The directionality of uncertainty expressions and the foreign language effect: Context and accounting judgement

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Abstract:

Purpose – This study investigates two issues inherent in accounting judgements: (1) the directional influence of uncertainty expressions and how they might positively or negatively affect accounting judgements and (2) the foreign-language effect (FLE), which refers to the reduction of judgement bias that occurs when an accounting judgement is made in one's foreign language. This study examines both issues in the context of accounting judgements made in Chinese and English languages.

Design/methodology/approach – This study conducts two experiments. The first experiment applies a 2x2 between-subject research design, and the second experiment adopts a 2x2 within-subject approach.

Findings – The overall results reveal that directionality biases exist in the exercise of accounting judgement in subjects' native and foreign languages. However, when switching the language from the subjects' native tongue to a foreign language, overall directionality biases are reduced.

Research limitations/implications – This study suggests that the use of native and non-native languages can have unintended consequences on accounting judgements. However, due to the limitations of using students as proxies for professionals and applying self-assessed language scales, the literature would benefit from future research that extends the subject profile to professional accountants and that assesses language skills more objectively.

Originality/value – This study contributes to the literature on cross-lingual accounting, both theoretically and methodologically. It also extends the FLE theory to an accounting context, providing insights on how language is involved in judgements concerning uncertainty expressions.

1.   Introduction

Today, there are millions of actively licensed professional accountants worldwide. Recent statistics show that the UK Chartered Accountancy bodies have almost 550,000 members worldwide (Financial Reporting Council, 2019), the American Institute of CPAs has over 650,000 licensed CPAs (National Association of State Boards of Accountancy, 2019), and CPA Australia has more than 164,000 members working globally (CPA Australia, 2019). Despite the large proportion of professional accountants who use English as their work language worldwide (Evans, Baskerville, & Nara, 2015), it is not unusual to have native English speaking professional accountants work in non-English language environments, and vice versa. As the workplace is becoming increasingly global, accountants may need to obtain sufficient knowledge of and skills in multiple languages (The Association of Chartered Certified Accountants, 2016). Failure to do so can create significant obstacles towards achieving effective accounting practices and impair consistency in accounting judgement (Chand, Cummings, & Patel, 2012; Doupnik & Richter, 2003).

With the introduction of the International Financial Reporting Standards (IFRS) and International Accounting Standards (IAS), a significant amount of jurisdictions and companies have used them as the *de facto* global language of financial reporting (IFRS Foundation, 2016). Meanwhile, the IFRS Foundation emphasises that using a common accounting language would benefit investors and other users of financial statements by bringing transparency, accountability, and efficiency to financial markets worldwide (IFRS Foundation, 2019b). To date, the IFRS Foundation has provided over 40 translations, accepted by over 140 jurisdictions (IFRS Foundation, 2019a). However, several studies suggest that language issues are still the obstacle to the equivalent implementation of the IFRS (Dahlgren & Nilsson, 2012; Evans, 2004; Evans et al., 2015; Nobes, 2013). For example, Evans et al. (2015) argued that equivalent translations on uncertainty expressions, accounting terminology, and IFRS are often problematic, repeatedly leading to misinterpretation of accounting concepts. Nobes (2013) commented that language issues could cause international differences in IFRS practices. These issues highlight the importance of language to the global implementation of IFRS.

Language can result in two types of challenges with regard to making accounting judgement. First is the language used to describe uncertainties, which is often subject to professional judgement. IFRS addresses this challenge by using verbal uncertainty expressions[1], such as 'uncertain' or 'reasonably possible'. However, behaviour studies found that verbal uncertainty expressions can cause directionality biases in judgement and decision-making (Brun & Teigen, 1988; Teigen & Brun, 2003a; Wallsten, Fillenbaum, & Cox, 1986). For instance, when deciding among options for a medical treatment, describing Treatment A's success as 'somewhat possible' might direct thinking in a positive way, whereas describing Treatment B's success as 'quite uncertain' might direct judgement negatively, even though the numerical probability inferred by these two expressions is similar (Teigen & Brun, 1999, p. 155). Such positive and negative thinking processes caused by verbal uncertainty expressions are called directionality bias. The second type of challenge is the cross-language issue on uncertainty expressions. There are criticisms regarding inconsistent translation and judgement between languages (Doupnik & Riccio, 2006; Huerta, Petrides, & Braun, 2016). Such criticisms raise questions such as whether foreign accountants would interpret the IFRS in their language and lead to different accounting judgements. As such, the current study seeks to answer two questions: how uncertainty expressions contained within accounting standards can directionally affect accounting judgements and how the use of native and foreign languages can impact accounting judgement.

Previous accounting studies have explored language issues on uncertainty expressions, but they often focus on investigations between native- and non-native-speaking users of accounting information (e.g. Chand et al., 2012; Doupnik & Richter, 2004). Studies under this research stream focus on inter-personal differences, such as differences between native and non-native users in terms of interpreting and judging uncertainty expressions from IFRS. Meanwhile, it is equally important to understand language influences from an intra-personal perspective. For example, whether differences exist when a bilingual-accounting-information user interprets uncertainty expressions in his/her first and second languages, or whether an accountant would provide different accounting judgements in his/her native

language and a foreign language. Although several studies have attempted to examine these issues (e.g. Huerta et al., 2016; Pan & Patel, 2016), there are still debates on this topic, such as whether using a foreign language would affect the quality of judgement or induce judgement bias.

A recent discovery in psychology suggests that the use of a foreign language reduces a person's judgement biases when faced with uncertainty information (Keysar, Hayakawa, & An, 2012). Subsequent studies describe this language-related phenomenon as the foreign-language effect (FLE) and have replicated it in experiments that involve making moral and risk judgements (Costa, Foucart, Arnon, Aparici, & Apesteguia, 2014; Costa, Vives, & Corey, 2017; Geipel, Hadjichristidis, & Surian, 2015; Hadjichristidis, Geipel, & Savadori, 2015; Hayakawa, Costa, Foucart, & Keysar, 2016; Keysar et al., 2012; Marcos & Helena, 2018). Following these psychological findings, the current study examines the FLE on individuals when they make accounting judgement in both native and foreign languages. It also illustrates how the FLE can influence directionality bias of uncertainty expressions.

This study undertakes a quantitative investigation of the directionality of uncertainty expressions and the FLE between Chinese and English languages. There are two rationales for examining the FLE in the context of Chinese and English languages. First, the IFRS' Chinese translation is available; therefore, excerpted accounting standards from the Chinese and English versions of the IFRS are deemed comparable and consistent. Second, investigating the FLE in the context of Chinese and English languages has practical implications for accounting practitioners because Chinese accountants are increasingly taking part in global accounting activities, which rely on IFRS interpretations. Data for this study are from two independent experiments. Based on between- and within-subject research designs, this study analyses variances in uncertainty judgement at the group and individual levels.

The remainder of this paper is organised as follows. The next section provides the theoretical background of the study, including the theory of directionality of uncertainty expressions and the FLE, and introduces the hypotheses that are formulated based on these theories. Section 3 discusses the research methodology. Section 4 presents the analytical findings. The final section provides the conclusions.

2.   Literature and Hypotheses

2.1. *Uncertainty expressions*

People often communicate uncertainty information using different modes of expression. In general, there are two modes of uncertainty expressions (Erev & Cohen, 1990): verbal uncertainty expressions (e.g. probable) and numerical uncertainty expressions (e.g. 50%). Uncertainty expressions are common in accounting information, such as accounting standards and financial reports. Their extensive use creates critical questions: do uncertainty expressions exist equally and have the same meanings in the process of accounting judgement?

2.1.1. *The directionality of uncertainty expressions*

Directionality refers to a feature of verbal uncertainty expressions that can carry directional information (Budescu, Karelitz, & Wallsten, 2003; Teigen & Brun, 1999) and lead people to judge an event either positively (e.g. 'probable') or negatively (e.g. 'uncertain') (Teigen & Brun, 2003a). The directionality feature of verbal uncertainty expressions manifests in the following arguments. First, words can carry multiple layers of meanings within different contexts; thus, people can use and interpret words more flexibly than numbers (Budescu et al., 2003). Second, people are motivated to develop biases in the assessment of verbal uncertainty expressions because verbal expressions are more justifiable than numerical expressions (Piercey, 2009). Such bias in interpreting verbal uncertainty expressions is called motivated reasoning bias. As Piercey (2009) described, people tend to justify an optimistic verbal probability assessment on uncertainties and retain the option of redefining it, in the case of adverse outcome. This motivated reasoning behaviour could make people's verbal probability expressions become more biased and be perceived as more justifiable than

numerical expressions. Third, people prefer to communicate uncertainty information verbally but prefer to receive it numerically. This paradox is called the communication model preference paradox (Erev & Cohen, 1990). Erev and Cohen (1990) stated that a verbal probability expression is spontaneous and easy to understand and thus, efficient in expressing uncertainty information. Meanwhile, a numerical probability expression is controlled (effortful) and accurate and thus, efficient in interpreting uncertainty information.

Notably, this type of directional impact on judgements is unique to verbal uncertainty expressions, as it is missing for numerical uncertainty expressions (Teigen & Brun, 1999). In Teigen and Brun's (1999, p. 164) experiment, when asked about the trial of a new medical treatment, an overwhelmingly large proportion (90.6%) of people said they would vote 'Yes' when the expression was framed as there being 'some possibility that the treatment will be helpful'. By contrast, less than a third (32.4%) of people would vote 'Yes' when the framing was 'it is quite uncertain that the treatment will be helpful'. Interestingly, in the same experiment, most people interpreted the numerical meanings of 'some possibility' and 'quite uncertain' within similar ranges (31% to 32%).

2.1.2. Uncertainty expression in IFRS

In the accounting context, IFRS uses uncertainty expressions when an accounting practice requires professional judgement. Although there are certain benefits in using uncertainty expressions in IFRS, such as facilitating communications and adjustments between different jurisdictions (Weiss, 2008; Zeff, 2007), more concerns have arisen on the potential negative impact of using uncertainty expressions in IFRS. Some scholars have expressed concern that IFRS users' judgement on uncertainty expressions can be influenced by external factors, such as translation and culture. For example, previous studies found significant variances on the uncertainty expressions' translations between English and French (Davidson & Chrisman, 1994), German (Doupnik & Richter, 2003), Chinese (Chand et al., 2012), and Spanish (Huerta, Petrides, & Braun, 2013). Related to cultural influence, German and Brazilian accountants were found to be more conservative than American accountants when interpreting the numerical meaning of uncertainty expressions (Doupnik & Riccio, 2006; Doupnik & Richter, 2004). In the same vein, Wehrfritz and Haller (2014) claimed that German accountants were more conservative than British accountants when recognising a provision. These accounting studies highlight translation and cultural influences on the interpretation of verbal uncertainty expressions. There are also concerns about the inherent ambiguity of uncertainty expressions that could result in different interpretations and implementation of accounting concepts (Laswad & Mak, 1997). Such inherent ambiguity manifests in the appendix of IFRS 5, where standard-setters use uncertainty expressions to explain another uncertainty expressions. To illustrate, IFRS uses 'more likely than not' to explain 'probable', or uses 'significantly more likely than probable' to explain 'highly probable' (IFRS 5, Appendix A).

A thorough review of the IFRS showed that there are approximately 40 different verbal uncertainty expressions actively being used. Some expressions relate to judgements on an accounting item's recognition, such as 'probable' for asset recognition in the Conceptual Framework and 'uncertain' for financial instrument recognition in IAS 32. Some expressions relate to the judgement on an accounting item's disclosure, such as 'reasonably possible' for insurance disclosures in IFRS 4 and 'remote' for contingent liability disclosures in IAS 37. Table I provides examples of uncertainty expressions used in IFRS and IAS.

[Insert Table I about here]

Notably, discussions on the directionality feature of uncertainty expression are rare in the accounting context. As explained earlier, directionality is a unique feature of verbal uncertainty expressions, and it could significantly influence people's judgement on uncertainty. In particular, the implications of misinterpreting or misjudging uncertainty expressions in an accounting context could result in significant consequences, such as misstatement of materiality (Griffin, 2014), variations in accounting estimates (Nelson & Kinney Jr, 1997), or reduced comparability of accounting information (Laswad

& Mak, 1997; Zeff, 2007). Despite its potential consequences, an investigation into the directionality features of uncertainty expressions remains inadequate in accounting. Therefore, this provides an opportunity to investigate whether users of IFRS would directionally be biased by uncertainty expressions when making accounting judgement. Based on previous findings on the directionality of uncertainty expressions, the following hypothesis is proposed:

H1: The direction of an uncertainty expression has a significant impact on the subjects' accounting judgement.

2.2. Foreign-language Effect

Although the directionality of uncertainty expressions has been examined in several psychological studies (e.g. Budescu et al., 2003; Teigen & Brun, 2003b), there has been limited investigation under cross-lingual conditions. As a separate topic in the current field of psychology, several studies have suggested that a person's overall biases towards uncertainty, such as risk-taking and risk-averse tendencies, would be significantly reduced when using a foreign language. This effect has been formally referred to as the FLE (Keysar et al., 2012).

The concept of the FLE as it pertains to uncertainty judgements was proposed by (Keysar et al., 2012, p. 661). The original interpretation of the FLE is that people would inevitably think differently when using a non-native language (Kay & Kempton, 1984). This language impact in thinking also exists amongst bilingual speakers between their first and second languages (Pavlenko, 2006). The FLE considers that the judgement biases of a person using a foreign language would be reduced due to various foreign-language mechanisms, which can be broadly divided into process difficulty and reduction (for review, see Costa et al., 2014; Costa et al., 2017; Geipel, Hadjichristidis, & Surian, 2016).

2.2.1. Process difficulty

Research that investigated the impact of the FLE proposed that people process information less fluently in a foreign language than in their native language. The main assertion is that people are often less proficient in a foreign language; therefore, processing-related information requires more effort in a foreign language than in a native one (see Costa et al., 2017 for a review). Because information is processed less fluently, using a foreign language prompts people to think more deliberately and less heuristically (Hadjichristidis, Geipel, & Surian, 2017; Volk, Köhler, & Pudelko, 2014).

This proposition has inspired discussions in multiple fields, including empirical studies in behavioural psychology (e.g. Gao, Zika, Rogers, & Thierry, 2015) and theoretical modelling in international business (e.g. Hadjichristidis et al., 2017; Volk et al., 2014). One typical example is the reduced strength of the hot-hand fallacy[2] in the context of one's non-native language. Gao et al. (2015) conducted this study, where the native Chinese speakers made significantly fewer attempts in an even-probability gamble in a non-native (English) language condition. This study justifies the FLE proposition on processing difficulty in that its results suggest that lower fluency in a non-native language prompts more deliberate thinking and behaviour.

2.2.2. Native language use and reduced bias

The FLE also proposes that people feel less emotionally attached in situations when using a foreign language compared with their native language. The reduced emotionality in foreign-language thinking would encourage one to make uncertainty judgement more analytically and less heuristically (Cipolletti, McFarlane, & Weissglass, 2016; Geipel et al., 2015, 2016; Hadjichristidis et al., 2015; Hayakawa et al., 2016; Hayakawa, Tannenbaum, Costa, Corey, & Keysar, 2017). According to this mechanism, people would reflect on their feelings less emotionally in a foreign language, leading to a less biased uncertainty judgement.

The key argument is that people normally acquire their native language in emotionally rich contexts, such as in daily lives; whereas they tend to learn a foreign language in emotionally neutral

environments, such as in a classroom (Ivaz, Costa, & Duñabeitia, 2016). As Caldwell-Harris (2015) explained, people feel more emotional and prefer to express emotions in a language that was acquired naturally. This is because the words and phrases are 'emotionally grounded' and are experienced in a social context (Caldwell-Harris, 2015, p. 216). When reflecting on daily life, people may feel more comfortable discussing potentially embarrassing topics in a foreign language than in their native tongue (e.g. Bond & Lai, 1986). Similarly, people may feel less intimidated talking about taboo issues in a foreign language than in their native language (e.g. Caldwell-Harris & Ayçiçeği-Dinn, 2009). According to this stream of research, people tend to encounter more deliberate thinking and less emotional feeling in a foreign language, which leads to their uncertainty judgements being potentially less biased than when they are using their native language.

2.2.3. *Foreign language issues in accounting*

Foreign language issues could cause several challenges in accounting: translation, interpretation, and application of accounting information. Translation challenges could affect the global implementation of international accounting standards; interpretation challenges could reduce communication efficiency among users of accounting information; and application challenges could afford accountants great discretion in exercising professional judgement.

In the accounting literature, discussions on foreign language issues have been dominated by proponents of cultural and linguistic relativism. The main argument of cultural relativism is that individuals' culture, values, and background affect how they make accounting judgement (e.g., Doupnik & Riccio, 2006; Doupnik & Richter, 2004; Hu, Chand, & Evans, 2013; Tsakumis, 2007). For instance, Tsakumis (2007) found that American accountants are more inclined to disclose uncertain accounting information than Greek accountants. In the same vein, Hu et al. (2013) revealed that Chinese accounting students were more conservative than Australian accounting students in responding to uncertainty expressions.

In comparison, the key assumption of language relativism is that language determines people's world view and thus, also affects their accounting judgement on uncertainties (Evans, 2010; Evans et al., 2015; Holthoff, Hoos, & Weissenberger, 2015; Riahi-Belkaoui, 1978). For example, Evans (2010) formally proposed this notion, pointing out that the accounting language is a highly specialised dialect of business because it has a unique collection of vocabularies. For example, there are expressions or terminologies specially designed by and attributed to accounting, such as 'EBIT' and 'fair value'. Moreover, some expressions are adopted from daily language with a different meaning, such as 'recognition', 'outstanding', and 'credit' (for review, see Evans et al., 2015). Likewise, Holthoff et al. (2015) found that German participants made significantly different accounting judgements based on whether they were reading 'IAS 24 Related Party Disclosures' in German or English.

As discussed earlier, when using a foreign language, people often display reduced sensitivity towards uncertainty expressions (Costa et al., 2014). Considering the directionality of uncertainty expressions, users of accounting information in a foreign language may also experience reduced sensitivity to uncertainty expressions, making their uncertainty judgements less directionally biased. Accordingly, this study proposes a second hypothesis:

H2: The judgement of uncertainty expressions will be less directionally biased when subjects use a foreign language.

3. Methodology

This study develops two experiments to test the hypotheses. The first, which is based on a between-subject approach, tests the first hypothesis. The second, based on a within-subject approach, tests the second hypothesis. The research instrument is identical for both experiments.

The research instrument consists of four versions, each based on one language setting – either Chinese or English – and one context of accounting judgement – either asset recognition or liability recognition. The following sections provide details of the research design and the development of the research instrument.

3.1. Research design

Previous accounting research on the cross-lingual issues of uncertainty expressions predominantly applied a between-subject research design (Chand et al., 2012; Doupnik & Riccio, 2006; Hu et al., 2013). The between-subject design asks each participant to conduct the task in only one language – either their native or a non-native language. For example, Doupnik and Riccio (2006) conducted a study to identify variances in the interpretation of uncertainty expressions between Anglo and Latin culture. They applied a between-subject design by asking the American accountants to complete an English-language survey and the Brazilian accountants to complete a Portuguese-language survey.

The between-subject design is suitable for testing group correlation. For example, it can test the first hypothesis by examining how two groups of subjects would be biased by the directionality of uncertainty expressions between the native and foreign language conditions and by the directionality of uncertainty expressions between the asset- and liability-recognition contexts. However, the test of group correlation cannot be used as a substitute for determining individual correlation, as a between-subject design does not adequately identify individual variances in judgement and decision-making. For instance, the between-subject design cannot test how individuals would be biased by the directionality of uncertainty expressions between native and foreign languages. Assuming that group correlations are substitutes for individual correlations has been referred to as an 'ecological fallacy' (Robinson, 1950).

One solution for testing individual correlation is to apply a within-subject design. The within-subject design asks each respondent to complete an identical task in both language conditions, thus enabling individual correlations to be drawn. Charness, Gneezy, and Kuhn (2012) noted that another advantage of the within-subject design is that its internal validity does not depend on a random assignment; this increases its statistical power and provides a closer match to a theoretical perspective. Importantly, a within-subject research design also allows for an investigation of the FLE (switching from one language to another), hence making it possible to test the second hypothesis as well. This was the rationale for including two experiments in the current investigation.

3.1.1. Experiment 1 – Between-subject design

Experiment 1 was conducted to test the first hypothesis. Specifically, it applied a between-subject design of two languages (Chinese vs. English) x two contexts (asset recognition vs. liability recognition). The subjects were randomly allocated into four groups and asked to complete only one version of the research instrument; this allowed their responses to be used for testing the group variance on either languages or contexts. Based on this research design, Experiment 1 was deemed suitable to test the first hypothesis on the directionality biases of uncertainty judgement from both language conditions.

3.1.2. Experiment 2 – Within-subject design

Experiment 2 was conducted to test the second hypothesis by applying a within-subject design in two stages. The first stage, identical to Experiment 1, had four versions (two languages x two contexts) of the research instrument, which were randomly allocated to subjects. Each subject involved in the first stage of the experiment could elect to provide their contact emails for the second stage of the experiment.

The second stage took place seven days later[3]. The subjects who had provided their contact details from the first stage received a different version of the research instrument. Specifically, the only change in this second stage was the language condition. That is, subjects who received the research instrument in Chinese in the first stage received the English version in the second stage, and vice

versa. This design made it possible to test the second hypothesis by measuring the individual variances of directionality biases after switching languages.

3.2. Sample selection

This study targeted a sample population of accounting students from Chinese and Australian universities. Prior research suggests that the use of advanced level accounting students as a proxy for accounting professionals is appropriate in a structured decision context (Mortensen, Fisher, & Wines, 2012). Considering the nature of this research, accounting students were deemed appropriate to demonstrate the cognitive aspects of accounting judgement and the impact of language. All data were collected with the approval of the researchers' university research ethics board. Our questionnaire was distributed using Qualtrics, a survey software program. All the participants gave informed consent before the experiment.

For Experiment 1 a sample was selected from one Australian university. This university is a public and research-intensive institution, with a significant proportion of overseas students. For Experiment 2 a sample was selected from two Chinese universities, both of which have high rankings in accounting courses and are classified as first-tier (yī běn 一本) universities in China. This means that students enrolled in these universities have satisfied English-language entry requirements, as measured by the National Matriculation English Test (Cheng & Qi, 2006). The subjects were selected from second-, third-, and final-year undergraduate accounting classes to ensure their familiarity with accounting standards.

Targeting accounting students from China and Australia provide several advantages. First, the IFRS Foundation provides the official Chinese-language version of the IFRS. Therefore, the excerpted accounting standards from these language versions of the IFRS are deemed comparable and consistent. Second, Australia has converged its national standards-setting body, the Australian Accounting Standards Board (AASB), with IFRS; thus, all entities using AASB can assert compliance with IFRS (IFRS Foundation, 2016). Similarly, the Chinese Accounting Standards (CAS) have been substantially converged with IFRS, and China is continually working towards its goal of full convergence (IFRS Foundation, 2015). Many Chinese firms use IFRS for trading in the United States and European markets (IFRS Foundation, 2016). Third, China and Australia provide an appropriate cross-lingual context for this research. In China, accounting education is becoming increasingly internationally integrated, with many accounting courses delivered both in Chinese and English (Zhang, Boyce, & Ahmed, 2014). In Australia, more than 170,000 international students, most of whom speak English as a non-native language, were enrolled in business and accounting courses in 2014 (Department of Educational and Training, 2015). Importantly, Australia has a large proportion of international accounting students. Accordingly, the sample selection is highly relevant to the purpose of the current study.

3.3. Research instrument

The research instrument is underpinned by the feature of the directionality of uncertainty expressions (Budescu et al., 2003; Teigen & Brun, 1999). Similar to Budescu et al. (2003); subjects were asked to make uncertainty judgements on two independent questions (randomly ordered).

Two uncertainty expressions 'reasonably possible' and 'uncertain' were selected from the uncertainty expressions used in IFRS. The rationales for this selection are, first, verbal uncertainty expressions are actively used in IFRS; second, the inherent directions of both expressions are different (see Appendix).

Related to the first hypothesis, the directionality bias is associated with the directions of uncertainty expressions, which could impact any information users, with or without professional experience. Related to the second hypothesis, the FLE is likely to be observed amongst any non-native speakers regardless of the gender, life experience, or professional experience.

To ensure that the assessment result reflects the subjects' genuine judgement on accounting uncertainty expressions, both questions were articulated with a simple accounting context (e.g. asset/liability recognition), which could be understood by subjects with basic accounting knowledge.

To ensure the assessment is not compromised by the subjects' language skills, this study measures the subjects' uncertainty judgements based on a 21-point scale, with (-10) labelled as 'No, absolutely not', (0) labelled as 'Equally favours', and (10) labelled as 'Yes, absolutely'.

Figure 1 demonstrates the English-language version of the research instrument for the asset-recognition context.

[Insert Figure 1 about here]

Furthermore, two control mechanisms were put in place to eliminate any potential invalid responses that might result from the subjects' random responses and lack of language ability. The first was a multiple-choice question after the uncertainty judgement task that asked the subject to specify the context of the financial standard. The second control mechanism was based on the subjects' self-rated foreign-language skills. Subjects rated their skills in reading, understanding, writing, and speaking on a five-point scale (1=almost none, 2=poor, 3=fair, 4=good, 5=very good). This control mechanism was based on (Geipel et al., 2015), and was subsequently applied by Hadjichristidis, Geipel, and Savadori (2015) and Geipel, Hadjichristidis, and Surian (2016). Figure 2 demonstrates the two control questions for the experiment.

[Insert Figure 2 about here]

The subjects were asked to provide their background information, including age, gender, country of origin, native language, length of staying in a foreign country, self-rated foreign-language skills, and education background.

The 'back translation' approach was implemented to ensure comparability and equivalence between English- and Chinese-language versions (Brislin, 1970; Doupnik & Richter, 2003; Pan & Patel, 2016). Specifically, all research instruments were initially prepared in English, translated into Simplified Chinese, and then translated back into English. Additionally, bilingual speakers of the languages used in each experiment were consulted to ensure that words and phrases conveyed the same content across languages.

3.4.   Computation of the directionality of judgements

To examine the directionality biases in the judgement of uncertainty expressions, this study formulated a variable: directionality (DIR) of uncertainty judgement, computed based on Budescu et al.'s (2003) study:

$$DIR = \frac{(\text{number of pro judgements} - \text{number of con judgements})}{(\text{number of pro judgements} + \text{number of con judgements})}$$

Specifically, the 'pro' judgements were identified as a positive response (1 to 10 on the 21-point scale), and the 'con' judgements were identified as a negative response (-10 to -1 on the 21-point scale). A neutral judgement was identified as a neutral response (0 on the 21-point scale).

Based on the formula above, the DIR ranges between -1 and 1. Specifically, -1 indicates that all judgements on accounting recognition are negative; 0 indicates a neutral judgement on accounting recognition; and 1 indicates that all judgements on accounting recognition are positive. The sign of DIR (+/-) indicates the uncertainty expression's directionality.

4. Results

4.1. Results of the between-subject experiment (Experiment 1)

After excluding subjects who either failed the control question or had low self-rated scores of their English-language skills, 325 valid responses were included in the analysis. The subjects' demographic summaries are provided in Table II.

[Insert Table II about here]

As shown in Table II, different versions of the instrument were randomly distributed, with 136 (56) subjects completing the asset-recognition version in their native (foreign) language and 56 (77) subjects completing the liability-recognition version in their native (foreign) language.

In terms of personal attributes, 67.7% of the subjects were female, and 32.3% were male. The average age of the subjects was 20.80, and most were in their second or third year of study (mean=2.30 years). Amongst these subjects, over 90% were pursuing accounting degrees and the remainder, accounting-related degrees.

Over 90% of the subjects were native-Chinese speakers, about 90.5% had spent less than two years in an English-speaking country, and most had sufficient language skills, as suggested by their self-rated English-language proficiency results (with the mean score across all skill components above 3 out of 5).

[Insert Table III about here]

Table III, column 'DIR' highlights the directionality biases between the judgements labelled 'uncertain' and 'reasonably possible'. In both language conditions, the term 'uncertain' led to negative judgements ($DIR_{uncertain} \leq 0$) and 'reasonably possible' led to positive judgements ($DIR_{reasonably\ possible} > 0$). This result resembles prior studies on directionality biases of uncertainty judgements (for review, see Budescu et al., 2003; Teigen & Brun, 1999).

To examine the first hypothesis, this study analysed the directionality biases for both languages and contexts. A chi-square (χ^2) test was employed to determine the significance of group variances. For the native-language condition, the directionality bias on asset recognition was statistically significant between the two uncertainty expressions (χ^2=14.036, p=0.007). By contrast, the directionality bias was not statistically significantly (χ^2=2.751, p=0.600) for liability recognition.

However, in the foreign-language context, the results showed significant directionality biases for both asset and liability recognition. Specifically, the subjects provided uncertainty judgements that were directionally biased between the asset-recognition expressions 'uncertain' and 'reasonably possible' (χ^2=8.749, p=0.068). Similarly, directionality bias was also significant for liability recognition (χ^2=14.909, p=0.005).

In summary, the overall results of Experiment 1 support the hypothesis that subjects would make significantly biased uncertainty judgements depending on the directions of the uncertainty expressions. This directionality bias was observed for both language conditions.

4.2. Results of the within-subject experiment (Experiment 2)

Experiment 2 applied the within-subject design and recruited subjects from two Chinese universities. After controlling for the responses (as in Experiment 1), 144 subjects provided valid responses. Specifically, 72 subjects completed the instrument's version for asset recognition and 72 for liability recognition. Table IV provides details of the demographic information.

As shown in Table IV, 68.1% of the subjects were female, and 31.9% were male. The average age of the subjects was 20.22, and most were in their second or third year of study (mean=2.46 years). Over 92% of the subjects had spent less than one year in an English-speaking country.

In terms of language ability, most subjects self-rated their reading (mean=3.43 out of 5) and understanding (mean= 3.31 out of 5) skills between 'fair' and 'good', and their writing and speaking skills, superior.

Experiment 2 was based on the within-subject design: each subject completed two separate language versions of the research instrument, responding to both their native language and a foreign language. Table V, column 'DIR' shows a consistent directionality bias between the accounting judgements labelled 'uncertain' ($DIR_{uncertain} < 0$) and 'reasonably possible' ($DIR_{reasonably\ possible} > 0$). Such consistency was found for both language conditions. In both languages, the term 'uncertain' led to a negative judgement, and 'reasonably possible' led to a positive judgement. This indicates that the subjects were consistently affected by the inherent directions of the uncertainty expressions in judgements concerning asset or liability recognition. These results are consistent with the findings in Experiment 1.

To test the second hypothesis – whether the usage of a foreign language would reduce directionality biases – the responses were sorted into four categories: 1) judgement of asset recognition based on the word 'uncertain', 2) judgement of liability recognition based on the word 'uncertain', 3) judgement of asset recognition based on the term 'reasonably possible', and 4) judgement of liability recognition based on term 'reasonably possible'.

In the context of asset recognition, the subjects provided less-strong directionality biases in the foreign language than in their native language (Foreign $DIR_{uncertain}$= -0.33 vs. Native $DIR_{uncertain}$= -0.44; Foreign $DIR_{reasonably\ possible}$ = 0.66 vs. Native $DIR_{reasonably\ possible}$= 0.67). Particularly, the judgement of asset recognition based on the word 'uncertain' showed a significant reduction of directionality bias (χ^2=8.290, p=0.082). This result supports the existence of the FLE.

In the context of liability recognition, the DIR results were mixed. The subjects provided incremental directionality bias in the foreign language when the judgement was based on the word 'uncertain' (Foreign $DIR_{uncertain}$ = -0.25 vs. Native $DIR_{uncertain}$ = -0.13). Although this incremental directionality bias contradicts the FLE, the variance was not statistically significant. By contrast, the subjects provided a reduced directional bias in the foreign language when the judgement was based on the term 'reasonably possible' (Foreign $DIR_{reasonably\ possible}$ = 0.40 vs. Native $DIR_{reasonably\ possible}$= 0.65). This reduction reached a statistically significant level (χ^2 =12.53, p=0.014). Taken together, the overall result supports the hypothesis that the use of a foreign language reduces judgement biases, confirming that the FLE is present in the use of accounting language.

Overall, the test results partially support the second hypothesis. Specifically, the overall findings suggest that the directionality biases decrease after the subjects switch from their native language to the foreign language.

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5.   Summary and Conclusion

The global economy is fast-changing, and the accountancy profession faces challenges in addressing language variations in accounting practices. Although the IASB has been working on developing a set of global accounting standards and has issued over 40 IFRS translations (IFRS Foundation, 2019a), language issues still raise challenges for the global implementation of IFRS. This study explored how users of accounting information make judgements based on IFRS uncertainty expressions in both native and foreign languages.

Specifically, this study examined two critical issues in accounting: the directionality of IFRS uncertainty expressions and the use of a foreign language in accounting judgement. The directionality of uncertainty expressions suggests that verbal uncertainty expressions may not have consistent meanings and often lead to either a positive or negative directional judgement (Brun & Teigen, 1988; Teigen & Brun, 2003a; Wallsten et al., 1986). The FLE states that using a foreign language reduces an individual's judgement biases under risk and uncertainty conditions (Costa et al., 2017; Hadjichristidis et al., 2017; Hayakawa et al., 2017; Keysar et al., 2012; Marcos & Helena, 2018).

This study's findings are twofold. First, directionality biases exist amongst users of accounting information when making judgements under different language conditions and contexts. Using a sample of uncertainty expressions from the IFRS, this study demonstrated that the use of verbal uncertainty expressions in accounting information may result in judgements that are significantly biased in their direction. Second, the FLE exists in the context of accounting judgement. Based on the within-subject experimental design, this study finds that switching from one's native language to a foreign language could reduce accounting information users' directionality biases. Both findings are consistent with earlier studies in the field of psychology.

As a cross-discipline research, this study contributes to our understanding of how a foreign language influences accounting judgements. As the workplace is becoming increasingly multilingual, professional accountants may face their daily tasks in different languages, especially those who work at multinational corporations. Previous accounting studies have stressed the translation and cultural challenges in multilingual accounting environments, and these challenges are relatively easy to observe and identify. Meanwhile, the influence of a foreign language on accounting judgement can be difficult to measure. For example, Doupnik and Richter (2003) attributed to the language-culture effect differences in interpretations of uncertainty expressions between German and American accountants, as they see culture and language to be interrelated. There have been few discussions on foreign language factors in accounting practice until the psychology findings on FLE came about. Thus, this study provides insights into how language is involved in the interpretation and judgement of uncertainty expressions.

The findings are also relevant to policymakers and accounting professional advisory boards that are concerned with the potential impact of language diversity in international business. While accounting practitioners who work for international companies may have competence in professional practice, some of them may be non-native in the corporate language (typically English or Chinese). This can lead to an unintended consequence when the FLE plays a role in the accounting judgement. Additionally, this study contributes to the existing knowledge on directionality biases by providing evidence relating to the directional features of uncertainty expressions. It brings supplementary evidence that the inherent directionality of uncertainty expressions used in IFRS can cause bias in accounting judgement. While there is already empirical evidence of context-specific explanations, such as translation and cultural factors, the current study explains the variations within the same individual via the FLE.

This research has some limitations. First, accounting students were recruited in the experiments as surrogates for professional accountants. Although this method of sample selection has been proven to be appropriate (Mortensen et al., 2012; Waldron & Fisher, 2017) and is widely used in accounting-judgement research (Chand et al., 2012; Pan & Patel, 2016), future research should extend the

investigation to professional accountants. Second, the scenario used in the experiment may not fully reflect real-world examples of accounting judgement, as it focuses only on asset/liability-related events. Future studies could investigate the directionality biases on different uncertainty expressions or other contexts of accounting judgement. Third, due to the inherent limitations of a within-subject design, the seven-day gap between the two stages of the experiment may not have been sufficient to eliminate the carry-over effect. Finally, the cross-language investigation on the FLE should include languages aside from English and Chinese. Notwithstanding these limitations, the current study suggests that the directionality-biases theory and the FLE theory are relevant to the issue of accounting judgement and decision-making. Given that both theories are relatively new to many accounting researchers, further research is required to determine their validity in practical settings.

Notes

[1] In this study, 'verbal uncertainty expression' refers to the uncertainty expressed in a written form, which is different from the 'oral' form of expression. The verbal uncertainty expressions (e.g. probable) are compared with the numerical uncertain expressions (e.g. 60%).

[2] The hot hand fallacy refers to a psychological bias that people who experience success with random trials believe there will be greater probability of successful outcomes in future trials (See the original study: Gilovich, Vallone, & Tversky, 1985).

[3] The seven-day interval between the first and second stages is to reduce the carry-over effect from the within-subject design (e.g. Pan & Patel, 2016). According to prior studies that used within-subject designs, a reasonable time delay between two experiments could minimise the carry-over effect (e.g. Charness et al., 2012). In this study, we followed a similar seven-days approach as in Pan and Patel (2016).

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Appendix

List of uncertainty expressions and examples of their usage in IAS/IFRS

	Examples of usage	
	IAS	**IFRS**
Positive expressions		
possible	1, 8, 11, 17, 20, 21, 24, 28, 32, 34, 36, 37, 38, 39, 40, 41	Framework, 2, 3, 4, 7, 9, 10, 13, 15
likely	1, 11, 19, 2, 28, 36, 37, 38, 39	Framework, 1, 2, 3, 4, 9, 10, 13, 15, 16
reliably	12, 16, 17, 23, 28, 34, 38, 39, 40, 41	Framework, 2, 3, 4, 7, 9, 15, 16
substantially	1, 11, 12, 17, 21, 23, 32, 38	2, 3, 8, 9, 10, 11, 13 ,15, 16
deemed	16, 17, 19, 29, 33, 37, 40	1, 3, 9, 10, 13
probable	12, 16, 23, 28, 37, 38, 40, 41	Framework, 3, 9, 15
sufficiently	1, 11, 17, 19, 37	Framework, 4, 5, 9, 10, 16
significant	1, 7, 16, 36	1, 4, 7, 9, 13
reasonably possible	1, 11, 19	4, 7, 9, 13, 15
significant influence	21, 24, 27, 28	1, 10, 11, 12
certainty	1, 7, 11, 38	Framework, 6, 13
expected	1, 2, 8, 12	Framework, 2, 3
more likely		3, 9, 10, 15, 16
most likely	36, 37	2, 13, 15
highly probable	39	5, 9, 15
virtually certain	19, 32, 37, 38	
major part	17	Framework, 16
absolute	27, 32	
highly likely	40, 41	
more likely than not	37	5
reasonably certainty	17	16
assurance		15
assurance beyond any reasonable	12	
reasonable assurance	20	
with the prospect	38	
Negative expressions		
unlikely	12, 17, 19, 26, 32, 36, 37, 38	Framework, 4, 5, 6, 9, 10
uncertain	1, 11, 17, 19, 32, 36, 37	3, 4, 7, 13, 15
not expected	1, 11, 19, 32, 36, 39	3, 9, 14, 15
remote	16, 17, 36, 37, 41	7, 9, 12, 15
insignificant	7, 16, 32, 40	4, 7, 9
not possible	26, 28, 36	Framework, 2, 9
highly unlikely	40	4, 9
not probable	12, 37	3
less likely		3, 10
no longer probable	12, 37	
sufficiently lower	17	16
very unlikely	32	9
extremely unlikely		4
improbable		Framework
not likely	36	

Tables

Table II. Examples of uncertainty expressions in IAS/IFRS

	Examples of usage	
	IAS	**IFRS**
Positive expressions		
probable	12, 16, 23, 28, 37, 38, 40, 41	Framework, 3, 9, 15
reasonably possible	1, 11, 19	4, 7, 9, 13, 15
highly probable	39	5, 9, 15
more likely than not	37	5
Negative expressions		
unlikely	12, 17, 19, 26, 32, 36, 37, 38	Framework, 4, 5, 6, 9, 10
uncertain	1, 11, 17, 19, 32, 36, 37	3, 4, 7, 13, 15
not expected	1, 11, 19, 32, 36, 39	3, 9, 14, 15
remote	16, 17, 36, 37, 41	7, 9, 12, 15

Table II. Demographic details from Experiment 1

	Frequency	Percentage	Mean
Gender	N=325		
Female	220	67.7	
Male	105	32.3	
Years in English-speaking country			
0-2 year	294	90.5	
3-4 years	7	2.2	
5-6 years	2	.6	
More than 8 years	22	6.8	
Country of origin			
China	295	90.8	
Australia	14	4.3	
Other[1]	16	4.9	
Major			
Accounting	295	90.8	
Other[2]	30	9.2	
English ability			
Reading			3.49
Understanding			3.48
Writing			3.26
Speaking			3.18
Years of study			2.30
Age			20.80
Instrument versions			
Native-asset recognition	136	41.8	
Foreign-asset recognition	56	17.2	
Native-liability recognition	56	17.2	
Foreign-liability recognition	77	23.8	

[1] Other nationalities (total of 16) included: India (2), Indonesia (2), Kyrgyzstan (1), Malaysia (4), Norway (1), Sri Lanka (2), Sweden (1), and Vietnam (2). These subjects were non-native English speakers and were randomly assigned with the English version. Their responses were included in either Foreign-asset recognition or Foreign-liability recognition.

[2] Other majors (total of 30) included: Business (4), Economics (1), Finance (15), Management (4), and Marketing (6).

*English ability: subjects self-rated their English language skills in reading, understanding, writing, and speaking on a five-point scale (1=almost none, 2=poor, 3=fair, 4=good, 5=very good; scale adapted from (Caldwell-Harris & Ayçiçeği-Dinn, 2009).

Table III. The directionality of uncertainty expressions based on the between-subject approach

	Pro	Con	Neutral	Total	DIR	χ^2	p
Native language							
Uncertain (asset)	42	64	30	136	-0.21	14.036	0.007***
Reasonably possible (asset)	79	38	19	136	0.35		
Uncertain (liability)	20	22	14	56	-0.05	2.751	0.600
Reasonably possible (liability)	34	14	8	56	0.42		
Foreign language							
Uncertain (asset)	23	23	10	56	0.00	8.749	0.068*
Reasonably possible (asset)	29	20	7	56	0.18		
Uncertain (liability)	26	33	18	77	-0.12	14.909	0.005***
Reasonably possible (liability)	46	18	13	77	0.44		

Pro=positive judgement; Con=negative judgement; Neutral=neutral judgement
* Significant at the .1 level
**Significant at the .05 level
***Significant at the .01 level

Table IV. Demographic details from Experiment 2

	Frequency	Percentage	Mean
Gender	N=144		
Female	98	68.1	
Male	46	31.9	
Years in English-speaking country			
0-1 year	133	92.4	
5-6 years	2	1.4	
7-8 years	2	1.4	
More than 8 years	7	4.8	
Country of origins			
China	144	100	
Major			
Accounting	135	93.8	
Economic	4	2.8	
Finance	4	2.8	
Marketing	1	0.7	
English ability*			
Reading			3.43
Understanding			3.31

Writing			2.97
Speaking			2.78
Years of study			2.46
Age			20.22
Instrument versions			
(Chinese and English) Asset recognition	72	50.0	
(Chinese and English) Liability recognition	72	50.0	

*English ability: subjects self-rated their English-language skills in reading, understanding, writing, and speaking on a five-point scale (1=almost none, 2=poor, 3=fair, 4=good, 5=very good; scale adapted from (Caldwell-Harris & Ayçiçeği-Dinn, 2009).

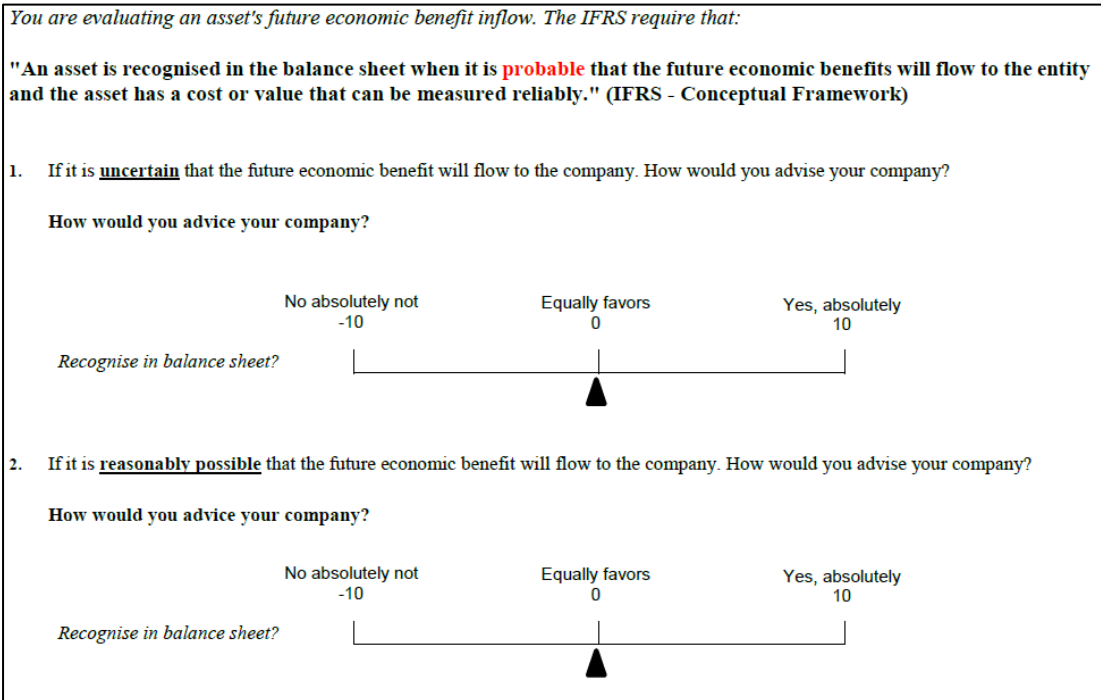**Table V.** Directionality of uncertainty expressions based on the within-subject approach

	Pro	Con	Neutral	Total	DIR	Chi-square test	
						χ^2	p
Uncertain (asset)							
Native	17	44	11	72	-0.44	8.290	0.082*
Foreign	19	38	15		-0.33		
Uncertain (liability)							
Native	23	30	19	72	-0.13	6.771	0.149
Foreign	23	38	11		-0.25		
Reasonably possible (asset)							
Native	50	10	12	72	0.67	3.265	0.515
Foreign	54	11	7		0.66		
Reasonably possible (liability)							
Native	51	11	10	72	0.65	12.53	0.014**
Foreign	44	19	9		0.40		

Pro=positive judgement; Con=negative judgement; Neutral=neutral judgement
* Significant at the .1 level
**Significant at the .05 level

Figures

You are evaluating an asset's future economic benefit inflow. The IFRS require that:

"An asset is recognised in the balance sheet when it is probable that the future economic benefits will flow to the entity and the asset has a cost or value that can be measured reliably." (IFRS - Conceptual Framework)

1. If it is <u>uncertain</u> that the future economic benefit will flow to the company. How would you advise your company?

   How would you advice your company?

No absolutely not -10	Equally favors 0	Yes, absolutely 10

   Recognise in balance sheet? ▲

2. If it is <u>reasonably possible</u> that the future economic benefit will flow to the company. How would you advise your company?

   How would you advice your company?

No absolutely not -10	Equally favors 0	Yes, absolutely 10

   Recognise in balance sheet? ▲

Figure 1. Uncertainty judgement in the asset-recognition context

1. **"An asset is recognised in the balance sheet when it is probable that the future economic benefits will flow to the entity and the asset has a cost or value that can be measured reliably." (IFRS - Conceptual Framework)**

This statement is about the recognition of:

☐ Liability ☐ Asset ☐ Expense ☐ Equity ☐ Income

2. Please self-rate your English language skills:

	Almost none	Poor	Fair	Good	Very good
Reading	☐	☐	☐	☐	☐
Understanding	☐	☐	☐	☐	☐
Writing	☐	☐	☐	☐	☐
Speaking	☐	☐	☐	☐	☐

Figure 2. Two control questions