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Which theories are taught to students and how they are taught: A content analysis of interpreting textbooks

Yuan Yang, 杨　圆[1]; Xiangdong Li, 李向东[2]

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Abstract. The usefulness of theory in interpreter training is widely recognized. Yet descriptive studies on which theories are used and how they are pedagogically treated in training are scant. This study aims at investigating which theories are covered and how they are pedagogically treated in interpreting textbooks. Content analysis was used to code 58 interpreting textbooks against a theory category framework for coverage. The results indicate that 14 theories and 33 categories of insights from the literature are covered in the textbooks. The two most popular theories are the Effort Models and Interpretive Theory, while the highly covered categories of insights from the literature concern the component skills of interpreting. Textbooks that cover the two most popular theories were coded against a pedagogical treatment framework. The results suggest that, although the theories are adequately treated in language presentation and information amount, they are poorly discussed in relation to practice, indicating that the textbooks fail to create situations for students to construct meaningful knowledge of theories from their own interpreting experiences, which is close to a transmissionist approach. Possible reasons for the two theories' popularity and the negative impact of a transmissionist approach are discussed against the current literature.
Keywords: interpreting theories; interpreter training; textbooks; coverage; pedagogical treatment

[ch] 口译教学中涉及的理论种类及其教学方法：口译教材内容分析

摘要：学界认可理论在口译教学中的作用，然而关于口译教学中使用的理论及其教学方法的描述性研究较少。本研究旨在分析口译教材中涵盖的理论种类、理论的教学设计方法。通过建立理论种类框架，作者对58本口译教材中包含的理论进行了内容分析，结果显示，口译教材中包含了14种理论、33类概念，提及频率最高的两种理论分别是释意理论与精力分配模式，提及频率较高的概念多与口译技能有关。作者建立了理论教学方法框架，对提及释意理论与精力分配模式的教材进行了内容分析，结果显示，虽然在理论呈现语言、信息量方面尚可，大部分教材以理论知识传递为主，没有阐释理论与实践的关系，未能引导学生在口译实践的基础上建构个人理论。结合当前文献，作者讨论了释意理论与精力分配模式得以广泛认可的原因、知识传递式教学方式对理论教学的负面影响。
关键词：口译理论；口译教学；教材；内容种类；教学设计

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1. Introduction

Whether or not theory is considered useful can vary, depending on whom one asks. In a discussion on the usefulness of theory in translator education at ResearchGate, the six participants, all with a training or research background, agree that theories are based on practice and that they lead to better practice (for example, understanding of the translation process and problems, justifications of strategic decisions, etc.). Such beliefs

[1] Xi'an International Studies University, China.
E-mail: 1550606858@qq.com.
ORCID: https://orcid.org/0000-0002-4223-9007

[2] Xi'an International Studies University, China.
Email: xiangdong813@gmail.com.
ORCID: http://orcid.org/0000-0002-7483-6076

are shared by many scholars and trainers (Gile, 2005; Lederer, 2007; Orlando, 2016; Setton, 2010; Tryuk, 2011; Takeda, 2010). By contrast, professionals (and some trainees) tend to consider theories as useless (e.g., Chesterman & Wagner, 2002; Shuttleworth, 2001). According to a large-scale survey of professionals (Katan, 2009), the majority of translators and interpreters think that theories are not useful in practice and that theories and ethics are much less important than practice-oriented content in training. Such a divide in the perceived usefulness of theories in training is reflected in the position of theory in curriculum development. Although AIIC (International Association of Conference Interpreters) suggests that an interpreting curriculum should include a theory component (AIIC Training and Professional Development, 2016), there is no guarantee that it is present in all interpreting curricula. The presence or absence of a theoretical component in a curriculum usually depends on the side that the curriculum developer takes (Pym, 2011). Basing curricular decisions on subjective assumptions without evidence may either overestimate or underestimate the role of theory in training, thus achieving little in terms of teaching efficiency. Therefore, research on the use of theories in training deserves attention.

Gile (2012), based on a review of the literature, concluded that research on the use of theories in training programs is missing. The situation has not changed in almost a decade. Current knowledge concerning theory in interpreter training is limited. Some preliminary findings are that interpreting students and teachers have a favorable attitude towards theory, that they favor theory that guides learning and practice, and that they prefer to have theory combined with practice in learning (Arumí Ribas, 2020; König, 2018; Tryuk, 2011). Findings of studies with translation students are not consistent and even conflict with one another (Giczela-Pastwa, 2017; Jeong, 2000; Li, 2002; Seung et al., 2001; Wali, 2015). It is worth mentioning that Giczela-Pastwa (2017) and Wali (2015) unintentionally found in the process of surveying translation students' attitudes towards theories that the manner in which theories are taught affects students' attitude towards theories, pointing to the importance of theory presentation. However, so far, no descriptive studies have been conducted to examine which theories are taught to students and in what ways they are taught.

Against such a background, this study aims at examining the categories of theories taught to interpreting students and in what ways they are presented through content analysis of interpreting textbooks. Although not all interpreting teachers use textbooks or publish their teaching materials as textbooks, textbooks represent the selection of teaching content and the manner of teaching of the compilers, who are usually seasoned interpreter trainers. For this reason, content analysis of textbooks has been applied in a wide range of disciplines for educational purposes. That said, content analysis of the categories of theories and their pedagogical treatment in textbooks can partially reveal which theories are taught to interpreting students and the manner in which it is done.

2. Current evidence on theory teaching in interpreter training

Although there have been many pre-scientific propositions in the current literature (Gile, 2005; Lederer, 2007; Orlando, 2016; Setton, 2010), current evidence on theory teaching in interpreter training is scant.

One direction is surveys of students' and teachers' attitudes towards theory. Previous studies indicate that interpreting theories are welcome in the curriculum (Arumí Ribas, 2020; König, 2018; Tryuk, 2011). In a survey with interpreting students at a university in Poland, Tryuk (2011) found that students expect to learn theoretical knowledge. König's (2018) thesis submitted to the University of Leipzig investigated interpreting students' and teachers' perceptions of the role of theory in interpreter training through interviews, questionnaires and focus groups in European countries. The results reveal that the two groups hold a favorable attitude towards theory. In another survey among nine interpreting students and six trainers at the Universitat Autònoma de Barcelona, Arumí Ribas (2020) found that all students and five of the six trainers have a positive attitude towards the inclusion of theories in the curriculum, though seven of the nine students are against the devotion of more time.

Compared with those with interpreting theory, there have been more questionnaire-based surveys with translation theory and the results are diverging. Agost and Ordóñez López (2015), Shih (2011) and Sung (2016) found that Spanish, British, and Korean translation students hold a positive attitude towards translation theory. By contrast, Jeong (2000), Li (2002), and Giczela-Pastwa (2017) found that translation students in Korea, Poland and Hong Kong held negative attitudes towards theory. Seung et al. (2001) and Wali (2015) found that, while the role of theory is recognized by translation teachers, it is less considered so by students.

Current empirical evidence on what and how to teach theory in interpreter training is even rarer. The only study that has touched upon students' and teachers' knowledge of theory is König (2018) who found that students and teachers favor theories that guide interpreting learning and practice, and that the two most popular theories are the Effort Models (EM) and Interpretive Theory of Translation (ITT). This is similar to a study of translation theory which found that students expect to learn theories that guide their translation practice in particular situations (Giczela-Pastwa, 2017).

As for how to teach theory, the only study related to interpreting theory is Tryuk (2011), who suggested that students' preferred method of theory teaching is combining theory with practice. This is generally consistent with Giczela-Pastwa (2017) and Wali (2015). When surveying students' attitudes towards translation theory, both authors inadvertently found evidence that translation students' negative attitude towards theory is related to the way translation theories are taught – that is, a transmissionist approach in which theory is not combined with practice. This indicates that it is not the theory but the way it is taught that bores the students, pointing to the necessity of more research on how theory is taught.

It seems that empirical studies on the use of interpreting theory in interpreter training are scant. The current studies are all surveys of students and teachers. There have not been any descriptive studies undertaken regarding which interpreting theories are being taught to students and in what ways. Nor has there been any relevant exploration of theory coverage and its pedagogical treatment by investigating teaching materials. A study that obliquely touches upon the topic of content analysis of theories in interpreting textbooks is Muroski (2019). In her PhD dissertation, she reviewed the competencies covered in 101 American Sign Language interpreting books published between 1965 and 2018 (9 textbooks and 92 edited volumes, monographs, manuals and workbooks) and checked them against the national standards for interpreter education. One of the results relevant to the current study suggests that competencies related to interpreting theory and knowledge were covered in five of the nine textbooks. Unfortunately, the author did not report separately the coverage of interpreting theories in the textbooks, nor did she examine in detail the coverage of specific theories in the nine textbooks. Since the focus of the research is the alignment between recommended competencies and the actual content of the 101 books, it does not provide adequate information as to what and how theories are used in interpreter training.

3. Theory in interpreter training: what, why and how

3.1. What

Based on prior definitions of theory (Chesterman, 2007; Newmark, 1980; Setton, 2010; Shuttleworth, 2001), interpreting theory in the current study refers to knowledge that can provide frameworks or principles for practitioners, trainers and trainees to understand and explain key issues of interpreting, such as the complexities of the interpreting process, interpreters' roles, obstacles, strategies and justifications, skill acquisition, and quality evaluation. It may take the form of either established constructs (ITT and EMs), or simply insights from the literature (empirical research or pre-scientific/pre-theoretical propositions) which are less systematic and focusing on a narrow aspect of interpreting (Gile, 2020a). Given space limitations, we will describe briefly two well-known interpreting theories (EMs and ITT), as well as insights from the literature.

The EMs were proposed and developed by Gile (1983, 1995, 2009, 2020b). According to the EMs (Gile, 2009), interpreting is a multi-tasking activity where interpreters allocate their attentional resources appropriately to achieve a dynamic balance between listening and analysis, memory, production, and coordination. Different extra attentional resources are involved depending on the mode (note-taking and note-reading in consecutive interpreting but reading in simultaneous interpreting with text). To keep the balance, their attentional resources available for each effort should be more than the attentional resources required. If a problem leads to a sudden increase in the required attentional resources of listening and analysis and thus consumes much of the available attentional resources, attention overloads occur because there will be less attentional resources for memory and production. Similarly, if memory and production require more attention than is available, listening and analysis may be buffeted. Problem triggers leading to increasing demand in any of the attentional resources can break the attention allocation balance and result in a domino effect. The EMs explain how the dynamic balance between different attentional resources functions in each interpreting mode (Gile, 2020b).

The ITT theory was first initiated by Seleskovitch (1962) and then developed by Seleskovitch and Lederer (1984). It depicts interpreting as a three-phase process: in phase one, the interpreter constructs sense from the linear stream of source speech input with the aid of cognitive complements (contextual and topical knowledge); phase two is known as de-verbalization in which the mental representation of ideas is retained while the source linguistic signs that carry the ideas are forgotten; in phase three, the interpreter re-expresses or re-verbalizes the sense idiomatically in the target speech and may make what is implicit in the source language explicit (Lederer, 2015). It holds that interpreting is not a mechanical process of word-for-word conversion, and that linguistic transcoding is only limited to such less context-dependent elements as numbers, terms, proper names, enumerations, or deliberate word choices.

Insights from the literature, specifically, empirical contributions or pre-scientific/pre-theoretical propositions, can also be treated as theoretical aids in interpreter training (Gile, 2020a). Empirical contributions are usually concerned with aspects of interpreting. They have a narrow focus, with specific research questions or hypotheses, resort to certain research designs and instruments to collect data, and provide new insights or test preexisting propositions. Pre-scientific or pre-theoretical propositions refer to insights recorded in conceptual papers in the literature. They also concern various aspects of interpreting but are not as systematic as more established theories such as the EMs and ITT theories, and are not empirically tested.

Please see Table 1 and Table 2 for a complete list of theories in the current study, which is derived from a predetermined list of theories based on the current literature (Pöchhacker, 2015, 2016), as well as an additional list based on an inductive analysis of textbooks.

3.2. Why

The current literature indicates the following roles of theory:

a. Theory brings learners a better awareness of the interpreting process and interpreter's profession and roles (Arumí Ribas, 2020; Lee, 2005; Setton & Dawrant, 2016b);
b. Theory helps learners develop personal theorizing of their everyday practice and promotes meta-cognitive learning and informed self-reflection (Arumí Ribas, 2020; Shuttleworth, 2001; Takeda, 2010);
c. Theory provides a yardstick for learners to evaluate learning and performance quality (Lederer, 2007; Setton & Dawrant, 2016b);
d. Theory serves as a lens through which learners understand common problem triggers and their potential impact on communication, and provides support for them to select informed tactics to manage the problems and justify their decisions (Arumí Ribas, 2020; Gile, 1992, 2020a; Lederer, 2007; Pöchhacker, 1992; Pym, 2014; Setton, 2010);
e. Theory helps learners grow into adaptive and lifelong learners who can face new problems and challenges and find solutions in the future (Orlando, 2016; Tryuk, 2011; Takeda, 2010; Lim, 2000);
f. Theory equips learners with a meta-language or shared terminology when discussing problems and evaluating quality (Arumí Ribas, 2020; Setton & Dawrant, 2016b);
g. Theory supports curriculum design in terms of instructional methods, material sequencing and pedagogical progression (Setton, 2010; Lederer, 2007; Sawyer, 2004; Setton & Dawrant, 2016b);
h. Theory prepares learners for increased knowledge about the contribution of research, higher levels of professional specialization, and more opportunities in teaching and research (González Davies, 2004; Setton & Dawrant, 2016b; Gile, 2020a);
i. Theory relates to the academic status of Translation Studies as a discipline that impacts the status of the translation and interpreting professions in society (Gile, 2010; Pym, 2014);
j. Theory equips students with a framework to carry out their final-year thesis project (Arumí Ribas, 2020).

If any of the above benefits of explicit learning of theory are the target objectives of translation or interpreting programs, theory should be part of training.

3.3. How

The literature suggests that theory teaching can be evaluated from six perspectives:

a. Time of presentation: theory should be taught after students have come to an awareness of common difficulties and problems in practice, instead of at the early stages of training (Gile, 1992, 2020a; Lederer, 1996; Bartrina, 2005; Sung, 2016; Tryuk, 2011);
b. Amount of presentation: theory should not be presented more than is necessary (Gile, 1992; Setton, 2012; Sung, 2016);
c. Language of presentation: theory should be presented in simple language, without technical terms and abstract concepts (Gile, 1992, 2020a);
d. Instructional aids: instructions should be aided with graphic or metaphorical illustrations (Setton & Dawrant, 2016b; Setton, 2012);
e. Relevance to practice: theory should be connected with concrete examples of professional ethics or practices (Agost & Ordóñez López, 2015; Arumí Ribas, 2020; Roberts, 1988; Gile, 1992; Bartrina, 2005; Orlando, 2016; Setton & Dawrant, 2016b; Setton, 2010; Tryuk, 2011; Wali, 2015);
f. Application: practical implications should be made clear to students (Gile, 1992).

Since the time of presentation can hardly be examined through content analysis of textbooks, the remaining five served as the scheme against which the pedagogical treatment of interpreting theory was coded (see the Methodology section for more details).

4. Methodology

4.1. Research questions

Two research questions drove the current study:

a. What theories are covered in interpreting textbooks?
b. How is theory pedagogically treated in interpreting textbooks?

4.2. Content analysis

Textbooks were analyzed through content analysis. In content analysis, qualitative data (websites, teaching materials, speeches, newspapers, or pictures) are coded into emerging frames inductively, or against existing frames deductively, for quantitative analysis and interpretation of their frequencies or patterns (Julien, 2008). This section presents the sampling criteria of textbooks, the two phases of content analysis, the creation of coding frames and the levels against which the textbooks were coded for theory coverage and pedagogical treatment, pilot coding and inter-rater reliability, as well as the statistical analyses applied to the frequencies of the code levels.

4.2.1. Sampling of textbooks

Fifty-eight textbooks, including 13 English and 45 Chinese ones, were included in the content analysis.

The textbook selection was the result of implementing several criteria. The first was related to the language of publication. Due to the difficulty of obtaining and analyzing textbooks published in all languages, only those published in English and Chinese were selected.

The second criterion was the specific mode of interpreting. Only comprehensive textbooks, focusing on conference interpreting, consecutive interpreting (and note-taking) or simultaneous interpreting, were included.

The edition of a textbook was taken into account. If more than one edition was published, only the latest edition was analyzed unless the previous and latest editions were different in content.

The target users of the textbooks were also considered. Since the current research aims to explore what theories are covered in interpreting textbooks and how they are taught, the intended users of the included textbooks are supposed to be students (at least a student version of the textbook is published). If a textbook has both teacher's and student's versions and they were symmetrical, the more complete version was analyzed; for example, Patrie (2004, 2005). If they were not symmetrical, both versions were analyzed; for example, Setton and Dawrant (2016a, 2016b). This decision was made on the assumption that the teacher may use the teacher's version as complementary materials in class.

Textbooks for trainers were excluded. One reason is that they do not help answer the research questions. This means that Gile (2009) and Lederer and Seleskovitch (1989), though both masterpieces for interpreter trainers, were excluded in the current analysis. Another reason to exclude the two masterpieces is that they may introduce bias. The two books are excellent in theory coverage and pedagogical design (use of instructional aids, relevance to practice, and application). However, they do not represent the normal level of students' textbooks in everyday use because they were written for trainers by top experts who proposed the theories. As an analogy, if we intend to measure the average height of people, there is no point to include basketball players in sampling because they are outliers who are much higher than the rest of the people.

4.2.2. Content analysis of theory coverage

Content analysis of textbooks consisted of two phases. In the first phase, the 58 textbooks were analyzed to examine their theory coverage.

Two coders were involved, both with backgrounds in Interpreting Studies and knowledge of common interpreting theories; one of them had more than ten years of research experience in Interpreting Studies. Both of their working languages are Chinese (A language) and English (B language).

The content analysis in this phase combined the deductive and inductive approaches. To guarantee face and content validity (Mellinger & Hanson 2017: 29), the current research analyzed the literature for possible theory categories (Pöchhacker, 2015, 2016). Informed by the literature, the coders started the analysis with five well-known theories (ITT, EMs, Relevance theory, listening comprehension model/discourse model, and Schema Theory) and 29 categories of insights from the literature (Gile, 2020a). This was a deductive coding process.

The inductive approach was also used, because new categories of theories were added as the analysis proceeded. Nine new theories and four new categories of insights from the literature emerged from further analysis. The two coders went through the 58 textbooks, and selected four textbooks, namely, Setton and Dawrant

(2016a, 2016b) and Patrie (2004, 2005), for pilot analysis because the four had referred to the most theories in their compilation process, as is indicated by their long reference lists. It was hoped that analysis of those four textbooks could lead to the point of theoretical saturation when analysis of additional textbooks generates no new theory categories (Bloor & Wood, 2006. p. 164). In addition, the pilot analysis constituted a stringent test to check the two coders' agreement, because their prolific citation of theories posed the most challenges for coding and categorizing. The two coders reviewed the four textbooks in detail, listed the additional theories emerging from the analysis, compared their lists and discussed any disagreements. They agreed to merge some categories and to add others. For example, 'testing and certification' were merged to 'assessment testing and certification', 'the interpreter's role' merged with 'professionalism', and 'user expectation' was integrated into 'user expectation, interpreting quality and criteria'. The theories of 'history and modes' were added. They also decided that, if an insight from the literature was used as a theory, they may code it as belonging to two categories. For example, in Setton and Dawrant (2016a, p. 235-237), the literature was cited to support the use of exercises for B language enhancement. It was coded both as 'language proficiency and enhancement' as well as 'exercises or instructional techniques'. Such cases occurred only occasionally in the analysis.

As a result of the deductive and inductive pilot analysis, 14 theories and 33 categories of insights from the literature were generated, as can be seen from Table 1 and Table 2.

Table 1. Categories of theories

Theory	Description
Interpretive Theory of Translation (ITT)	See the previous section for details.
Effort Models (EMs)	See the previous section for details.
Listening comprehension model/discourse model	Listening for interpreting results from the interplay between two types of information processing: 1) bottom-up processing where interpreters utilize their linguistic knowledge to break the source speech into meaning units for message construction; 2) top-down processing where interpreters construct meaning by relying on their schematic, contextual, and pragmatic knowledge (Albl-Mikasa, 2017).
Schema theory	Interpreters take advantage of their schemata or prior knowledge in long-term memory (world and topical knowledge, knowledge of the rhetorical patterns of different genres and bilingual knowledge) to comprehend input information (Zuo, 2014).
Relevance theory	If interpreting is approached from a relevance theory perspective (Setton & Dawrant, 2016b, p. 474), 1) interpreters acquire the intended message (knowledge or perceptions) in the source speech (this is aided by preparation, note-taking, etc.); 2) they render it among the audience with minimum effort by utilizing their available resources in the target speech to provide clues; 3) the audience makes inferences from the clues with available context (their current knowledge or perceptions in memory) for relevant meaning (this often leads to a change in their knowledge or perceptions).
Other cognitive process models of interpreting (those other than EMs)	They refer to Gerver's flowchart model which depicts the mental operations in input speech comprehension and output production in simultaneous interpreting (Moser-Mercer, 1997, p. 5) and Moser-Mercer's model of speech processing and memory operations in simultaneous interpreting (Moser-Mercer, 1997, p. 6).
Theory of activity	As a cognitively demanding goal-oriented activity, simultaneous interpreting depends on continuous synthesis and perception of changes in information from the internal and external environment for comprehension and anticipation, for example, additional knowledge and redundancy in the input speech (Chernov, 2004, p. x).
Social or relational models of interpreting	Refer to models that describe the dynamics of interpreter-mediated communication as well as the roles of participants, such as the one proposed by Pöchhacker (1992, p. 216).
Cognitive load theory	A theory concerning how people learn or process information effectively. According to Setton and Dawrant (2016b, p. 209), interpreters' cognitive load can be reduced by increasing the chunks of working memory through acquiring knowledge and automating such procedures as speech analysis, note-taking, etc.
Translation theories or models	Refer to theories or models related to translation, for example, Skopos Theory, dynamic equivalence, etc.
Zone of proximal development	Zone of proximal development refers to the status between what learners can do on their own and what they cannot do even with scaffolding: thus, what learners can potentially do with instructional aids (Cole et al., 1978). In interpreter training, trainers need to have the pedagogical skills to challenge the trainees so that they progress from where they are to where they need to be (Setton & Dawrant, 2016b, p. 11).

Functionalist approaches to linguistics	From a functionalist perspective to language, a speech to be interpreted may have multiple functions (persuasive, informative, ritual or phatic) and information usually flows from given to new ones, which has implications to speech type selection and information processing in interpreter training (Setton & Dawrant, 2016b, p. 162).
Models for language teaching and learning	Refer to models in language education that can be adapted to serve the purpose of interpreter education or testing, as is the case with Arjona (1985).
Gravitational Model	According to Gile (2009, p. 227), the model explains different levels of interpreters' availability of lexical items and language rules, ranging from active availability which features effortless use in comprehension and production to passive availability which features use with maximum effort in even comprehension. The level of availability is dynamic, increasing when lexical items and language rules are repeatedly used while decreasing when they are not used.

Table 2. Categories of insights from the literature

Categories of insights	**Description**
Input parameters	Include all factors that may influence interpreting performance – for example, accent, speed, high information density, speaker logic, preparedness, formality, syntactic complexity, visual aids, redundancy, degree of specialization, channels of viewing, environmental input, time constraints, etc.
Language proficiency and enhancement	Refer to interpreting trainees' proficiency in their working languages and issues related to their language enhancement.
Analytical listening	Related to comprehension of the input speech in interpreting – for example, identification of ideas, supporting ideas, keywords, links, web of hierarchical relationships, etc.
Memory and information retrieval	Refer to interpreters' retaining and retrieving of information after comprehension of the input speech, such as long-term and short-term memory, information storage, etc.
Note-taking and reading	Include note-taking and reading skills, such as what to note, how to note, preferred language, layout, note structure, sign use, etc.
Reformulation	Refers to interpreters' skills to reproduce message into the target language, such as self-monitoring and correction, public speaking, register, and style, etc.
Error analysis	Concerns trainee's development (usually under the supervision of instructors) of awareness of interpreting errors, error types, their causes and possible consequences for communication.
World and subject-specific knowledge	Refers to interpreters' generic knowledge of the world and knowledge of specific domains.
Strategies	Refer to tactics to prevent problems or offset the impact of problems in the interpreting process. For example: segmentation, omission, anticipation, adaptation, inferencing, compression, abstracting, décalage, etc.
Rhetoric	Refers to the interpreter's familiarity with speech types, genre patterns, cohesive devices, conventionalized styles, temporal, spatial or logical relationships, etc.
Directionality	Concerns the direction of interpreting; in particular, interpreting into the B language.
Linguistic interference	Refers to the impact of the source language on the target language at phonetic, syntactic or semantic levels.
Transfer competence	Refers to automatic recognition and transcoding of numbers, terms, proper names, clichés, certain syntactic patterns, pat phrases, motivated expressions, genre-specific patterns, and many other recurring language-pair-specific elements.
Cross-cultural communication	Consists of interpreters' bi-cultural awareness in terms of knowledge in high-context and low-context culture, non-verbal communication, culture-specific expressions, etc.
Instrumental competence	Refers to interpreters' ability to use resources and tools.
Interpersonal competence	Refers to interpreters' interpersonal competence such as teamwork spirit, tolerance for difference, coordination, leadership, etc.
Psychological competence	Refers to interpreters' qualities of concentration, multi-tasking, mental agility, and personality traits such as creativity, self-confidence, stress-resistance, self-reflection, etc.
Professionalism	Includes interpreters' literacy in preparation, interpreter's role, ethics, conduct, professionalization, professional status, gender issues, etc.

User expectations, interpreting quality and criteria	These are related to interpreting quality in general: for example, fidelity, accuracy, expression, delivery, the impact of setting or field on criteria of quality, etc.
Interpreting norms	Refer to common values shared by the interpreting community concerning the appropriate actions to take in certain situations, including the least effort, self-protection, appropriate explicitation, maximizing communicative impact, etc.
Expertise	Concerns skills acquisition and its sequencing or progression in teaching.
Exercises or instructional techniques	Relate to exercises and methods in training: for example, intralingual exercises, process-oriented training, shadowing, videotaping, summarizing, deliberate practice, mind mapping, idiomatic gist, listening cloze, open grammar, role play, triangular classes, technology-assisted teaching, demonstration, booth observation, post-graduation mentoring, simulation, etc.
Assessment, testing and certification	Refer to measurement issues in interpreting training and accreditation: for example, formative assessment, self-assessment, portfolio, checklist, feedback, comments, validity, reliability, scoring, etc.
Teaching beliefs	Refer to instructors' beliefs about how to teach and learn to interpret (e.g., teaching by example, student-centered learning, etc.) based on their experience of learning, practicing and teaching interpreting.
Admission/aptitude	Refers to qualities looked for in interpreting program applicants and methods of testing them.
Curriculum design	Refers to various aspects of curriculum design: for example, course profiles, teaching goals, alignment between courses, teaching models, etc.
Material selection	Matters to consider in materials selection and use in interpreter training: for example, difficulty, sequencing of materials, authenticity, diversity, etc.
Learners and learning	Refer to trainees' learning needs, anxiety, self-efficacy, motivation, lifelong learning, etc.
Trainer qualities and training	Concern the competences that interpreter trainers are supposed to possess and issues concerning trainer training.
History	Refers to the history of the interpreting profession, training and research.
Various modes and their features	Refer to traditional and emerging high-tech-aided interpreting modes, definitions, key terms, features, processes, working settings, etc.
Theories and research	Relate to the use of theories and models in teaching and learning, students' research competence, etc.
External and internal challenges	Include aspects that may impose challenges to interpreter training: for example, market needs, educational and language policies, institutional weaknesses, etc.

The categories of theories and insights from the literature were established as the coding frame. Each textbook was then analyzed page by page against the frame at two levels: "1" for presence, or "0" for absence. The detailed descriptions of situations that fit the two levels, which were worked out by the two coders, are presented in Table 3.

Table 3. Codes for content analysis of theory coverage

Code levels		**Descriptions**
Presence	1	A textbook covers a theory if it fits one of the following: a. It mentions the name of or keywords of the theory (usually with cited references which include journal articles, chapters, monographs, or proceedings), or the name of the theory is explicitly mentioned and used in explaining concepts but cited sources are not given in the running text due to carelessness or unknown reasons, e.g., Setton & Dawrant (2016a, p. 141, Relevance Theory) and Patrie (2005, p. 35, simultaneous interpreting models). b. It reports the theory in summary or in detail, e.g., Patrie (2005, p. 14, feedback) and Patrie (2005, p. 34, ITT). c. It uses the theory to justify an exercise or strategy, e.g., Patrie (2005, p. 6, videotaping) and Patrie (2005, p. 10, error analysis). d. It applies the theory in explaining phenomena, difficulties, or problems, e.g., Patrie (2005, p. 2, EMs).

Absence	0	A textbook is considered as not covering a theory if it fits one of the following: a. It mentions no keywords of the theory and provides no references to the relevant literature in the running text, even if it contains a further reading list (because the theories in the listed literature are not used); b. It presents personal thinking or reflections on aspects of interpreting without references to the literature, even if they are similar to theories recorded in the literature; c. It borrows a speech segment as practice material or demonstration from the literature or relevant websites, or it borrows a term with a citation as part of the running text instead of using it as theoretical support, e.g., Setton & Dawrant (2016a, p. 130, 155, 213, 301). d. It uses a keyword related to the theory but it is used as a normal word instead of referring to the theory, e.g., Setton & Dawrant (2016a, p. 110, the use of schema as a normal word instead of using the Schema Theory as support).

To ensure reliability, the two coders analyzed independently six textbooks (10% of all the textbooks under analysis), namely, Setton & Dawrant (2016a, 2016b), Patrie (2004, 2005), Gillies (2019), and Zhan et al. (2009), so that the inter-coder reliability can be checked. The Krippendorff's alpha test was used to estimate the reliability (Hayes and Krippendorff, 2007, p. 77). The alpha (α) values for the six textbooks were respectively .9155, .8784, .8277, .8699, .8632, and .9393, indicating a very strong inter-coder reliability. The values of .80 are the threshold for high inter-coder reliability (Krippendorff, 2004, p. 242). The two coders discussed their disagreements in the analysis of the six textbooks before each analyzed their half of the remaining textbooks.

4.2.3. Content analysis of the pedagogical treatment of the theories

The second phase of content analysis was related to the pedagogical treatment of theory, which was conducted based on the results of the first phase. Since it is impossible to analyze the pedagogical treatment of all theories, the researchers decided to focus on EMs and ITT, the two most popular theories covered in the textbooks. Out of the 58 textbooks, 26 covered both or at least one of the two theories (EMs were covered in 20 textbooks, and ITT in 17). Therefore, the second phase of content analysis involved 26 textbooks.

Content analysis in this phase was mainly deductive. Five principles served as the coding frame against which the EMs or ITT theory appeared in the 26 textbooks was analyzed in terms of their pedagogical treatment. The two levels for each code were "1" (inadequate) and "2" (adequate) (Table 4).

Table 4. Codes for content analysis of the pedagogical treatment of theories

Code levels			**Descriptions**
Amount of presentation	Inadequate	1	Too little is provided to inform students of the components of the model/theory;
	Adequate	2	Appropriate amounts of information are provided to inform students of the components of the model/theory, e.g., Patrie (2005, p. 34): The author lists the three phases of ITT and explains them one by one.
Language of presentation	Inadequate	1	The presentation is loaded with direct quotations, theoretical jargon and very little paraphrasing or explanation;
	Adequate	2	The theory is paraphrased or explained in a student-friendly manner, with only occasional theoretical jargon, e.g., Patrie (2005, p. 48): The author elaborates on the components of the EMs in her own words, though there are some quotations.
Relevance to practice	Inadequate	1	The theory is presented as reading material without examples from interpreting practice;
	Adequate	2	The theory is presented with examples from interpreting practice, e.g., Patrie (2005, p. 36): The author gives an example of required capacity exceeding available capacity: "An example of the overwhelming amount of information that the human mind processes, …"
Instructional aids	Inadequate	1	The theory is taught without visual, metaphorical or anecdotal illustrations;
	Adequate	2	The theory is taught with visual, metaphorical or anecdotal illustrations, e.g., Patrie (2005, p. 2): As an illustration, the author compares effort consumption to running: "This idea is similar to needing enough energy to run one mile. If you have only …"
Application	Inadequate	1	The theory is taught without implications for learning or for understanding the interpreting process, explaining difficulties or using strategies.
	Adequate	2	The theory is taught in terms of its implications for learning or for understanding the interpreting process, explaining difficulties or using strategies, e.g., Patrie (2005, p. 2): The author applies the EMs to guide learning of interpreting skills: "Gile's Model suggests that when learning interpretation, certain tasks are better presented before others…".

The same two coders were involved in the second phase of content analysis. The two coders independently analyzed six of the 26 textbooks (23%), including those by Patrie (2004), Setton and Dawrant (2016a), Setton and Dawrant (2016b), Yao, Zhu and Sun (2006), Patrie (2005), and Zhong, Zhan and Wang (2008). Concerning the first four textbooks, the two coders were in 100% agreement. For the latter two, Krippendorff's alpha test was run to verify the inter-coder reliability (Hayes & Krippendorff, 2007, p. 77). The alpha (α) values were .7912 and .7467 respectively, indicating acceptable inter-coder reliability (Krippendorff, 2004, p. 242). Subsequently, the two coders checked and discussed their disagreements in the analysis of the six textbooks, before each analyzed half of the remaining textbooks.

4.2.4. Statistical analysis

Descriptive statistics (frequencies and percentages) were used to analyze which theories were covered in the textbooks and how the theories were treated pedagogically.

5. Results and discussion

5.1. Categories of theories

The categories of theories covered in the 58 textbooks are illustrated in Figure 1. The top theories present are EMs and ITT, which are covered in 20 and 17 textbooks respectively. The higher coverage of the two theories within the interpreting textbooks indicates that they are most popular among textbook writers and interpreter trainers. This is consistent with findings by König (2018) who observed that the two theories are the most popular among interpreting students and teachers in European and some other countries. Other theories are poorly represented in the textbooks.

The two theories are popular for a number of reasons. Both theories were proposed by interpreting practitioners, based on their interpreting experience, and are therefore close to students' real everyday experiences. They meet the goals of theories which are supposed to describe what professionals do, what techniques they can use and what roles they play in given communicative contexts (Chesterman, 2016), and therefore meet the expectations of both teachers and learners. Seen in terms of the desired criteria for good theories in applied disciplines (Lincoln & Lynham, 2007), the two theories meet four criteria: importance, parsimony, practicality, and fruitfulness.

Both the EMs and ITT theories satisfy the criterion of importance (a theory that provides explanations or understanding of behaviors of professionals). The EMs explain how interpreters allocate their attentional resources appropriately so as to achieve a dynamic balance between listening and analysis, memory, production, and coordination. The ITT clarifies the three phases (sense construction from input speech, de-verbalization, and re-verbalization) of interpreting.

The two theories meet the standard of parsimony (simple and understandable beyond the scientific community). Both use simple demonstrations. The EMs take the form of equations, while the ITT was illustrated through use of a triangle. Both involve very little jargon and require no learning of abstract concepts and are thus easy to understand for both practitioners and students. By contrast, other theories like Gerver's or Moser-Mercer's model of simultaneous interpreting, though graphically demonstrated, involve complex relationships and require readers to have some knowledge of psycholinguistics.

Both theories provide a framework to reflect on and improve practice (practicality). The EMs account for the triggers of interpreting problems. They provide a framework for learners to reflect on common errors and causes. Problem triggers can be linguistic (strong accents, unfamiliar wording, high information density, high delivery rate, acronyms, numbers, etc.), increasing attention requirements in listening and memory, or extra-linguistic (unfamiliar terms, noise in the work setting, lack of topical knowledge, and unfamiliarity with the rhetorical patterns of the speech, etc.), increasing attention requirements in listening and jeopardizing memory and production. Attentional resource mismanagement can lead to mental saturation: for example, too much attention to note-taking (in consecutive interpreting), and too long or short ear-voice-spans (in simultaneous interpreting). Another factor is directionality. Interpreting from a second or foreign language demands more attentional resources in listening and analysis, while interpreting into a second or foreign language requires more effort in production. Language-pair-specific issues should also be considered, if the working languages are morpho-syntactically asymmetrical (more attention in memory is required when interpreting from an SOV language to an SVO language), are closely related (more attention is needed to avoid linguistic interference or false friends in listening and production), or have asymmetrical numerical systems (Chabasse & Dingfelder Stone, 2015). Moreover, culture specificities can influence attention allocation. Lack of awareness of difference and similarities in rhetorical patterns, use of figures of speech, logic and style may increase attention requirements in listening and production.

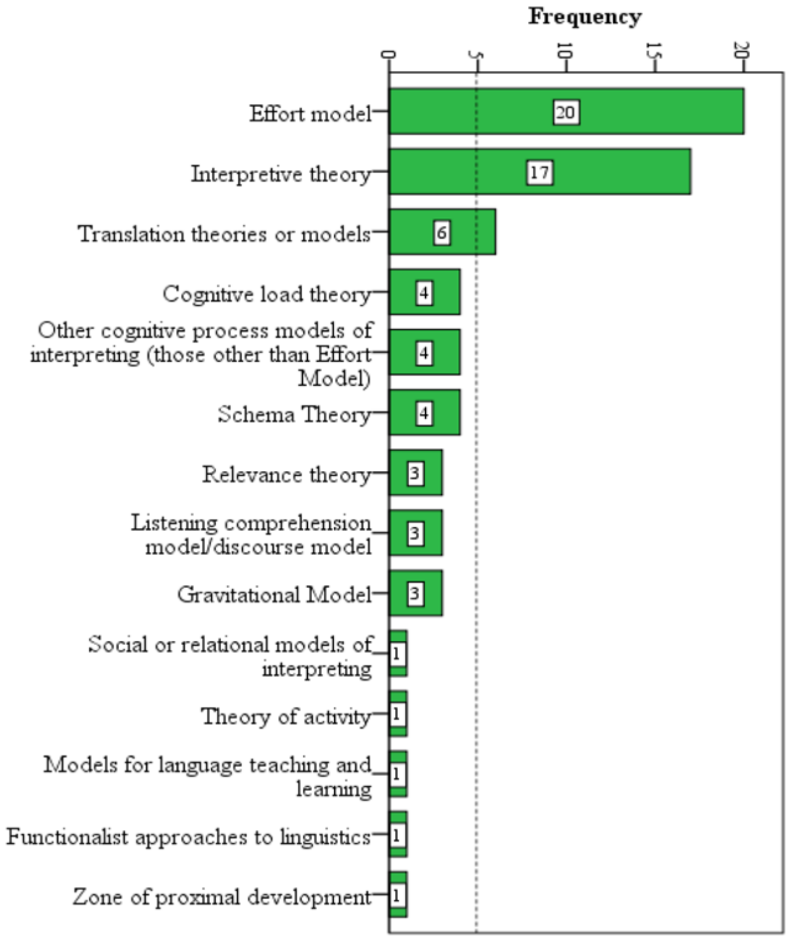

Figure 1. Frequency of the 14 theories in the 58 interpreting textbooks

Similarly, the ITT proposes a basic principle: interpreting is not language-based (transcoding) but sense-based (meaning construction aided by the world and contextual knowledge). It raises students' awareness of interpreting as a sense-based activity. Beginners may equal interpreting to linguistic transcoding. The concept of de-verbalization helps them understand that the essence of interpreting lies in sense construction and re-expression of the sense in idiomatic target language (Gile, 2003), and thus avoid word-for-word translation.

Both theories can be translated into action (fruitfulness). Below are not basic tenets of the theories but our discussions of their implications based on personal interpretations of their core tenets. The EMs provide insights for training and appropriate selection of coping tactics. The goal of training and the use of coping tactics is to increase students' available attentional resources and their ability in attention allocation by reducing the impact of problem triggers (Gile, 2009). Students should become familiar with different styles of speech and speakers in order to increase their attentional resources in listening and production. Repeated practice in any other aspects to increase automation, such as note-taking and note-reading, may have a similar effect. Additionally, adequate preparation (including technical terms, meeting agenda, participants and their background, topical knowledge, etc.) and development of bi-cultural and bi-rhetorical literacy (including social conventions, rhetorical patterns of certain oral discourses, etc.) are important because they increase the interpreter's knowledge, reduce effort required for listening and analysis, and save attentional resources for memory and production. Additionally, since specificities of working languages and cultures affect attention allocation and strategy use, students should also cultivate the capacity to automatically cope with less context-dependent elements (numbers, frequently used clichés in certain events, etc.), standardized expressions (word collocations and syntactic structures) and culture-loaded expressions, and be aware of the difference in interpreting norms related to culture specificity (for example, interpreting from a high-context culture like Chinese to a low-context culture like English requires the use of more expansion or explicitation strategies). Moreover, students' awareness of the relationship between attentional resources and working direction should also be raised. For example, interpreting from a B to an A language is more demanding in listening, thus requiring the use of more comprehension strategies (inferencing, anticipation, etc.), while the reverse order requires more attention in production and thus demands more production strategies (paraphrasing, compression, etc.). When it comes to strategy use, students are expected to be able to use effortlessly online strategies, such as inferencing, segmentation, anticipation, generalization, omission (of modifiers in simultaneous interpreting and redundant and lost or incomprehensible information in both simultaneous and consecutive interpreting), explicitation, and compression, to seek maximum information recovery with minimum effort, to prevent or solve emergent problems to avoid mental saturation, and to increase temporarily available attentional resources.

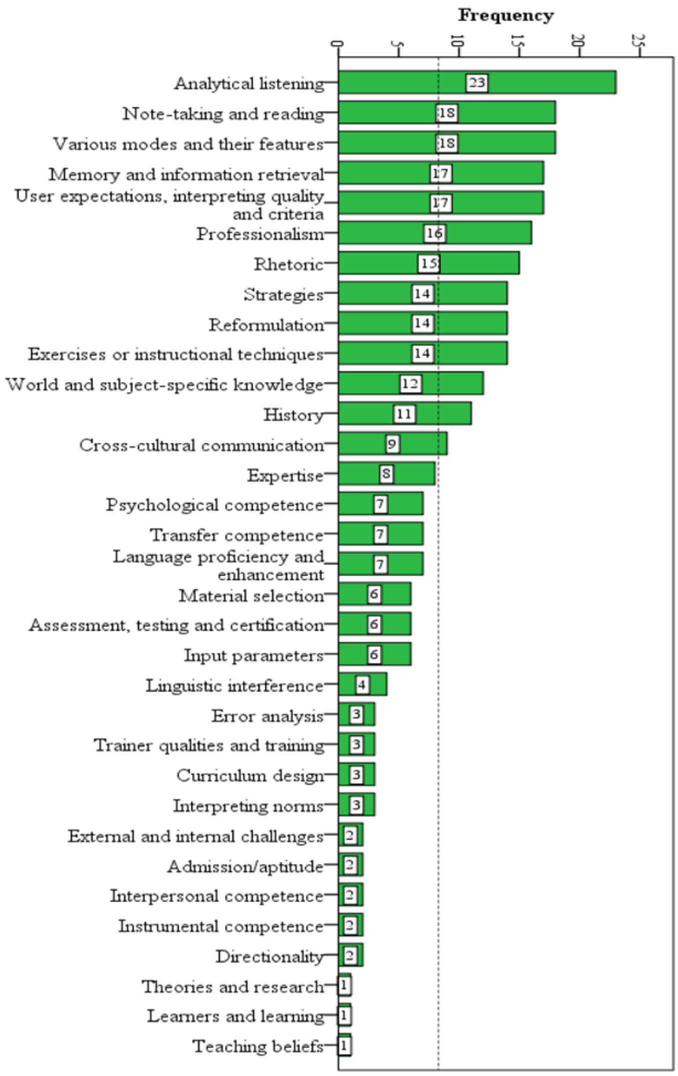

Figure 2. Frequency of the 33 categories of insights from the literature in the 58 interpreting textbooks

The ITT can also be translated into actions. The theory recognizes the importance of cognitive complements (contextual, topical and world knowledge) in sense construction. Therefore, adequate preparation is important because it provides more cognitive complements as assistance in comprehension and increases the ease and speed of transcoding context-dependent elements. It emphasizes the dominant role of de-verbalization. In initial training, preference should be given to well-structured mini-speeches instead of single sentences and non-specialized speeches instead of specialized ones, because single sentences and too many proper names and terms may encourage students to adhere to a word-for-word approach to interpreting. Note-taking in consecutive interpreting should be sense-based, including ideas, logical connections between the ideas, and the less context-dependent elements. It also admits the presence of the transcoding of less context-dependent elements (numbers, enumerations, terms and proper names, etc.) in interpreting. Long-time interpreting practice in a given domain and context can strengthen automatic connections between interlingual lexical items in long-term memory, thus improving the ease and speed of retrieval in interpreting (Chmiel, 2007). In the advanced phase of training, development of automatic links between the source and target lexical items form a useful part of the teaching modules. For recurrent dissymmetrical structures between certain language pairs, strategies at the syntactic level can be taught to trainees in order to develop automatic responses (Dodds & Katan, 1997). Likewise, recurrent clichés and expressions in certain speech genres can be taught in the advanced phase of interpreter training. A non-specialized spontaneous speech is easy to de-verbalize, while a rigid speech full of proper names, terms and clichés allows room for transcoding (Setton & Dawrant, 2016a). In reality, some speeches require more transcoding than others; for example, in highly technical conference presentations where there is little opportunity for mediation between cultures. In such cases, automatic transcoding of the recurrent clichés and expressions, achieved through long-time interpreting of the speech type or preparation before the conference, conserves interpreters' attentional resources.

As regards insights from the literature, these categories are presented in Figure 2. Most of the well-covered categories involve component skills of interpreting. The top ten are analytical listening, note-taking and reading, various modes and their features, memory and information retrieval, user expectations, interpreting quality and criteria, professionalism, rhetoric, strategies, reformulation, and exercises or instructional techniques. The wide coverage of component interpreting skills might be because they are quite specific to interpreting and more accessible to interpreter trainers (textbook writers).

By contrast, most categories related to pedagogy are the least covered (except exercises or instructional techniques), namely, materials selection, assessment and testing, curriculum design, and learners and learning. Pedagogical theories and contributions from educational research, namely, those related to curriculum development, skill progression, and assessment and testing, can be converted into practice through learning (Setton, 2010). Specifically, they inform trainers and learners in regards to efficient teaching and learning (Cirillo & Niemants, 2017) and provide students with experience- or evidence-based insights to improve learning proficiency (Pöchhacker, 2010). For example, research on performance assessment (Lee, 2019), propositions on the progression of training (Setton, 2008), and the use of competencies as the basis for writing teaching objectives (Kalina, 2000), all inform both teaching and learning. To convert insights from published literature into practice through learning, textbook writers may consider covering these insights in the future textbooks.

5.2. Pedagogical treatment of theory

The frequencies of each level (adequate or inadequate) in the pedagogical treatment of EMs and ITT are displayed in Figure 3 and Figure 4.

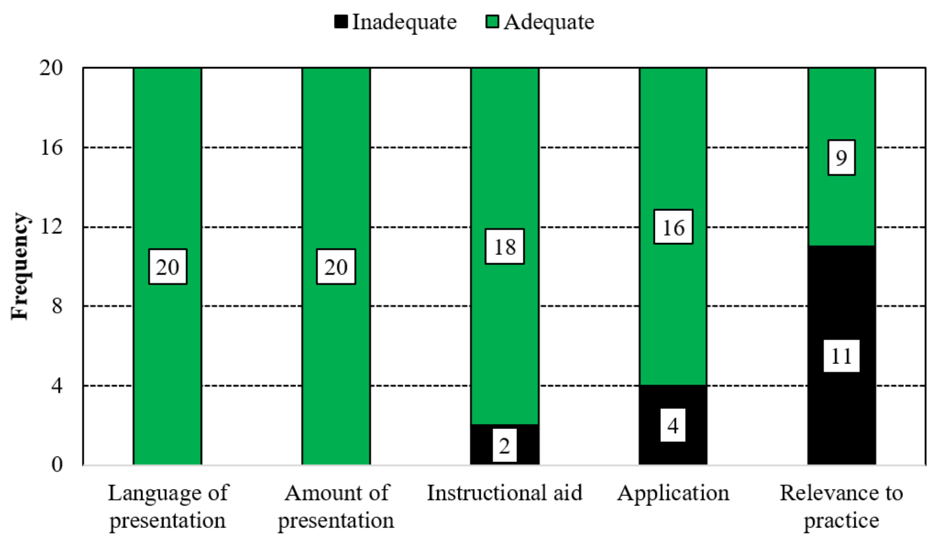

Figure 3. Frequency of each level in pedagogical treatment (Effort Models, covered in 20 textbooks)

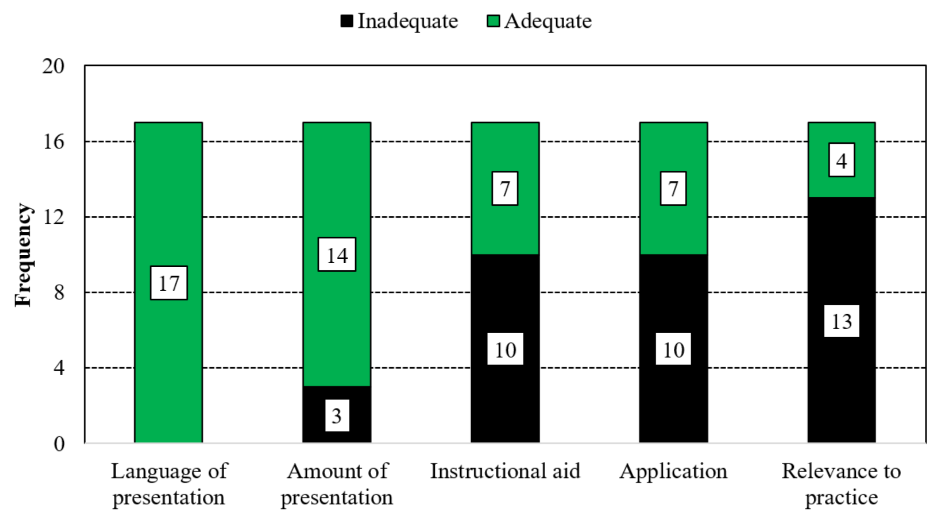

Figure 4. Frequency of each level in pedagogical treatment (Interpretive Theory, covered in 17 textbooks)

It appears that both theories are explained in a student-friendly manner with only occasional theoretical jargon. All the 20 textbooks covering the EMs are adequate in terms of the language in which they are presented. The same is true to the 17 textbooks covering the ITT.

Adequate information is provided to inform students of the two theories. Of the 20 textbooks covering the EMs, all reach the level of "adequate". Fourteen out of the 17 textbooks (82%) covering the ITT are adequate in terms of the amount of information.

As for instructional aids (whether theory is taught with visual, metaphorical or anecdotal illustrations), differences exist between the two theories. The EMs are pedagogically well-treated in this regard, as 18 out of the 20 textbooks (90%) are adequate. The pedagogical treatment of the ITT is not as satisfactory, as only 7 out of the 17 textbooks (41%) are adequate.

Similar to instructional aids, the two theories also differ in terms of application (implications for learning or for understanding the interpreting process, explaining difficulties or using strategies). Sixteen out of the 20 textbooks (80%) covering the EMs in contrast to 7 out of the 17 textbooks (41%) covering the ITT were rated as "adequate".

Relevance to practice is the least pedagogically treated principle. Both theories are not adequately related to interpreting practice. Only 9 out of the 20 textbooks (45%) covering the EMs and 4 out of the 17 textbooks (23.5%) covering the ITT were rated "adequate", suggesting that the two theories are presented in the majority of textbooks without examples from interpreting practice.

In summary, the pedagogical treatment of theory is best in terms of language of presentation and amount of information and worst in terms of relevance to practice. Instructional aids and application are between these two opposites.

Adequacy in the language of presentation and amount of information requires textbook writers to paraphrase and write so that the form and quantity of theory are appropriate for students. It is the first and most basic step of theory instruction. By contrast, instructional aids, application, and relevance to practice are more demanding on the part of the textbook writers, who need to make creative contributions by availing of their interpreting and teaching experiences and resources. They are more important to the overall pedagogical effect. Generally, the pedagogical treatment of theory in terms of instructional aids, application, and relevance to practice is not satisfactory, in particular, in terms of relevance to practice.

Theoretical instruction may take a transmissionist or constructivist approach (Miller, 1996). In the former, theory is transmitted from textbooks or instructors (source of knowledge) to students (receiver of knowledge). In the latter, instructors do not transmit theory. Instead, they create situations where students connect prior knowledge (interpreting experiences) with new knowledge (interpreting theory) so that they can construct meaningful knowledge (personal theory that can guide interpreting practice). The constructivist approach is consistent with Setton's (2010) claim in which theory should be introduced in a relevant and sensible way to allow students to connect theory with their interpreting practice. Gouadec (2007) also believes that theory should be presented in a way that is relevant to professional practice. The results indicate that relevance to practice is not taken seriously in the pedagogical treatment of theory, providing evidence that the textbooks fail to create situations for students to construct meaningful knowledge of theory. Therefore, the instruction approach in textbooks is close to a transmissionist approach.

The current pedagogical treatment of theory, particularly the isolation of theory from practice, may lead to the negative reception of theory among students. The literature indicates that students expect theory to be integrated into practice (Tryuk, 2011). If theory is isolated from practice and taught through a transmissionist approach, it is hard to involve students, which results in dissatisfactory reception of or even resistance to theory among students (Giczela-Pastwa, 2017; Wali, 2015). Therefore, there is a need to improve the current way of presenting theories in the textbooks.

6. Conclusions

This study set out to examine what theories are covered and how they are pedagogically treated in interpreting textbooks.

The results indicate that 14 theories and 33 categories of insights from the literature are covered in the 58 textbooks. EMs and ITT are the most popular theories. Both theories meet the goals of a good theory, which is supposed to describe what professionals do, what tactics they can use and what roles they play in given communicative contexts (Chesterman, 2016), thus satisfying the needs of teachers and learners. Seen in terms of the criteria for good theories in applied disciplines (Lincoln & Lynham, 2007), the two theories under discussion meet four criteria: importance, parsimony, practicality, and fruitfulness.

The most comprehensively covered categories of insights from the literature are component skills of interpreting, such as analytical listening, note-taking and reading, various interpreting modes and their features, and memory and information retrieval. Those related to pedagogy are the least covered (except exercises or instructional techniques); for example, materials selection, assessment and testing, curriculum design, and learners and learning. The consequence is that pedagogical theories and insights from the literature cannot be converted into practice through learning.

As for pedagogical treatment, the results suggest that the pedagogical treatment of ITT and EMs is adequate in terms of the language of presentation and amount of information. As for instructional aids and application, the two theories are divergent: while the pedagogical treatment of the EMs was acceptable, that of the ITT was not. Both theories were poorly treated in terms of relevance to practice, indicating that the textbooks failed to create situations in which students can construct meaningful knowledge of theories from their own interpreting experiences. Therefore, the instruction approach resembles a transmissionist one, which may lead to negative reception of theory among students.

One limitation of the current study lies in its sampling of the textbooks. Due to logistical reasons, it was impossible to use probability sampling because it was almost impossible to collect all of the targeted textbooks. This is a limitation of almost all qualitative studies. Although we tried to include all available textbooks in Chinese and English, the use of convenience sampling may limit the extent to which the current findings can be generalized to the whole population of textbooks.

We hope that the current exploration can spur more studies on the use of interpreting theories in training. Further studies can be conducted to involve textbooks with different foci (for example, community interpreting) and published in different languages. Research that aims at investigating students' and instructors' reactions to theory coverage and pedagogical treatment in interpreting textbooks as well as their ways of overcoming textbook weaknesses would also be welcome, and would help to create a clearer picture of theory use in interpreter training. Data can be triangulated by employing classroom observation notes, students' questionnaires and focus groups, or instructor interviews.

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CREDiT Authorship Contribution

Yuan Yang: research (lead), data curation, formal analysis (equal), software, visualization and writing (original draft preparation).

Xiangdong Li: conceptualization, research (supporting), management of the project, methodology, formal analysis (equal), resources, supervision and writing (review and editing).

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Appendixes

Appendix 1. The 13 English interpreting textbooks reviewed

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