THE CONSTRUCT OF METACOGNITION IN THE PROCESSING OF TRANSLATION PROBLEMS AND ITS MEASUREMENT

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ABSTRACT

This article focuses on metacognition in translation by presenting an in-depth discussion of the construct and its measurement. Our discussion begins with an interdisciplinary definition of metacognition in translation, followed by a methodological analysis of how to measure such metacognition activities, focusing on internal measure and external measure as well. We find that internal measure depends on off-line methods to collect self-evaluated data, while external measure depends on on-line methods for data-collecting at different translation problem-solving stages. Besides, triangulation of research perspectives brings about abundant data, leading us closer to what is exactly happening in the problem-processing process of translation.

KEYWORDS

Metacognition in translation, translation problem-solving, internal measure, external measure.

1. INTRODUCTION

Metacognition is an important subject in cognitive psychology, and it is knowing about knowing, referring to higher-order self-reflective cognitive processes that may be used for regulating information processing [1,2]. In translation process, complex problem-solving tasks need to be accomplished under the control of metacognition. Thus, the impact of metacognition on translation has gradually received growing attention from studies in which translation is investigated from a cognitive perspective. Despite this, metacognition itself is studied by only a few scholars. In view of such a trend, we try to argue that metacognition in translation process should not be treated with such insufficient scholastic endeavors; instead, with increasingly solid consensus reached in response to burgeoning cognitive science, more attention is supposed to be paid to metacognition and its role in translation process for a better understanding of what is exactly happening in translation process.

2. METACOGNITIVE CONSTRUCT IN TRANSLATION

Developing the metacognitive construct is beneficial for the purpose of understanding the structure and dynamics of metacognition. This gain in particular popularity as a promising area of inquiry in educational psychology. Metacognition is usually hypothesized as consisting of three dimensions as knowledge of cognition, monitoring of cognition and regulation of cognition. According to a research, such a construct is supported by the analysis of on-line discussion transcripts [3]. Knowledge of cognition, as pre-task reflection, indicates an entering metacognitive state that reflects knowledge and motivation associated with the inquiry process. Monitoring of cognition, reflection on action, is associated with assessing progression and effort with regard to goals and expectations. Regulation of cognition, reflection in action, enacts and controls the learning process which requires employment of strategies to achieve meaningful outcomes.

Guided by pre-established dimensions and indicators of the metacognition construct proposed by a researcher, we attempt to make a further detailed analysis of this construct by incorporating insights of other related research. In fact, knowledge of cognition is static knowledge, serving as

background knowledge to support the progression of metacognitive activities. This knowledge includes knowledge about oneself and about the factors that might impact performance (declarative), knowledge about strategies (procedural), and knowledge about when and why to use strategies (conditional) [4]. Monitoring and regulation of cognition are both dynamic, attempting to accomplish tasks by various strategies, including orienting tasks, planning activities, monitoring comprehension and performance, and evaluating the efficacy of monitoring processes and strategies. As for the dynamic metacognition, there are a lot slightly different terminologies and these concepts are more or less overlapping, but all of them could be regarded as dynamic metacognition as they all reflect the nature of dynamic metacognition that encompasses all forms of the management of cognitive resources. This dynamic part of metacognition is also viewed as the core and essence of metacognition, which could better express metacognition than the static part during information processing [5]. In this study on translation problem-solving process, the term of metacognition mainly refers to dynamic metacognition, and the view of dynamic metacognition as consisting of metacognitive monitoring and regulation is adopted. Based on available research, we distinguish orienting, planning, monitoring, and evaluating as key metacognitive strategies. Metacognitive orienting focuses on the task content, resulting in hypothesizing about the content or activating prior knowledge. Metacognitive planning encompasses selecting and sequencing problem-solving strategies, allocating resources, and formulating action plans. Metacognitive monitoring facilitates the control of comprehension and progress, aiming at identifying inconsistencies and modifying problem solving if needed. Metacognitive evaluating involves appraisals upon completion of problem solving as well as upon the process of problem solving.

3. MEASURING METACOGNITION IN TRANSLATION: A METHODOLOGICAL DISCUSSION

3.1 Translation Problem-Solving Stages

In translation studies, problem-solving is among the earliest issues addressed by translation process researchers. Until the 1980s, however, translation problems have been approached almost exclusively from a

structuralist and generative point of view. With the development of cognitive science, studies on translation problems have been linked to cognitive processes. Translation problems are viewed as a cognitive state of indecision taking place while translating, which needs to be solved through a series of non-automatically cognitive processing stages. Accordingly, translation problem-solving stages could be divided into problem-identifying, problem-analyzing, and decision-making. Problem-identifying stage comes when the translator runs into cognitive deficit, entering the state of indecision, where the translator would try to find out the way to solve the problems based on the background knowledge. In problem-analyzing stage, the translator should analyze the problems identified so as to propose alternative solutions and evaluate their acceptability. In this stage, the translator need the ability to generate a series of more than one viable target text for a pertinent source text [6]. At last, the translator steps into decision-making stages, where the translator need select only one viable target text from preceding alternative solutions quickly and with justified confidence [7]. Therefore, from this view, translation problem-solving is such a cognitive process from constantly generating a series of alternative translations to deciding the final translated version.

3.2 Internal and External Measurement

Metacognition is essentially a theoretical construct, so it cannot be observed and measured directly. What we can do is rely on observable and measurable surrogates that are indicative of metacognition. One seemingly obvious indicator is the translator's off-line self-reflection on previous behavior, namely post hoc self-examination; the other is on-line self-reflection on ongoing behavior. The assumption is that metacognition as an activity of reflection could be recalled after performance or verbalized concurrent with performance. The two categories of indicators could reinforce each other to present a comprehensive picture of metacognition in translation. Another rationale is that if metacognition is applied to other interdisciplinary areas such as translation, it is advisable to measure it from internal aspect and external aspect by adding the characteristics of translation. Internal measure is quite clear which means to make self-measurement on metacognition based on its four dimensions of translation orienting, translation planning, translation monitoring, and translation evaluating. While external measure taking into consideration the characteristics of translation problem-solving stages, refers to measure by others the metacognition at different translation stages as problem-identifying, problem-analyzing, and decision-making. Off-line methods could help internal measure to collect metacognitive data, while on-line methods are in favor of external measure for data-collecting at different translation problem-solving stages. The methodological consideration could be illustrated by Figure 1. The study aims at measuring the four dimensions of translation metacognition as orienting, planning, monitoring, and evaluating, from two perspectives of internal measure and external measure, by the off-line methods and on-line methods.

4. TECHNIQUES FOR METACOGNITION MEASUREMENT IN TRANSLATION

4.1 Off-Line Measures: Self-Report Questionnaires and Retrospective Interviews on Translation Metacognition

One of the most frequently used categories of off-line measures on metacognition is self-report questionnaires in which participants are asked to report on their own metacognitive process. With available questionnaires for reference, a translation metacognition questionnaire typically pertinent to dynamic metacognition in translation problem-solving process needs to be designed. Participants are asked to rate the degree of each statement on the questionnaire applied. One notable practical advantage of using questionnaires is that they can easily be administered on a large scale, so that quantitative data can be obtained. What's more, questionnaires are reliable and effective in certain situations such as observing motivation and cognitive engagement, which partly accounts for its wide use in various studies. But this measure also causes several problems. Firstly, self-report questionnaires are susceptible to memory distortion issues since they are answered after earlier performance. Secondly, the way of answering questionnaires may be biased by social desirability or by the ways that questions are proposed which prompt participants to wrongly label their own behavior. Thirdly, these metacognitive questionnaires may be more adequate to assess metacognitive knowledge as opposed to metacognition applied. Self-

report questionnaires, designed to measure dynamic metacognition, indeed contribute to probing into translation metacognition to a certain extent, with plenty of valuable research published. However, they seem not to be fully representative of how translators' metacognition actually works for the suspicion of reporting metacognitive knowledge instead of metacognitive activities. Therefore, we need other research techniques as complement. Obviously, the basic problems concerned with using interviews in measuring metacognition are the possibility that the data collected may be some comments on one's translation process or certain constructed knowledge of what participants think happened during translation process instead of the actually ongoing cognitive thought, the possibility that this delayed verbalization may cause memory failure that effects data quality and reliability, and the possibility that this method is time-consuming due to the fact that it requires a mutual and interactive communication process based on asking and answering questions [8]. However, retrospective interviews, providing qualitative data, could facilitate researchers to make insightful excavation on metacognition occurring in translation process quickly and purposefully, capturing partial metacognitive activity left out by on-line measures.

4.2 On-Line Measures: TAPs and Screen Recording on Translation Metacognition

One of the popular and theoretically grounded measurement techniques to infer on-line information about metacognition is TAPs, proven to be an effective method to get insight into participants' metacognition by asking them to verbalize their thought while working on a translation task, which allows the researcher to determine participants' metacognitive ideas online. Arguably, training is required before engaging participants in thinking aloud. What's more, data collected by TAPs need to be transcribed manually and analyzed individually, which causes considerable loss of time and high demanding on researchers. This measure comes primarily from cognitive psychology and Ericsson and Simon's framework, in which human cognition is viewed as information processing and could be reported accurately at any point in time [9]. Despite its weaknesses, thinking aloud has and is still being fruitfully employed to gain a better understanding of translation processes. A major strength of the use of TAPs, is that metacognitive information is collected directly when it is executed. In contrast to off-line measures, TAPs make the information less vulnerable to participants' memory distortions, insofar that they are retrieved from the translator's working memory [10]. Besides, having translators think aloud does likely divert them from the behavior they would normally pursue when translating, the degree of potential cognitive distraction suggested by skeptics of TAPs may be overestimated. Although sometimes slowing translation process down, when executed correctly, TAPs do not impair participants translating performance and could even be seen as beneficial in that it tends to make participants stop and think about translation problems more carefully and critically [11]. This is in favor of translation problem-solving. Lastly, metacognitive activity in translation, being active, conscious, and volitional in nature, therefore lends itself well to analyze translation problem-solving processes via TAPs [12]. In order to testify and guarantee the validity and quality of the data from TAPs, a more objective research method is expected.

Along with the advancement of high-tech and the arrival of the electronic age, the techniques used to probe into human cognitive process are highly developed. As traditional research methods on metacognition mainly depend on subjective judgment, no longer satisfying the demand of investigating the black box in human, objective research techniques are in need compensating for the lack of hard data. In this context, screen recording seems to be in order. But, no technique is perfect. It is the same to screen recording which has both negative and positive aspects. Firstly, although by employing this method no direct information is gathered about the meta-level processes, certain characteristics of translation performance can be used to infer this meta-level information. Furthermore, using screen recording as a metacognitive measure does not cover metacognition over all episodes of problem solving, but it offers more objective data and materials, mutually complementary with additional on-line information such as TAPs. The existing traditional research techniques must have their unique advantages that they are still widely used after so many years of continuous development, while new techniques providing to us with new horizon remain to be test that they cannot absolutely replace any traditional techniques. Besides, the development of interdisciplinary research tells the fact that no technique could work well alone. Therefore, we need methods triangulating.

4.3 Methods Triangulating

The advent of many new techniques such as keystroke logging, eye tracking, and neural imaging enriches the methodological arsenal of cognitive process studies, making triangulating research methods and research findings possible, and as a consequent traditionally verbalized data are augmented and supported. Triangulation is the use of more than two data acquisition methodologies within a single study to improve the quality, validity, and reliability of research findings, which has come to be regarded as a desirable best practice in process-oriented research. Triangulation is realized in this study by multi-method and multi-data. To be specific, first of all, a group of researcher state that metacognition is measured on the basis of observations, dialogues and individuals' self-reports, which are corresponding to the methods that the present study intends to employ as screen recording, retrospective interviews, self-report questionnaires, and TAPs [13]. Secondly, based on the preceding analysis on the pros and cons of the four measures, screen recording can be used to supplement data derived from other methods such as thinking aloud, questionnaires and interviews. The latter three measures are conducive to collecting mental data, while the former one is inclined to offer behavior data or hard data. Multi-method and multi-data thus improve the quality, validity, and reliability of research findings. Specifically, the collected process-tracing data including self-report questionnaires, retrospective interviews, TAPs, and screen recording serve as a starting point and the basis for later analysis. Different sources of data could be triangulated to present a comprehensive picture of metacognition in translation process [14]. With the process data, a variety of cognitive moves are identified into the category of dynamic metacognitive stages and that of problem-solving stages. The research findings could be synthesized from the above analysis to outline the measurement of metacognition in translation problem-solving process.

5. CONCLUSION

Building on available studies on metacognition in the field of translation, and borrowing from adjacent studies on metacognition, this article has attempted to define and illustrate the construct of translation metacognition and to discuss its measurement in the background of translation problem-solving. Metacognition in translation is conceptualized as a multi-dimensional construct providing basis for its measurement. In view of the characteristics of translation, the measuring methods are divided into two categories as internal measure and external measure. They are specific to the measurement on metacognition in translation problem-solving. Considering the update of research tools, some techniques are introduced to be potentially useful for measuring metacognition in translation. Research perspectives, research methods and research data are all triangulated respectively for gaining a more relatively comprehensive picture of metacognition in translation. Our next step is to validate the measurement techniques introduced in this article. Although few researches focus on the empirical research on translation metacognition, the techniques provide some promising possibilities. The significance of defining and operationalizing metacognition in translation lies in the foundation it provides for investigating translators' problem-solving cognitive process experimentally. Internal measure on dynamic metacognitive stages and external measure on translation problem-solving stages presuppose two different perspectives to measure the level of the four inner dimensions of metacognition in translation. Without the detailed dimensions, the whole picture of translation would stay sketchy and hollow. While without the measuring perspectives, the details may not relate to each well, and the picture may therefore remain partial and incoherent. The nature of metacognition is such that, in order to study it effectively in the lab, one must devise situations that mimic real life. However, unlike some laboratory research, metacognitive data from the lab have parallels to real-word phenomena and therefore can be applied. Research on metacognition in translation is of highly practical value, and more efforts are needed to exert in the future on such as longitudinal studies and comparative studies to investigate the important role of metacognition played in translation cognitive process.

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