

## The Relationship between Sensory Learning and Recalling Styles and Speaking Proficiency: A Case Study of Yemeni EFL University Students

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**Abstract:** This quantitative correlational study addressed the relationship between sensory learning and recalling styles and speaking proficiency. The study sample consisted of 105 (9 male and 96 female) students enrolled in the English Departments for the academic year 2022-2023. Sensory learning and recalling style questionnaires and speaking proficiency test were used. The two instruments' validity and reliability have been verified. The study results showed that there is a statistically significant relationship between the sensory (auditory) learning style and speaking proficiency ( $r = 0.392, p < 0.01$ ); There is also a weak, non-statistically significant relationship between the sensory (visual) learning style and English speaking proficiency ( $r = 0.008, p < 0.467$ ). The study, then again, revealed, negative non-significant relationship between sensory recalling (visualization speech) and speaking proficiency ( $r = -0.069, p < 0.241$ ). It also revealed a statistically significant and strong relationship between sensory recalling (verbalization speech) and speaking proficiency ( $r = 0.699, p < 0.01$ ). The results of the multiple regression analysis also revealed that the sensory learning style (auditory) together with the sensory recalling style (verbalization speech) explained 54.2% of the variance in speaking proficiency. The sensory recalling style (verbalization speech) alone explained 48.3% of the variance in the English-speaking proficiency. Beta coefficient indicated that sensory learning (auditory) and sensory recalling style (verbalization speech) predicted speaking proficiency. However, the sensory recalling style (verbalization speech) was the best predictor of the English-speaking proficiency, followed by the sensory (auditory) learning style.

**Keywords:** Sensory learning, Sensory Recalling, Speaking proficiency, Yemeni University Students.

### أساليب التعلم والتذكر الحسية المتعددة وعلاقتها بالكفاءة في التحدث (دراسة حالة لطلبة اللغة الإنجليزية في الجامعات اليمنية)

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**المستخلص:** هدف البحث الحالي إلى الكشف عن العلاقة بين أساليب التعلم الحسية (السمعية والبصرية) وأساليب والتذكر الحسية (الكلام الذهني والتصور الذهني) وكفاءة التحدث باللغة الإنجليزية لدى طلاب أقسام اللغة الإنجليزية في الجامعات اليمنية. تم استخدام المنهج الوصفي الارتباطي، وتم استخدام استبانة لقياس أساليب التعلم والتذكر الحسية المتعددة واختبار إتقان التحدث وقد تم التحقق من صدق الأداتين وثباتهما. وتكونت عينة الدراسة من 105 طالبا وطالبة (9 ذكور و96 إناث) من الطلاب الملتحقين بقسم اللغة الإنجليزية للعام الدراسي 2022-2023م. وقد أظهرت نتائج البحث أن هناك ارتباطاً دالاً إحصائياً بين أسلوب التعلم الحسي (السمعي) وكفاءة التحدث ( $r = 0.392$ ) و ( $p = 0.000$ ). كما يوجد ارتباط ضعيف ليس له دلالة إحصائية بين أسلوب التعلم الحسي (البصري) وكفاءة التحدث باللغة الإنجليزية ( $r = -0.069$ ) و ( $p = 0.482$ ). أما بالنسبة لأساليب التذكر الحسي فقد وجد أن هناك ارتباطاً عالياً؛ له دلالة إحصائية بين أسلوب التذكر الحسي (كلام ذهني) وكفاءة التحدث باللغة الإنجليزية ( $r = 0.699$ ) و ( $p = 0.000$ ). ويوجد ارتباط ضعيف ليس له دلالة إحصائية بين أسلوب التذكر الحسي (تصور ذهني) وكفاءة التحدث ( $r = 0.008$ ) و ( $p = 0.943$ ). كما أظهرت نتائج تحليل الانحدار المتعدد أن أسلوب التعلم الحسي (السمعي) وأسلوب التذكر الحسي (كلام ذهني) مجتمعان يفسران 54.2% من التباين في كفاءة التحدث، كما أن أسلوب التذكر الحسي (كلام ذهني) يفسر منفردا 48.3% من التباين في كفاءة التحدث باللغة الإنجليزية، وأشار معامل بيتا إلى أن التعلم الحسي (السمعي) والتذكر الحسي (كلام ذهني) يؤثران على كفاءة التحدث باللغة الإنجليزية وكان أسلوب التذكر الحسي (كلام ذهني) أفضل متنبئ لكفاءة التحدث باللغة الإنجليزية يليه أسلوب التعلم الحسي (السمعي).

**الكلمات المفتاحية:** التعلم الحسي، التذكر الحسي، إتقان التحدث، طلاب الجامعات اليمنية.

## 1- Introduction

In the context of English as a Foreign Language (EFL), understanding the interplay between sensory learning styles, sensory recalling styles, and speaking proficiency has to be increasingly vital in the field of applied linguistics. Existing studies highlight the significance of tailored learning approaches, particularly for learners from disadvantaged backgrounds, who may face unique challenges in language acquisition.

Cassidy (2004) claimed that individual views learning styles as learner's preferred ways of receiving, processing and retaining new information. Arbuthnott and Krätzig (2014) stated that matching sensory learning style preferences with instructional methods and learning environments will greatly improve students' learning.

Furthermore, Long (1990) suggested a psychological factor in self-directed learning to the extent that the learner has primary control of the learning process. It is this cognitive aspect of being able to convey thoughts and ideas from covert into overt speech in a second/foreign language can play a vast role in their learning of new skills mainly, speaking performance (Gluszek & Dovidio, 2010).

Wolfson (2020) claimed that a critical link exists between the learner's senses, particularly the auditory and visual channels, and the verbal and nonverbal recalling aspects of language. A language learner is attempting to process and accommodate the phonological forms of words and phrases with information from visual, auditory modalities and autobiographical sensory recalls (Lantolf, 2003; Borer, 2006), adding this process contributes to the L2 acquisition process, adding without this strategy, language acquisition is not likely to occur.

Wolfson (2020) claimed that understanding the relationship between sensory learning styles and recall methods can inform teaching strategies and improve L2 learning performance.

Guerue (2018) noted an increase in the literature on the first language (L1) second language (L2) research of inner voice and inner voice instruments. However, she pointed out that the preponderance of research in this part has been done with the role of (inner voice) in reading texts, the concept of inner voice and its development among L1 and L2 learners, suggesting that additional innovative research with cognitive learning, recalling and learners' outcome is needed.

In addition, Guerue endorsed Bandura and Walters' (1977) three fundamental principles of observational learning, defined as the manner in which, and conditions under which, learners most efficiently and most effectively perceive, recall and actually reproduce the target language.

Researchers (see for example, Maftoon and Bahrami, 2002) conducted a study to investigate the relationship between inner speech and speaking proficiency in the Iranian setting. To these researchers, a significant relationship was found between the subjects' inner speech questionnaire scores and their speaking proficiency.

Fairhurst, Scott and Deroy (2017) claimed that EFL learners' speaking proficiency might be related not only to linguistic features of their oral production but also to their sensory learning and recalling differences.

Specifically, the study tried to explore the association between learning styles, recalling styles and speaking performance in the context of Yemeni University EFL students, as a case in point. It also aimed at finding out whether the sensory learning and recalling styles predict Yemeni EFL University learners speaking proficiency. It further tried to explore what is the type of sensory learning and recalling styles that contribute significantly to predict students' speaking proficiency.

## 2- Literature Review

Sensory learning and recalling styles and key studies reported in the literature will be reviewed.

### Sensory Learning Styles

Among the areas of interest shared by learning styles models and theories is sensory perception. According to Keefe (1988) "perception is the process by which the brain systematically collects information (p 1).

### Sensory Dimension

This learning style category according to Shabani, Khasrei and Bakhoda (2018) deals with how language learners use their physical senses, visual, auditory, and kinesthetic. Keefe (1987) states that "perceptual modality lies within the cognitive domain of

learning styles and that —perceptual response is both cognitive and affective in the sense that preferred response is a biased initial reaction to information”(p. 17).

The importance of studying these perceptual modalities arises for different reasons. Tight (2007) explained some of these reasons when she wrote:

- a. [Perceptual modalities] represent a crucially important part of the learning process.
- b. They are very intuitive that is to say; most people can agree that some people are more visual, for example, while others tend to be more —hands-on.
- c. They may be more easily recognized in oneself and by one’s teacher than other learning style variables such as classroom design preference, sensitivity to light, preferred time of day to learn, and whether a person thinks in words or in pictures. (Tight, 2007, p. 33).

### Sensory Modes

This concept refers to the perceptual learning channels (e.g., ‘visual’, ‘auditory’, ‘kinesthetic’, ‘tactile’) with which the student is most comfortable(Ehrman& Oxford, 1990). In particular, this study focused on sensory perceptual learning styles (i.e., auditory, and visual), which refer to the physiological modes that students manifest in learning contexts.

The perceptual modes are classified into visual, auditory, kinesthetic and tactile learners (Shabani, Khasrei and Bakhoda, 2018). However, this study deals with visual and auditory learning styles.

### Sensory Recalling Styles

Recalling or repeating is reviewed in the fields of language learning strategies, psychology, L2/FL acquisition involving the silent covert practice of the other language, undertaken in relation to an oral or written, future or past, language task (Tomlinson, 2000). Sensory recall-- whereby something is remembered is a modality specific function of acoustic code—an inner voice— (e.g., Baddeley, Gathercole, & Papagno, 1998). Sensory recalling according to Feournouhg (2016) is the sensory representational phenomenon of inner speech.

For Carruthers (2015), this sensory recalling is, at least often, similar to what it is read or heard. In other words Carruthers claimed that some people can recall things- conversations, music, dialogue in film, adding some people can recall things they have read as if they were reading them aloud.

Kompa (2024) proposed that inner speaking be defined as “a mental episode that substantially engages the speech production system” (p, 646); That is to say that sensory recalling modality can differ based on the sensory experience--either visualization or verbalization. Carruthers (1998) has it that:

“an imaged sentence will occupy the causal role of a thought if it has the distinctive causes and effects of that thought, but without these being mediated by events which themselves carry the same (or a sufficiently similar) content. So the sentence ‘The world is getting warmer’ will count as constitutive of my conscious thought if it (together with my other beliefs and desires) causes my intention to walk to work [...]” (p. 461).

Here, Carruthers thinks of inner speech in terms of imagined sentences. Here, Carruthers’ vision on inner speech allows for inner visualization minus inner verbalization encoding. However, Kompa, (2024) came to an understanding with Carruthers that an inner speech occurrence is a piece of visual image of thinking if it plays the functional role of a thought. Remlaps (2024) claimed that it appears that people generate more robust verbal representations during deliberate inner speech compared to when their intent is to visualize.

### Sensory Inner (visualization & verbalization) Speech

Inner speech is “sensory forward model in auditory code processed by activated speech actions” (Carruthers (2018, p. 35). However, researchers are forced to confront the issue of how (or if) a single mental phenomenon can be both sensory-phonological-like and sensory-image-like in language acquisition (Kosslyn, 1995). For his part, Carruthers (2014) said that inner speech is “auditory images that result from offline activation of instructions for producing speech” (p. 149). Unlike Carruthers, Shabani, Khasrei and Bakhoda (2018) assured that talking to oneself might occur in the form of auditory verbal or auditory imagery. In addition, Franklin, Baars, Ramamurthy

and Ventura (2005) confirmed that inner speech is not only sensory-phonological-like but also sensory-image-like, referring to deaf people who receive information via sign language as a case in point.

### The Role of Sensory Inner Speech in L2 Learning

As early as 1957, Nida recommended that foreign language (FL) learners “practice thinking in a foreign language by making up imaginary conversations, constructing speeches, or recalling what one has heard or read” (1957, p. 24). Rivers (1979) wrote in the diary she kept while learning her fifth non-native language: “It is very important to try out in new sentences what you have just learned, if not to others (p. 77). Another aspect of sensory recalling speech described in the literature is that associated with written production.

### Previous Studies on Sensory Learning Styles

It is worth mentioning that learners’ cultural background is believed to influence their perceptions, which could result in differences in learning style preferences (Joy & Kolb, 2009). Let us start by Firissa (2024), a study carried out in the African continent, Addis Ababa; Ethiopia. The study aimed at shading more light on the roles of perceptual learning style preferences on EFL achievement. The study applied quantitative and correlational design. And students’ semester final exam results to measure PSLP and FLA, respectively. Findings of the study revealed that the major Reid’s (1984) (PLSP), of the students was group followed by visual, minor PLSP, and negligible others four. Moreover, the activities addressed by the teaching material were found incongruent with the perceived learning styles. Furthermore, results of One-way ANOVA confirmed that (PLSP) is significantly related with FLA. A mismatch between activities of teaching materials would result in learners’ failure. Teachers are expected to identify students’ ways of learning and apply accommodating strategies to address individual differences in the classroom in terms of PLSP dimensions.

Table (1) A Summary of the Previous Studies on Sensory Learning Style

N.	Study	Setting & population	Study's aim	Mean findings
1	Reid (1987)	43 EFL learners in the United States of America.	To investigate learners’ sensory perceptual learning style preferences.	The preferred learning styles vary in accordance with one’s nationality. For example, Arab EFL learners preferred the visual style.
2	Hylan (1994)	440 students at 8 universities in Japan.	Replicated the study by Reid (1987) of the learning style preferences of ESL learners in the US.	The study confirmed Reid’s findings that Japanese learners appear to have no strong learning style preferences, a fact which might help explain are more visual.
3	Almutairi (2007)	209 English learners at King Faisal University in Dammam, Saudi Arabia.	To investigate the EFL learning styles of the participants.	A large percentage (41%) of the participants preferred the visual style.
4	Alkhatnai (2011).	100 Saudi EFL learners at King Saud University studying in the United States of America	To examine the preferred learning styles of	The auditory learning style was the most preferred one among the learners, followed by the visual and kinesthetic styles.
5	Naqeeb and Awad (2011).	386 EFL learners at the Arab American University in Palestine.	Developed a 20-item perceptual learning styles questionnaire.	Data analysis revealed that the auditory style was favored by most of the students.
7	Zhang & Evans (2013).	466 Chinese EFL learners.	To examine the learning styles of 466 Chinese English learners.	Visual style was a major learning style among the learners. Kinesthetic style was ranked the highest among the minor styles.

'N.	Study	Setting & population	Study's aim	Mean findings
6	Aljasir (2016)	334 freshman students at a public university in Saudi Arabia.	Differences among learners of English as a foreign language (EFL) in Saudi Arabia learning styles (specifically, perceptual learning styles, among other factors.	Findings revealed that the participants were multimodal, among other variables. All six used in the study including visual and auditory, variables were significantly related to English proficiency and/or performance.
8	Alkooheji & Al-Hattami (2018)	135 Bahrain college students.	Conducted a study that looked at learning style preferences among 135 Bahrain college students using the Visual-Auditory-Reading/Writing-Kinesthetic (VARK) model.	The results showed that kinesthetic and visual learning styles were the most widely preferred learning styles. The results also showed that the students learning styles preferences vary according to the nature of academic learning activity done by the students.
9	Setyoningsih (2019)	123 Indonesian Junior High School students Muhammadiyah University of Makassar English Department,	Investigate the correlation between students' learning styles and speaking ability.	There was a statistically strong relationship between learners' auditory learning style and L2 speaking.
10	Candilas, Diane, Gaid, & Kolog (2023)	Subjects' data was collected from (50) fifty Teacher Education Program College students.	A correlational research design was used. Data were analyzed using descriptive and inferential statistical tools to assess students' verbal learning style and oral English skills	A significant correlation found between college students' verbal learning style as to memory and their level of oral English skills as to pronunciation which implied that ability to pronounce words is determined by their term memory to recall the manner on how words and phrases are sounded in English.

It is evident from Table (1) above, that these researchers have become increasingly concerned with exploring the prevalent learning styles among EFL learners in different parts of the world, for instance, the Middle East see researchers (Almutairi, 2007; Alkhatnai, 2011; Naqeeb&Awad, 2011; Aljasir, 2016; Alkooheji& Al-Hattami, 2018, among others).

Almutairi (2007) investigates the learning styles of (209) English learners of King Faisal University in Dammam, Saudi Arabia, using *Oxford's style analysis survey* (SAS) questionnaire followed by a focus group interview of 10 students. One of the major findings of her study is that a large percentage (41%) of the participants preferred the visual learning style, revealing visual learning style the most preferred one among the EFL learners. Almutairi concluded her study by the following remarks:

- i. The teacher is found to play an important role in influencing the learners' use of sensory perceptual learning style.
- ii. Learning styles are found to be influenced by factors such as the learners' cultural values and previous academic achievement in English foreign language.

Alkhatnai (2011) conducted study employing Reid's perceptual learning styles preferences questionnaire (PLSPQ) and in-depth interviews, to examine the preferred perceptual learning styles of 100 Saudi students of King Saud University, studying in the US. To summarize Alkhtani's study results, the main findings are as follows:

- a. The auditory learning style was the most preferred one among the participants, followed by the visual and kinesthetic styles.
- b. Learning styles are found to be influenced by learners' cultural values and teacher's role.

- c. Significant correlation between EFL college students' perceptual learning styles and with that of their success and effective learning.

Once more in Saudi Arabia, Aljasir (2016) carried out study, using three self-developed questionnaires to explore the interrelationships between six major learning styles of 334 University EFL learners. She, as well, used semi-structured interviews with 20 participants. She found out that undergraduate students have a high preference of combined numerous learning styles. Aljasir finalized her study result saying:

- a) All six variables were significantly related to English proficiency and/or performance.
- b) Interrelationships between six major learning styles and affective factors in an EFL learning context.

Naqeeb and Awad (2011) conducted two studies involved two different educational institutions and teaching approaches at Arab American University in Palestine. They developed a 20-item questionnaire to explore the sensory perceptual learning styles of (386) EFL learners. Data analysis revealed that the auditory learning style was favored by most of the students.

Still in the Middle East, Alkooheji and Al-Hattami (2018) investigated the sensory perceptual learning styles preferences among (135) Bahrain college students using the visual-auditory-reading/writing-kinesthetic (VARK) questionnaire. Their study result revealed that kinesthetic and visual learning styles were the most widely preferred learning styles among students. The students learning styles preferences vary according to the nature of academic learning activity done by the students. In addition, employing different learning style measures in existing studies makes it challenging to compare their findings.

A study in Asia by Zhang and Evans (2013) examined the learning styles of 466 Chinese English learners. Oxford's (SAS) was translated into Chinese and piloted with 40 students. Data analysis revealed that the visual style was a major learning style among the learners, while the kinesthetic style was ranked the highest among the minor styles. Based on these findings, Zhang and Evans proposed that "an optimal way to react to multiplicity of learning styles of undergraduates is to design classroom activities, tasks, and assignments in a balanced manner.

Thus, the above studies involved different educational institutions and teaching approaches that suggests that an issue that needs attention when collecting and interpreting the data in this study.

### **Relationship between Sensory Learning Styles and Speaking Proficiency**

To date, little evidence has been found on the association between the use of particular sensory learning styles and the use of particular skill of English language proficiency... In contrast to the finding of the present study, as can be seen in Table (1) above, studies reviewed above (cf., Naqeeb & Awad, 2011; Zhang & Evans, 2013) found no significant relationship between the learners' English proficiency levels and their preferred perceptual styles of learning.

A different finding, however, was obtained in the Indonesian context. Setyoningsih (2019) attempted to investigate the relationship between students' learning styles and speaking ability. The study was conducted with 123 Indonesian Junior High School students Muhammadiyah University of Makassar. Setyoningsih's study results revealed that there was a statistically strong relationships between learners' auditory learning style and L2 speaking ability.

### **Previous Studies in Sensory Recalling Styles**

To begin with Mok (2023) study entitled "Inner and outer voices: L2 readers' experiences of silent reading, reading aloud and reading-while-listening" This qualitative study, which adopts an exploratory, case-study approach, aims to explore L2 learners' reading comprehension and their experiences in three reading conditions – reading silently (RS), reading aloud (RA), and reading-while-listening (RWL). It also aims to investigate the role of phonology in L2 reading through these different conditions.

Their comprehension results in all three reading conditions, oral reading in RA, and perceived affordances and challenges for each of these conditions were analyzed. Result indicated the following:

- While some performed best in reading while listening RWL and liked it most, others found it a difficult condition to read.
- All respondents reported hearing an inner voice while reading silently.
- Their comprehension generally suffered in RA, and they experienced difficulties in phonological translating to a different extent in this condition.

Table (2): A Summary of Previous Studies in Sensory Recall

N	Study	Setting & population	Study's aim	Mean findings
1	(Larsen, Schrauf, Fromholt & Rubin, 2002)	60 EFL learners of Spanish as a foreign L2 of L1 Puerto Rican.	To investigate the frequency of use of English and Spanish in social and psychological internal domains	Results showed that the immigrants with higher levels of L2 proficiency made greater use of the L2 not only in the social but also in the internal domain.
2	Maftoon & Bahranini (2002)	174 Iranian female learners majoring in English translation at Islamic Azad University	To find out EFL learners experience of L2 internal rehearsal, internal rehearsal characteristics and functions. To find relationship between inner speech and speaking proficiency.	The result showed that EFL learners at different level use their inner voice as an internal rehearsal at a large extent as they rehearse the English language. A significant relationship was found between: subjects level of language proficiency and speaking proficiency.
3	Shigematsu (2010)	Five L2 learners of English and Japanese	The conscious 'use of the L2 for thinking as a way of helping one mediate the ways of the L2 and culture.	An L2 inner voice tends to develop with increased proficiency and exposure to naturalistic L2 settings.
4	Dewaele (2015)	1,579 multilinguals representing 77 different L1s and up to four additional languages..	Web-administered questionnaire, which focused on multilinguals 'expression of emotions, the silent use of language for mental calculations/arithmetic and forming sentences.	More than a third (37.9%) of the overall BEQ respondents, however, indicated using their L2 'frequently' or 'all the time' for mental calculations and more than half (56.6%) using the L2 'frequently' or 'all the time' for IS L3s, L4s, and L5s were used decreasingly less for these cognitive functions.
5	Shabani, Khasrei, & Bakhoda, (2018).	60 female subjects participated in this study and were assigned to the experimental and control groups each consisting of 30 participants. Nouri University Iran	To investigate whether inner speech instruction had any significant effect on upper-intermediate EFL learners' reading comprehension.	Results of paired samples t-test indicated the effectiveness of inner speech instruction in the experimental group. Moreover, the interview analysis revealed that the visual and auditory learners preferred to visualize and hear voices while completing the task and developing a positive perception towards the use of inner speech as a tool to enhance their reading ability. instruction.
6	Yang (2021)	70 Chinese ESL students participated conversing in their first (Chinese) or second (English) English reading	Mixed methods design was used to investigate how the spoken language (first or second) of pre-reading conversations relates to inner speech and the qualitative and quantitative	Results on reading performance showed significant differences between the two pre-reading conversation groups in terms of English silent reading efficiency, speed, and time. Similar inner speech themes

N	Study	Setting & population	Study's aim	Mean findings
		comprehensive test+ inner speech questionnaire+ in-depth interview.	aspects of English reading among Chinese-speaking	with different dominant language patterns in the two pre-reading conversation groups.
7	Mok (2023)	Five international students studying in a UK university participated in reading sessions and follow-up interviews.	aims to explore L2 learners' reading comprehension and their experiences in three reading conditions – reading silently (RS), reading aloud (RA), and reading-while-listening (RWL).+ the role of phonology.	Some performed best in RWL others found it difficult condition to read. They all reported hearing an inner voice in RS. Their comprehension generally suffered in RA, and they experienced difficulties in phonological decoding to a different extent in this condition.

Looking at Table (2) some researchers have specifically looked into language preferences for inner speech use (cf., Larsen, Schrauf, Fromholt & Rubin, 2002; Ewert, 2010; and Dewaele, 2015 among others).

Schrauf, Fromholt and Rubin's (2002) study to investigate the frequency of use of Spanish in social and psychological internal domains. 60 learners of English and Spanish as a foreign L2 of L1 Puerto Rican were asked to self-rated their frequency of use of English and Spanish in social and psychological domains,--cognitive and affective functions-- of internal self-directed speech. The study reported that immigrants with higher levels of L2 proficiency made greater use of the L2 not only in the social but also in the internal domain, for both cognitive (thinking, talking to themselves, and calculating) and affective (expressing feelings, swearing, and dreaming) functions. However, to this researcher no predominant shift from the L2 was found in any social or psychological domain, even among the most fluent L2 users.

Ewert (2010) explored language preferences for internal and external uses. The researcher investigated 17 Polish L1 multilinguals enrolled in a combined Russian/English degree program at a Polish university. Ewert's study findings shows the following:

- a. Polish, the L1, was the preferred language for internal functions, such as performing mental calculations, making private notes, praying, dreaming, swearing, and formulating inner voice sentences.
- b. English, the L2 and Russia the L3 were used sometimes or rarely for the same functions.
- c. English, the L2 was used frequently for inner voice sentences and swearing.

An explanation for the frequent use of L2 English, according to Guroru might be that swear words sound much stronger in the L1 than in the L2; perhaps participants were trying to lessen the emotional charge of these words by rendering them in the L2.

Dewaele's (2015) study looked for important information on the language of choice for covert use of L2 speech, the study reported the following:

- a. Frequency of use in everyday interactions the strongest predictor of choice of language for inner speech.
- b. Proficiency and socialization in the language, size of network of interactants,
- c. Context of acquisition, and number of learned languages appeared to predict whether an L2 or L3 would become the medium for inner (L2 inner speech).
- d. Context of acquisition was indeed a significant predictor for the language of mental calculations, suggesting that the type of setting—whether naturalistic, instructed, or mixture of both—in which performing mental calculations is learned will have an impact on the language chosen to perform those operations in adult life.

However, it can be interpreted that the question 'What language do L2 speakers, bilinguals, or multilingual use for thinking?' might be used in many studies.

It should be noted here that the studies reviewed above depended solely on looking into language preferences for inner speech use, which did not provide enough insight into the complex nature of inner speech in FL learning. Nonetheless, such limitation is often unavoidable due to the size and scope of distinct studies along with certain procedural limits.



### Inner Speech and its Development among L2 Learners

Studies dealt with inner L2 speech and its development among L2 learners (cf., Kato, 2009; Shigematsu, 2010). A wide variety of text types were used in the studies investigating reading tasks in the literature. These texts included words and letter strings poems stories and prose. one more thing is that studies' participants were EL1 readers.

Kato (2009) investigated the impact of inner speech in ESL reading. Kato's study will be elaborated:

- a. Kato (2009) highlighted the role of (inner voice) in reading L2 texts, claiming that, when the ability of the participants suppressed to use inner voice (covert articulation), reading comprehension was affected negatively.
- b. The effect was greater among learners with lower reading proficiency levels.

Kato stated the following:

- a. Less proficient readers rely more on covert phonological activation and articulation during reading.
- b. Unlike less proficient, advanced readers developed an ability to derive meaning directly from visual orthographic symbols (bypassing the phonological route).

Shigematsu's (2010) research on the concept of inner voice and its development among L2 learners. Shigematsu defined inner voice as the conscious "use of the L2 for thinking as a way of helping one mediate the ways of the L2 and culture" (2010, p. 2). The study reported that self-reports from five L2 learners of English and Japanese revealed that an L2 inner voice tends to develop with increased proficiency and exposure to naturalistic L2 settings.

Shabani, Khasrei and Bakhoda, (2018) conducted an experimental study to assess the effect of inner speech instruction on EFL learners', Nouri University Iran, reading comprehension. 60 female subjects participated in this study and were assigned to the experimental and control groups each consisting of 30 participants.

Results of paired samples t-test indicated the effectiveness of inner speech instruction in the experimental group. Moreover, the interview analysis revealed that the visual and auditory learners preferred to visualize and hear voices while completing the task and developing a positive perception towards the use of inner speech as a tool to enhance their reading ability.

A recent study which efficiently employed the mixed methods approach was carried out by Yang (2021) to investigate how the spoken language (first or second) of pre-reading conversations relates to inner speech and the qualitative and quantitative aspects of English reading. 70 Chinese ESL students participated in this study finishing an English reading comprehensive test, completing a questionnaire on their inner speech experience, and participating in an in-depth interview to investigate inner speech and reading experiences.

Quantitative results on reading performance showed significant differences between the two pre-reading conversation groups in terms of English silent reading efficiency, speed, and time. Qualitative results showed similar inner speech themes with different dominant language patterns in the two pre-reading conversation groups. The researcher noted that a mixed methods interpretation indicated that pre-reading conversation with L1 could influence inner speech and L2 reading performance.

### Relationship between Inner Voice and Speaking Proficiency

Maftoon and Bahrami (2002) conduct a study to find out EFL learners at different level of English proficiency experiencing L2 internal rehearsal and to identify some of their internal rehearsal characteristics and functions. (174) Iranian female learners majoring in English translation at Islamic Azad University (128) senior and(46) juniors divided into three groups according to their TOEFL scores (Low, intermediate and high). The result showed that:

- a. EFL learners at different level use their inner voice as an internal rehearsal at a large extent as they rehearse the English language.
- b. A significant relationship between some aspect of the L2 language learning and English proficiency.

To these researchers, a significant relationship was found between the subjects' inner speech questionnaire scores and their speaking proficiency.

### The study tried to answer the following questions:

- 1- What is the relationship of sensory learning styles, sensory recalling styles and speaking proficiency of Yemen's EFL University learners?

- 2- Do sensory learning and recalling styles product Yemen's EFL University learners?
- 3- What sensory learning or recalling style is the best predictor Yemen University learner's speaking proficiency?

### 3- Methodology

This study used descriptive correlational research design among 105 EFL Yemen's University learners, English language majors, from second year students enrolled at Sana'a University and Al-Bydha University; Faculties of Education Campuses, Sana'a and Al-Bydha during the university year 2022-2023

#### The Study Population

The population of this study are the Yemeni State Universities EFL Level learners at the Department of English, Faculty of Education of the academic year 2022-2023. Their ages ranged between 21- 26 (University level students).

#### The Study Sample

The sample of the study was 105 student drawn from two Yemeni Universities Urban and Rural that are, Sana'a University and Al-Bydha University in the academic year 2022-2023. More specifically the current research selected the Department of English Language in the Faculty of Education, at the University of Sana'a and the University of Al-Bydha.

As for the sampling design, the researcher imposed convenient method to ensure that each learner was appropriately chosen.

#### Data Gathering Procedure

In the collection of data the study employed the following steps: A permit to administer the questionnaire and the speaking test was sought from the Dean of the Colleges and then from the office of the college as well. The administering of the questionnaire was conducted by the researcher and the instructors at the two colleges.

#### The Study Instrument

A quantitative survey addressing the L2 sensory learning styles, visual and auditory was adopted from Alejandra's (2022) study, while a quantitative survey addressing the L2 sensory recalling styles was adopted from Roebuck and Lupyan (2020).

#### Questionnaires and the Proficiency Test Validity

The questionnaires validity was assessed through content and face validity by experts in the field. Figure (1) shows sensory learning and sensory recalling fourfold representation.

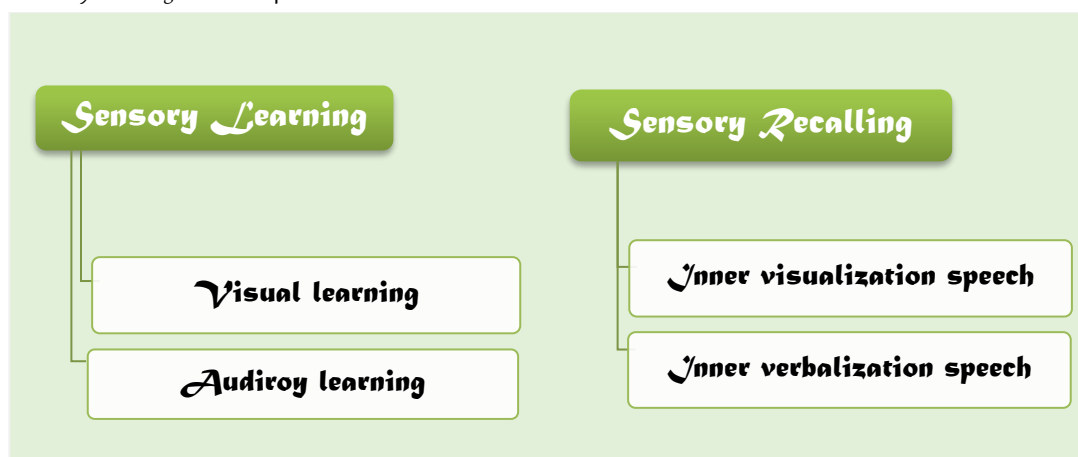


Figure (1): Sensory Learning and Sensory Recalling Fourfold Representation

As shown in Figure (1), the in-hand study enriches the sensory learning and recalling styles definition by identifying four constructs. Sensory learning, (visual & auditory); Sensory recalling inner (visualization & verbalization) speech.

The proficiency test validity was assessed through content and face validity by experts in the field. The researcher adopted Lina's(2000) list of topics she used to test her student's ability to speak. Three specialists' experts in the English Department reviewed the

items. That was done for the sake of adjusting the level of the test to that of the target population, i.e. the Second Year EFL University students.

#### Questionnaires and Proficiency Test Reliability

The Cronbach's alpha was calculated for all items in each category. In this regard, the result of the estimated reliability was more than 0.70 to consider the developed instrument reliable as recommended by Dörnyei (2007).

Reliability of the sensory learning and sensory recalling styles questionnaires was determined using Cronbach's alpha, with coefficients of "sensory learning styles" visual learning 0.73 auditory learning 0.75.

Reliability of the sensory recalling styles with coefficients of 0.73 for inner visualization speech and 0.71 for inner verbalization speech of Students.

Reliability of the speaking proficiency test was determined using (inter-rater method). It shows that the correlations of the first and second raters of the pilot administration of the speaking test in the pilot study were (0.91) and this reliability could be good enough and ensures the speaking and writing scale reliability.

## 4- Results

**4-1-Answering the First Research Question:** "What is the relationships between Yemen's EFL university learners' sensory learning styles, (visual & auditory), sensory recalling styles inner (visualization & verbalization) speech and speaking proficiency?."

**Table (3) Correlation between sensory learning, sensory recalling styles and speaking proficiency of Yemen's University EFL students**

Person correlation	The independent variables	N.	Speaking proficiency	Sig. (1-tailed)
	Visual learning	105	-0.069	0.241
	Inner visualization	105	0.008	0.467
	Auditory learning	105	0.392	0.000
	Inner verbalization	105	0.699	0.000

As Table(3) above indicates that there is a statistically significant positive correlation between (a) auditory learning style and speaking proficiency ( $r = 0.392$ ,  $p < 0.01$ ); (b) inner (verbalization) speech and speaking proficiency ( $r = 0.699$ ,  $p < 0.01$ ); and (c) negative non-significant relationship between visual learning styles and speaking proficiency ( $r = -0.069$ ,  $p > 0.05$ ); positive non-significant relationship between inner (visualization) speech and speaking proficiency ( $r = 0.008$ ,  $p > 0.05$ ).

**4-2-Answering the Second Research Question:** "Do sensory learning and recalling styles product Yemen's EFL University learners?"

A multiple regression analysis was conducted, the results of which are summarized in Tables 2, 3, 4 and 5.

First, the researchers used stepwise regression to calculate the equation of multiple regression,  $y = ax + b$ .

**Table (4) Variables Entered/Removed**

Model	Variables Entered	Variables Removed	Method
1	Inner verbalizaion speech	.	Stepwise (Criteria: Probability-of-F-to-enter $\leq .050$ , Probability-of-F-to-remove $\geq .100$ ).
2	Auditory learning style	.	Stepwise (Criteria: Probability-of-F-to-enter $\leq .050$ , Probability-of-F-to-remove $\geq .100$ ).
<b>a. Dependent Variable: speaking proficiency</b>			

Table (4) reveals the entered variables which (auditory learning styles) for being significant at  $\alpha \leq 0.01$  and sensory (inner verbalization speech) for being significant at  $\alpha \leq 0.01$ . However, the other variables such as sensory styles (visual learning), sensory inner (visualization) speech are removed from the equation of multiple regression for not being significant at  $\alpha \leq 0.05$ .

Second, Table (5) shows the multiple correlation coefficient, and the adjusted and unadjusted correlation of sensory learning styles (visual & auditory) and sensory recalling styles, inner (visualization & verbalization) speech and speaking proficiency. Table 3: Model summary investigating the multiple correlation coefficients, the adjusted and unadjusted R of the variables.

Table (5) Model summary of multiple correlation coefficients

Model Summary <sup>c</sup>				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.699 <sup>a</sup>	.488	.483	4.415
2	.736 <sup>b</sup>	.542	.533	4.195
a. Predictors: (Constant), inner verbalization speech				
b. Predictors: (Constant), inner verbalization speech, Auditory learning				
c. Dependent Variable: Speaking proficiency				

As the results in Table (5) indicate that the multiple correlation coefficient (R), is 0.736<sup>b</sup> (R<sup>2</sup> = 0.542) and the adjusted R squared is 0.533. It indicates that 0.533% of the variance in participants' speaking proficiency can be predicted from the combination of learning styles and recalling styles.

In the next phase, to investigate whether the combination of the predictors, sensory learning and recalling styles (i.e. auditory learning and inner verbalization speech)

significantly predicted Yemen's EFL University students speaking proficiency, an ANOVA was run, the results of which are presented in Table (6).

Table (6) Amount of contribution of each of the independent variable

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	2126.092	2	1063.046	60.397	0.000
Residual	1795.298	102	17.601		
Total	3921.390	104			
a. Dependent Variable: Speaking proficiency					
c. Predictors: (Constant), Inner verbalization speech, auditory learning					

Table (6) shows the combination of sensory learning and recalling styles language significantly predicted L2 speaking proficiency of the participants, [F<sub>2, 104</sub> = 60.397, p = 0.000 < 0.01]. Table (6) shows the amount of contribution of each of the independent variable sensory learning and recalling styles (i.e. auditory learning and inner verbalization speech) to the dependent one, speaking proficiency.

#### 4-3-Answering the Third Research Question

Research question three concerned with what sensory learning or recalling style is the best to predictor Yemen University learner's speaking proficiency. It stated as the following: "What sensory learning or recalling style is the best to predictor Yemen University learner's speaking proficiency?" The amount of contribution of sensory learning and recalling styles to L2 speaking proficiency are as follows see Table (7).

Table (7) The Amount of Contribution of Sensory Learning and Recalling Styles to L2 Speaking Proficiency.

Model		Unstandardized Coefficients		Standardized Coefficients		t	Sig.	Correlations		
		B	Std. Error	Beta				Zero-order	Partial	Part
1	(Constant)	8.693	2.054			4.232	.000			
	inVR2	.688	.069	.699		9.906	.000	.699	.699	0.699
2	(Constant)	3.919	2.386			1.642	.104			
	inVR2	.632	.068	.642		9.307	.000	.699	.678	0.624
	VR1	.195	.056	.240		3.477	.001	.392	.326	0.233
a. Dependent Variable: spk										

As indicated in Table (7), both sensory learning styles (auditory) and sensory recalling styles (inner verbalization speech) were significant predictors of the participants' L2 speaking proficiency; however, sensory recalling styles (inner verbalization speech) was found to be a stronger predictor [ $B=0.642, t=9.307, p=.000<.01$ ], than auditory learning style [ $B=240, t=3.477, p=.000<.01$ ].

## 5- Discussion of Finding

The findings revealed that:

- 1- A statistically significant positive correlation, positive non-significant and negative non-significant between:
  - a. Auditory learning style and speaking proficiency ( $r=0.392, p<0.01$ ); The findings agree with that of Setyoningsih (2019) that there is a significant relationship between auditory learning style of students and their speaking proficiency.
  - b. Inner (verbalization) speech and speaking proficiency ( $r=0.699, p<0.01$ ). The finding comes to an agreement with Maftoon and Bahrami (2002) that there is a significant relationship between the subjects' inner speech questionnaire scores and their speaking proficiency.
  - c. Negative non-significant relationship between visual learning styles and speaking proficiency [ $r=-0.069, p>0.05$ ]; positive non-significant relationship between inner (visualization) speech and speaking proficiency [ $r=0.008, p>0.05$ ].
- 2- Another major finding of this study is that participants' speaking proficiency was predicted from the combination of learning styles and recalling styles. A total of 0.533% of the variance in participants' speaking proficiency can be predicted from the combination of learning styles and recalling styles. However, sensory recalling styles (inner verbalization speech) was found to be a stronger predictor [ $Beta=0.642, t=9.307, p=.000<.01$ ], than auditory learning style [ $B=240, t=3.477, p=.000<.01$ ].

The likely explanation for this outcome may be connected to the fact that critical link exists between the learner's senses, particularly the auditory and visual channels, and the verbal and nonverbal recalling aspects of language (Wolfson, 2020). This process contributes to the L2 acquisition process, and that without this strategy, language acquisition is not likely to occur (Lantolf, 2003; Borer, 2006).

## Conclusion

Based on the findings of the study, the following conclusions were drawn:

It could be argued language learners be aware of language learning and recalling styles. Thus, they would be more successful.

Also, L2 learners clearly need to make the most of their style preferences. However, occasionally they must also extend themselves beyond their style preferences.

Yet, students are not always aware of the power of consciously using L2 recalling styles for making learning quicker and more effective. Specific function of sensory recalling in the current study, especially the sensory inner (verbalization) speech, can also be applied in EFL learning classrooms for different memory-enhancing-related learning purposes (Guerrero, 2018).

The study reports a positive direct effect of sensory leaning styles on speaking proficiency, and an indirect effect of sensory recalling styles on speaking proficiency through the inner verbalization speech that mediated sensory auditory and speaking proficiency.

## Recommendations

Based on the findings, the following recommendations were made:

1. Wolfson (2020) claimed that understanding the relationship between sensory learning and sensory recalling can inform teaching strategies and improve L2 learning experiences.
2. In summary, while sensory learning styles significantly influence how L2 learners recall information and finally speak successfully, other contextual factors also contribute to the overall effectiveness of their learning processes.

## References

- Alejandra, M. (2022). Perceptual Learning Style Preferences of Monolingual and Bilingual EFL Learners. *Revista de lenguas para fines específicos* 28.(1), 207-227 · <https://orcid.org/0000-0002-9835-6069>
- Aljasir, N. (2016). Individual Differences among Saudi Learners of English as a Foreign Language: An Exploratory Correlational Study of Learning Styles, Affective Factors and English Proficiency and Performance. Doctoral Theses University of Birmingham, Birmingham.

- Alkhatnai, M. (2011). Learning Styles of EFL Saudi College-level Students in on-Line and Traditional Educational Environments (Doctoral dissertation). Retrieved from Pro-Quest Dissertations and Theses database. (UMI No. 3453565)
- Alkooheji, L., & Al-Hattami, A. (2018). Learning Style Preferences among College Students. *International Education Studies*, 11(10), 50-63.
- Almutairi, N. H. (2007). The Influence of Educational and Sociocultural Factors on the Learning Styles and Strategies of Female Students in Saudi Arabia. (Unpublished doctoral dissertation). University of Leicester, Leicester, UK.
- Arbuthnott, K. D., & Krätzig, G. P. (2014). Effective Teaching: Sensory Learning Styles Versus General Memory Processes. *Innovative Teaching*, 4(2).
- Baddeley, A., Gathercole, S., & Papagno, C. (1998). The Phonological Loop as a Language Learning Device. *Psychological Review* 105.(1), 158-173. <https://doi.org/10.1037/0033-295X.105.1.158>
- Bandura, A., & Walters, R. H. (1977). *Social Learning Theory (1)*. Englewood Cliffs, NJ: Prentice-Hall.
- Borer, L. (2006). Speaking to the Self and to Others: The Role of Private and Social Speech in the Retention of Second Language Vocabulary by Adult Academic Learners (Unpublished Doctoral Dissertation). University of Toronto, Toronto.
- Candilas, K., Diane, X., Gaid, J., & Kolog, P. (2023). Verbal Learning Styles: Implications to College Students' Oral English Skills. *International Journal of Language Instruction*, 2(1), 30-39. DOI: <https://doi.org/10.54855/ijli.23213>
- Carruthers, P. (1998). Conscious Thinking: Language or Elimination? *Mind & Language* 13 (4): 457–476. <https://doi.org/10.1111/1468-0017.00087>
- Carruthers, P. (2015). *The Centered Mind*. New York: Oxford University Press.
- Carruthers, P. (2018). The Causes and Contents of Inner Speech. In *Inner Speech – New Voices*, eds. P. Langland-Hassan, and A. Vicente, 31–52. Oxford: Oxford University Press.
- Cassidy, S. (2004). *Learning Styles: An Overview of Theories, Models*.
- Dewaele, J.-M. (2015). From Obscure Echo to Language of the Heart: Multilinguals' Language Choices for (Emotional) Inner speech. *Journal of Pragmatics* 87, 1–7.
- Dörnyei, Z. (2007). *Research Methods in Applied Linguistics*. Oxford, UK: Oxford University Press.
- Fairhurst, M., Scott, M., Deroy, O. (2017). Voice over: Audio-visual congruency and content recall in the gallery setting. *PLoS ONE* 12(6): e0177622. <https://doi.org/10.1371/journal.pone.0177622>.
- Fernyhough, C. (2016). *The Voices within: The History and Science of How we Talk to Ourselves*. Basic Books <https://psycnet.apa.org/record/2016-51035-000>
- Firissa, B. (2024). Perceptual Learning Style Preferences (PLSP) and their Relationship with English Foreign Language Achievement, *Romanian Association of Teachers of English*, 1(31).
- Franklin. Baer, D. M., & Sherman, J. A. (1964). Reinforcement Control of Generalized Imitation in Young Children. *Journal of Experimental Child Psychology*, 1, 37–49.
- Gabry's-Barker, D. (2015). Communicating with Oneself: On the Phenomenon of Private/Inner Speech. In L. Piasecka, M. Adams-Tukiendorf & P. Wilk (eds.), *New Media and Perennial Problems in Foreign Language Learning and Teaching*. New York: Springer, 115–130.
- Gluszek, A., & Dovidio, J. F. (2010). The Way they Speak: A social Psychological Perspective on the Stigma of Nonnative Accents in Communication. *Personality and Social Psychology Review*, 14(2), 214–237. <https://doi.org/10.1177/1088868309359288>
- Guerrero (2018), *Going Covert: Inner and Private Speech in Language Learning* Inter American University of Puerto Rico, San Juan, Puerto Rico *Lang Teach*, 51.1, Cambridge University Press doi:10.1017/S0261444817000295
- Hyland, K. (1994). The learning styles of Japanese students. *JALT Journal*, 16, 55-74. <https://jalt-publications.org/files/pdf-article/jj-16.1-art4.pdf>
- Joy, S., & Kolb, D. A. (2009). Are There Cultural Differences in Learning Style? *International Journal of Intercultural Relations*, 33(1), 69–85. <https://doi.org/10.1016/j.ijintrel.2008.11.002>
- Kato, S. (2009). Suppressing Inner Speech in ESL Reading: Implications for Developmental Changes in Second Language Word Recognition Processes. *The Modern Language Journal* 93.4, 471–488. <https://doi.org/10.1111/j.1540-4781.2009.00926.x>
- Keefe, J. W. (1987). *Theory and Practice*. Reston, VA: National Association of Secondary School Principals. *Larsen, S., Schrauf, P. Fromholt & Rubin, D. (2002)*. Inner speech and bilingual autobiographical memory: A Polish-Danish Cross-cultural Study. *Memory* 10.1, 45–54.
- Keefe, J. W. (Ed.). (1988). *Profiling and Utilizing Learning Style*. Reston, Virginia: National Association of Secondary School Principals. *The Asian Journal of English Language & Pedagogy*, 37-55.

- Kompa, N. (2024). Inner Speech and 'Pure' Thought – Do we Think in Language? *Review of Philosophy and Psychology* 15:645–662 <https://doi.org/10.1007/s13164-023-00678-w>
- Kosslyn, S. (1995). Mental Imagery. In *An Invitation to Cognitive Science*, (ed). *Edward E. Smith and Daniel N. Osherson, chapter 7*, 267–296. Boston: MIT Press, 2 edition. → pages 3
- Lantolf, J. P. (2003). Intrapersonal Communication and Internalization in the Second Language Classroom. In *A. Kozulin, B. Gindis, V. S. Ageyev, & S. M. Miller (Eds.), Vygotsky's educational theory in cultural context* (pp. 349–370). Cambridge: Cambridge University Press. <http://dx.doi.org/10.1017/CBO9780511840975>
- Larsen, S., Schrauf, P., Fromholt, A. & Rubin, D. (2002). Inner Speech and Bilingual Autobiographical Memory: A Polish-Danish Cross-cultural Study. *Memory* 10.1, 45–54.
- Lina, L. (2000). Evaluating Intermediate Spanish Students' Speaking Skills Through a Taped Test: A pilot study. *Hispania*, 83(1), 127-138, <https://dx.doi.org/10.2307/346151>
- Long, H. B. (1990). Psychological Control in Self-directed Learning. *International Journal of Life Long Education*, 9(4), 33 1-338.
- Maftoon, P. & Bahrani, A. (2002). Inner Speech as Mental Rehearsal-The Case of EFL Learners Islamic Azad University Tehran *Science and Research Branch*
- Mok, E. (2023). Inner and Outer Voices: L2 Readers' Experiences of Silent Reading, Reading Aloud and Reading-while-listening. Unpublished Master Theses in Applied Linguistics and Second Language Acquisition,
- Naqeeb, H., & Awad, A. (2011). Learning Styles as Perceived by Learners of English as a Foreign Language in the English Language Center of the Arab American University- Jenin, Palestine. *An-Najah Research Journal*, 25(8), 2231–2256.
- Nida, E. (1957). *Learning a Foreign Language*. A Hand Book Prepared Especially for Missionaries. Committee on Missionary Personnel Division of Foreign Missions National Council of the Churches of Christ in the U.S.
- Reid, J. M. (1984). *Perceptual Learning Style Preference Questionnaire*. Laramie: Department of English, University of Wyoming.
- Reid, J. M. (1998). *Understanding Learning Styles in the Second Language Classroom*. Upper Saddle River, NJ: Prentice Hall Regents
- Remlaps (2024). Modes of Thought: Quiet-mind or Inner-Voice, Visualization or Narration, Retrieved from <https://steemit.com/hive-163521/@remlaps/modes-of-thought-quiet-mind-or-inner-voice-visualization-or-narratio>
- Rivers, w. M. (1979). Learning a Sixth Language: An Adult Learner's Daily Diary. *Canadian Modern Language Review*, 36, 67-82.
- Roebuck, H & Lupyán, G. (2020). *The Internal Representations Questionnaire: Measuring Modes of Thinking*. Behavior Research Methods <https://doi.org/10.3758/s13428-020-01354-y> The Psychonomic Society, Inc.
- Setyoningsih, D. (2019). The Correlation of Visual, Auditory, and Kinesthetic Learning Style on Students' English Learning Achievement. Language-Edu: *Journal of English Teaching and Learning*, 8(2), 1–6.
- Shabani, K., Khasrei, G., & Bakhoda, I. (2018). The Role of Inner Speech Instruction in Fostering Visual and Auditory Learners' Reading Ability and Perception. *The Asian Journal of English Language & Pedagogy*. (6), 37-55.
- Tight, D. (2007). The Role of Perceptual Learning Style Preferences and Instructional Method in the Acquisition of L2 Spanish Vocabulary. Unpublished Doctoral Dissertation, University of Minnesota, Minneapolis, MN.
- Tomlinson, B. (2000). Talking to yourself: The role of the inner voice in language learning. *Applied Language Learning*, 11(1), 123–154.
- Wolfson, S. (2020). Output Visualization of Machine Measuring Analysis. *Analytics Magazine* <https://pubsonline.informs.org/doi/10.1287/LYTX.2017.05.01/full/4/9>
- Yang, L. (2021). Inner Speech in College ESL Reading: A Mixed Methods Study. Unpublished Doctoral Dissertation, Graduate School of the University of Cincinnati. Cincinnati.
- Zhang, J., & Evans, M. S. (2013). An Empirical Study on the Multidimensional Learning Styles of Chinese EFL Students. *International Proceedings of Economics Development & Research*, 68, 61–69.