Chinese Interpreting Studies: A data-driven analysis of a dynamic field of enquiry

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Chinese Interpreting Studies

A data-driven analysis of a dynamic field of enquiry

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Abstract:

Over the five decades since its beginnings, Chinese Interpreting Studies (CIS) has evolved into a dynamic field of academic enquiry with more than 3,500 scholars and 4,200 publications. Using quantitative and qualitative analysis, this scientometric study delves deep into CIS citation data to examine some of the noteworthy trends and patterns of behavior in the field: how can the field's progress be quantified by means of citation analysis? Do its authors tend repeatedly to cite 'classic' papers or are they more drawn to their colleagues' latest research? What different effects does the choice of empirical vs. theoretical research have on the use of citations in the various research brackets? The findings show that the field is steadily moving forward with new papers continuously being cited, although a number of influential papers stand out, having received a stream of citations in all the years examined. CIS scholars also have a tendency to cite much older English than Chinese publications across all document types, and empirical research has the greatest influence on the citation behavior of doctoral scholars, while theoretical studies have the largest impact on that of article authors. The goal of this study is to demonstrate the merits of blending quantitative and qualitative analyses to uncover hidden trends.

Keywords: scientometrics, Chinese Interpreting Studies, citation analysis, statistical modeling

1. Introduction

34   There are various channels through which scholars communicate with one another, easing the
35   flow of knowledge and furthering the advance of science. One such important channel comes in
36   the form of citations, which are the result of the duty incumbent upon all scholars to conduct
37   comprehensive and critical reviews of existing literature before embarking on new research, to
38   gain a deep understanding of the field and find the precise empty niche into which their own
39   work will fit, referring to previous related work to bolster their arguments. Though citing other
40   people's work did not become the norm in scientific writing until the early 1900s (Garfield
41   1979), it is now standard and required practice for authors to acknowledge the works of
42   predecessors from which they have drawn inspiration, thereby maintaining the 'intellectual
43   lineage' from one generation of academics to the next. Citation analysis has long attracted
44   attention in the scientific community (see for example Garfield 1972; White & Mccain 1998;
45   Baumgartner & Pieters 2003; Vallmitjana & Sabaté 2008). This is mostly as a consequence of
46   Kuhn's 1970 ground-breaking work on the nature of science, in which he called on future
47   scholars to recognize the crucial importance of adopting an empirical approach to studying the
48   structure of the scientific community.

49

50   Such academic pursuits are particularly relevant in the Translation and Interpreting Studies
51   (TIS) community, because it has experienced a significant growth in both quantitative and
52   qualitative terms over the past two decades, and because hundreds of papers with diverse
53   research methodologies and themes are produced on a yearly basis (Franco Aixelá 2013). During
54   this period of significant growth, more empirical studies are needed if we are to fully appreciate
55   the patterns of communication and trends in TIS. A number of earlier scholars have used citation
56   data to trace the evolution of the field and understand how scholars communicate with each other
57   (see for example, Pöchhacker 1995; Gile 2005; Grbić & Pöllabauer 2009). However, despite its
58   usefulness, there are limitations to a purely quantitative approach in analyzing TIS citation data,
59   and qualitative analysis is called for in order to obtain a fuller picture of the discipline (Gile
60   2000). The purpose of this scientometric study is to marry quantitative and qualitative
61   approaches to analyzing citation in order to obtain a panorama of CIS' evolution and reveal its
62   hidden trends and predominant theoretical influences.

2. Background

2.1 Major Questions

CIS has been developing rapidly since the 1990s, as evidenced by its increasing number of publications and researchers (Chen 2009). Using an all-but-exhaustive collection of citation data, three component strands of CIS (journal articles, MA theses, and doctoral dissertations) were studied with the aim of finding changes or differences in patterns of citation. In what ways is the citation network changing? Are authors still primarily influenced by older works or do more recent ones now hold the ascendancy? How do different research methods (theoretical, empirical, etc.) affect the use of citations in the works themselves? The three bodies of literature are generally produced by three distinct groups of authors: established researchers for journal articles and conference proceedings; graduate students for MA theses; and PhD students for doctoral dissertations (Xu 2014 & 2015). Examining these three strands individually is necessary if we are to fully understand how each contributes to advancing the field as a whole.

2.2 Literature Review

The study of research trends in Translation and Interpreting Studies (TIS) is currently dominated by citation analysis (see for example Gile 2005 & 2006; Gao 2008; Franco Aixelá 2004). There are various methods of carrying out citation analysis, but the overall basic concept is always the same. First a sample of articles is selected; the researcher then counts the number of times each article is cited in other works. Citing (or 'source') works can be categorized according to type (conference proceedings, monographs, periodicals, etc.), and a weight assigned to each citation based on various factors: the type of publication in which it is being cited; the number of authors being cited; in the case of co-authorships an author's contribution to the work being cited (the 'target'); and others. Finally, a numerical score is calculated for each author, article, research institution, journal or whatever the researcher is focusing on; these scores can then be ranked to indicate each cited individual's or entity's relative impact (Lowry et al. 2007). The procedure is based on the premise that the number of times a work is cited is a measure of its influence in the academic world.

93

94   Citation analysis has increasingly been adopted to map out the historical evolution of a

95   particular area of study, the impact of individual researchers, academic institutions or scientific

96   publications, the extent of collaboration between these, or the influence of certain disciplines on

97   others (Glänzel 2003; Kalaitzidakis et al. 2003). In their general study of the technique, Braun et

98   al. (1985) found that articles cited between five and ten times each year during the period

99   immediately following their publication tend to be assimilated into the relevant discipline's

100   'universal' stock of knowledge, and that conversely, if articles go uncited over the same period,

101   there is little chance of such assimilation taking place. Citation analysis has been used in well-

102   established disciplines such as linguistics (White 2004), psychology (Carr & Britton 2003; White

103   & White 1977), and information science (White & McCain 1998), but has also been highly

104   useful in assessing research patterns in fields with much shorter histories, such as TIS (Gile

105   2005).

106

107   Given the increasing popularity of citation analysis, Garfield's Institute of Scientific

108   Information (ISI) produced the first citation index[1] for articles published in academic journals

109   shortly after it was founded in 1960. The ISI has since produced numerous other indexes, which

110   have grown to encompass more than 40 million records and 8,700 research journals (Meho 2006)

111   and are now accessible online via Thomson Reuters' Web of Science. Although originally

112   designed to facilitate access to information, the indexes are now widely recognized as an

113   important source of empirical data for scientometric research (Ivancheva 2008).

114

115   Despite the growth in use of citation indexes, the exponential expansion of scientific research

116   into new disciplines over the past four decades has resulted in numerous high-quality journals

117   being excluded from the 'baskets' used by the leading indexes. To facilitate improved

118   communication among researchers in the field of interpreting, in 1990 Daniel Gile set out to

119   create an international network — the Conference Interpreting Research Information Network

120   (CIRIN) — which publishes a biannual Bulletin. Since then several other searchable databases

121   have been created for this discipline: the Bibliography of Interpreting and Translation (BITRA),

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[1] A citation index is a database that archives bibliographic information from publications: it allows users to trace the progress of a concept or subject of inquiry by sourcing published works that cite particular authors or articles.

122   for example, carries over 50,000 entries and is updated on a monthly basis, while the Translation

123   Studies Bibliography (TSB) subscription service has 24,500 entries to date.

124

125   Gile (2005) surveyed citations from 47 papers on translator and interpreter training written by

126   Western academics to find out which theories were most influential, the languages that target

127   works were most often written in, and whether empirical or non-empirical research had more

128   influence. The interpreter training material he sampled for the study revealed several interesting

129   points: the model advocated by the Association Internationale des Interprètes de Conférence

130   (AIIC) was the most frequently cited theory, while functional theories were dominant in

131   translator training; the majority of the cited literature was written in English; and empirical

132   research played very little part in the papers sampled. In another study (2006) he introduced a

133   qualitative dimension to his analysis by grouping citations into different categories (concepts,

134   methods, findings, etc.), on the assumption that such an approach would provide a more nuanced

135   analysis of each category's impact on the evolution of Translation and Interpreting Studies (TIS).

136   The study revealed that scholars were cited on their methods and findings in less than 10% of the

137   articles in the corpus. Adopting the same classification scheme, Nasr (2010) examined a corpus

138   of 542 texts on translator training. Her study produced a similar result, indicating that empirical

139   research was not influential in shaping research into that subject either.

140

141   By developing methodologies based on citation analysis, earlier researchers have laid the

142   groundwork for assessing the impact of an individual's work and tracing the evolution of a field.

143   In addition to quantitative analysis, qualitative approaches have been proposed to study how

144   scholars cite one another. However, the application of these methodological techniques to

145   investigating the evolution of CIS has to date been very limited. The goal of the present study

146   was to adopt a blended approach with equal emphasis on both quantitative and qualitative

147   considerations to explore how the CIS citation network changes over time and how different

148   research methodologies have affected citation behaviors.

149

150

3. The Present Study

Expanding on the broad themes of enquiry outlined at the beginning of this paper, three more in-depth mini-studies were drawn up to address some of the major issues unresolved by previous researchers. The rationale for each is summarized in the following section.

3.1 Data Organization

The author created a near-comprehensive database of 59,303 citations from the 1,289 Chinese MA theses, 32 doctoral dissertations and 2,909 research papers available to him. The CIS literature was collected from several sources: field trips to university libraries, interlibrary loans, book purchases, and academic databases such as CNKI, Wanfang and the National Digital Library of Theses and Dissertations in Taiwan. Publications with no bibliographic references were excluded from the analysis. Since these publications were obtained from multiple databases and different institutions, convenience sampling should not be an issue in this study: it would only be a problem if there were some inherent qualities among those one was able to sample that would not be present in the entire population. There is no good reason to believe that the publications found in the present sample would be different from ones found elsewhere. Once collected, the references were manually entered into a relational database which uses Structured Query Language (SQL) for managing data.

3.2 Study 1

3.2.1 Research question

Do CIS authors tend repeatedly to cite 'classic' papers, or are they more drawn to the latest research within the field? How can the progress of CIS be quantified by means of citation analysis?

179   A number of scholars (Merton, 1967; Lederberg, 1972; Garfield, 1977) have observed that at

180   the same time as science constantly moves forward, there exists a phenomenon known as

181   obliteration: the pace of scientific progress is so rapid, and new findings become so quickly and

182   thoroughly absorbed into the 'general stock' of knowledge, that a great deal of work is quickly

183   'forgotten' by the academic community. The phenomenon is particularly noticeable in exact

184   sciences, in which authors seem consistently to build upon relatively recent research, the time lag

185   between an author and the work he cites remaining fairly constant (Van Raan, 2010). At the

186   same time, other scholars have observed the long-lasting impact of 'classic' works on the

187   evolution of a field. For instance, Franco Aixelá's 2013 study of the most cited works in Western

188   Translation Studies (WTS) revealed that almost all the most frequently cited papers were

189   "classics" published well before the 2000s, a finding which appears to suggest that WTS scholars

190   have a marked preference for deepening and widening their understanding of the ages-old issues

191   of translation and otherwise carrying on the intellectual lineage of classical authors.

192

193   The research by the aforementioned authors points to two contrasting patterns of knowledge

194   flow existing in tandem. Merton (1967), Lederberg (1972), Garfield (1977) and Van Raan (2010)

195   identified a scenario whereby knowledge flows at a steady rate, which will be referred to in the

196   remainder of this chapter as perfect research flow. By contrast, Franco Aixelá (2013) has

197   observed deviations from this scenario, along a continuum to the extreme opposite one of

198   research stagnation. The aim in this section was to discover whether or not the CIS community

199   followed this academic tradition of WTS', and, more generally, to examine how the field's

200   progress could be illustrated by means of citation analysis.

201

202   **3.2.2 Research methodology**

203

204   Two null hypotheses were tested: the first was that of 'research stagnation'[2] — this tests

205   whether new papers are not constantly being cited; and the second was that of 'perfect research

206   flow' — this tests whether the citation process is stationary[3].

---

[2] 'Research stagnation' in this context is shorthand for the stagnation of the citation process, whereby new articles are not cited and therefore after a given year the distribution of citations falls to zero. As we shall see in the Results and Discussions section (3.2.3.1), this hypothesis was later rejected. Of course, numerous other factors need to be taken into consideration to determine whether or not a field of inquiry is moving forward. Unfortunately the analysis of these is outside the scope of the present study.

207

3.2.2.1 The Hypothesis of Research Stagnation

209

210 Research stagnation occurs when articles published after a given year (t) suddenly cease
211 completely to be cited. One scenario which can lead to this state of affairs is when articles
212 published before year t are so influential that they 'drown out' all citations from ones published
213 after it. This hypothesis is rejected if new papers are being constantly cited.

214

3.2.2.2 The Hypothesis of Perfect Research Flow

216

217 Perfect research flow occurs when the citation process is stationary. The following example
218 illustrates a case of perfect research flow: for articles published in a given year t, let us suppose
219 that no citations come from year $t-4$ or earlier, and that most citations come from papers
220 published in year $t-3$, with half as many for each successive year down to t itself. Perfect
221 research flow comes about when this distribution of citations is true for all the years t examined
222 in the study.

223

224 A typical scenario that would cause this hypothesis to be rejected would be if a few very
225 influential ('classic') articles were published in a given year t_0 and cited more than the average
226 article, even ten years later: in this case the citation process would indeed not be stationary,
227 because in year t_0+10 citations of this article published ten years previously would still be
228 being produced! We therefore would not be dealing with a case of perfect research flow.

229

3.2.2.3 Hypothesis Testing

231

232 The aforementioned hypotheses concern the distribution of the citation process. To test them,
233 all the papers published in year t and the years of all citations contained in those papers were
234 identified. The distribution of papers cited in year t was estimated as the average number of

---

[3] A process is said to be stationary if its distribution remains unchanged over time. In the example given in section 3.2.2.2 the distribution of papers cited in year t is said to be stationary if its relation to the previous years (t, $t-1$, $t-2$, etc) does not depend on t.

235   citations per paper published in year *t* coming from each previous year: *t-1*, *t-2*, *t-3* and so on.
236   The same methodology was applied to all publication years between 1990 and 2013. Once the
237   distribution of cited papers for each year *t* was established, it was possible to test whether the
238   figure was stagnant, and, by measuring how it changed from year to year, whether it was
239   stationary.

240

241   These two hypotheses were tested by comparing the performances of two models—one for each
242   hypothesis—to that of a third, namely a varying coefficient model (VCM).

243

244   Varying Coefficient Models (VCMs) are more generalized versions of regression. Regression
245   expresses the value of an output as a combination of different type of input (or predictors). Each
246   input has an associated coefficient which signifies the importance of its contribution to explain
247   the output. In varying coefficient models, the coefficients themselves vary with other variables,
248   which may or may not be connected to the predictors. For example, in the context of a chemistry
249   experiment, we may get very different coefficients in a linear regression of amount of reagent
250   created depending on outside parameters such as temperature. A varying coefficient model
251   would give a better fit: the coefficients in the regression are functions of the temperature (this is
252   not the same as including the temperature as a predictor, since the dependence of reagent created
253   to the temperature is not direct or linear). An overview of the theory behind VCM models can be
254   found in Hastie & Tibshirani (1993).

255

256   We used a Varying Coefficient Model to fit a citation process somewhere between research
257   stagnation and perfect research flow in the following way. In each model the output was the
258   average number of citations per paper published in target year t. For research stagnation the input
259   was the raw source year of the citations (e.g. a paper is published in 1996). For perfect research
260   flow the input was the relative source year of the citations (the relative source year of papers
261   published in year t-i is i). For both of these models the input coefficients were forced to be fixed
262   across target year t. Finally, we fit the third—VCM—model with the same inputs as for perfect
263   research flow, but allowed the coefficients to vary smoothly with source year.

264

265   All three models were fit using a generalized linear model with Poisson link function.

266   Additionally, the VCM was fit using locally weighted least squares and a Gaussian kernel.

267

268   To test the null hypotheses of research stagnation and perfect research flow we examined

269   whether the VCM model fit the data significantly better than either of the first two using a

270   deviance difference test as proposed in Fan, Zhang and Zhang (2001). Table 1 below contains

271   the resulting p-values.

272

273   **Table 1:** Evaluation of VCMs.

274

275   A more detailed description of our statistical methods—model description, fitting procedure

276   and hypothesis tests—can be found online at: http://interpretrainer.com/VCM_Justification.pdf.

277

278   **3.2.3 Results and discussions**

279

280   Figure 1 is the graph representing the distribution of citation processes for MA theses, doctoral

281   dissertations and journal articles in different years.

282

283   Figure 1: Normalized incoming citations for three strands of CIS research

284

285   **3.2.3.1 Hypothesis of Research Stagnation**

286

287   Figure 1 indicates definite movement over time for the incoming citation curves. In panel 4 of

288   Figure 1 concerning all CIS publications, if all the curves had looked the same, this would have

289   supported the hypothesis that the field of CIS is static. This is not the case here: the 'peaks' in the

290   curves move forward from year to year and do not 'stagnate' at a given year. In sum, the figures

291   suggest that CIS research is moving forward.

292

293   In addition, the hypothesis of research stagnation was rejected on statistical grounds: more

294   recent CIS publications were constantly being cited, as opposed to classic papers receiving the

295   majority of citations as time went by, and that caused the model corresponding to research

296 stagnation to fit less accurately the data than did the VCM model, as demonstrated by the very

297 low p-values for the corresponding tests[4] (see http://interpretrainer.com/VCM_Justification.pdf

298 for more information).

299

300 While newer citations may not necessarily contain innovation — they may simply restate the

301 positions found in classic works — there is assuredly some foundation to Zuckerman's argument

302 (1987) that the use of more recent citations nonetheless indicates that academic inquiry is

303 moving forward. The argument is as follows: a cited paper (Paper A) gains influence when it is

304 cited by multiple authors; however, authors may sometimes be inclined to cite other more recent

305 papers that specifically refer to Paper A, as opposed to citing it directly. While these more recent

306 publications may or may not generate new findings or innovative material, they effectively serve

307 as an intellectual conduit connecting contemporary researchers with past foundational work.

308 Paper A has become so thoroughly incorporated into the field's stock of knowledge, has become

309 so fundamental to it, that authors feel no need to make explicit reference to it. Therefore, the

310 rejection of the research stagnation hypothesis indicates that contemporary researchers build on

311 more recent work and that academic enquiry is moving forward.

312

313 Even though it was both visually and statistically confirmed that CIS is moving forward,

314 whether it has been doing so at a steady pace remains an open question. The rejection of the

315 research stagnation hypothesis says nothing about how research evolves, and notably if the flow

316 of research is 'perfect' in the sense where the distribution of citations is always the same from

317 year to year, and for that reason the hypothesis of perfect research flow needs to be tested.

318

319 **3.2.3.2 Hypothesis of Perfect Research Flow**

320

321 Perfect research flow is the opposite extreme of stagnation, and it means that papers are cited in

322 exactly the same fashion every year. Figure 1 also enable us to grasp visually the rejection of the

323 stationarity hypothesis. If this hypothesis were true, this would imply that the lines shown in the

324 plots did not change with source year. This is clearly not the case here.

---

[4] 'The corresponding tests' refers to those that compare the research stagnation model against the VCM model to see if the former fit data better than the latter. This hypothesis was rejected for all document types: MA theses, journal articles and PhD dissertations.

325

326   Moreover, a statistical analysis was conducted to validate visual intuition concerning the

327   hypothesis of perfect research flow. Indeed, this hypothesis was statistically rejected, because the

328   Varying Coefficient Model fit better to the citation data than did the model corresponding to

329   perfect research flow (described in detail at http://interpretrainer.com/VCM_Justification.pdf).

330   Once again, this is demonstrated by the very low p-values of the corresponding tests in Table 1.

331

332   **3.2.3.3 Hypothesis Testing and Graphical Interpretations**

333

334   To test both of the previously mentioned hypotheses a VCM model was used first to describe

335   the data as accurately as possible, then this model's performance was tested to compare it with

336   those of the models corresponding to each hypothesis.

337

338   For each year t, a spline was fit to incoming citations as a function of $|t\text{-}i|$, where i was the year

339   of publication of the cited article. The VCM model was constructed so that it would be easy to

340   control the variation of the coefficients over time.

341

342   The resulting graphs (see Figures 2 - 4) can be likened to a frame-by-frame movie of the

343   evolution of incoming citations over time.

344

345   Figure 2: Trends in citations for research papers

346

347   Figure 3: Trends in citations for MA theses

348

349   Figure 4: Trends in citations for doctoral dissertations

350

351   The red line is the fit for the VCM model and can be considered the average citations count for

352   that year; the blue dots are the actual number of citations produced in each year; and the gray

353   shaded areas represent a 95% confidence interval for the red line. The gray headers show the

354   year under consideration — for example, '2000' means that all the papers written in 2000 were

355   examined to ascertain the number of citations in them dating from 2000 (*t*), 1999 (*t-1*), 1998 (*t-*
356   *2*), and so forth.

357

358   On examining the incoming citation data it was observed that recent papers were regularly cited
359   within an interval of a year or two — this trend was particularly obvious from 2009 to 2012.
360   Moed (2005) has argued that an author might include a certain reference not only because its
361   content fits the flow of an argument, but because he believes the scholar he is citing has gained a
362   certain stature in the field and will lend credibility to his own ideas. For example, it would be
363   more credible to cite the definition of empirical research by a scholar who has conducted
364   extensive studies of that type than by one whose focus is purely theoretical. The finding that
365   recent papers are cited so soon indicates that newer research has a more or less instant impact on
366   the latest studies and that CIS research is in a state of continuous progression. It was also
367   remarked that, in disregard of the 1-2 year rule mentioned above, citations from material
368   published in 1990 were made in CIS papers throughout the period under study, suggesting that
369   that year may have seen the publication of particularly influential material, whose impact on
370   research has been especially long-lasting. On further examination of the incoming citations, Hu
371   Gengshen's *An overview of interpreting research in China* stood out as the aforementioned
372   material. Hu's paper took a scientometric approach to assessing the themes and trends in
373   interpreting research. From the Y axis it was also clear that many more citations were being
374   made in later years, probably because the number of CIS papers being written was increasing
375   year on year.

376

377   The situation for MA theses was slightly different from that of journal articles, though research
378   was moving forward here too. These authors were somewhat hesitant to cite recently completed
379   theses, preferring those produced at least three years previously, which they could be sure, had
380   been adopted by the academic community and become established. It was also noticeable that
381   material produced in 1996 was cited by numerous MA authors in all subsequent years,
382   suggesting that some very influential work was produced in that year. Detailed analysis revealed
383   that work to be Ru Mingli's thesis *Interpreting quality and the role of the interpreter from the*
384   *perspective of users*, which was produced under the supervision of Chen Yongyu. It should be
385   noted, however, that MA thesis authors cited their predecessors' work far less often than the

386 authors of research papers did theirs: in 2010, for example, research papers produced in 2008

387 were cited no fewer than 148 times; the same figure for MA theses was a mere 22. There are two

388 possible reasons for this phenomenon: (1) a number of researchers (Lawrence 2001; Harnad &

389 Brody 2004; Hajjem et al. 2005) have identified that open-access articles receive a substantially

390 higher number of citations than those that require a subscription — this is true across many

391 disciplines including computer science, physics, sociology and psychology. Proceeding from

392 their findings, it is reasonable to speculate that the difficulty — and expense — of obtaining

393 access has contributed to the significantly lower number of CIS theses being cited in comparison

394 to research papers. (2) In addition, in the academic world MA theses are generally considered to

395 be of lower quality than research papers, which have gone through rigorous peer review.

396

397 Given that the total number of doctoral dissertations was only 32, little in the way of trends was

398 observable. It should be noted, however, that a particular doctoral dissertation produced in 2008

399 was consistently quoted by later PhD authors in the period 2010-13 — this was Gong

400 Longsheng's *An analytical study of the application of Adaptation Theory in interpreting*, written

401 under the supervision of Dai Weidong. Gong is such a well-established and visible academic

402 within the CIS community[5], that it is hardly surprising that his work might attract a large number

403 of incoming citations.

404

405 To conclude, two null hypotheses were both visually and statistically rejected: research

406 stagnation and perfect research flow. To perform those tests two models corresponding to each

407 of the hypotheses, and a third, the Varying Coefficient Model, were constructed. The three were

408 tested to see how well they fit the CIS citation data. Both hypotheses were rejected, because the

409 first two models performed poorly in comparison with the VCM model. Analysis of the citations

410 yielded enough evidence to say that this field is going forward, though not at a constant pace.

411

412 **3.3 Study 2**

413

414 **3.3.1 Research Question**

415

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[5] Gong served as an associate dean of the Graduate School of Business at SISU, has supervised nearly 30 MA interpreting students, and was involved in developing the Shanghai Interpretation Accreditation Test.

416 **What are the most frequent citation types? Do they differ based on language of origin**

417 **(Chinese vs. English) and document type (papers, MA theses and doctoral dissertations)?**

418

419   While quantitative analysis of the academic influence of individual authors, institutions,

420 geographical regions and publications may shed light on the entire CIS landscape, some

421 qualitative analysis of citation types is necessary to provide insight into the interactions between

422 the various schools of thought and research practice that constitute the field.

423

424 **3.3.2 Research methodology**

425

426   The citations were labeled according to the way each cited paper was used by the referring

427 paper. After an initial pilot study,[6] a citation classification system was developed to evaluate how

428 authors were cited in the CIS literature (see Table 2).

429

430 **Table 2**: Citation classification system

431

432   A random sampling without replacement was conducted on each of the six citation databases of

433 CIS: English citations in MA theses, research papers, and doctoral dissertations; and Chinese

434 citations *ibidem*. This form of sampling was used because it leads to more accurate results than

435 sampling with replacement, thanks to an effect known in the simulation literature as 'variance

436 reduction' (Rao 1963). The minimum sample size was fixed at one large enough for detecting

437 any statistically significant difference in the proportions of each citation type between Chinese

438 and English. Given that there was no prior knowledge about whether the number of Chinese

439 citations would be larger than that of the English ones, or vice versa, a power calculation for a

440 two-sided two-sample proportion test was conducted for each of the six citation databases in

441 order to give a 95% chance of detecting a difference of 10%[7] between two proportions at the

---

[6] Building on the studies of Gile (2006) and Nasr (2010), the author conducted a pilot study of citation types in CIS by randomly sampling a total of 239 in-text citations from Chinese papers, theses and doctoral dissertations. After labeling these according to the methods described in Gile's pilot research project (2006), a collaborator who was familiar with the topic was asked to give a 'second opinion' by labeling them again himself, with the aim of ensuring a greater measure of objectivity and reliability. These labelling activities were completed in four installments. The sequential analysis was restricted to 239 citations because by that point the author had sufficient knowledge of regularly occurring citation types in CIS, and the differences in labeling between the author and the collaborator were minimal.

[7] If the true difference in proportions were, for example, 1%, no difference would be detectable unless the sample

442 0.05 significance level. The minimum number of samples required for each database (648 as
443 determined by the power calculation) was collected, analyzed and labeled.

444

445   The majority of the in-text citations were expected to belong to a single citation type, but some
446 belonged to more than one — this occurred primarily when an author cited a particular source at
447 different places in his text. If one of these multi-category observations was selected for inclusion
448 in the random sample, that citation needed to be assigned to a *single* category to maintain
449 consistency. To address this, one of the assigned categories with equal probability was selected
450 at random to decide which category the citation should have been assigned to. Though it may
451 appear crude, assuming equally probable categories as a first approach yields good results, and is
452 frequently used (Kempthorne 1952; Freedman 1997; Schulz & Grimes 2002) when there is no
453 prior knowledge of the distribution of the data.

454

455   Working from the results of the power calculation, which gave an effective way of sampling;
456 confidence intervals of 95% were constructed for the proportion of each citation type. It was
457 expected that N/A would be the most frequently used citation type across all three categories of
458 CIS publication in both Chinese and English. Citation practice in the Chinese academic
459 community is distinctly different from that of the Western world: large numbers of scholars list
460 in their bibliographies the literature they consult while conducting research, even if it is not
461 directly cited in the body of their texts. However, according to most Western style guides, such
462 as that of the American Psychological Association (APA), authors are required to cite the works
463 of those who have directly influenced their research, and every resource in the bibliography must
464 have a corresponding in-text citation, with the exception of some classics such as the Bible (APA
465 2010). Because of the lack of textual references to these N/A citations it is not easy to code them.
466 There may be limits to the space available to authors for recording references, meaning that not
467 all the works that have influenced them will make it to the final list, so it is reasonable to assume
468 that they are painstaking in their choice of what to include. Those citations that are listed,
469 including those in the N/A category, must have had a major influence on the author, be it factual,
470 theoretical or inspirational. Because of the different impacts that Western and Chinese literatures
471 have had on CIS, the proportions of N/A for English and Chinese citations were expected to

---

sizes were at least 64,974! The entire population for the present study comes nowhere near this size. A 10%
difference was chosen because it allowed the author to work with a reasonably sized sample.

472   differ — analyzing these proportional differences might help to illustrate the ways in which

473   Eastern and Western thought have influenced CIS.

474

475   Another expected finding was that authors would be frequently cited for their Ideas and

476   Prescriptive and Non-prescriptive Opinions; this might come as a surprise to those from

477   disciplines where opinion-based citations are not common. These citations of Ideas and Opinions

478   are prevalent because practicing interpreters are highly respected in the CIS community. This is

479   corroborated by the fact that numerous professionals with no background in research are

480   regularly invited to serve as keynote speakers at the biannual National Conference and

481   International Forum on Interpreting, the most important research conference in China. Tangential

482   Research was another citation type expected to be in frequent use, because scholars may often

483   feel obligated to make 'ceremonial citations', i.e. referencing the leading experts in the field

484   without actually having read their research (Meho 2006). At the other end of the spectrum,

485   research methodology and findings were expected to be in much less frequent use, because non-

486   empirical research still accounts for the overwhelming majority of published works in CIS.

487

488   **3.3.3 Results and discussions**

489

490

491   Figure 5: Proportion of the top 10 citation categories with confidence bars across all databases

492

493   When a fair and unbiased random sample is taken from a large population, the law of large

494   numbers ensures that the sample average for any category ought to be close to the true value of

495   the mean in the total population. Confidence intervals represent intervals where the real average

496   proportion of each category will be with some probability; in the current study, this probability

497   was set to 95%. For example, in the sample for the present study (3,888 citations), nearly 45%

498   were labeled N/A. Therefore the 95% confidence interval for all the N/A citations was [42% ;

499   45.1%], a finding which appears to suggest that almost half of the works listed in the

500   bibliographies of CIS authors did not appear in the body of the text. The prevalence of N/A

501   references indicates that certain cited authors may not necessarily be linked directly to the

502   research of those citing them, despite having played an instrumental role in shaping their outlook

503   on interpreting or influencing their professional training. For example, a further analysis revealed

504   that 75.3% of the references to Mei Deming and 85.6% of those to Zhang Weiwei belonged to

505   the N/A category; their cited works are the leading interpreting textbooks in China, though not

506   regarded as theoretical or empirical contributions to CIS research. The second most popular

507   citation type (theoretical analysis) stood at 7.5%; the corresponding 95% confidence interval was

508   [6.6% ; 8.3%]. From this finding it is reasonable to speculate that theoretical research has played

509   a crucial role in shaping CIS. It was also observed that 5.8% of citations belonged to the research

510   finding category (95% confidence interval: [5.1; 6.5%]). This is interesting because that citation

511   type is generally associated with empirical research. Its being the third most frequently used type

512   seems to indicate that CIS authors were also keenly aware of the importance of empirical

513   research, and consciously analyzed how their research could amplify the findings of previous

514   scholars.

515

516   An examination was also made of the distribution of citation types by the following methods:

517

518   (1) Citation type distribution for all Chinese citations (see Figure 6)

519   (2) Citation type distribution for all English citations *ibidem*

520   (3) Top ten citation types for all Chinese citations in theses, dissertations and papers (see

521   Figure 7)

522   (4) Top ten citation types for all English citations in theses, dissertations and papers *ibidem*

523   (5) Citation types for MA theses, dissertations and papers (see Figure 8)

524

525

526   Figure 6: Proportions of all English and Chinese citation type distributions with confidence bars.

527

528   Confidence intervals of 95% were constructed to compare the differences in the proportions of

529   each category between Chinese and English references. If for a given category the means of the

530   two populations have non-overlapping confidence intervals, this indicates a statistically

531   significant difference between the Chinese and English citations – non-overlapping 95%

532   confidence intervals guarantees a test for differences at alpha level of 0.05 (Knezevic 2008). For

533   example, the proportion of N/A citations was [46.2% ; 50.6%] for Chinese against [36.6% ;

534   41.0%] for English. The differences in proportions suggest that English references listed in

535   bibliographies are more likely to have corresponding in-text citations than their Chinese

536   counterparts, which would indicate that CIS authors are more indirectly influenced by their

537   Chinese than their Western colleagues.

538

539   The analysis also revealed that there was a significant difference in the Theoretical Analysis

540   citation type between Chinese (95% CI: 4.1-6.0%) and English (95% CI: 8.5-11.2%) (Figure 7).

541   This would appear to indicate that, in cases of theoretical discussions, CIS authors are roughly

542   twice as likely to cite English authors as their Chinese colleagues. In addition, it was found that

543   Prescriptive Opinions (95% CI: Chinese 3.7-5.6% vs. English 2.1-3.6%) and Textbook citations

544   (95% CI: Chinese 1.6-2.9% vs. English 0.1-0.5%) were less common in English than in Chinese

545   citations, while Research Findings were more common (95% CI: Chinese 3.1-4.8% vs. English

546   6.5-8.8%). While advice from all practicing professionals is highly valued in the global

547   interpreting community, these findings appear to suggest that the opinions of Chinese

548   interpreters carry more weight with CIS authors than those of their Western counterparts.

549   Textbooks are usually seen as repositories of established fact rather than sources of cutting-edge

550   ideas. The fact that Chinese textbooks are cited more often than Western ones highlights that CIS

551   researchers frequently turn to them for well-established facts.

552

553   The most frequently occurring category of Chinese citation besides N/A was Characterization

554   (95% CI: [4.6 ; 6.6%]). Given that experience-based, intuitive writing was dominant in CIS'

555   early developmental stage, and that practicing interpreters often resorted to summarizing the

556   features of a phenomenon or idea rather than theorizing or providing empirical support, its

557   popularity is understandable. Conversely, the most frequent category in English citations after

558   N/A was Theoretical Analysis (95% CI: 8.5-11.2%), which suggests that CIS authors were

559   influenced by the theoretical work of Western authors.

560

561

562   Figure 7: Proportions of the top ten citation types for all Chinese and English citations in theses, dissertations and
563   papers

564

565

566   Figure 8: Proportions of all citation types for MA theses, dissertations and papers

567

568   From this point forward the citation distribution in each document type was examined, to
569   spotlight the differences in how different sub-groups of CIS authors make bibliographic
570   references. Citation practice differed widely across the document classes. In MA theses
571   statistically significant differences between Chinese and English references were found for the
572   following citation types: N/A (95% CI: 47.1-54.7% for Chinese vs. 35.6-43.2% for English),
573   Tangential Research (95% CI: 3.7-7.1% for Chinese vs. 0.3-1.9% for English), Theoretical
574   Analysis (95% CI: 2.1-5.0% for Chinese vs. 12.9-18.5% for English) and Textbooks (95% CI:
575   1.5-4.0% for Chinese vs. 0-0.5% for English). The finding for N/A tallies with the earlier result
576   for all citations. As for the Tangential Research type, the result suggests that Chinese authors'
577   research is more frequently mentioned in passing without specific reference to its contents than is
578   the case for Western authors. One might wonder if some thesis authors cite their compatriots as a
579   way of paying tribute rather than because their works inspire or influence them. In addition, this
580   finding is in line with our interpretation of the differences in proportions for the N/A category
581   between Chinese and English references. Of course, there is also the possibility that thesis
582   authors prefer a style of literature review that summarizes more than it analyzes. It is worth
583   noting that no statistically significant differences were observed between Chinese and English
584   references for citation types generally associated with empirical research, such as Research
585   Methodology or Findings.

586

587   It was also revealed that Theoretical Analysis was the second most popular type of all thesis
588   citations, though English authors were far more frequently referred to than Chinese for this
589   category. Its popularity across both Chinese and English strongly suggests that theoretical
590   research is influential on Chinese thesis authors. It was somewhat surprising to find that citing
591   someone for their definitions was a moderately popular citation type (English: 7.9-12.5%;
592   Chinese: 3.4-6.8%) — one might have expected researchers mainly to cite others for their
593   research findings or theories, rather than regularly resorting to them for the definitions of certain
594   terms. Close examination of the contexts in which this type of citation occurs revealed that a
595   significant number of MA students reviewed the history of interpreting at the beginning of their

596   theses, citing Western researchers to define various types of interpreting and clarify the
597   differences between it and translation.

598

599   In journal articles and conference proceedings there were statistically significant differences
600   between Chinese and English references for the Prescriptive Opinion (English<Chinese) and
601   Theory citation types (English>Chinese). This finding suggests that in developing their work
602   CIS article authors were more likely to turn to Western scholars for theories and models and to
603   their Chinese colleagues for intuitive understanding of interpreting. It is worth remembering here
604   that the preference for citing Chinese colleagues for Prescriptive Opinion was also observed in
605   theses. It is understandable that Western scholars are more often cited for Theory, because the
606   first generation of Chinese SI trainers received their education in Brussels — theories such as the
607   Interpretive Theory of Translation and the Effort Models have served as the foundations for
608   many a Chinese author's research. It should be noted here that unlike the earlier findings, no
609   statistically significant difference was observed in N/A between English and Chinese references
610   in research papers[8]; this might be explained by the fact that the comparison was made on a
611   smaller sample for papers (the average number of citations in papers was 10, compared to 43 for
612   theses and 278 for dissertations).

613

614   In doctoral dissertations the following citation types yielded statistically significant differences
615   between Chinese and English references: N/A (Chinese>English), Research Findings
616   (English>English), Concepts (English>Chinese), and Theory (Chinese>English). As in the
617   dissertation category, there were statistically fewer corresponding in-text citations for Chinese
618   references than for English ones, which is consistent with all previously discussed findings in the
619   overall, article and thesis categories. It should be noted that the proportion of Research Findings
620   was higher here than in any other document type examined. This suggests that PhD students
621   particularly rely on predecessors' empirical findings to shape their own work.

622

623   In sum, CIS researchers displayed different citation behavior across languages and document
624   classes, and no particular citation type yielded significant differences between Chinese and

---

[8] The statistic of a two-sample z test is 0.79, which is smaller than the critical value of 1.96. Thus, there is no evidence to suggest that there is a statistically significant difference between the proportions of English and Chinese N/A citations.

625 English references across all three document classes. However, the N/A citation type was more
626 frequently used in the Chinese references of theses and doctoral dissertations than in the English
627 ones, while the opposite was the case for Theory. Other than N/A, no citation type occurred more
628 than 20% of the time across languages and document classes, suggesting that research is cited in
629 diverse ways in the CIS community and no particular citation type is predominantly used.

630

631 ## 3.4 Study 3

632

633 ### 3.4.1 Research question

634

635 **What different effects does the choice of empirical vs. theoretical research have on the use**
636 **of citations in the three document types?**

637

638 Citations illustrate a dynamic relationship between source and target authors; identifying
639 whether a document is being cited for its methods, concepts or theories illustrates how
640 researchers interact with and influence one another. As observed by Garfield (1979), a
641 comprehensive survey of citation types could provide useful information on the structure and
642 evolution of a science. When a source author is cited for his concepts, ideas or opinions, he is
643 typically engaged in theoretical research, while citations of methodology and findings are
644 typically taken from empirical research (Gile 2006). An examination of the shares of citations
645 that relate to empirical vs. theoretical research would shed light on the relative influences that the
646 two methods have in the three categories of CIS publications.

647

648 3.4.2 Research methodology
649 The analysis for this research question proceeds from the assumption described in section 3.4.1
650 that certain citation types (Research Methodology and Finding) are typically associated with
651 empirical research, while others (Concepts, Ideas and Opinions) are linked to theoretical studies.

652

653 It was expected that doctoral dissertations might contain a greater proportion of empirical
654 citations than MA theses and research papers. Furthermore, it was predicted that citations
655 relating to theoretical research would be most frequently found in papers, followed by theses and

656 dissertations. These predicted outcomes were based on the fact that 80% of dissertations were

657 empirical (compared with 50% of theses and 20% of papers), indicating that empirical

658 methodologies were the preferred research approach among doctoral students, whereas paper

659 authors, who were mostly established academics, preferred theoretical research.

660

661 First it was necessary to determine how many data points would be required to detect a 10%

662 difference between two proportions at the 0.05 significance level. Given that there is reason to

663 believe that the differences in the proportions of empirical and theoretical citations are

664 directional, a power calculation for a one-sided two-sample proportion test was conducted to

665 determine the minimum number of citations that would be needed as samples from each of the

666 three categories of CIS publications to guarantee enough statistical power of the test. Since there

667 was found to be no relationship between the hypotheses in Questions 2 and 3, re-using the same

668 samples is not an issue. The minimum sample size for Question 2 was 648 for every possible

669 combination of language and document type, whereas the same number for Question 3 was 755

670 for each category of document. The actual sample of 1,296 (combining the sampled Chinese and

671 English citations in each document type) easily exceeded the necessary minimum for Question 5,

672 further increasing the power without increasing a type one error. Once all the required citations

673 were labeled, a two-proportion z-test was performed, yielding p-values. The z-test examined

674 whether the proportions of citations associated with theoretical research were equal to those

675 associated with empirical research.

676

677 3.4.3 Results and discussions

678

679 A two-proportion one-sided z-test was used to evaluate whether the proportion of empirical

680 citations was greater than non-empirical ones. The test yielded the following p-values for the

681 four tests (p-values were rounded to 3 digits): the comparison between the proportion of

682 Research Methods and Findings cited by articles and MA theses (empirical citations) was not

683 significant ($p = 0.532$). However, the comparison between doctoral dissertations and theses was

684 significant ($p < 0.001$). The proportions for citations of research methods and findings in theses,

685 articles and doctoral dissertations were 0.064, 0.065 and 0.124 respectively.

686

687 (1) Articles > theses IS NOT significant, p = 0.532

688

689 (2) Doctoral > theses IS significant, p < 0.001

690

691   It was observed that doctoral dissertations cited research methods and findings more than

692 theses, therefore the null hypothesis that the reverse would apply can be rejected; but there was

693 little evidence to support the same claim for theses as compared to journal articles, therefore that

694 null hypothesis cannot be rejected. However, given that the p-value in hypothesis (2) is

695 significant, it can be stated with confidence that doctoral dissertations cited research methods and

696 findings more than papers. The data suggest the following relations:

697

698 **Research methods and findings:** dissertations > (theses ? journals)[9]

699

700   It was observed that theses used fewer citations of Concepts, Ideas and Opinions (theoretical

701 citations) than papers, but there was scant evidence to suggest that doctoral dissertations used

702 fewer such citations than theses. The overall proportions for these citations in the three types of

703 publication were 0.094, 0.086 and 0.133.

704

705 (3) Theses > doctoral IS NOT significant, p = 0.246

706

707 (4) Articles > theses IS significant, p < 0.001

708

709   However, the present analysis demonstrates that the differences between the two categories are

710 significant, which is in line with the idea that theses use fewer concepts:

711

712 **Concepts, ideas, and opinions:** (dissertations? theses) < journals

713

714   Because questions (1) and (3) compare MA theses and research papers, and questions (2) and

715 (4) compare doctoral dissertations and MA theses, and because there is not a new random sample

---

[9] 'Theses? journals' means that the null hypothesis that theses have fewer research methodology citations than articles cannot be rejected, therefore the author cannot comment on any relationship that might exist between theses and journals in this specific case. Unlike a two-sided test, where the null hypothesis is equality, the null hypothesis for our one-sided test is less than or equal to zero.

716 for each test, the tests are correlated. To control the familywise error rate, the present author

717 implemented the Bonferroni-Holm correction method, a sequential method where the p-values

718 do not have to be adjusted but can, rather, be compared to a different significance level to keep

719 the familywise error rate for all of the tests at 0.05. Without such correction, there would be an

720 increased chance of rejecting correct null hypotheses, thus increasing Type-I errors.

721

722 After the correction, even the two smallest p-values remained significant when compared to the

723 new cutoffs:

724

725 (2) Research methods and findings: doctoral > theses IS significant at 0.0125, p-value: 7.75e-08

726 (4) Concepts, ideas, and opinions: articles > theses IS significant at 0.0167, p-value: 0.000639

727

728 This strongly suggests that the previous findings — that dissertations cite more research

729 methods and findings than theses, and that dissertations and theses cite fewer concepts, ideas and

730 opinions than papers — still hold true even after adjusting for familywise errors. In other words,

731 empirical research has a greater influence on how doctoral scholars cite papers than it does on

732 thesis and paper authors; and theoretical research has a more significant impact on how paper

733 authors make citations than it does on MA and doctoral authors. This finding is interesting

734 because it indicates that data-driven research is more popular among MA and doctoral students,

735 whereas theoretical research is favored by established academics. If MA and doctoral students

736 represent the future of CIS, one can expect empirical research to continue to expand its sphere of

737 influence in the foreseeable future.

738

739 ## 4. Conclusion

740

741 The author hopes that this scientometric survey has demonstrated the merits of blending

742 quantitative with qualitative analysis to paint a panorama of Chinese Interpreting Studies.

743 Citation data was used to measure the progress of CIS: the field is a dynamic one with new

744 papers being constantly cited, though a few influential older papers have withstood the process

745 of 'obliteration'. Citation sampling and labelling were employed to describe how scholars exhibit

746 different citation patterns across languages and document types, and how authors' choice of

747   empirical or theoretical research variously influences journal articles, MA theses and doctoral

748   dissertations.

749

750   Thanks to its comprehensive collection of data, the study did not face the issues of sample size

751   typically associated with quantitative analyses of interpreting studies (IS) in the past. In the West

752   only a few hundred individuals are dedicated to interpreting research; by contrast, no fewer than

753   3,500 Chinese scholars are documented in this study's database: this wealth of available data

754   made it possible to adopt some of the latest statistical techniques to assess the evolution of CIS.

755   The qualitative elements of the study served to spotlight unique patterns of behavior exhibited by

756   its researchers when citing their predecessors.

757

758   The focus of this paper being IS, no attempt was made to explore translation-related

759   publications. Given that translation studies (TS) has a longer history and many more participants

760   than IS in China, an interesting future line of inquiry would be to research the themes and

761   patterns of the former, so as to offer a balanced view of how the whole discipline of translation

762   and interpreting studies has developed and is developing. According to Franco Aixelá (2013), it

763   takes at least five years for Western TS publications to receive any citations, in sharp contrast to

764   the 1-2-year rule for Chinese papers. It is reasonable to predict that Chinese TS, with its strong

765   focus on classic authors and their theories, may need much more time to gain any traction.

766   However, as is the case for IS, with its increasing influence from neighboring disciplines such as

767   psychology and linguistics, the time lag between citing and cited papers in TS is greatly

768   shortened as time goes by.

769

770   Also, with the ever-increasing level of academic exchange between East and West, a

771   comparative study of the differences and similarities between the two would provide valuable

772   insights to policy-makers charged with shaping the future direction of academic research. In the

773   West, Chesterman (1998) observed that one of the most important trends in TIS has been the

774   shift from theoretical to empirical research. Pym (2010) further argued that the regurgitation of

775   'authoritative' insights without empirical testing does not help advance the field. It would be

776   interesting to seek out empirical evidence to corroborate Chesterman's observations regarding the

777   trends in Western TIS and to investigate whether empirical studies have a tangible effect on

778   journal articles, theses and doctoral dissertations in the field. If the answer to that question turned

779   out to be negative, the design of curricula for training future TIS researchers might need to be

780   reconsidered, and in particular their empirical components reinforced. On the Chinese front,

781   Wang and Mu found (2009) that though the number of publications was on the rise, many were

782   no more than speculative and personal reflections regarding training. Thanks to its much more

783   comprehensive and recent data-set, this study has found that the current CIS landscape is a

784   complex and rapidly changing one: while journal articles and conference proceedings are still

785   dominated by theoretical analysis, doctoral studies have been heavily influenced by empirical

786   research.

787

788   Interpreting is a profession whose actions can have real-world consequences in diplomatic,

789   military, commercial, and judicial fields, among many others. For this reason alone, the ideas

790   and theories in use need to be tested, adjusted and improved in the real world so that aspiring

791   interpreters may hone their skills with the maximum of efficiency and efficacy. The findings of

792   this study have demonstrated that CIS has come a long way from its infancy. While much more

793   work undoubtedly needs to be done to improve the overall quality of CIS research, it is

794   reassuring to have learned that scholars in the field have begun to appreciate the importance of

795   empiricism and that as a result the general trend of the discipline is moving in the right direction.

796

References

798

799   APA. (2010). *Publication manual of the American Psychological Association*. Washington, DC:
800   American Psychological Association.

801   Baumgartner, H. & Pieters, R. (2003). The structural influence of marketing journals: A citation
802   analysis of the discipline and its subareas over time. *Journal of Marketing,* 67 (2), 123-
803   139.

804   Binhua, W. & Lei, M. (2009). Interpreter training and research in mainland China: Recent
805   developments. *Interpreting*, 11(2), 267-283.

806 Braun, T., Glänzel, W. & Schubert, A. (1985). *Scientometric indicators: A 32 country*
807 *comparative evaluation of publishing performance and citation impact*. World
808 Scientific.

809 Carr, J. E. & Britton, L. N. (2003). Citation trends of applied journals in behavioral psychology
810 1981-2000. *Journal of Applied Behavior Analysis,* 36 (1), 113-117.

811 Chen, B. (2009). Interpreting research in China: Past and present (In Chinese). *The Science and*
812 *Education Article Collects,* 264-265.

813 Chesterman, A. (1998). "Causes, translations, effects." *Target* 10(2), 201-230.

814 Fan, J., Zhang, C. & Zhang, J. (2001). Generalized Likelihood Ratio Statistics and Wilks
815 Phenomenon. *The Annals of Statistics*, 29(1), 153-193.

816 Franco Aixelá, J. (2004). The study of technical and scientific translation: An examination of its
817 historical development. *The Journal of Specialised Translation,* 1, 29-49.

818 Franco Aixelá, J. (2013). Who's who and what's what in Translation Studies: A preliminary
819 approach. In C. Way, S. Vandepitte, R. Meylaerts, & M. Bartłomiejczyk, (Eds).
820 *Tracks and Treks in Translation Studies*. John Benjamins, 7-28.

821 Freedman, D. (1997). Some issues in the foundation of statistics. *Topics in the Foundation of*
822 *Statistics,* 1, 19-39.

823 Gao, B. (2008). *Conjecture and refutations: An inquiry into researches on cognitive process in*
824 *simultaneous interpreting* (In Chinese)*. PhD dissertation, Shanghai International*
825 *Studies University*.

826 Garfield, E. (1972). Citation Analysis as a Tool in Journal Evaluation. *Science,* 178(4060), 471-
827 479. http://www.jstor.org/stable/10.2307/1735096?ref=no-x-
828 route:8f4816e110f43a76725a95940101096a (accessed 17th February 2015)

829 Garfield, E. (1977). The 'obliteration phenomenon' in science -- and the advantage of being
830 obliterated. In E. Garfield (Ed.), *Essays of an information scientist*. 2. Philadelphia,
831 PA: Institute for Scientific Information. 396-398.

832 Garfield, E. (1979). *Citation indexing: Its theory and application in science, technology, and*
833 *humanities*. New York: Wiley.

834 Gile, D. (1994). Opening up in interpretation studies. In M. Snell-Hornby, F. Pöchhacker, & K.
835 Kaindl (Eds.), *Translation studies: An interdiscipline*. John Benjamins. 149-158.

836 Gile, D. (1999). Use and misuse of the literature in interpreting research. *The Interpreters'*
837   *Newsletter,* 9, 29-43.

838 Gile, D. (2000). The history of research into conference interpreting: A scientometric approach.
839   *Target,* 12(2), 297-321.

840 Gile, D. (2005). Citation patterns in the T&I didactics literature. *Forum,* 3 (2), 85-103.

841 Gile, D. (2006). L'interdisciplinarité en traductologie : Une optique scientométrique (In French).
842   In Ö Kasar, (Ed.) Interdisciplinarité en traduction (*11e Colloque International sur la*
843   *Traduction*). Istanbul: Isis. 23-37.

844 Glänzel, W. (2003). *Bibliometrics as a research field: A course on theory and application of*
845   *bibliometric indicators*. Lecture.

846 Gong, L. (2008). *An analytical study of the application of Adaptation Theory in Interpreting* (In
847   Chinese). *PhD dissertation, Shanghai International Studies University*.

848 Grbić, N. & Pöllabauer, S. (2009). An author-centred scientometric analysis of Daniel Gile's
849   œuvre. *Effort and models in interpreting and translation research*. John Benjamins. 3-
850   24.

851 Hajjem, C., Harnad, S. & Gingras, Y. (2005). Ten-year cross-disciplinary comparison of the
852   growth of open cccess and how it increases research citation impact. *ArXiv*.

853 Harnad, S. & Brody, T. (2004). Comparing the impact of open access (OA) vs. non-OA articles
854   in the same journals. *D-lib Magazine,* 10 (6).

855 Hastie, T. & Tibshirani, R. (1993). Varying-Coefficient Models. *Journal of the Royal Statistical*
856   *Society,* 55(4), 757-796.

857 Hu, G. (1990). An overview of interpreting research (In Chinese). *Foreign Language Teaching*
858   *and Research,* 4 (84), 1-6.

859 Ivancheva, L. (2008). Scientometrics today: A methodological overview. *Collnet Journal of*
860   *Scientometrics and Information Management,* 2 (2), 47-56.

861 Kalaitzidakis, P., Mamuneas, T. P. & Stengos, T. (2003). Rankings of academic journals and
862   institutions in economics. *Journal of the European Economic Association,* 1 (6), 1346-
863   1366.

864 Kempthorne, O. (1952). *The design and analysis of experiments*. New York: Wiley.

865 Knezevic, A. (2008). Overlapping confidence intervals and statistical significance. *StatNews*, 73,
866   1.

867 Kuhn, T. S. (Ed.) (1970). *The structure of scientific revolutions*. Chicago: University of Chicago
868   Press.

869 Lawrence, S. (2001). Online or invisible. *Nature,* 411 (6837), 521.

870 Lederberg, J. (1972). Reply to H.V. Wyatt. *Nature,* 239 (234).

871 Lowry, P. B., Karuga, G. G. & Richardson, V. J. (2007). Assessing leading institutions, faculty,
872   and articles in premier information systems research journals. *Communications of the*
873   *Association for Information Systems (CAIS),* 20 (16), 142-203.

874 Meho, L. I. (2006). The rise and rise of citation analysis. *Physics World,* 1-15.

875 Merton, R. K. (1967). *On theoretical sociology*. New York: Free Press.

876 Moed, H. F. (2005). *Citation analysis in research evaluation*. Dordrecht: Springer.

877 Nasr, M. (2010). *Pour l'obtention du titre de Docteur en Traductologie* (In Chinese). *PhD*
878   *dissertation, UNIVERSITÉ PARIS III.*

879 Pöchhacker, F. (1995). Writing and research in interpreting: A bibliographic analysis. *The*
880   *Interpreters' Newsletter,* 6, 17-31.

881 Pym, A. (2009). On empiricism and bad philosophy in translation studies. In HC Omar, H.
882   Haroon, & A. Abd. Ghani (Eds). *The sustainability of the translation field: 12th*
883   *international conference on translation.* 28-39.

884 Rao, J. N. (1963). On Three Procedures of Unequal Probability Sampling without Replacement.
885   *Journal of the American Statistical Association,* 58 (301), 202-215.

886 Ru, M. (1996). *Interpreting quality and the role of the interpreter from the perspective of users*
887   (In Chinese). *PhD Dissertation, Fu Jen Catholic Universit.y*

888 Schulz, K. F. & Grimes, D. A. (2002). Generation of allocation sequences in randomised trials:
889   Chance, not choice. *The Lancet,* 359 (9305), 515-519.

890 Vallmitjana, N. & Sabaté, L. G. (2008). Citation analysis of PhD dissertation references as a tool
891   for collection management in an academic chemistry library. *College & Research*
892   *Libraries,* 69 (1), 72-82.

893 Van Raan, A. F. (2010, December 3). *Ranking of universities: Methods, limitations, challenges*.
894   Lecture presented in Middle East Technical University, Ankara.

895 White, H. D. & Mccain, K. W. (1998). Visualizing a discipline: An author co-citation analysis of
896   information science, 1972–1995. *Journal of the American Society for Information*
897   *Science,* 49 (4), 327-355.

898   White, H. D. (2004). Citation Analysis and Discourse Analysis Revisited. *Applied Linguistics,* 25
899   (1), 89-116.
900   White, M. J. & White, K. G. (1977). Citation analysis of psychology journals. *American*
901   *Psychologist,* 32 (5), 301-305.
902   Xu, Z. (2014). Chinese Interpreting Studies: Genesis of a discipline. *Forum: International*
903   *Journal of Interpretation and Translation,* 12 (2), 159-190.
904   Xu, Z. (2015). The past, present and future of Chinese MA theses in Interpreting Studies: A
905   scientometric survey. *Perspectives, .* (Forthcoming)
906   Zuckerman, H. (1987). Citation analysis and the complex problem of intellectual influence.
907   *Scientometrics,* 12 (5-6), 329-338.
908
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910
911
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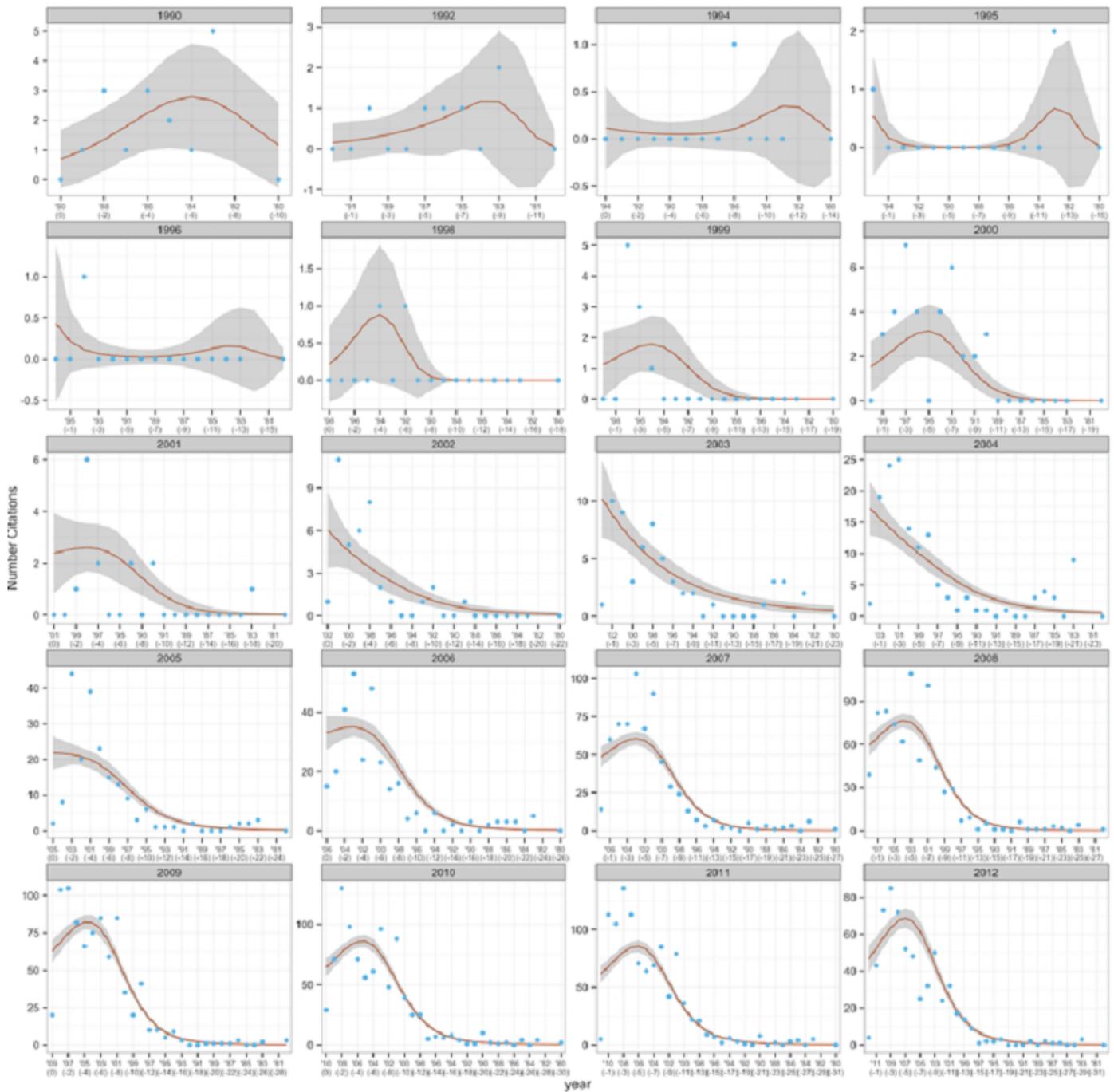
Trends in citations for research papers

Proportion of the top 10 citation categories with confidence bars across all databases

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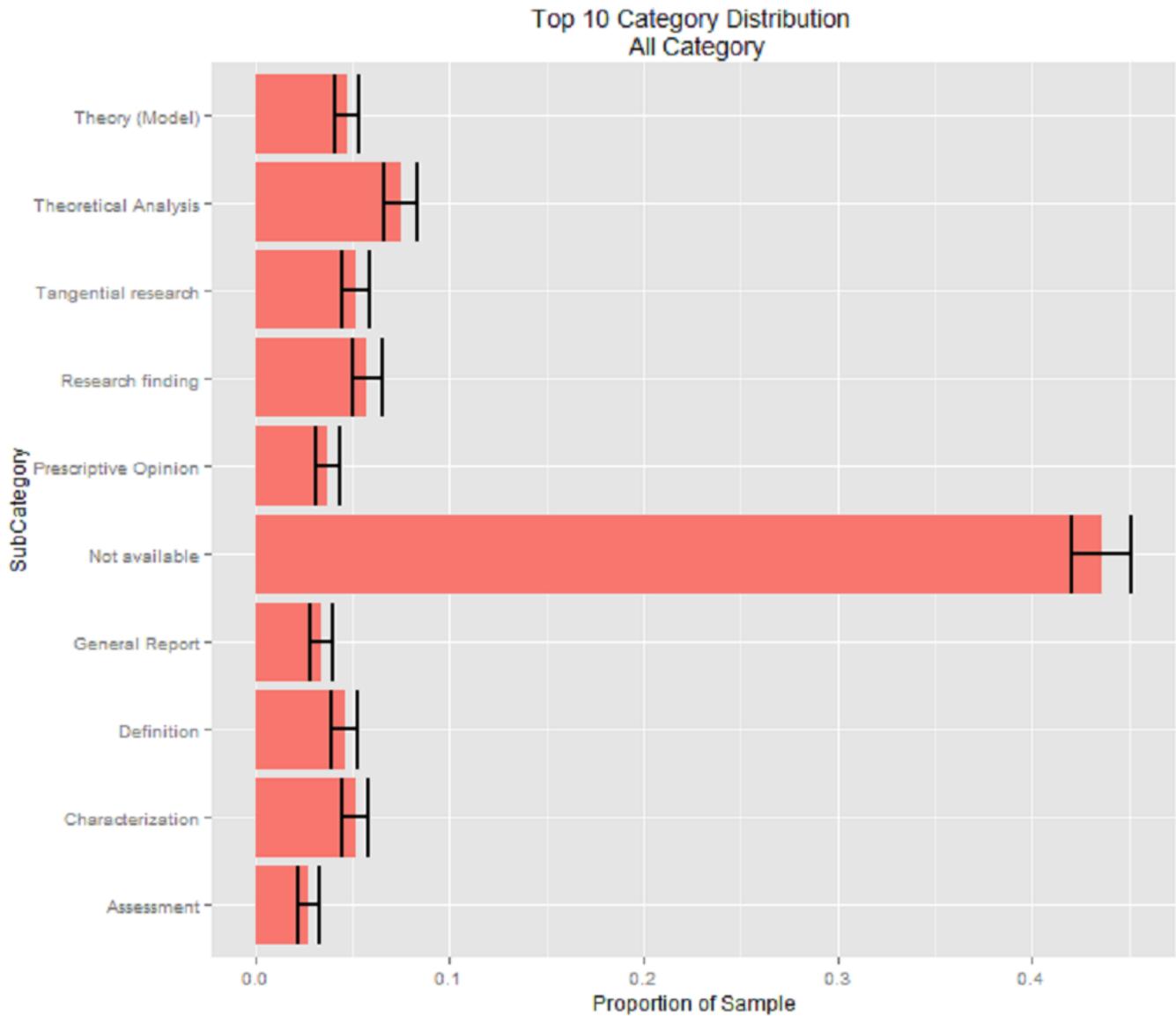
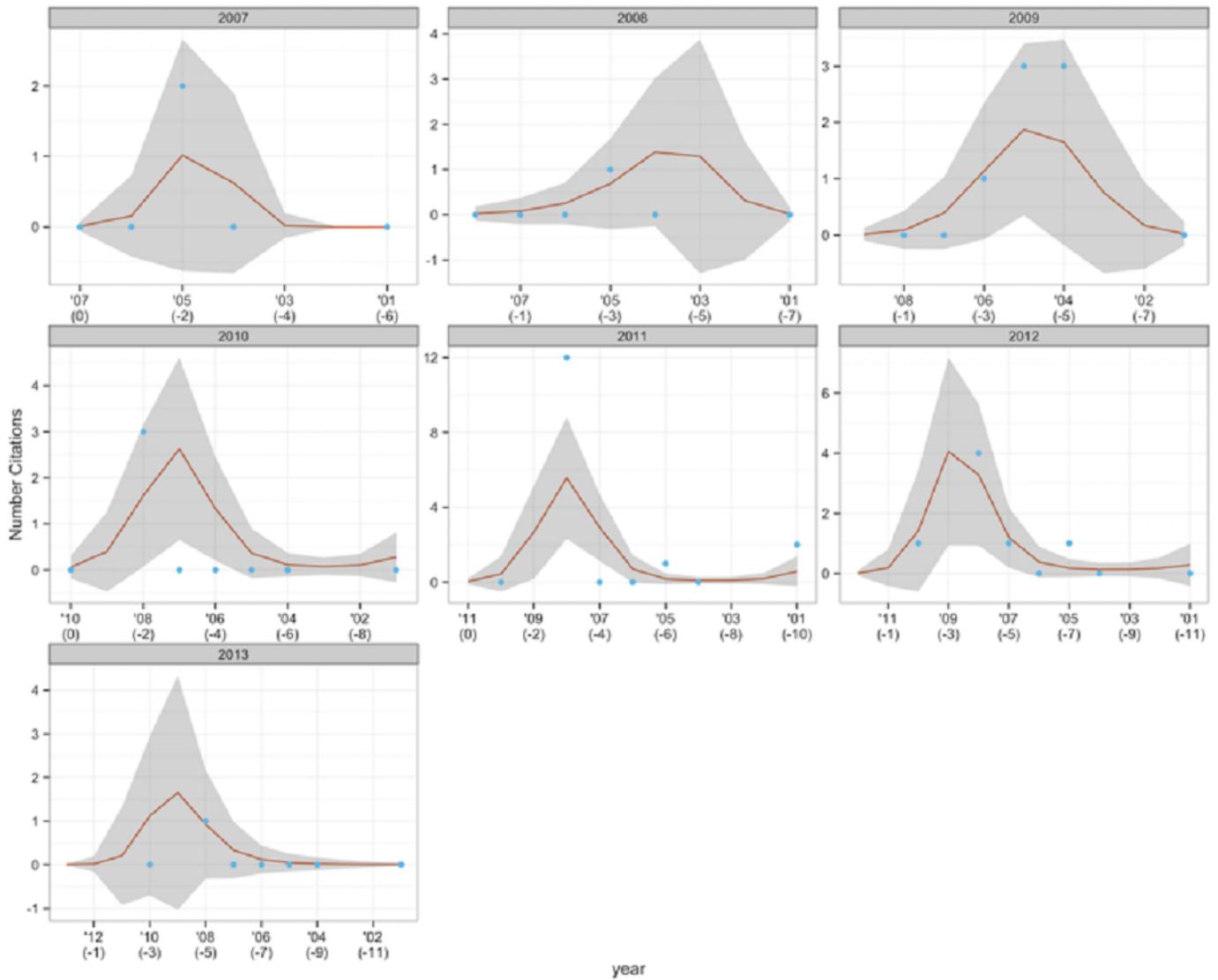
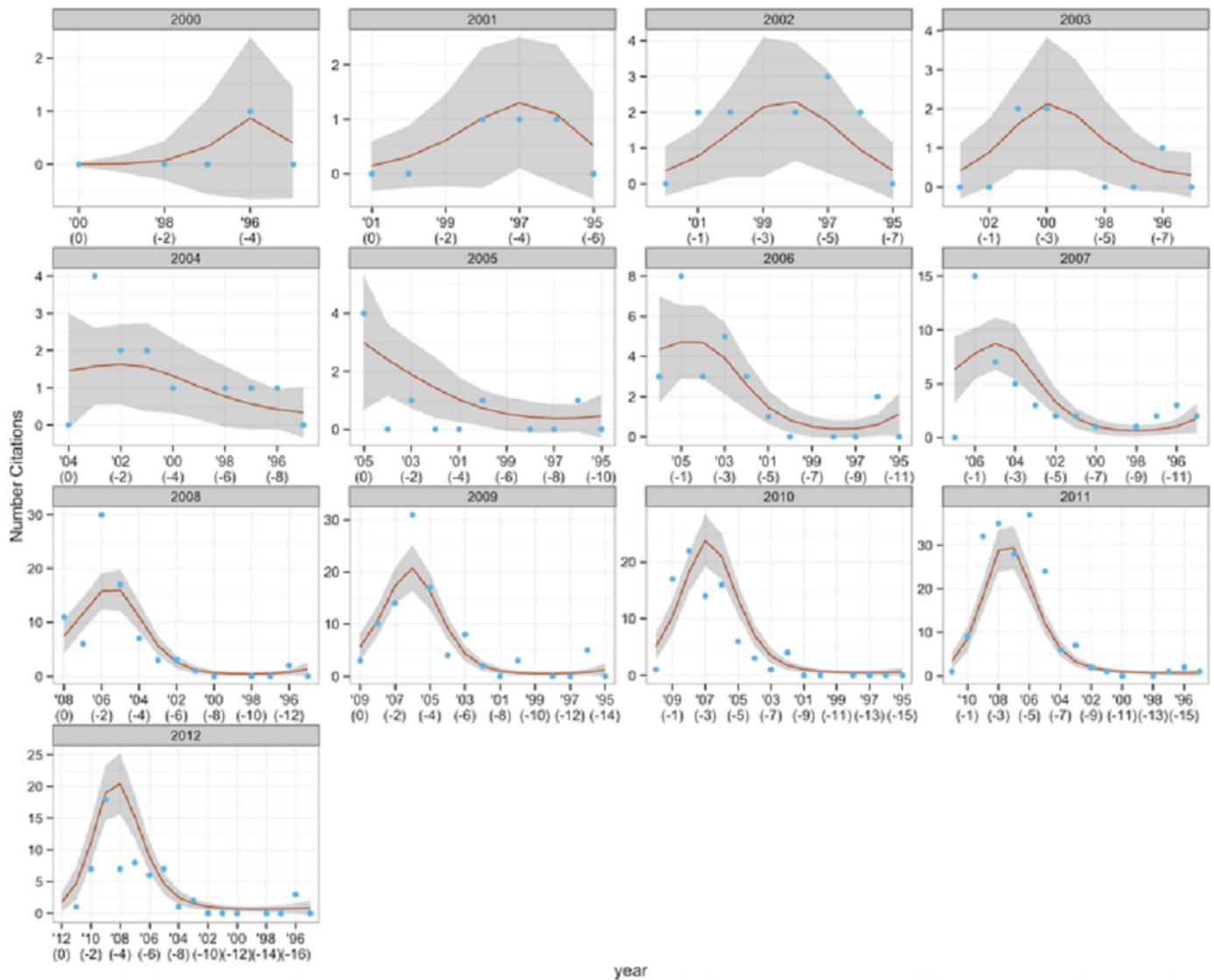
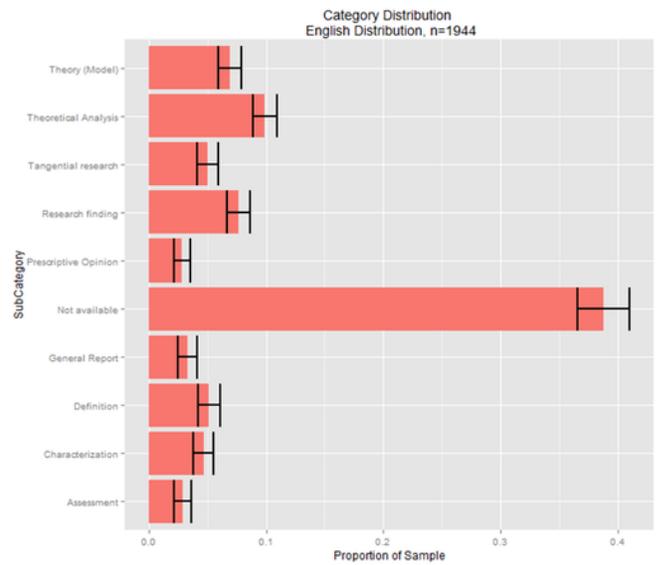
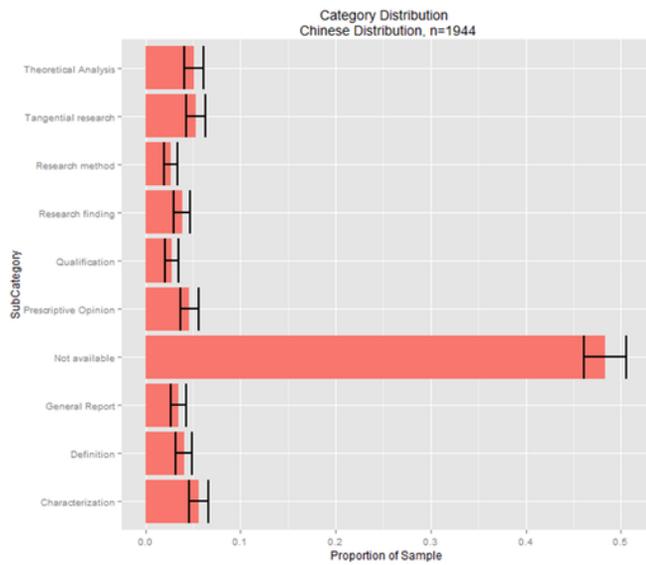
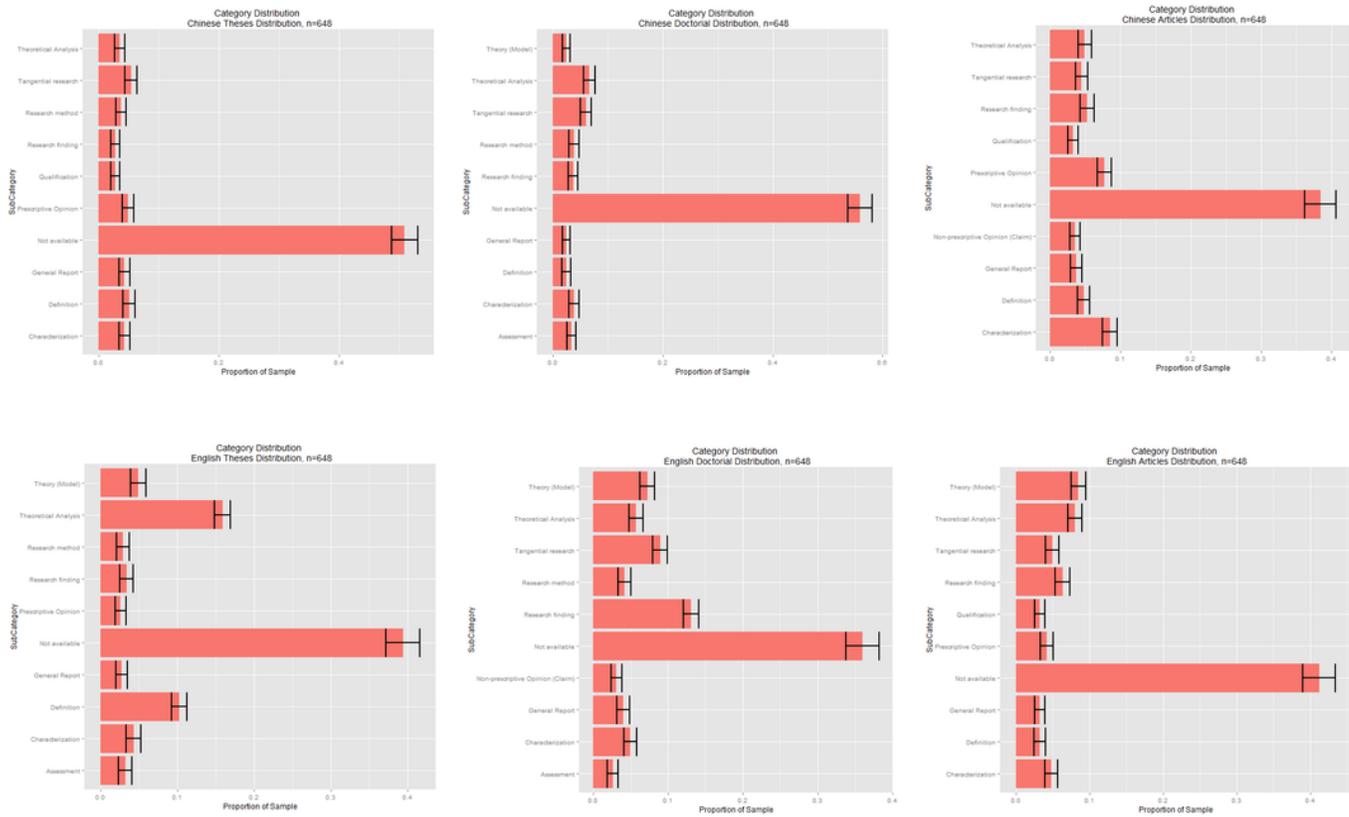

Trends in citations for doctoral dissertations

Trends in citations for MA theses

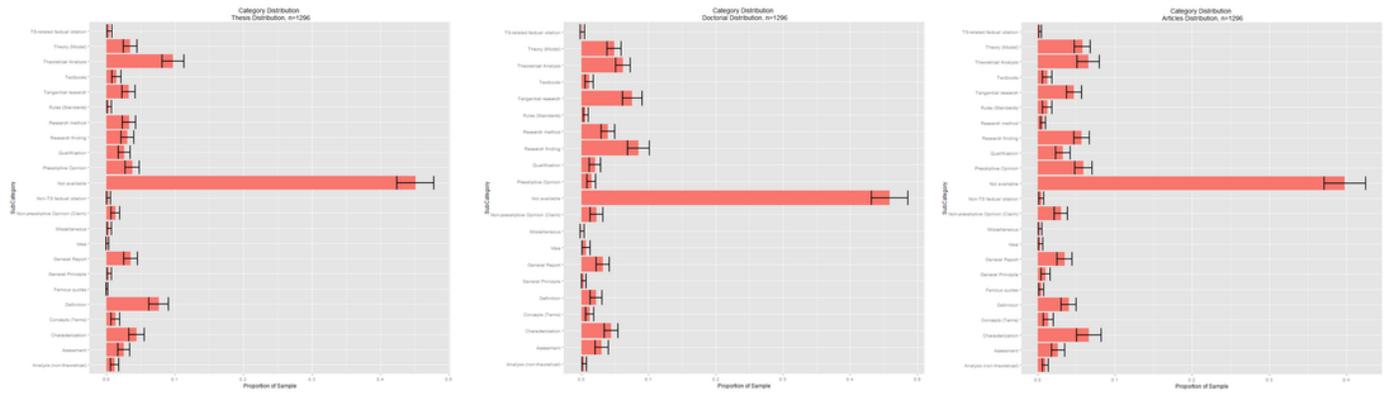
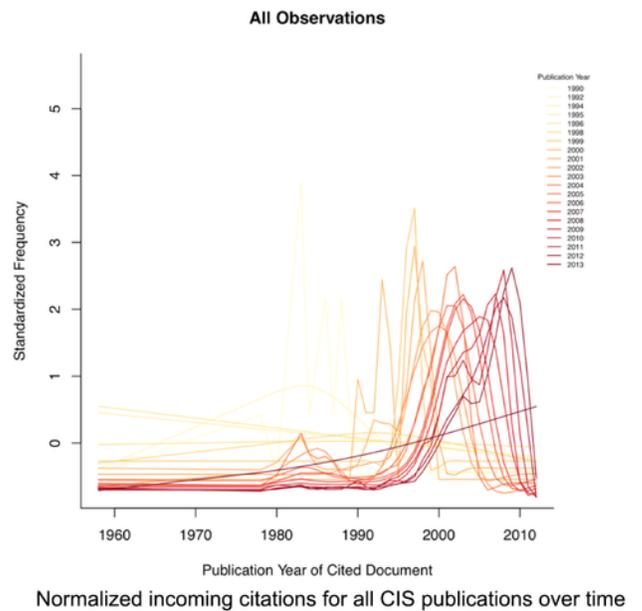
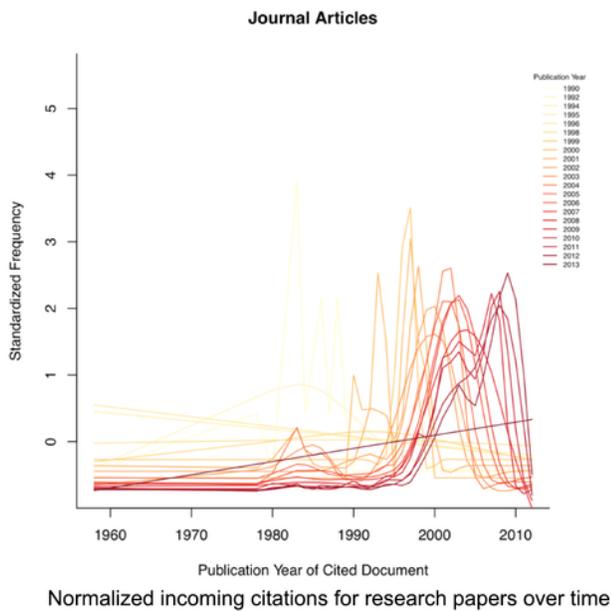
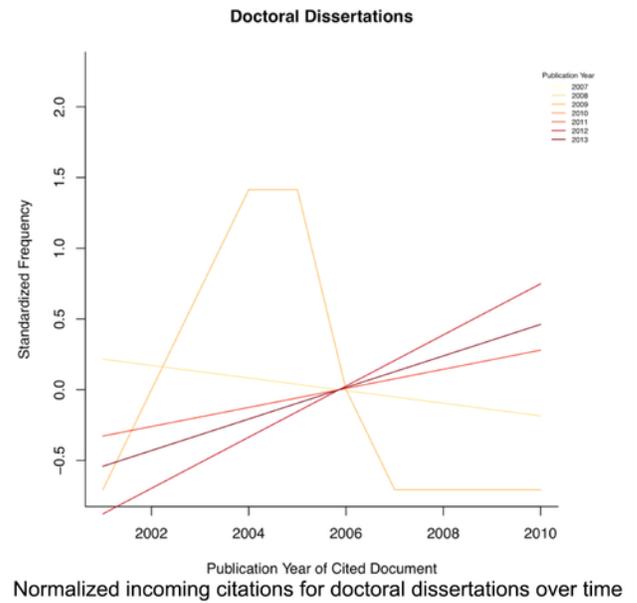
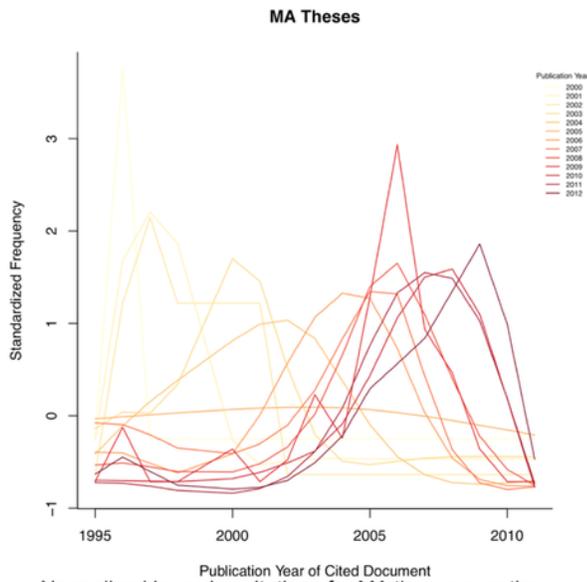
Proportions of all English and Chinese citation type distributions with confidence bars

Proportions of the top ten citation types for all Chinese and English citations in theses, dissertations and papers

Proportions of all citation types for MA theses, dissertations and papers

8

Normalized incoming citations for three strands of CIS research

Normalized incoming citations for MA theses over time

Normalized incoming citations for doctoral dissertations over time

Normalized incoming citations for research papers over time

Normalized incoming citations for all CIS publications over time

Evaluation of VCMs

1   **Table 1**: Evaluation of VCMs

	Research Stagnation Deviance	Perfect Research Flow Deviance	VCM Model Deviance	P-value VCM < RS	P-value VCM < PRF
MA	341.9	845.40	247.22	<0.001	<0.001
Journal	3871.26	10124.87	1909.24	<0.001	<0.001
PhD	67.0	80.45	29.25	<0.001	<0.001

3

Citation classification system

1   **Table 2**: Citation classification system

Citation types	Definitions
Prescriptive opinion	The cited author explicitly expresses his position on an issue or issues, and directs readers. Statements of this nature often rely on modals such as *ought*, *should* and *must*.
Non-prescriptive opinion (Claim)	The cited author expresses a personal view but *without* directing the reader.
Assessment	The cited author gives an evaluation of an issue or issues he deems important.
Concept	The cited author puts forward a detailed idea.
Rules/standards	The cited author talks about principles of conduct or codified regulations.
Theory/model	The cited author creates a group of propositions that are used to explain or predict certain phenomena.
Theoretical analysis	The cited author examines a phenomenon, concept or behavior in abstract terms, basing his reasoning on existing theoretical frameworks.
Idea	The cited author's thought is non-technical and lacks the detail found in 'concepts', 'theories' and 'theoretical analysis'.
Tangential Research	The cited author has made a detailed study of a particular subject in the hope of obtaining new information or deepening understanding.
Research method	The cited author adopted a particular approach to uncovering new information or advancing understanding.
Research finding	The cited author draws factual or empirical findings from a study.
Non-TS factual citation	The cited author covers factual information outside the scope of Translation Studies.
TS-related factual citation	The cited author alludes to factual information that falls within the scope of Translation Studies.
General Principle	The cited author talks of fundamental 'truths' which fall short of being absolute.
General Report	The cited author observes and describes a phenomenon or behavior.
Qualification	The cited author sets parameters or defines the limitations of a phenomenon.
Definition	The cited author explains a phenomenon, behavior or concept in terms of its unique characteristics.
Characterization	The cited author describes the features of a particular issue or concept.
Textual	The citation is of an author's textbook or other instruction manual.
Non-theoretical analysis	The cited author makes a face-value examination of certain issues or phenomena without the use of theories.
Famous quotes	The cited author quotes a well-known person's words to emphasize a point.

Miscellaneous	Any citations that do not fit into the aforementioned categories.
Not available	A bibliographic reference does not correspond to any of the in-text citations in a paper.