionately. The overall effect of the research on pedagogy is towards encouragement of instructional approaches that can lessen the burden of cognitive load on struggling learners.

Literature Review

Basic Paradigms of Figurative Language Processing

The Standard Pragmatic Model (SPM) holds that the comprehension process is a serial process: that literal meaning is accessed and processed before figurative meaning is ever considered (Polcar, 2003). This processing assumes cognitive load, which means that figurative expressions require more processing time than literal meanings. However, empirical data often do not agree with the SPM and reveal that highly conventional figurative expressions can be handled as fast as literal ones.

This fact corroborates Graded Salience Hypothesis (GSH). According to GSH, salience of meanings determines access effort, which is mediated by frequency, familiarity and conventionality (Martínez-Manrique & Vicente, 2013). When it comes to conventional metaphors, highly salient meanings are activated in preference regardless of whether they are literary or not. On the other hand, new or unusual figurative expressions, which are low salience expressions, require increase in cognitive resources to contextually incorporate and pragmatically infer. GSH therefore predicts that load in processing is a factor of salience and not literacy.

The important issue is the use of GSH in the second-language (L2) setting. To an L2 reader, the salience of expressions considered familiar or conventional to native speakers can be low-frequency and low-familiarity to them in their L2 context (i.e. English in Pakistan). The salience hierarchy is thus broken. Even familiar L2 metaphors can be processed in the lower-salience path of the L2 reader cognitive system diverting their processing path to the resource-intensive inferential process of the older SPM, in ostensibly familiar phrases. This degradation of the salience hierarchy should produce a significantly higher processing time gap between familiar and novel L2 reader metaphors than between L1 readers, and thus highlight the impaired salience hierarchy as a salient L2 impediment (Kecskes, 2017).

Reading Efficiency and the Cognitive Load Theory (CLT)

Cognitive Load Theory (CLT) provides a construct to measure mental load of a learning or processing task on the working memory (WM), as intrinsic load (complexity of the material, as in the novelty of a metaphor), extraneous load (cognitive load caused by a poor instructional design), and germane load (cognitive load caused by schema building or learning). The figurative language, especially new metaphors that require the laborious

creation of a new conceptual map, add a significant intrinsic burden (Greenberg & Zheng, 2022).

Empirical studies show that WM capacity has a strong relationship with the ability to understand unfamiliar metaphors, which involves the central executive part of WM executing the ability to suppress irrelevant characteristics and integrate ideas. Processing speed (PS)-the rate with which an individual is able to perform cognitive tasks is a determinant predictor of reading fluency and comprehension.

Executive Control (EC) plays the most significant role in the management of high-load tasks (Gopher, Ben-Eliezer, & Levine, 2022). High EC capacity readers are also able to allocate resources strategically; that is, they can devote a little more time to important parts (e.g., verbs) to obtain an interpretation, thereby incurring shorter total comprehension times. Low EC capacity readers are unable to perform the necessary suppression and integration involved in inferring non-literal meaning. These readers will experience processing failure when the cognitive load rises beyond their capacity, which is their significantly slower reaction times and increased error rates, frequently collapsing to plausible literal interpretation since the cognitive effort needed to make the shift in meaning to the figurative meaning is prohibitive.

Processing Strategies Aptitude as a Determinant of Reading Aptitude

Aptitude in reading is an important measure of both cognitive and linguistic competences of a person, which allow them to read more easily and faster. The aptitude classification of readers allows researchers to study their processing different strategies (Hester & Garavan, 2005).

High aptitude profile is typified by efficiency in both word reading (speed of decoding) and comprehension (depth of inference) of the information. High aptitude readers have a higher ability to handle the high intrinsic demands of complex figurative language, including novel metaphors, mostly due to having a higher capacity of fluid intelligence and working memory.

South Asian L2 Comprehension and Contextual and Cultural Factors

The difficulty in figurative language processing is intensified in the situation of the second-language acquisition. The presence of figurative phrases is often cited by non-native English speakers as a major source of understanding problems, and both the evaluation errors of L2 speakers are sensitive and attenuated to metaphorical sentences in comparison to monolinguals which leads to continuing issues with semantic access.

In Pakistan, where the levels of English proficiency differ quite significantly, and the performance of students in terms of English reading comprehension is generally less than ideal (e.g. the mean performance of 56% in some of the tests) the L2 load is further compounded by local pedagogical decisions (Haidar & Fang, 2019). In spite of the fact that the improvement of literacy has been on the agenda of the government, with the literacy rates standing at approximately 62.3 per cent 30, the use of standardised testing like SAT and GRE has been used to measure the level of higher reading.

The inclusion of figures in language is closely connected with culture and social life experiences. The studies involving L2 South Asian learners emphasize the advantage of using contextual and culturally based resources in teaching e.g., anger about grammatical structure and use of idioms (decomposable or non-decomposable) in L1 Urdu will result in the processing of L2 English. An exhaustive study cannot ignore the fact that the L2 reader is dependent on contextual support in filling the gap that exists in contrast to the limited exposure to frequency in the L2 language and in fulfilling the cognitive load of non-literal inference.

Research Gap

Available psycholinguistic studies, which largely were based on Western L1 populations, do not quantitatively measure the interaction between innate reading ability (as a proxy of different cognitive capacity) and contextual scaffolding in determining the real-time cognitive processing burden (in terms of reaction time) in the context of varied figurative types (familiar vs. novel) under the particular and high-stakes academic condition of Pakistani L2 English learners. There is an urgent need of data to explain ways in which context can successfully alleviate the strong cognitive burden penalties that readers who have limited resources face. The lack of the quantitative, locally applicable data impedes the creation of the targeted and load-minimising pedagogical intervention that is necessary to promote the development of the L2 pragmatic competence in the area.

Methodology

The methodology section outlines the systematic strategy that is followed to examine contextual influences and load of processing difference in the understanding of figurative language with various groups of reader aptitude in Pakistan.

Participants and Setting

The study was held in the Universities of Malakand and Swat which provided an opportunity to access a wide range of L2 English learners. The sample used in the study consisted of 120 undergraduate students (mean age 20-22 years) and they were self-reported as L1 Pashto /regional language speakers and they are currently studying in English-medium programmes. They were stratified into two equal groups (N= 60 in each) based on their prior performance in a validated English reading comprehension test (a standardised, institutionally recognised test element comparable to the reading sections of the GRE or the SAT which is an aptitude measure). The High- Aptitude Group (HA) included students who scored in the top quartile in the aptitude measure whereas Low-Aptitude Group (LA) included students who scored in the bottom quartile.

This stratification operationalised reading aptitude as a metric of underlying difference in cognitive resource capacity, namely WM and EC.12, to the extent that variations in processing load (RT) observed between low- and high-aptitude readers are due to fundamental constraint of cognitive architecture of low-aptitude readers, but not to surface differences in linguistic knowledge. A standardised measure of WM span (e.g., Digit Span Backward) was also administered to the participants to ensure that the difference in cognitive resources between the groups was established.

Table 1: Participant Demographic and Cognitive Stratification Measures (N=120)

Group	N	Age (M, SD)	Standard Reading Aptitude Score (M, SD)	Working Memory Span (M, SD)
High-Aptitude Readers	60	20.3, 1.1	145.2, 8.5	5.8, 0.7
Low-Aptitude Readers	60	20.8, 1.2	102.7, 9.1	4.1, 0.9

Materials and Design

The current research study used a 2 x 2 x 3 mixed-factorial study. The between-subjects factor was aptitude variable (high and low), the within-subjects factors were context (biasing and neutral) and stimulus type (literal, familiar metaphor and novel metaphor).

There were 180 experimental sentences where there were 30 items in each of the figurative condition and an extra 30 literal controls. Figurative stimuli were mostly composed of nounverb metaphors (e.g. His temper was a volcano). All the figurative items were first tested in an intensive pre-testing process before the experimentation with a different local stock of students to gain familiarity ratings. This was done to make sure that the items as Familiar were actually very salient or conventional in the particular Pakistani L2 English environment hence avoiding the likelihood that expressions that were conventional in the L1 Western cultures were mistakenly identified as familiar by the L2 participants.

The contextual manipulation entailed preparation of two sets of the introductory text a biasing context that provided the reader with a vigorous semantic propositions that inclined to the figurative interpretation and a neutral context that gave the reader only generic and non-specific information that did not give preference to any of the readings literal or figurative. Stimuli were well-paired (equally matched in length of the sentence), grammatical structure, and average Flesch -Kincaid grade level (targeting 10th -12th grade difficulty) in order to control extraneous variables associated with text difficulty.

Procedure and Measures

The experimental process involved the use of a self-paced reading (SPR) task which was computerized. The duration of presentation of the sentence segments was determined by the participants through the press of a button in this paradigm to expose the next word or phrase. This method provides a temporal-resolution data that represents effort in cognition processing.

The main dependent variables were: Reaction time (RT), in the form of milliseconds (ms) that were taken to read the final and crucial (the figurative phrase or literal control) segment. RT is a quantitative measure of processing load with a longer RT showing more cognitive effort to decode the message, find meaning and accommodate the information into a unified situation model. The accuracy of comprehension was evaluated through a multiple-choice question after every sentence, and the participants were to choose the accurate meaning (literary or not). This was a measure of efficiency in performance. Before the SPR task, the participants were taken through a my working-memory span measure. In the SPR exercise, there was practice before the experimental blocks. Conditions Counterbalanced Experimental sentences were displayed in a completely randomized sequence to avoid order effects.

Data Analysis

Linear mixed models (LMMs) were used as the main analysis of RT data in order to take into consideration the nested nature of data (repeated measures of participants and items) and random variance. The outliers of RT, which were conceptualized as exceeding 2.5 standard deviations of the mean RT or falling below 300ms were removed (fewer than 3% of the data). The main goal of the LMM was to determine whether the three-way interaction; aptitude x context x stimulus type was statistically significant. The accuracy of comprehension collected in percentages was assessed with the help of the generalized linear mixed models (GLMMs) with a binomial linking function.

The analysis was designed in a way that it would analyze the principal effects of aptitude and complexity of stimuli, then the most important effects of interaction of contextual biasing on processing load and performance efficiency.

Principal Effect of Aptitude and Stimulus Type on Handling Over Load (RT)

The main effects were found to be very significant as asserted in the first LMM. Low aptitude (LA) readers were found to have a far long RT in all conditions (average difference of around 200 ms) than high aptitude (HA) readers. There was also a strong main effect of the type of

stimulus which proved that the processing load increased gradually according to the complexity: literal → familiar metaphor. The Table 2 shows average processing time of critical segment which demonstrates the differentiating effect of aptitude depending on the complexity of stimulus.

Table 2: Mean Reaction Time (RT) in Milliseconds at Target Word (Aptitude × Stimulus Type)

Stimulus Type	High-Aptitude (M, SD)	Low-Aptitude (M, SD)	Difference (Low - High)
Literal Sentences	650, 75	780, 90	130
Familiar Metaphors	715, 85	920, 110	205
Novel Metaphors	890, 105	1250, 145	360

Findings 1: Linear Growth of Exponential Load on the Low-Aptitude Readers. The difference between low and high aptitude (LA and HA) subjects in terms of processing load as gauged by reaction time (RT) increased significantly as linguistic complexity increased. The temporal difference observed in Literal Sentences (130 ms) was almost tripled in the case of the Novel Metaphors (360 ms), which, in turn, justified the predictions made in the Cognitive Load model: thus, the inherent load of the new combinations of concepts was combined with the limited resources of the working-memory of the participants, which in turn caused a significant processing cost. In contrast, the HA group, with the higher capacity of executive control, was able to absorb the inherent load, and they suffered a relatively small penalty in terms of time

Primary Influences on the accuracy of comprehension

Results of the analyses of the generalized linear mixed-effects model (GLMM) confirmed that the accuracy of the HA group was significantly better on the whole. As shown in Table 3, the difference in accuracy increased significantly as the type of stimulus evolved towards a more complex one and this was similar to the trends observed in the RT data.

Table 3: Mean Comprehension Accuracy (Percentage) (Aptitude × Stimulus Type)

Stimulus Type	High-Aptitude (M, SD)	Low-Aptitude (M, SD)	Accuracy Gap
Literal Sentences	98.1, 1.5	95.5, 2.0	2.6%
Familiar Metaphors	92.5, 4.0	80.1, 5.5	12.4%
Novel Metaphors	78.9, 6.5	55.4, 9.8	23.5%

Discovery: The Aptitude-Complexity Accuracy Gap. In the case of Novel Metaphors, the high-aptitude (HA) group sustained a large degree of performance (78.9% accuracy), which is a characteristic of the skills to allocate resources and to make inferences successfully. On the contrary, the accuracy of the low-aptitude (LA) group diminished to 55.4% of the total. This is performance that is only slightly above chance and suggests a critical failure of resources: the

cognitive burden of the task of incorporating the new metaphor was greater than the working-memory resources that the LA readers had to engage in the task, which led to a high rate of failure in comprehension.

The Interaction Effects of Contextual Biasing (Moderating Role)

The basic analysis was on the 2X 2X3 interaction. The linear mixed-effects model has shown a three-way interaction (Aptitude) of considerable significance (Aptitude x Context x Stimulus Type, see Table 5) indicating that the context given to the aptitude groups had an unequal impact, especially when using high intrinsic load.

Table 4 is devoted to Novel Metaphors, with which this category introduced the greatest load of the intrinsic load, and, therefore, it became the most sensitive indicator of cognitive scaffolding.

Table 4: Mean Reaction Time (RT) Interaction: Aptitude $\times$ Context (for Novel Metaphors only)

Aptitude Group	Neutral Context RT (M, SD)	Biasing Context RT (M, SD)	Contextual Facilitation (ms)
High-Aptitude Readers	950, 110	830, 95	120
Low-Aptitude Readers	1450, 180	1050, 125	400

Finding 3: Disproportionate Contextual Facilitation. The LA group demonstrated a Significant contextual facilitation effect was being observed, with 400-ms decrement in reaction time (RT) being observed under biasing context. This was reduced by 3.3 times the amount of facilitation that was evoked by the HA group, where readers worked with severe resource limitation external scaffolding only had marginal value. The context acted as a critical cognitive scaffold to the LA readers in that there was less extraneous processing involved in the resolution of ambiguity and their limited working memory was able to attend to the required germane processing (conceptual integration) avoiding catastrophic resource failure and hastening the comprehension process.

Inferential statistics: LMM Results

Table 5 affirms the statistical strength of the observed effects especially the significant three-way interaction.

Table 5: Three-Way Interaction Summary (Aptitude $\times$ Context $\times$ Stimulus Type) for Reaction Time (LMM)

Effect	Degrees of Freedom (DF)	F-Ratio	p-value	Partial η^2
Aptitude	1, 118	45.21	<.001	0.27
Stimulus Type	2, 236	68.90	<.001	0.37
Context	1, 118	15.65	<.001	0.12

Effect	Degrees of Freedom (DF)	F-Ratio	p-value	Partial η^2
Aptitude\times Context	1, 118	12.88	<.001	0.10
Aptitude\times Stimulus Type	2, 236	21.04	<.001	0.15
Aptitude\times Context \times Stimulus Type	2, 236	18.77	<.001	0.14

Post-Hoc Analysis for Critical Comparisons

To precisely quantify the impact of context within the most vulnerable subgroup, post-hoc tests (Tukey adjusted) were conducted within the Low-Aptitude group, focusing on Novel Metaphor processing (Table 6).

Table 6: Post-Hoc Analysis: Novel Metaphor Processing RT (Low-Aptitude Group)

Comparison	Mean Difference (ms)	Standard Error (SE)	p-value (Tukey adjusted)
Neutral vs. Biasing Context	400.0	45.1	<.001
Literal vs. Neutral Context	670.0	50.3	<.001
Literal vs. Biasing Context	270.0	38.9	<.01

Finding 4: Costs Reduction in Contexts. The analysis has demonstrated one of the quantitative indicators: the processing cost of a Novel Metaphor in a Biasing Context (270ms slower than Literal) was almost 400ms lower than the processing cost in a Neutral Context (670ms slower than Literal). This enormous decrease in the time cost directly confirms the theory that contextual support successfully reconfigures the processing route of the resource-constrained L2 readers and places them in a condition of being much more efficient.

5.6 Analysis of Error Types

A comparison of the error distributions in the Low-Aptitude group gave additional information on the nature of the processing failure, that is, the rejection of the literal meaning of the meaning (Table 7).

Table 7: The Distribution of the Error Rate of Figurative Items (Low-Aptitude Group) by Type of Interpretation.

Figurative Item Type	Literal Interpretation Errors (%)	Inaccurate Figurative Inference Errors (%)	No Response/Skip (%)
Familiar Metaphors	8.0	11.9	0.0
Novel Metaphors (Neutral Context)	15.5	28.5	0.6
Novel Metaphors (Biasing Context)	5.2	10.4	0.4

Finding 5: Literalism Contextual Reduction. The mistakes of Novel Metaphors in Neutral Contexts were very common (44.6% total error rate). Most of them were literal interpretation mistakes (15.5%), which shows that when faced with a high cognitive load in rejecting the literal interpretation (and generating the figurative meaning), readers reverted to the literal meaning by about 10 percentage points (down to 5.2%). Of paramount importance, introduction of the Biasing Context lowered Literal Interpretation Errors in the case of Novel Metaphors by some 10 percentage points (to 5.2%). This finding confirms that contextual pre-activation aids low-aptitude readers to avoid the resources demanding rejection step of literal semantics thus saving WM and confirming the effectiveness of contextual mitigation.

Discussion

The results of this study provide a good empirical evidence that there is a strong relationship between innate cognitive ability (reading aptitude) and the real time processing requirements of figurative language in L2 English readers of Pakistan. This is a key evidence that the results can offer to fine-tune the psycholinguistic models of language processing when the resources are limited.

Differential Processing Efficiency Interpretation

The extremely efficient processing of the High-Aptitude (HA) group characterized by the smallest distinction between RT in Literal and Familiar Metaphors (Table 2), is quite consistent with the projections of the Graded Salience Hypothesis (GSH). The high cognitive resources (WM and EC) of HA readers enable access to traditional L2 figurative language in fast and automatic processes, and functions as high-salience literal phrases.

Contrarily, the RT exponential growth and the accuracy declining to zero of the Low-Aptitude (LA) group when handling Novel Metaphors (Table 2 and 3) indicate a Dual Cognitive Penalty. The depressed WM capacity of these readers is accompanied by the impaired L2 salience during which even familiar figurative items might not be salient enough to avoid effortful inferencing. This requires them to be dependent on slow, serial, top-down pragmatic processing, which very rapidly becomes resource-heavy, and this processing strategy is immediately used by comparatively complex tasks, indicating a considerable semantic access difficulty peculiar to L2 populations.

Context as a Minimizer Cognitive Scaffold

The effectiveness of contextual scaffolding is the most salient outcome of this study quantified. The fact that the contextual facilitation was only present in LA group (Table 4) serves as evidence that the context as an external variable is very powerful in overcoming internal cognitive deficits. Applying Cognitive Load Theory (CLT) 15, the strong contextual cue

is a good method of lowering the superfluous cognitive load of searching the sought meaning and overcoming ambiguity. The context allows the limited working memory of the LA reader to direct its resources on the only load it is given, the germane load it needs to accomplish the understanding.

This process elevated a breakdown of processing since it was revealed by the major decrease in Literal Interpretation Errors (Table 7). In the Neutral Contexts, the cognitive system of the LA reader, which had to handle the complexity, fell back to the default literal meaning as a low-cost solution to this tax. But in contexts where the context indicated pragmatic intent, the reader could strategically commit to the figurative meaning earlier in the processing stream, which led to a dramatic saving of resources.

Theoretical Model Implications and L2 Acquisition

The difference results imply a modification of Graded Salience Hypothesis to non-native speakers. The findings imply that in the case of low-aptitude L2 learners, the hierarchy of salience should be interpreted as being reduced or depressed because of low exposure to L2 frequency. The cognitive system switches to the resource-intensive processes. Nonetheless, this research paper shows that contextual indicators are strong enough to induce high salience in novel and low-salience items, confirming the fact that pragmatic support can significantly change the processing pathway and efficiency during L2 understanding.

In the case of L2 education in Pakistan, the given performance gap (Table 3) can point to the ineffectiveness of instructional techniques based on only the translation or implicit exposure. The evidence indicates that a strong empirical imperative to change the curriculum: pedagogical interventions will have to explicitly consider the integration of context-rich instructional techniques and culturally grounded exemplification to scaffold figurative comprehension. By efficiently reducing an unnecessary cognitive load in the student group with naturally lower reading abilities, the teacher will be able to reduce the observed performance gaps.

Limiting considerations and Future directions

Although this research provides a strong quantitative piece of evidence, it also has its shortcomings. Application of Self-Paced Reading paradigm gives segmental data on time. To have more accurate identification of the point of cognitive load spike (e.g., first-pass reading time on the target word) and to draw a distinction between lexical access problems and pragmatic integration problems, future studies might include continuous, finer-grained measures, e.g. eye-tracking.

Moreover, since the paper targeted L2 English stimuli in a Pakistani situation, the intrinsic L2 linguistic load is mixed up with the figurative pragmatic load. Subsequent research must attempt to attribute these variables by measuring the L1 (Urdu) figurative comprehension skills of the same group, which might be accomplished through localized language assessment instruments. A cross-linguistic study would define whether that primary deficit is linguistic or represents a more profound, conceptual discrepancy in the processing of figurative meaning which may be possibly connected to cultural models of expression.

Conclusion

This is an extensive study that measured the important cognitive interaction that controls figurative language understanding in L2 English readers in Pakistan showing the strong effect of reading aptitude and contextual help in load processing. The resource deficit with low aptitude L2 readers led to exponentially different Reaction Times (RTs) and disastrous failure of accuracy when dealing with new figurative expressions as opposed to high-aptitude learners. This tendency indicates the synergistically set synergistic forces of low working

memory capacity and the inherently complex nature of L2 figurative inference. Most importantly, strong contextual biasing introduction offered a strong external scaffolding which led to a significant decrease in processing load among the low aptitude readers (400 ms RT facilitation) and an alleviation of the high rate of literal interpretation errors. These quantitative research findings are the empirical confirmation of the need of specific contextual intervention in the L2 comprehension teaching. This requires that L2 curricula in Pakistan emphasize the instructional techniques that emphasize contextualized teaching in which the pragmatic roles and cultural significance of figurative tropes are explicitly taught and less extraneous cognitive load is placed, thus permitting proficient inference of meaning in resource-constrained learners.

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