Assessing Academic Reading Ability

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To my teammates for life: Kinga & Hanga.

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CHAPTER 1

INTRODUCTION

The use of English as the language of science and technology and the internationalisation of tertiary education have resulted in the situation that in addition to students majoring in English, students in English-medium education or those in L1-medium education who want to read specialised literature in English, as well as scholars from any discipline and professionals from any backgrounds have to process large amounts of English academic prose regularly. This development has foregrounded research conducted on English academic reading and generated substantial interest in the development and assessment of English academic reading ability. Regardless of the context, be it educational, professional, or research, reading is an activity often carried out in preparation for writing. As a consequence, it has come to be investigated (e.g., Ascención-Delaney, 2008; Fitzgerald & Shanahan, 2000; Grabe, 2003; Graham & Hebert, 2011, Plakans & Gebril, 2012; Spivey, 1990), taught (e.g., Carson & Leki, 1993; Flower, F. et al., 1990; Hirvela, 2016), and assessed in conjunction with writing (e.g., Chan et al., 2015; Michel et al., 2020; Plakans, 2008; Taylor, 2013).

A special type of written product that has been investigated in relation to reading is the summary. The summarisation skills of students have been investigated with tasks that test summarisation indirectly—an example being the gapped summary (e.g., Taylor, 2013)—or directly by means of tasks that require students to read an input text and write a summary of it (e.g., Armbruster et al., 1987; Sawaki, 2020; Yu, 2008). A subtype of summary called *guided summary* that assesses summary writing ability directly has received less attention (Tankó, 2016, 2020). A guided summary is different from a complete source text or global summary in the sense that whereas for the latter all the main ideas of a text need to be extracted, only specific—and depending on the reading goal—not necessarily the main ideas have to be included into a guided summary (Tankó, 2012). What is common to both the indirect and direct assessment of summarisation is that the tasks integrate reading and writing abilities and thus authentically reproduce key processes that students use in a variety of educational settings. This is the reason why this type of integrated task

together with tasks that measure jointly other abilities have become extensively used in large-scale tests that assess academic English proficiency (e.g., IELTS Academic, TOEFL, Pearson Academic) and will very likely gradually replace more of the assessment tasks that target one ability in isolation (cf. Weir & Chan, 2019 for an example of how this process is reshaping the IELTS Academic test). For this reason, research on integrated assessment tasks in general and on reading-into-writing tasks in particular has been a dynamically expanding research area (e.g., Chan et al., 2015; Chan, 2018; Gebril & Plakans, 2009; Plakans, 2008; Taylor, 2013; Trites & McGroarty, 2005).

In spite of the fact that reading is one of the four macro-skills typically tested and that it is the ability through which input is processed for the increasingly common integrated reading-into-writing or reading-into-speaking tasks, it is not tested as comprehensively as it could be according to a fairly recent comparative study on language testing (European Commission, 2015) which recommended that the range of reading behaviours tested at B2 level and above should be expanded. Furthermore, recent factor analytic studies that make possible the investigation of the componentiality of reading specifically for academic purposes are scarce except for a few exceptions (e.g., Weir et al., 2000), and even less rare are those studies that employ true factor analysis rather than principal component analysis, which is considered to be a data reduction method (Costello & Osborne, 2005; Lloret et al., 2017; Watkins, 2018).

A scarcity of comprehensive investigations of English reading ability in general and notably of studies using a factorial design also characterises the Hungarian context, where learners have been recently repeatedly found wanting in their ability to read efficiently even in their L1. According to the last three PISA (OECD, 2012, 2015, 2018) international assessments, the reading related knowledge, strategies, and skills of Hungarian 15-year-old students fell below the OECD average, indicating that they were not very successful at applying their L1 reading ability in practice in educational or non-educational settings unfamiliar to them. The findings of a nationwide survey on English (Albert et al., 2018a; 2018b) revealed a number of shortcomings that explain the inadequate English language knowledge of Hungarian students. Based on the findings, the students would have little to transfer and use when they start their university studies and have to read specialised literature in English even if they were not so inhibited by their poor L2 knowledge as to be unable to transfer their L1 reading behaviours (i.e., strategies and skills) to their L2 (Alderson, 1984; Clarke, 1980; Cummins, 1979b). However, this is not the current situation for lack of trying. There is ample evidence of competent national

efforts to remedy the situation and improve the L1 reading competence of school-goers (Csapó & Csépe, 2012; Józsa, G. & Józsa, K., 2014; Józsa, K., 2006; Józsa, K. & Steklács, 2009; Steklács, 2013). However, considerably less original research (a rare exception being, for example, Tánczikné Varga, 2016) is available on the general English reading ability of Hungarian school-goers, and few studies have been conducted on academic reading ability in the higher education context. Those qualitative (e.g., Fekete, 2020; Szűcs, 2020; Szűcs & Kövér, 2016) and quantitative studies (e.g., Tankó, 2016; 2020; 2021a; 2021b) that are available have all investigated post-entry academic English tests, and all involved academic reading, which indicates that research efforts have started to be made in Hungary to investigate tertiary-level English academic reading ability.

The current research study investigated the reading dimension of the construct operationalised by an integrated assessment task, namely the guided summary writing task, administered as part of a high-stakes, post-entry academic skills test to those first-year English majors at Eötvös Loránd University who have completed the first of a two-module academic skills course that they must enrol in consecutively in the first and second semester of their studies. The modules were designed specifically for first year English majors based on theoretical and empirical research findings from the fields of English for Academic Purposes and Discourse Studies. The first module focuses primarily on the development of academic reading and writing abilities through a single source text reading-into-writing task which is used both as a teaching/learning and as an assessment task in the academic skills test administered at the end of the module. In terms of reading ability, the aim of the module is to enable students to read in English a self-contained academic text related to their field of study with a pre-set selective reading goal in mind, summarise and paraphrase the relevant propositional content, and write it up in the form of a short academic text. The summary the students write is not a global but a guided summary, for which they do not reproduce the macrostructure of the input text through the selection of macropropositions and important details, but have to locate existing macropropositions or use the available micropropositions to construct macropropositions on the basis of a well-defined reading goal specified in the task instruction (cf. the sample task in Appendix 8). Therefore, to complete the task, students have to read, analyse, and reorganise explicit content, keeping in mind the formal requirements of the guided summary to be written.

The guided summary writing task was designed to operationalise four constructs: (1) academic reading (i.e., reading selectively with a pre-set goal, using a range of academic reading behaviours described, for

example, in Khalifa & Weir, 2009); (2) summarisation (i.e., condensing ideational content by using the construction, generalisation, deletion, and zero macrorules defined by Van Dijk, 1980); (3) paraphrasing (i.e., giving a new form to the summarised content while retaining specialised terminology as discussed in Tankó, 2019a); and (4) academic writing (i.e., producing a short academic text that matches the schematic structure, organisation, register, mechanics, and APA style in-text citation use norms). The guided summary writing task is administered in the academic skills test annually at the end of the first academic skills module to almost 500 first-year English majors. The scripts are double rated with an analytic rating scale. The raters are trained, and their work is monitored at each administration. The test, which was developed also in order to engineer positive instructional washback effect by test design (Messick, 1996), is a high-stakes test on which the students' enrolment into content-courses and specialisation programmes depends.

The subsequent academic skills module, which the students take in the second semester, builds on and aims to expand the knowledge acquired in the first one. As a consequence, mastering all the strategies and skills conveyed by the first module is paramount for the successful completion of the second. It was designed around a multiple source text reading-into-writing task for which students first have to extract content from thematically related texts—as they do in the case of the guided summary writing task, and then they have to synthesise the extracted task-relevant content. Whereas the first module is intended to focus primarily on the accurate comprehension and reproduction of literal meaning expressed in writer-responsible prose, the second module was designed to develop the ability to read actively beyond the lines (cf. Gray, 1960) and critically evaluate, compare, contrast, assimilate, and integrate, or use as evidence in arguments the content extracted from the source texts. Additionally, in order to generate new knowledge, the students are also expected to integrate the extracted and synthesised content with information and related experiences they have as readers.

The current research study contributes to the dynamically expanding body of literature on integrated assessment tasks by investigating a lesser known written summary task type that makes possible the comprehensive development and assessment of academic reading ability at B2 level and above, as well as enriches the literature available on the dimensionality of academic reading ability with new empirical evidence obtained with the true factor analysis method. The study is part of a large-scale validation project (cf. Tankó 2021c for a detailed account) on the post-entry academic skills test administered to first-year English majors who have completed the first

academic skills module. The main goals of the project are to collect and analyse validity evidence to improve the test and the academic skills module leading up to it as well as to share the results with stakeholders and facilitate open discussion. The reading-into-writing integrated guided summary writing task administered in the academic skills test was developed with the intention to operationalise academic reading ability in addition to the constructs of summarisation, paraphrasing, and academic writing. Of these, in the current investigation the main focus is on the academic reading construct.

The study is a large-scale longitudinal educational action research based on a separate sample pre-test and post-test design conducted to improve the effectiveness of the development of English majors' academic reading ability. Two sets of questionnaire data were collected in 2015 and in 2019 from two cohorts of first-year English majors after the administration of the academic skills test and subjected to exploratory factor analyses to investigate the dimensionality of the academic reading ability elicited by the task type. Then the questionnaire data together with the scores awarded to the guided summary scripts were further analysed to enrich the findings of the factor analyses with insights into the reading processes and behaviours the students were engaged in during the completion of the reading-into-writing task.

Following the 2015 data collection and based on the results of the analysis, the first academic skills module was revised with the addition of content intended to foster the acquisition of the academic reading strategies and skills necessary for the purposive, efficient, and accurate processing of academic texts. The students in the 2019 cohort received instruction with the revised content, including the revised course book (Tankó, 2019a) written specifically for the academic skills course.

The goals set for the study were the investigation of (1) the characteristic features of academic reading operationalised by the guided summary writing task, of (2) whether the operationalisation of the academic reading construct was affected by the modified academic skills instruction implemented subsequent to the first data collection with an emphasis on the development of academic reading, and of (3) the type and manner in which the students engaged in reading strategies and skills during the completion of the guided summary writing task.

The findings of the exploratory factor analyses showed that the academic reading ability elicited by the guided summary writing task featured the dimensions of academic reading ability adopted for the study but with some distinct differences. The differences identified showed definite improvement and can be explained plausibly with the effect of the

modified instruction characterised by a weighted emphasis on the development of academic reading ability. The analysis of the questionnaire data together with the summary scores provided valuable insights into the reading processes and the effectiveness of the ways in which the students engaged in academic reading behaviours, some of which were the same or minimally different across the two investigated administrations of the academic skills test, whereas some others were distinctly different, most likely due to the revised course content.

The implications of the findings are theoretical and practical. The study is a much needed contribution to the small body of current true factor analytic research available on tertiary-level academic reading investigations. It contributes to the ongoing debate about the divisibility of reading ability as it generated empirical evidence for the divisibility of reading ability. It confirmed that the integrated guided summary writing task is suitable for the development and assessment of English academic reading ability as it engages a range of essential, higher- and lower-order, sequentially and parallelly deployed academic reading processes, strategies, and skills, as well as induces the creation of semantic and cognitive models of text representation. Through the identification of the exploratory factor model of academic reading as operationalised by the guided summary writing task enriched with the analysis of the data obtained with the post-test questionnaire, it gives and account of the reading processes and behaviours activated during the reading phase in the course of the completion of the integrated reading-into-writing task. It proposes a comprehensive conceptual definition of academic reading and a specific definition of academic reading as operationalised by the guided summary writing task, as well as provides empirical evidence about the complexity and dimensionality of the reading-into-writing construct by illustrating the dynamically interactive sub-processes that characterise it. Furthermore, the study externally validated the taxonomy of reading strategies and skills proposed by Urquhart and Weir (1998) adopted for the specification of the academic reading constructs of various tests, such as the IELTS Academic (Weir et al., 2009) or the Advanced English Reading Test (Weir et al., 2000).

The practical implications of the present investigation are pedagogical. The study demonstrated through the comparison of the results of the exploratory factor analyses the positive effect the modified academic skills instruction with an emphasis on the development of academic reading ability had on the English academic reading proficiency of the students who participated in the study. It has several findings that are readily applicable in academic skills courses for academic reading skills development purposes, specifically in relation to the integrated reading-into-writing guided

summary writing task. However, since the task operationalises authentic academic processes, the findings are expected to also allow students to extend the application of what they learn in the academic skills module to a variety of settings in the academic context that require the fast, effective, and reading-goal directed selective processing of large amounts or academic texts.

CHAPTER 2

REVIEW OF THE LITERATURE

The review of the literature section is divided into three main parts. The first part discusses the main approaches to reading that have kept reading researchers divided into two groups: those who hold the view that reading is a unitary ability and those who consider it to be divisible into clearly distinguishable strategies and skills. The controversy extends to the differentiation of lower-level and higher-level reading processes, which are addressed at the end of the first part. The second part presents an overview of reading comprehension models that help position the current research study within the wider reading theory context. The third part discusses the construction-integration and cognitive processing models that constitute the framework for the analysis of the processes underlying the academic reading ability engaged by the guided summary writing task investigated in this study. The fourth part reviews the definitions proposed for academic reading and formulates a comprehensive definition from which a narrower definition of academic reading is derived—as intended to be operationalised by the guided summary writing task. The final part reviews the use of reading-into-writing tasks in integrated assessment and justifies the use of the guided summary task for the assessment of English for academic purposes in general and for the assessment of academic reading in particular.

2.1 Unitary and divisible views of reading ability

Reading involves a range of underlying processes and components. Whether these can be separated or should be kept together, and whether they are hierarchic in nature has been a point of contention for researchers—some of whom have arrived at contradictory conclusions using the same dataset and different methods of analysis as discussed later below. In addition to reading theorists, education specialists and language testers interested in the teaching and measurement of reading have also had differing views. Whereas some language testers (e.g., Alderson, 2000) and L2 education specialists (e.g., Brown & Hirst, 1983) have considered reading as an

undifferentiated skills activity, other language testers (e.g., Hughes, 1989; Khalifa & Weir, 2009; Urquhart & Weir, 1998) and L2 education specialists (e.g., Grellet, 1987; Munby, 1978, or Nuttall, 1996) have viewed it as an ability composed of distinguishable skills that can be taught and measured separately. The next two sections present a discussion of these approaches.

Although there have been a few attempts at delineating a third, intermediate, approach—which acknowledges the existence of subskills but considers them to be overlapping, parallel, or alterable in the course of the reading process (e.g., Alderson, 1990a; Grabe, 1991)—a review of the literature shows two dominant approaches to the issue of divisibility of reading ability: the holistic approach, which defines reading as a unitary ability; and the analytic approach, according to which reading is divisible into a set of subskills. The third approach is more likely to be an elaboration of the analytic approach rather than a separate one.

2.1.1 Holistic approach

The holistic approach does not seem to be conclusively supported by research evidence. Those researchers who inclined towards this view of reading ability have all found that the ability is not truly unidimensional; nevertheless, for lack of strong and clear contrary evidence, they settled for a unitary view. A review of their endeavours is in order because it prepares the discussion of the divisibility of reading ability, the view to which this study adheres.

Thorndike (1917) first proposed that reading ability is none other than a reasoning process. If we think of reading as a process of combining propositions from a text to formulate inferences based on them—even when we only restate the gist of a text—or as a process of combining propositions with background knowledge to arrive at inferences, indeed this view of reading is plausible because of the inherent nature of the process of inferencing. An inference has the structure of an argument (Dewey, 1910) that leads to a conclusion—or to the formulation of a hypothesis or of a prediction in reading—about a text's content and function (Grellet, 1981) to be tested against upcoming content.

His view became influential all through the 1930's and 1940's (Derrick, 1953) and was tested with factor analysis. Derrick (1953) found only one factor, namely general reading ability. Then, Thorndike reported in a study in 1971 (as cited in Spearritt, 1972) to have identified one factor that explained 93% of the variance in a reading test. He claimed that most probably the factor was reasoning ability. In the same study, however, he also mentioned that word knowledge could also possibly be distinguished

as a factor. Additionally, in an internationally conducted study, Thorndike (1973–1974) argued that reading ability is a unitary reasoning and general cross-cultural ability.

In a correlational study, Thurstone (1946) reported that in a test designed to measure nine hypothesised reading skills, reading ability was best accounted for by a single general factor. However, he also noted without further investigation of the nature of the phenomenon that some variance could not be attributed to the common factor, suggesting that not all of the underlying variables had been identified. In a later correlational study on the reading comprehension section of the Nelson test, Drahozal and Hanna (1979) also argued that reading is indivisible. They claimed that the three kinds of tasks (recognising "specific information", selecting "synonyms for paraphrased restatements of main ideas or related details", and "determining implicitly stated main ideas or details, identify cause-effect relations, make judgments about events and attitudes of authors or characters", p. 418) were only alternative means of measuring one phenomenon. Most likely, this was not an erroneous finding in terms of higher-order factorial causation: The general ability measured was reading. However, this does not necessarily mean that the general factor could not have been broken down into constituent components.

Spearritt (1972) also designed a study to identify reading comprehension skills. He found four differentiable skills but emphasised that due to high correlations between them some of the skills were only barely distinguishable except for one: recalling word meanings. Lexis, much like syntax, is an area of language knowledge that underlies several language abilities (cf. Bachman & Palmer, 2010), so the high correlations found are not surprising, but it is probably unwarranted to consider in itself recalling word meanings a distinctive reading skill; it should most likely be regarded a relevant but secondary enabling skill. Spearritt also concluded that what was measured as reading comprehension was probably one basic ability that could be labelled as reasoning in reading.

In his paper reviewing skill hierarchies in reading comprehension investigated in correlational studies, textbooks, and instructional materials, Rosenshine (as cited in Mason et al., 1977) also arrived at the conclusion that there was no evidence for the existence of discrete skills in reading comprehension and that most of the reading skills were in fact general reasoning skills. Similarly, Lunzer et al. (1979 as cited in Lumley, 1993) found no evidence that distinct separate skills exist. They identified one main factor that they called general reading comprehension and concluded that reading is a unitary ability. However, their results also indicate the presence of a potential second factor related to word meaning.

The review of the research body in favour of the holistic view shows that although most of the investigations were conducted with primary school and secondary schools pupils up to grade twelve, the majority involved primary school pupils. Because of cognitive developmental factors and because of their different reading tasks and goals, it may easily be the case that these research findings do not accurately describe the reading processes of tertiary level students. Furthermore, it is to be noted that none of the reviewed studies investigated L2 reading processes. Even the international study (Thorndike, 1973–1974) investigated L1 reading in various countries.

As it was mentioned in the introduction to this section, some researchers (Lunzer et al., 1979, as cited in Lumley, 1993; Spearritt, 1972; Thorndike, 1971 as cited in Spearritt, 1972) did find that vocabulary seemed to be a distinguishable component of the ability they were testing. Considering the fact that meaning hinges on the lexis in addition to the syntax that links text constituents, it should be less than a surprise that vocabulary is a key and separable constituent of verbal comprehension processes. In fact, some of the reading skills taxonomies that emerged from the analytic approach to be discussed next include lexis and syntax as distinct constituents that enable comprehension.

In spite of the efforts of researchers who were the advocates of the holistic view, other reading researchers and education specialists created reading skills lists and taxonomies and, although challenged, some of them cogently argued and managed to demonstrate with empirical studies that reading ability could be divided into measurable separate components.

2.1.2 The analytic approach

In contrast to the holistic view, there are researchers and education specialists, who agree with Carroll (1971, pp. 4–5) that "[c]omprehension ability … is more likely a multidimensional affair. Whether one is concerned with spoken or printed language, the evidence suggests that the individual may have different levels of ability with respect to vocabulary, grammatical features, and other characteristics of texts." These levels of ability have been also called the component skills of reading ability. Grabe (1991, p. 382) noted that a "'reading components' perspective is an appropriate research direction to the extent that such an approach leads to important insights into the reading process". Indeed, understanding the underlying processes is relevant for both the instruction and assessment of reading ability.

The analytic approach is preferred by some language testers and by most education specialists and teachers because it makes reading ability

measurable and teachable given that it facilitates the evaluation of various aspects of language users' reading ability as well as the planning of syllabuses and the design of course materials. The advocates of this approach assume that language users master a number of reading ability components, and their level of proficiency varies across these. In what follows, the analytic approach is discussed in terms of two types of skills taxonomies and of the differentiation made between higher- and lower-order skills.

2.1.2.1 Theoretically and empirically derived reading skills taxonomies

The advocates of reading skill taxonomies see reading comprehension as a composite of different, increasingly more complex, and cumulative set of skills or subskills[1]. The skills range from decoding skills to higher level reasoning and have been grouped (e.g., by Hughes, 1989) under the labels of macroskills (i.e., understanding the gist of the text, including its logical structure) and microskills (i.e., enabling skills like understanding word meaning, reference, or discourse markers necessary for the recognition and interpretation of the linguistic features of a text). The reading skills taxonomies can be divided into two categories (Williams & Moran, 1989): those which are the products of informed intuition as they are based on theoretical assumptions, and those that were arrived at by means of empirical investigations. The following sections present overviews of the most discussed and influential reading skills taxonomies representing both categories.

2.1.2.1.1 Theoretically derived reading skills taxonomies

Bloom et al. (1956) defined reading as being part of the cognitive domain and consisting of "the behaviours: remembering; reasoning; problem solving; concept formation; and, to a limited extent, creative thinking" (p. 15). This is a rather abstract and general definition of reading ability but not unlike those proposed by the advocates of the holistic approach, who also mentioned reasoning and concept formation, as well as recalling vocabulary, as key reading processes. A comparatively more explicit and informative classification was the list of reading skills proposed by Gray (1960), which included three subskills: literal (reading the lines), inferential (reading

[1] The terms reading skills and reading subskills are often used interchangeably in the literature. In this review, the term *reading skills* is used to refer to both reading *skills* and reading *subskills* except for those cases when reading skills are further subdivided into reading subskills.

between the lines), and critical (reading beyond the lines) skills. Of these, given that one of the key characteristic features of academic prose is to express meaning explicitly, especially the first and last subskills can be of primary interest for academic reading instructors and assessors. The second one is most likely of relevance, for example, for scholars researching literary works or texts from domains where writer responsibility is not a main concern. In 1966, Robinson (as cited in Davis, 1972) expanded Gray's subdivision of the reading process with a modified taxonomy of skills:

1. understanding the literal meaning of a writer;
2. understanding the implied meaning of a writer;
3. assessment of a writer's purpose, frame of reference, assumptions, and generalizations;
4. evaluation by the reader of the writer's ideas;
5. integration of information and ideas of a writer with the reader's information and related experiences.

Whereas the first two match Gray's (1960) literal and inferential skills, the third and fourth skills can be perceived as the expansion of the original critical reading skill. Therefore, a noteworthy addition is the fifth skill, which was researched later as reading with the aim to learn and is a major component of, for example, the construction-integration model (cf., for example, Kintsch, 1998).

Cleland and Barrett proposed two similar general taxonomies. According to Cleland (1965, as cited in Pettit & Cockriel, 1974), there are six comprehension factors: perception (not only literal comprehension but also meaningful response to the text); apperception (integration of text content with background knowledge); abstraction; appraisal; ideation (i.e., the formation of ideas or concepts); and application. Later Barrett (1968, as cited in Kaplan, 1985) proposed a taxonomy that describes the comprehension and feelings that characterise different types of reading. Barrett differentiated five reading comprehension types, each divided into sets of subskills: literal comprehension (i.e., understanding explicitly stated ideas); reorganisation (analysing, synthesising and/or reorganising explicit ideas); inferential comprehension (formulating conjectures and hypotheses); evaluation (comparing text content with external sources or own knowledge); appreciation (recognition of the psychological and aesthetic effects of the text). The last three skills rely more markedly on the reader's background knowledge.

Other taxonomies emphasise that the reading process is a highly conscious activity that results in some kind of output. Strang (1938, as cited in Willis, 2008) described the process as follows:

> In reading to obtain proof on any point the student will first formulate the assumptions, which are to be studied. Then he will select, as he reads, the ideas significantly related to the assumptions. He will search for evidence in support of or opposed to the assumptions and weigh each bit of evidence as he reads. If evidence accumulates against one of his original assumptions, he will change it. Finally, he will act upon the assumptions for which he has obtained proof. ... [This requires] scientific thinking which includes elements of observation, analysis, synthesis, selective recall, and imagination as well as ability to recognize the problem, judge the adequacy of the data, discover the essential relationships and suspend judgment until enough reliable evidence is available on which to draw conclusions. (pp. 47–48)

Strang therefore conceptualised an active reader as a systematic thinker who formulates a priori hypotheses about the content of a text, evaluates information to confirm the hypotheses, and adjusts them accordingly if necessary. The reader then applies the confirmed hypotheses. This approach to reading as a constructive process presupposes the existence of a reading goal.

Reading goal as an addition to the reading process is further specified by Berry (1931, as cited in Davis, 1967), who differentiated two types of reading in her study on college freshmen: one for general comprehension and one for learning. According to her, a proficient reader employs different sets of reading skills in accordance with the reading purposes, as summarised in Figure 1.

As can be seen, in addition to the thorough and contextually appropriate comprehension of the author's message by means of using word-attack skills, literal comprehension, willing and temporary suspension of critical evaluation of text content, and following the author's train of thought, reading for learning also includes the ability to extract and restructure ideas according to the reader's goal through the selective extraction and restructuring of propositional content. These active reading processes—described by the last six reading-for-learning subskills—were later elaborated in the revised version of construction-integration model (cf. Kintsch, 1998).

Some taxonomies address the relationship between the reading goal, reading processes, and reading outputs. As early as 1928, Yoakam (as cited in Harris, 1968) described four reading types for different reading purposes and types of texts. The two faster reading types are *skimming*, serving the purposes of quick survey or location of a specific piece of information; and *rapid reading*, serving the purposes of superficial reading of easy material—for example, to get the main ideas in a text or rereading.

Figure 1
Subskills Used by a Good Reader (Berry, 1931 as cited in Davis, 1967)

Reading purpose	Reading to master the general outline or the facts involved	Close reading for mastery of content
Skills	• outline the selection, identifying main and subordinate topics, • relate subordinate details to such an outline, • select key sentences or determine topics of paragraphs or of a longer selection, • accompany reading with appropriate visual imagery, • note for later consideration new or difficult terms and concepts • grasp the major issues and their implications	• understand the individual words and make reasonable inferences as to meanings of unknown words, • accept for the moment the writer's point of view, disregarding own prejudices and biases, • give to words and phrases the meanings and interpretations intended by the writer, • follow a train of thought through a maze of detail, • ignore whatever is irrelevant for own purpose, • select and organize data for use in answering questions or the like, • isolate the essential parts of an idea, • note restrictive modifications, • group essential ideas or elements (after these have been isolated) in meaningful relationships, • associate the selection as a unit with what precedes and what follows it

The purpose of *normal reading* was described as getting the main and some supporting ideas; whereas *slow or careful reading* was considered suitable for reading difficult texts, be it for a thorough and accurate comprehension of the content or for critical reading purposes. This is an early recognition that good readers change their reading behaviour depending on what type of text they are reading and why—as a result of which, they change their reading rate. Similar differentiations of reading types occur in more recent empirical studies by Urquhart and Weir (1998) and by Carver (1977–78, 1990, 1992). However, given that both the cognitive processing model for reading comprehension proposed by Khalifa and Weir (2009)—based on the work of Urquhart and Weir (1998)—and Carver's taxonomy of basic reading processes have been empirically validated, they are discussed separately in the next section.

Another theoretical skills-based exploration of reading ability which acknowledges that a change in reading goals alters the reading process was created by Munby (1978). According to this detailed and highly influential taxonomy of language skills, reading involves the following skills (pp. 123–132):

- discriminating sounds in isolate word forms
- recognising the script of a language
- deducing the meaning and use of unfamiliar lexical items
- understanding explicitly stated information
- understanding information in the text, not explicitly stated (inferencing)
- understanding conceptual meaning (e.g., quantity and amount; definiteness and indefiniteness; cause; result; purpose)
- understanding the communicative value (function) of sentences and utterances
- understanding relations within the sentence
- understanding relations between parts of a text through lexical cohesion
- understanding relations between parts of a text through grammatical cohesion devices
- interpreting text by going outside it (e.g., by 'reading between the lines' or by integrating data in the text with own experience or knowledge of the world)
- recognising indicators in discourse
- identifying the main point or important information in a piece of discourse
- distinguishing the main idea from supporting details
- extracting salient points to summarise
- selective extraction of relevant points from a text
- reducing the text through rejecting redundant or irrelevant information and items