4. TYPES OF KNOWLEDGE

4.1. Implicit vs. Explicit

EXPLICIT KNOWLEDGE

a) can be accessed only with controlled effort → typically used in tasks that allow for careful planning and monitoring
b) represents consciously held insights about language

Characteristics of explicit knowledge:

anxiety reduces the use of explicit knowledge
is stored as declarative knowledge
its quality and use are more prone to individual differences such as WM capacity
is more prone to decay over time than implicit knowledge

Ellis (2004) distinguishes between explicit knowledge as analyzed knowledge and as meta-language:

Analyzed knowledge → e.g. error correction

learners' awareness of grammatical rules and features
available to consciousness, but they may not be available for verbal report
measured through tests that require learners to judge the grammaticality of items

Metalanguage →

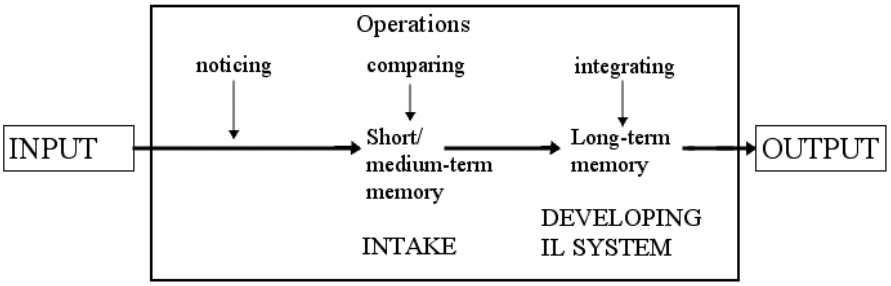
language used to talk about language, which entails the ability to verbalize analyzed knowledge
knowledge of technical terminology to refer to language
measured through tests that require learners to identify parts of speech and/or to identify or verbalize the rules violated in ungrammatical sentences

IMPLICIT KNOWLEDGE

a) is intuitive, procedural, automatic, and thus available for use in fluent, unplanned language use
b) is not verbalizable

The acquisition of implicit knowledge:

(1) Noticing
(2) Comparing
(3) Integrating



Note: The first two processes involve conscious attention; the third process takes place at a very deep level, of which the learner is generally not aware

Ellis (2005)

Criterion	Implicit knowledge	Explicit knowledge
Degree of awareness	Response according to feel – Learner has no conscious awareness of linguistic norms	Response using rules – Learner is consciously aware of linguistic norms
Time available	Time pressure	No time pressure
Focus of attention	Primary focus on meaning	Primary focus on form
Systematicity	Consistent responses (less variable)	Variable responses (more variable)
Certainty	High degree of certainty in the correctness/ incorrectness of the response	Low degree of certainty in the correctness/ incorrectness of the response
Accessibility	Automatic processing	Controlled processing
Metalinguistic knowledge	Metalinguistic knowledge not required	Metalinguistic knowledge required
Use of L2 knowledge	Only evident when learners use it in communication	Used to monitor L2 production
Learnability	Early learning favored –	Late, form-focused instruction favored

4.2. Two-dimensional Model

PROCESS OF ANALYSIS

- how linguistic knowledge is represented cognitively and how it changes → making explicit, or analyzing, a learner's implicit knowledge
- mental representations that were loosely organized around meanings become rearranged into explicit representations that are organized around formal structures → this process ranges from –analyzed to +analyzed
- behavioral outcome of high levels of analysis is the ability to articulate structural principles of organization → new operations become possible, e.g., literacy skills

PROCESS OF CONTROL

- first, the relative access the learner has to relevant knowledge, irrespective of its degree of analysis → –controlled to +controlled
  an individual learner's retrieval procedures vary according to the demands of the situation
- second, the ability to select, coordinate and integrate relevant information in real time, the key to which is the ability to intentionally focus attention on relevant parts of a problem, e.g., speaking

Note: It is the continual maturation of these processing components across the life span that is credited with proficiency increase in a second language

Note: Both first and second language acquisition must begin with unanalyzed knowledge

4.3. The Dual-mode System

EXEMPLAR-BASED SYSTEM

a) is not efficiently organized but rather highly redundant, with multiple representations of the same item in what Skehan called "item bundles"
b) organized in this way for convenience of use → speakers need to acquire a solid repertoire of formulaic chunks
c) instance-based theories of fluency → fluent speech is not based on the rapid computation of rules but on the retrieval of ready-made exemplars that require minimal processing capacity

RULE-BASED SYSTEM

a) language users need to formulate precise and novel propositions → This requires a rule-based system when users are not under pressure to perform rapidly online
b) creativity and flexibility becomes possible
c) it is parsimonious

The two systems co-exist ; language users can move between these systems, and do so quite naturally

5. INTERFACE OF KNOWLEDGE TYPES

5.1. Non-interface position

Implicit and explicit L2 knowledge
involve different acquisitional mechanisms
are stored in different parts of the brain
are accessed for performance by different processes

→ This position rejects both the possibility of explicit knowledge transforming directly into implicit knowledge and vice versa

Supported by research that suggests that explicit and implicit memories are neurologically separate and do not interact with each other

Krashen stated explicitly that what has been learned cannot become part of the acquired system →non-interface position leads to a zero grammar approach.

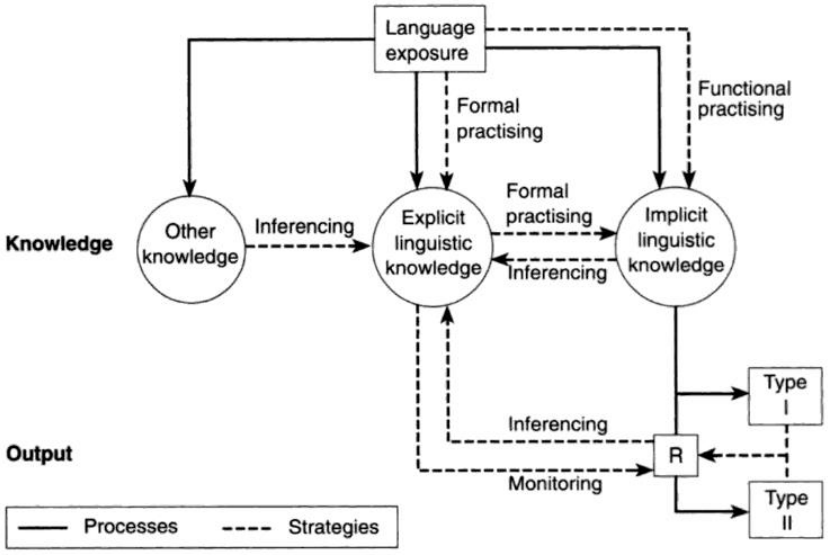
5.2. Strong interface

There is a distinction between implicit and explicit knowledge → knowledge gained in explicit form by providing conscious rules may transform into implicit form if learners have opportunity for plentiful communicative practice

1) grammatical structure is presented explicitly
2) practiced by means of controlled activities
3) practiced by means of free production activities

the possibility of the transfer of implicit knowledge to explicit knowledge through the process of conscious reflection on and analysis of output generated by means of implicit knowledge

Bialystok's (1978) theory



5.3. Weak interface position

It is possible for explicit knowledge to convert into implicit knowledge, but through conditions:

- Pienemann's learnability/teachability hypothesis → the possibility of explicit knowledge becomes implicit but only when the learner is psycho-linguistically ready to acquire the linguistic form
- Explicit knowledge primes a number of key acquisitional processes,
    - Learners' output derives from explicit knowledge, which can act as auto-input that triggers learners' implicit learning mechanisms
    - Explicit knowledge can help learners to **notice** the occurrence of a linguistic feature in the communicative input they receive by making it salient ←→ a kind of advance organizer
    - Explicit knowledge may help **noticing the gap** → carry out cognitive comparisons, i.e., to compare their own norms with the target norms

The weak interface position provides a basis for *consciousness-raising (C-R) tasks* and *interpretation tasks*

6. THE ROLE OF MEMORY SYSTEMS AND CONSCIOUS LEARNING

6.1. Awareness and attention in L2 acquisition

6.1.1. Attention

There are three general stages of information processing at which attention operates:

Information processing	Themes in attentional research	Uses of the concept of attention
Perceptual encoding	Auditory and visual information intake and processing	Selection of information → We pay attention to things as a way of selecting them for further processing
Central processing	Central control and decision-making functions, such as allocation of attention to competing task demands	Capacity of attentional resource → Sometimes we are able to pay a lot of attention to a task, while at other times we are not
Responding	Response execution and monitoring via sustained attention	Effort involved in sustaining attention to task goals → We can maintain the level of attention we pay to a task, or attention and performance can decline over time

Attention as selection → A distinction between linguistic input and intake ; the role of attention in mediating this process?

the level of attention needed for selecting input for processing;
whether pedagogic intervention can facilitate switches of attention from meaning to aspects of the form of input which may lack saliency;
etc.

attention is capacity limited → attention is selective

Attention as capacity → Tasks differ in the demands they make on our attention → distinctions between controlled/explicit and automatic/implicit L2 processing. Explanation:

speed-up of control processes and withdrawal of attention
unconscious abstract rule induction in a separate implicit memory store
memory-based processes

Attention as effort → Sustained attention ; in this sense it is a "state" concept referring to energy or activity in the processing system, not to structural processes

Failure to sustain attention effort is caused by

prolonged time on task,
complexity of the task

Three energetic pools have been proposed:

Perceptual encoding → arousal pool
Central processing → activation pool
Responding → effort pool

6.1.2. Noticing hypothesis

Initially, the role played by attention in L2 acquisition was conceptualized in terms of consciousness:
Richard Schmidt (1990)

consciousness as awareness
- understanding → explicit knowledge
- noticing → noticing hypothesis
- perception → subliminal

consciousness as intention
consciousness as knowledge

Schmidt (1994)

consciousness as intentionality
consciousness as attention → noticing hypothesis
consciousness as awareness
consciousness as control

Noticing → the process of bringing some stimulus into focal attention = conscious registration of a form in the input = registering simple occurrence of a stimulus, whether voluntarily or involuntarily

Note: Attention takes place in working memory

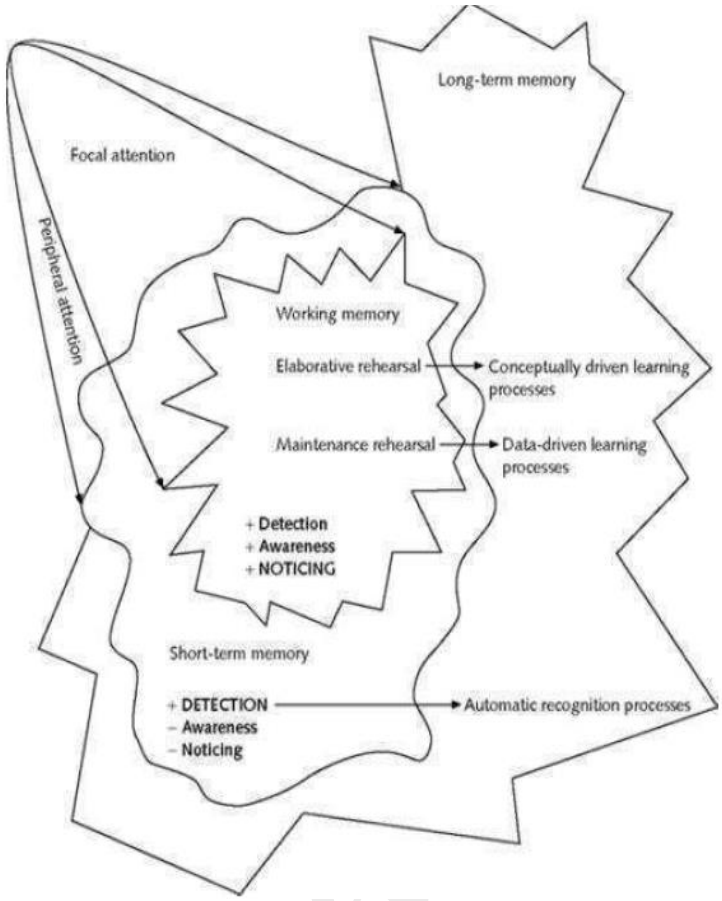
Strong form of noticing hypothesis:

there is no learning from input that is not noticed, i.e. learners will not be able to process information for storage in long-term memory = noticing is the necessary and sufficient condition for converting input into intake

Weak form of noticing hypothesis:

more noticing leads to more learning = learning without noticing is in fact possible, but that noticing is beneficial = people learn about the things they attend to and do not learn *much* about the things they do not attend to.

Only the initial registration of a feature needs to be with conscious awareness → implicit perception can activate this pre-excising representation: *Implicit Tallying Hypothesis*



Information that enters short-term memory: matching what has been attended to with pre-existing knowledge → its function is to strengthen existing categories / unlikely to lead to modification

Detected information is subjected to further processing in WM → changes in long-term memory

Maintenance rehearsal: data-driven, instance-based processing, e.g., *made me go* → provides an opportunity for the cognitive comparison

Elaborative rehearsal: conceptually-driven, schema-based processing, e.g., *made me go* → 'understanding' and explicit learning

6.1.3. Tomlin and Villa's theory of attention

Tomlin and Villa (1994) presented a very different view of the role of attention in L2 acquisition:

Alertness → a general readiness to deal with incoming stimuli and is closely related to the learner's affective/motivational state

Orientation → the aligning of attention on some specific type or class of sensory information

Detection → the cognitive registration of a particular stimulus without subjective awareness in short-term memory

During this process specific exemplars of language are registered in memory.

Detection allows for the further processing of information.

Note: Tomlin and Villa argue that detection is the necessary and sufficient condition for further processing and learning.

Two claims:

detection can take place without alertness and orientation
all three attentional processes can occur without awareness

6.1.4. Models of attentional resources and allocation of attention during L2 performance

Two hypotheses about how attention is allocated during L2 performance

Trade-off hypothesis (Skehan, 2009)

A single limited capacity → speakers must divide their attentional resources between all the processes a task requires, such as input selection, effective information processing, and response actions

L2 performance: learners will need to prioritize form or meaning by accessing either their rule-based system or their exemplar-based system

Skehan distinguishes three aspects of language production: complexity, accuracy, and fluency (CAF):

- **Complexity** → the learner produces more complex constructions using the rule-based system
- **Accuracy** → the learner conforms to target language norms by drawing on the rule-based system
- **Fluency** → the learner can speak rapidly without undue pausing by drawing on ready-made chunks of language

Learners will prioritize one aspect of production over the others:

tension between form (complexity and accuracy) & fluency
within form, tension between complexity & greater accuracy

Skehan drew on Levelt's (1989) model of speech production:

- **Conceptualization** → the propositional content of the message that a speaker wishes to convey
- **Formulation** → developing a linguistic plan for encoding the propositional content by accessing lexis and grammar
- **Articulation** → performing the plan

In native speakers, these phases occur in parallel ≠ L2 learners engage in more linear processing

conceptualize what they want to say → allocate greater attention to formulation and articulation ➔ language is both more fluent and more complex
talk about a very familiar topic → allow more time for formulation ➔ focus more on accuracy

How interlanguage development takes place:

Complexity → Accuracy → Fluency

Cognition hypothesis (Robinson, 2007)

Underpinned by two separate models:

Multiple-resource model (Wickens, 1992) → individuals draw their attention from different resource pools when completing different tasks:

processing mechanisms (i.e., encoding or responding),

codes (i.e., spatial or verbal),
modalities (i.e., visual or auditory),
responses (i.e., manual or vocal) that each task requires.

Note: a competition for attention occurs not between pools but within them.

Interference model (e.g., Gopher, 1993; Sanders, 1998) → it is not limitation of capacity but the limited time available to complete a task that hinders processing of multiple sets of information

→ Robinson (2003): individuals have multiple-resource pools of attention and the amount of attention within each pool is unlimited

Robinson proposed the Triadic Componential Framework (TCF) for L2 task classification:

Task complexity

Attention-directing dimensions → affect the demands the task can make on the learner's attention and cause the learner to focus on specific linguistic forms

Note: increasing complexity on the resource-directing dimensions of task → interlanguage development

Task variables that are resource-directing

(1) reference to events happening in the 'here-and-now' or to events that took place in the past elsewhere
(2) transmission of simple information or provision of reasons for intentions

[+ intentional reasoning] → cognitive state terms such as 'think', 'wonder' and 'doubt', and the complex syntactic complementation that accompanies their use: 'X wonders if Y', 'X doubts that Y believes Z', etc.

Resource-dispersing variables → govern the procedural demands made on the learners' attentional and memory resources

Note: increasing complexity on the resource-dispersing dimensions promotes → automatic access to linguistic resources

Variables that are resource-directing

(1) involving a few or many steps to complete it and
(2) providing or not providing background knowledge prior to performance of the task

[– planning time] → disperses attentional resources over many dimensions of a given task with no particular linguistic correlates

Task conditions

Variables that affect the demands made on learners when they perform a task ; two kinds of demands:

Participation variables

(1) open solution
(2) one-way vs. two-way flow
(3) convergent vs. divergent solution

Participant variables

(1) proficiency level
(2) gender
(3) familiarity with the topic
(4) shared cultural knowledge

Task difficulty

Learner factors that affect learners' perceptions of task difficulty. Two sets of learner factors:

those relating to the individual learners' ability (e.g., working memory or reasoning skills)
those relating to learners' affective response to a task (e.g., task motivation and anxiety)