2012

Mediated Processes in Writing for Publication: Perspectives of Chinese Science Postdoctoral Researchers in America

Mimi Li
Marshall University, limi@marshall.edu

Recommended Citation

Mediated Processes in Writing for Publication:
Perspectives of Chinese Science Postdoctoral Researchers in America

Mimi Li

University of South Florida, USA

Sichuan Normal University, China

Biodata

Mimi Li is a Ph.D. candidate in Second Language Acquisition and Instructional Technology at the University of South Florida, USA. Meanwhile, she is a College English lecturer at Sichuan Normal University in mainland China. She gets her M.A. in Foreign Linguistics and Applied Linguistics from Sichuan University, China. Her research interests include second language writing, computer-assisted language learning, and sociocultural perspectives on learner strategy. Her work appears in *Computer Assisted Language Learning*, *CALL-EJ*, and *Sino-US English Teaching*.
Email: mli3@mail.usf.edu

Abstract

Sociocultural theory provides an explanatory framework for understanding human activity in the community of practice. This paper aims to address science researchers' scholarly writing for publication processes from a sociocultural perspective. The author conducts a study via in-depth reflective interviews with three Chinese science postdoctoral researchers in America in an attempt to find their specific mediated actions and dynamic processes in writing for publication. In light of Engeström's (1987, 1999) activity system, this paper, drawing on the interview data, explores the four mediating factors: objects/goals, artifacts, community, and roles, which afford and constrain the goings-on in the researchers' writing for publication activity. Results reveal that in order

to achieve their publication goal, the three researchers comply with the publication norms, mediate with a diversity of cultural artifacts, socialize with different people from academic and editorial communities, and fulfill their dual social roles. All these mediated actions are essential components of their writing processes that contribute to their international-refereed publications. The current study, exploring the link between writing for publication and activity theory, will inform L2 writing research in more encompassing ways.

Keywords: writing for publication, mediated processes, activity theory, ESP

1.   Introduction

With English becoming increasingly dominant as an international language of research and publication, more and more research investigates scholarly writing for publication in English, the lingua franca of the scientific world. Writing research papers and having them published in international-refereed journals in English, has become a requirement for hiring, promotion, tenure and even conferral of Ph.D. degrees in some non-English speaking countries (Braine, 2005; Flowerdew, 2000). Publishing research findings, especially for science researchers, will also add their own voices and home country's perspectives to the international conversation in their professions (Casanave, 2002). Therefore, the significance of scholarly writing for publication in English has inevitably resulted in much research from multiple perspectives.

1.1   The social orientation in writing- for-publication research

The previous two decades have witnessed a social turn in writing research. Departing from the traditional cognitive framework regarding writing as a "non-linear, exploratory and generative process whereby writers discover and reformulate their ideas as they attempt to approximate meaning" (Zamel, 1983, p. 165), more and more scholars called for studying writing in context. Prior (2006) argued that the cognitive paradigm is "too narrow in the understanding of context and was eclipsed by studies that attended to social, historical, and political contexts of writing" (p. 54). Casanave (1995) proposed that learners' learning-to-write processes should be understood across three levels of context: the local, historical, and interactive levels. Cumming, Busch and Zhou (2002) posited that writing strategies should be "analyzed in reference to the goals people have

to motivate and guide their task performance as well as other essential aspects of these activity structures and contexts in which they are embedded" (p. 193).

Echoing the social turn in the writing literature, research on writing for publication is currently switching to the sociocultual and sociopolitical orientations. Okamura (2006) interviewed thirteen Japanese researchers, investigated their L2 writing process and examined how researchers succeed in mastering scientific discourse in English. Findings showed that all the researchers focused on reading academic texts in their field to learn typical writing patterns, whereas only junior researchers gave direct attention to mastering English speakers' language use by reading English texts written by notable writers in and outside their field, and contacting English speakers about the use of English. Selecting participants from multiple nations, Cho (2004) had interviews with four doctoral students studying in America, who came from Greece, Japan, Korea, and the Ukraine. The study revealed similar themes across participants regarding writing for publication, such as co-authoring, getting professor and native-speaker assistance, making the most use of local knowledge, and negotiating feedback from editors and reviewers.

As to the writing research on Chinese native speakers, Flowerdew (2000) presented a case study of a nonnative-English-speaking scholar from Hong Kong majoring in mass communication, reporting his experience and process in publishing a scholarly article in an international-refereed journal on his return from doctoral study in the USA. This article applied social constructivist theory, especially the notion of "discourse community" (Swales, 1990) and "legitimate peripheral participation" (Lave & Wenger, 1991) to interpret the mediated nature of writing for publication. The study indicated that the participant was "peripheral" because he was not central but on the margins of the activity. He was meanwhile involved in "participation", acquiring knowledge through his involvement with activity. In mainland China, Li (2006) conducted a case study of a Chinese doctoral student who was authoring a paper for international publication to better understand the sociopolitical processes involved. Regarding written texts as sociopolitical artifacts, and drawing on "legitimate peripheral participation" (Lave & Wenger, 1991), Li discussed how the novice scholar's writing-for-publication process was influenced by power-infused relationships between him and the institutional context, the supervisors, as well as the gatekeepers of his target journals.

The above studies examine writing processes in the social, historical, and political context, but little research in the writing-for-publication literature has investigated what researchers perceive about their mediated process during writing for publication. Also, although some literature addressed science researchers' perceptions of their writing experience via interviews (Gosden, 1996; Matsumoto, 1995; Okamura, 2006), there has yet been any study guided by activity theory (Engeström, 1987, 1999). Activity theory helps people interpret individual actions more deeply, by situating individuals' actions in collective activities and delving into the diversity of interrelated mediating factors. While L2 research utilizing activity theory is modest in volume, it has made significant contributions to SLA and applied linguistics research (Lantolf & Thorne, 2006). Activity theory, as one of the core constructs in sociocultural theory, can provide an explanatory framework for understanding the processes of scholarly writing for publication.

1.2   Mediation and Activity theory

Sociocultural theory posits that human mental function is a fundamentally mediated process that is organized by cultural artifacts, activities, and concepts (Lantolf & Thorne, 2006). According to Vygotsky (1978), humans are not restricted to simple stimulus-response reflexes; they are able to make direct connections between incoming stimulation and their responses through various links. Such devices that "intervene in the context of an interaction between human beings and the world of objects, events, and behavior" are referred to as "mediation" (Block, 2003, p. 100). From a sociocultural perspective, "development of language learning strategies is mainly a by-product of mediation and socialization into a community of language learning practice" (Donato & McCormick, 1994, p. 453). Second language learning can be regarded as a mediated process which involves mediation by artifacts, mediation by self through private speech, and mediation by others in social interactions (Lantolf, 2000).

Based on Vygotsky's (1978) model of mediated action, Engeström (1987, 1999) proposed activity system (Figure 1) which further developed the conceptualization of mediation. He identified the participants and processes of an activity system as subject, object, outcome, community, division of labor, and rules. Activity system provides a framework that stresses human agency, which is mediated by the mediational means, the communities relevant to the situation, the rules and divisions of labor in these

communities, and the object of the activity system (Thorne, 2004). The framework of activity theory provides a broad theoretical basis for studying different kinds of human practices. It will definitely shed light on research investigating writing. Lei (2008) studied two proficient EFL learners' writing strategy use within the activity theory framework. Drawing on the data collected from interviews, stimulated recall, and process logs, her study investigated how the two EFL learners strategically mediated their writing processes with diverse resources and identified four types of writing strategies: artifact-mediated, rule-mediated, community-mediated, and role-mediated strategies. Her research bridged the gap between traditional cognitive views and sociocultural perspectives on L2 learner strategies.

2.   The Study

Following the framework of a basic qualitative study, which seeks to discover and understand a phenomenon, a process, or the perspectives of the people involved (Merriam, 1998), the present study, via reflective in-depth individual interviews, investigates three Chinese science postdoctoral researchers' writing-for-publication process from the perspective of activity theory. Drawing on interview data, the paper discusses important factors which mediate researchers' writing for publication processes, i.e. objects/goal, mediating artifacts, community, and roles. It aims to explore the researchers' specific mediated actions and the dynamic processes in scholarly writing for publication. The following two research questions are addressed:

1) What motives and artifacts mediate the postdoctoral researchers' scholarly writing for publication?
2) How do the postdoctoral researchers mediate and interact with others within the scholarly writing community so as to achieve their publication goals?

2.1   Participants

Convenience samples were used in this study. Three Chinese science postdoctoral researchers in America participated in this study. One is an acquaintance with the researcher, and the other two are friends of the former participant. Two of them are working at a southern university in America, and the other is working at a northern

university in America. All participant names used in this study are pseudonyms. Liu, a 31-year-old male researcher, earned his doctorate degree in medicine in 2006 and then worked as a researcher and lecturer in a national university in China before coming to the US. To this day, he has worked as a postdoctoral researcher in the US for over two years. He has had five research papers published in international-refereed journals, with the first accepted in 2006. Yang, a 30-year-old female researcher, obtained her Ph.D in pharmacy in China in 2007 and afterwards worked in a major pharmaceutical company for half a year after graduation. She has conducted postdoctoral research in the USA for almost a year and a half. She published in an international refereed journal in 2006 for the first time and she has had a total of six research papers published in international-refereed journals. Zhang, a 40-year-old male and associate professor in a Chinese medical university, has worked in America as a postdoctoral researcher for over a year. He obtained his doctorate degree in 2001 and has five international publications, with the first accepted in 2004.

2.2   Method of study

The three researchers were invited to participate in semi-structured reflective individual interviews to elicit their writing-for-publication experience and their mediated processes in writing for publication. Based on the research questions on the motives and artifacts that mediate the researchers' writing-for-publication process and the interactions within the writing community, interview protocols were formulated (see Appendix) to guide the interviews. All the interviews were conducted in Mandarin Chinese and audio-recorded. The interviews lasted from 45 to 60 minutes. Following Okamura (2006)'s method that he adopted in interviewing Japanese scientists, the interviewees were asked to provide revision samples from their published work so that texts might be referred to when they talked about their experience in writing and publication.

2.3   Method of data analysis

In this study, the author mainly draws on the activity system (Engeström, 1987, 1999) to understand how science postdoctoral researchers write for publication. The data collected from the interviews were transcribed in English. The author first translated each participant's recorded interview data and read and reread the detailed transcripts

carefully. By making notes in the margins to comment on the data (Merriam, 1998), the author coded the data in terms of themes that could be identified with respect to four mediators within the activity system: objects and goals, artifacts and mediating means, community (including division of labor), and roles. The author then categorized responses addressing the same themes or patterns. Revision of the categories and recoding of the data were conducted until a satisfactory framework was proposed to explain the data.

3.   Findings

The reflective interviews, from the insiders' perspective, revealed various important factors which afford and constrain the researchers' writing for publication process. The themes were explicated with excerpts from the three participants' interview data. The findings were discussed in the following four respects: objects and goals; artifacts and meditational means; community: academically and editorially; dual roles: as author and as researcher. The former two respects addressed what motivate researcher's writing-for-publication action and what artifacts mediate the researcher's scholarly writing for publication. The latter two respects indicated how the researchers mediate and interact within the scholarly writing community so as to achieve their publication goals.

3.1   Objects and goals

Asked about their motives for publication (Interview Question 1), Liu and Yang addressed their different goals at home and in the States. For them, publishing was a requirement for graduation and degree-obtaining several years ago. Publishing in an international journal is a must for Ph. D. science students in national universities in China. As Yang pointed out,

> Publish or perish! I know one student who entered my program two years earlier than me had to stay and continued to struggle to get published when I graduated. I also heard that someone dropped out after four years' Ph.D. study just because of the strict requirement of publishing. To be or not to be! The majority of us worked so hard that we had our paper published internationally before the admission to candidacy. …Reflecting back, now I think it was not that difficult

to meet the publication requirement stipulated by the university. I benefited a lot from the experiences of publishing during my Ph.D. years.

Now in the USA, all three researchers aimed at journals with strong SCI (Science Citation Index) impact factor ratings. All of them mentioned that their ideal target journal in the future will be a top-tier science journal such as Cell, Nature, and Science. The following excerpt from Liu indicated his publication motive:

> I came to the USA two years ago, in an attempt to have an overseas research experience and strengthen my academic background. Now I realize that only having this experience is far from enough; what really counts is a good paper, which will reflect one's research capacity. You know, I am pressed to publish in a renowned journal. If there were no good publication I would lag behind my colleagues who conduct research at home. There is a policy in the college I am affiliated with in China that whoever has a publication in an international-refereed journal with a SCI impact factor of 10 plus will be promoted to the position of full professor immediately. My former supervisor encouraged me to strive for this goal.

It is a similar case with Zhang. He intended to acquire knowledge about cutting-edge technology and get published in a renowned journal so as to get a promotion and secure better career prospects when returning to his home country. In contrast, the motive for publishing for Yang is to get credit for her research career, which will smooth the way for her to apply for a "green card" (permanent residence in the USA). She stated a very clear goal, "To publish is everything -- the more, the better. The higher the impact factor, the better."

3.2   Artifacts and mediating means

Asked about the criteria of good science wiring, the usefulness of tools, and their use of language (Interview Question 2, 6, 7, respectively), three interviewees acknowledged numerous artifacts mediating their writing. These artifacts include tools, signs, as well as rules.

3.3   Mediating tools

The participants use various mediating tools in their writing for the publication process. One important tool that they mentioned is online bilingual medical dictionaries. Zhang commented like this:

> I often use electronic dictionaries like Jinshan Ciba and Wangji Jingdian (Chinese English bilingual medical dictionary). It is very helpful to pinpoint vague words and check the spelling and usage of some words when I am writing. It is also convenient to consult a dictionary for unfamiliar technical terms while reading.

In terms of language checking tools, Liu mentioned his use of Google. He liked to type a sentence or phrases in the search bar so that he can see what patterns others use to express similar ideas.

As the three interviewees also indicated, a target journal article is definitely a beneficial tool. They spent most of their time reading relevant literature, from which they acquired not only novel ideas but also good language that they may reuse in their own writing. Referring to the function of the source texts, Liu commented:

> Every time I read an article, I highlight the important sentences. In the past, I attended much to the language and tried to learn the formulaic expressions, classic sentence constructions, and technical terminology. After years of reading and writing, I have formed my own writing style. Now I attach more importance to the original viewpoints and the new method adopted in others' research.

The above excerpt exactly reflected the "scaffolds" of source articles in "serving as rhetorical models" (Zhu, 2005, p.146). The source articles mediated Liu's scholarly writing, allowing learning to occur in his "zone of proximal development" (Vygotsky, 1978).

Yang seems to be even more attentive in studying the research journal articles. She explained:

> I created my literature folder by myself. The literature is organized according to IMRD (introduction, method, results, and discussion). Some readings provide foreground and background knowledge and I copy them and put them in the folder of introduction, while some are constructive for the part of discussion, and I place them in the folder of discussion. Apart from the folders for the four

sections, I have thirty complete articles in my resource database. These papers are guiding articles in my discipline; all the sections are helpful for me, both in content and language. I am proud of my literature folders and it proves to be very useful.

Interestingly, these words echo the scenarios of source-based language re-use reported in Flowerdew and Li (2007). In their study, the Chinese doctoral students reported that they have collections of papers, from which they tend to adopt useful expressions and sentences in their own writing.

Also, Liu and Zhang make use of reference management tools. Liu reported that "Endnote" is a nice tool to manage the literature and it makes the work very neat. Zhang spoke highly of a Chinese reference management tool named "Yixue Wenxian Wang" (Medical Reference King). "It served as a very helpful tool when I did scholarly writing in China."

Moreover, all the researchers pointed out the importance of a library database (e.g., PubMed). In order to keep abreast of updated research, they frequently consulted a library database at every stage of the scholarly writing process.

In addition, Yang mentioned her recent research was from her boss' grant. The grant proposal guided her throughout the experiment. When it was time for her to write and publish the findings of the experiment, the grant proposal became a valuable source for writing. As she put it:

> The grant proposal functions as a compass to our research. During my research writing, I revisited the grant proposal, for example, focusing on the objective part to check whether we have reached our purpose. I adapted the introduction in the proposal to my own writing. I also tailored the expected results in the proposal to my writing, based on the research findings. A grant proposal not only directs the process of our writing-for-publication, but it also offers guidance for future grant proposals to be drafted.

3.3   Signs/ Languages

Regarding their use of languages (signs), the three participants mentioned that they predominantly use English. They seldom use Chinese during writing. They believe translation of a whole passage is almost impossible because there is a huge difference between the Chinese writing style and the English writing style. As Zhang commented:

> I once attempted to write down part of my draft in Chinese and then have them translated in English. I just got frustrated at that attempt, only to find it was very time-consuming and ended with a rather poor translation. I dropped this idea and never translated again.

However, they did not negate the role of the L1, for Chinese helped them generate ideas. Liu uses Chinese when drafting the outline of a specific paper. For Yang and Zhang, they occasionally take notes in Chinese. The findings are in line with Matsumoto's (1995) observations, which reported that Japanese professional writers do not use their L1 once they have started to write in English, although they may do so while brainstorming on the topic in the prewriting stage.

3.4   Publication Rules

Regarding the question of what they attend to before and during the writing process (Interview Question 4), all the participants reported that complying with the submission guidelines of target journals is significant for publication. Liu shared his experience of consulting the PowerPoint slides made by editors.

> It is advantageous to search and study the PPT slides that editors made for a certain journal. Generally, these slides elaborate on the submission guidelines and converse good strategies and skills. These materials enable writers to be sensitive to the distinctive style of a journal, which are definitely conductive to paper publication.

All the interviewees expressed some criteria for a well-written science article (response to Interview Question 2). They think that good science writing is characterized with originality, integrity, accuracy, clarity, and persuasiveness. Also, both Liu and

Zhang addressed the importance of visual aids for scholarly publication, such as pictures, figures, and graphs. As Liu stated:

> Generally every journal has rigorous requirements on the format of electronic artwork, like the minimum resolution of images. The images which are not presented appropriately or accurately have to be resubmitted and even suffer rejection.

Zhang echoed Liu's perspectives on the rigor of visual aids and also highlighted the effective use of pictures, "A picture is worth a thousand words. The graphs illustrating the results neatly can sure be a plus for the manuscript. I am very concerned with the graphs I draw in my paper."

In addition, Liu particularly mentioned the mediator of time in writing for publication. With the rapid advancement of science, scientists strive to reveal their findings in a timely manner so as to disseminate the updated knowledge and to add their voice to the international conversation. As Liu maintained:

> Nowadays, time really counts in science publication. If you have obtained some novel findings in your research, you should write the article and have the results published as soon as possible. Or else, it may not be considered innovative when more researchers conduct similar experiments and get the insightful results.

3.5 Community: academically and editorially

In the writing for publication process, there are lots of participants who lend direction to the shared publication activity at hand. These participants form a community with members interacting and mediating with one another. The interviewees' strategic mediation within the community is reflected from their responses to the questions of others' revisions and suggestions (Interview Question 5) and the activities beneficial for their publication (Interview Question 9). According to the interview data, the author classified the community into both academic and editorial communities. The participants stated that successful publication involves meaningful communication with the members from both these communities.

The academic community consists of the researcher himself/herself, supervisor/boss, language professionals, colleagues, and peers, etc. The importance of interaction with the community members was indicated in Yang's excerpt:

> During my Ph.D. study, my supervisor was strict in my academic endeavors. He encouraged me to aim high and ushered me general guidance for scholarly publication. I also received great help during writing from language professionals. I turned to my friend, an English teacher, for language assistance. In my current working contexts here in America, more people can provide support. The most important person is my boss. He not only negotiates with me before I write, but also offers detailed feedback after I write. Look, this is her written response to my previous paper (taking out the revised text). Also worth-mentioning is coauthors' or colleagues' reactions. My current lab is cooperating with other labs. These collaborators in other labs offer valuable feedback to us about our paper in different disciplines: i.e. statistics, chemistry, and biology.

Worthy of note, academic communities may display different power relations. Postdoctoral researchers are subordinate to their bosses, and they have to be subservient sometimes. Liu implied the subtle relations with his boss:

> We do not always negotiate well on our experiment design. Sometimes we are not on the same page. I had to either try to convince her that I am right or I had to follow her ideas when she firmly defended them. Anyway, she is my boss and I need to take any actions that she suggests.

Liu continued with the theme of power relations and implied the contradictions between him and his boss in response to Interview Question 8 regarding the hindrance of their scholarly writing for publication.

> I derived some interesting findings using a novel research technique in my experiment previously and I wanted to have them disseminated as soon as possible. However, my boss did not assent my idea. She would like me to delve deeper and reach more 'exciting' results before we wrote for publication. Recently, I reviewed the literature and found a newly published paper addressing

a similar technique as we used in our experiment, so now we have to kind of switch our attention to explore something new and novel.

In addition to the above community members, both Zhang and Liu reflected on the scaffolding from a professional editorial service when they submitted to an international journal for the first time in China. Zhang said:

For the first time I decided on submission to an international journal, I first had one of my friends who is an EFL teacher proofread my paper and then I found a professional editorial service from Europe, which charged me like 500 Euros. Their revisions shaped my manuscript in a large degree.

Liu also stressed the importance of professional editorial services and he referred to one revised version of his manuscript from an editorial service. He stated that an editorial service can provide professional assistance, especially for novices. The people in the editorial services can be regarded as "shapers," who participate in the editorial process, but whose names are not listed on the publications (Burrough-Boenisch, 2003).

Regarding the shapers' role in enhancing rigor of the manuscript, Liu said:

It directed specifically to your target journal and led you to be sensitive to rigid publication norms and the statistics rules, etc. You see, it is mentioned here that 'Please note the title should not exceed 60 characters with spaces. We have used the abbreviation MAPK as this appears undefined in many Medline titles.' It is also stated here 'Please consider stating if the data were first tested for normality of distribution.'

Moreover, as the three researchers regarded, even more important are the comments from the editorial community, i.e. the reviewers and the editor. The courteous interaction among the community members facilitates the activity of publication. Liu commented that he was very receptive to reviewers' feedback so as to move things forward. He said:

We always carefully evaluated the reviewers' critical comments, responded to their suggestions point-by-point, and revised the manuscript thoroughly. All the

changes made to the text were marked in red so that the reviewers and editors could easily identify the modifications.

In addition to showing meticulousness in response to reviewers' comments, Yang stated the necessity of having a diplomatic negotiation with editorial members using her anecdote.

> If your paper is not rejected, you are lucky. You may receive a letter requiring modification from the editor and he or she will also forward to you insightful comments from three reviewers. I always took their ideas very seriously and responded to each reviewer' ideas meticulously. Generally, their comments are in great detail. They may point out grammatical mistakes (i.e. tense); they may ask you to rephrase a certain passage; they may require you to revisit the literature and improve your synthesis connecting the established literature to your study. What we may be reluctant to do is to conduct further experiments and make major changes to the paper, before the revised paper is reviewed once again. I once had a successful experience handling this situation. For one of my studies, one reviewer suggested a follow-up experiment. However, considering it unnecessary, I convinced him to stand on my side by showing similar strands of literature and offering consolidate research evidence. All in all, the external verifications are very crucial in the whole writing for publication process.

3.6   Dual Roles: as author and as researcher

During the writing-for-publication process, the postdoctoral researchers assume two main roles, one as author and the other as researcher. Their reactions to questions of goals, target audience, and activities before and during writing (Interview Questions 1, 3, and 4 respectively) elicited the two types of roles that they play.

As the first author, all the researchers take initiative to communicate with all the other co-authors before, during, and after writing. They communicate via emails with their collaborators on a regular basis. Zhang pointed out that the collaborators in the group share their ideas in Google Docs. Though he keeps most notes in Google Docs, there are occasions that other co-authors make modification and add the viewpoints.

Meanwhile, these authors attached great importance to readers. Liu regarded his target audience/reader as fellow researchers in the same field or similar discipline, including editors and university faculty. Zhang targeted his audience as senior scientists, in his words, "Da Niu" (literate translation: big bull, which means influential figures in Chinese) in the field. As for Yang's target audience, there is a special group – researchers from laboratories of corporation in addition to academia. She said:

> The researchers from the company pay great attention to our experiments, because it is interdisciplinary and can be applied in pharmacy. It may bring economic benefits to a company through the joint efforts in research after the acknowledgement of mutual interests.

Furthermore, Liu highlighted the importance of the editor as audience. As Mungra and Webber point out (2010), the editor has the final responsibility of accepting or rejecting manuscripts and thus can confer authority and help to disseminate knowledge. Liu says:

> It is vital to leave a good impression on the editor by writing well, providing appealing graphs, and interacting with courtesy in correspondence. A delicate knack is to cite in your article one or two papers which have been published in the same target journal, which is of great interest to the editors. This may be a general implicit rule applied in all scholarly writing across disciplines.

As to the role as researcher, Liu mentioned that he publishes scholarly papers so as to disseminate insightful results, to spread their research achievements, and to influence fellow scientists so that they will be able to make concerted efforts to further advance science. Yang pointed out the importance of a bridge linking previous research to current research. "We make advancements in our research by standing on the shoulders of many giants. Our current research, of course, should in turn offer some insights for future research." Zhang commented that as a researcher, he would strive for quality publications, not only for himself, but add more Chinese voices to the international communication in his field.

4.   Discussion of findings

Through the interviews with three Chinese science postdoctoral researchers who reflected on their writing for publication experiences, the present study has investigated what motive and artifacts mediate the researcher's writing processes for international-refereed publications and also explored how the three researchers strategically mediated their writing within academic and editorial writing communities. From a sociocultural perspective, human actions are mediated by social-semiotic tools, material artifacts, and the communities that they are situated in. According to activity system (Engeström, 1987, 1999) and based on the analysis of data collected from the study, the author proposed Writing for Publication System (Figure 2) to illustrate researchers' mediated actions in the process of writing for publication.

In the writing for publication diagram, mediating artifacts located at the vertex of the triangle, afford and constrain researchers' cognition and writing activity. In the upper part of the diagram, the "subject" is the postdoctoral researcher, who is portrayed as mediated by cultural tools and signs. "Object", describing the orientation of the activity, refers to the research paper writing and reviewing at which mediated activity is directed and which is molded or transformed into the outcome of publication. The interview revealed that the researchers' writing for publication is a "process mediated by semiotic resources" (Donato, 2000, p.45). The three participants develop their scholarly writing through appropriating and internalizing a variety of mediating artifacts.

These mediating tools include electronic bilingual dictionaries, relevant literature, library database, Google search, grant proposals, and such reference management software as Endnote, which reflect the social cultural historical contexts. Their language reuse of academic texts echoes with the findings of previous literature (Flowerdew & Li, 2007; Okamura, 2006). The utilization of L1 and L2 also provide roles on some occasions. Though they do not negate the use of L1, the three researchers in the current study stated that they predominantly use L2 to mediate their writing actions. This finding is different from that identified in Flowerdew (1999), which addressed the frequent use of L1 during L2 writing process among science researchers in Hong Kong. The discrepancy may be attributed to the participants' high English proficiency in this study or more likely stem from the monolingual working context in which they are exposed to the target language.

The bases of the diagram–rules, community, and division of labor provide a "conceptual framework that brings together local human activity and larger social-cultural-historical structures" (Lantolf & Thorne, 2006, p. 222). In the writing-for-publication process, the rule or the publication norm plays an indispensable role. The three researchers pointed out their awareness of diverse publication rules, ranging from submission guideline, slides made by the editors, widely acknowledged criteria of well-written science articles to visual aids, publication efficiency, and citation of papers in the same target journal. These implicit and explicit rules afford the goings-on within a writing-for-publication activity system.

The researchers' writing process is by no means isolated. The researchers have an explicit view of writing as a nonlinear dynamic process by interacting with other community members. "Community" in the activity system refers to all the participants who lend direction to the shared publication activity at hand. As indicated in the findings, the writing for publication community falls into two categories: academic and editorial communities. The academic community consists of the researcher himself/herself, supervisor/boss, language professionals, colleagues/peers etc. The editorial community is mainly comprised of the reviewers and the editor. The interaction and contradiction among the community members facilitate the activity of publication. As the three participants reflected, the academic community members set the same publication goal, share the joint responsibility, and negotiate their roles for writing for publication. Within the editorial community, the researchers try the best possible means to initiate a good negotiation with the gatekeepers.

Whether academically or editorially, members of the community interacted and mediated, each playing a dispensable role, which constitutes "division of labor" i.e. writing papers and reviewing papers. According to Engeström (1993), the division of labor refers not only to the horizontal actions and interactions among the members of the community but also "to the vertical divisions of power and status" (p.67). The findings in this study exactly corroborated this viewpoint. In the interview, Yang more than once stated that she did her utmost to express her boss' perspectives in writing. She has been hired by the boss and her research is part of her boss's grant. The difference in power between her and the boss was strongly inferred. To take another example, the higher status of editors was implied in Liu's scenario. He regarded it vital to leave a good

impression on the editor by writing well, providing appealing graphics and engaging in courtesy correspondence. He also considered it important to refer to the PowerPoint slides made by the editors for some publication strategies and to cite in the manuscript one or two papers published in the target journal.

In the writing for publication process, the researchers assume two different roles: author and researcher. As the first author, they cooperate with their respective coauthors closely by face-to-face negotiation, email correspondence, or document sharing via Google Docs. They also bear their readers in mind when they write their research papers. As researcher, they displayed some degree of dedication to the science career. They set high publication goals to advance their future career. Their actions are highly motivated by concrete objectives. Despite the fact that the three researchers set similar publication targets, their activities are mediated by different motives. For Zhang and Liu, they strive to publish in a prestigious international journal with a high SCI impact factor rating so as to be promoted to the position of full professor on their return to their home country. For Yang, she works hard to publish more influential papers in order to facilitate the process of her application for U.S. permanent residence. Therefore, researchers, as historically and sociologically situated active agents, are recognized through sharing their writing for publication experiences.

Taken together, as discussed in the findings, the three researchers reported their mediated processes in the writing for publication. They set publication goals for specific purposes. They use a variety of cultural artifacts, including tools, signs, and rules to mediate their writing. In order to achieve their publication goals, they comply with the publication norms, socialize with people from both academic and editorial communities, and fulfill their social roles. It is worth noting that some changes occur in their mediated writing processes after they came to America, such as their publication motives, academic communities, and artifacts mediating their writing. All of these mediated actions are essential components of the writing process that contribute to the ultimate goal of getting their research accepted in an international publication.

5.   Conclusion

To sum up, this study explored three Chinese postdoctoral researchers' writing-for-publication experiences from a sociocultural perspective by using individual reflective

interviews. Departing from the traditional cognitive view of writing strategies, this study explored L2 learner strategy as "socially mediated plan or action to meet a goal, which is related directly or indirectly to L2 learning" (Oxford & Schramm, 2007, p. 48). The reported mediated writing-for-publication processes are analyzed within the framework of activity theory. Drawing on Engeström's (1987, 1999) activity system, the author has evaluated the four important constituent factors: objects, artifacts, community, and division of labor, which afford and constrain the goings-on in the researchers' writing for publication processes. On one hand, the study identified different motives and a variety of artifacts which mediate the three researchers' writing for publication. On the other hand, it discovered how the researchers, as agents, negotiate and interact with other community members so as to achieve their publication goals. The current study, introducing the happy marriage between writing for publication and activity theory, will contribute to L2 writing research in more encompassing ways.

In the future, more research is needed to further examine researchers' writing for publication processes from a sociocultural perspective to provide a broader picture of the dynamics of post-doctoral researchers' writing for publication. The participants may include researchers from different disciplines, novices or experts, who will be invited to reflect on their writing for publication strategies and mediated processes. Also, since the recursive and dynamic process of writing for publication would require a long time commitment, a longitudinal study needs to be conducted to further examine the dialogic within academic and editorial communities. Ethnographic approach is also encouraged so as to document researcher's strategic development in situ and to explore the community of practice through which novice researchers are apprenticed into full participation and develop into competent members (Lave & Wenger, 1991). Moreover, to delve into the influence of historical, cultural, and social contexts on the writing-for-publication process, the study would be significant on comparing the ESL writing-for-publication process of researchers working in their home country and those working in the country of a target language.

Acknowledgements

participants for their willingness to participate in this study. Great thanks also go to the editors and the two anonymous reviewers who gave valuable feedback on this paper.

References

Block, D. (2003). *The social turn in second language acquisition*. Washington DC: Georgetown University Press.

Braine, G. (2005). The challenge of academic publishing: A Hong Kong perspective. *TESOL Quarterly*, *39*, 707-716.

Burrough-Boenisch, J. (2003). Shapers of published NNS research articles. *Journal of Second Language Writing, 12*, 223–243.

Casanave, C. P. (1995). Local interactions: Constructing contexts for composing in a graduate sociology program. In D. Belcher & G. Braine (Eds.), *Academic writing in a second language: Essays on research and pedagogy* (pp. 83-110). Norward, NJ: Ablex Publishing Corporation.

Casanave, C. P. (2002). *Writing games: Multicultural case studies of academic literacy practices in higher education*. Mahwah, NJ: Lawrence Erlbaum Associates.

Cho, S. (2004). Challenges of entering discourse communities through publishing in English: perspectives of nonnative-speaking doctoral students in the United States of America. *Journal of Language, Identity & Education, 3* (1), 47-72.

Cumming, A., Busch, M., & Zhou, A. (2002). Investigating learners' goals in context of adult second language writing. In S. Ransdell & M. Barbier (Eds.), *New directions for research in L2 writing* (pp.189-208). Dordrecht, Netherlands: Kluwer Academic Publisher.

Donato, R., & McCormick, D. (1994). A sociocultural perspective on language learning strategies: The role of mediation. *The Modern Language Journal, 78* (4), 453-464.

Donato, R. (2000). Sociocultural contributions to understanding the foreign and second language classroom. In J. Lantolf (Ed.), *Sociocultural theory and second language learning* (pp. 27-50). Oxford, UK: Oxford University Press.

Engeström, Y. (1987). *Learning by expanding: An activity theoretical approach to developmental research*. Helsinki: Orienta-Konsultit Oy.

Engeström, Y. (1993). Developmental studies of work as a test bench of activity theory: the case of primary care medical practice. In J. Lave and S. Chaiklin (Eds.), *Understanding practice: Perspectives on Activity and Context* (pp. 64-103). Cambridge: Cambridge University Press.

Engeström, Y. (1999). Activity theory and individual and social transformation. In Y, Engeström, R. Miettinen, and R. L. Punamaki (Eds.), *Perspectives on activity theory* (pp.19-28). Cambridge: Cambridge University Press.

Flowerdew, J. (1999). Writing for scholarly publication in English: The case of Hong Kong. *Journal of Second Language Writing, 8*, 123–145.

Flowerdew, J. (2000). Discourse community, legitimate peripheral participation, and the nonnative- English-speaking scholar. *TESOL Quarterly, 34*, 127-150.

Flowerdew, J., & Li, Y. (2007). Language reuse among Chinese apprentice scientists writing for publication. *Applied Linguistics, 28*(3), 440-465.

Gosden, H. (1996). Verbal reports of Japanese doctoral students. *Journal of Second Language Writing, 5*, 109-128.

Lantolf, J. P. (2000). Second language learning as a mediated process. *Language Teaching, 33*, 79-96.

Lantolf, J. P., & Thorne, S. L. (2006). *Sociocultural theory and the genesis of second language development.* New York: Oxford University Press.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge: Cambridge University Press.

Lei, X. (2008). Exploring a sociocultural approach to writing strategy research: Mediated actions in writing activities. *Journal of Second Language Writing, 17*, 217-236.

Li, Y. (2006). A doctoral student of physics writing for publication: a socio-politically oriented case study. *English for Specific Purposes, 25*, 456-478.

Matsumoto, K. (1995). Research paper writing strategies of professional Japanese EFL writers. *TESL Canada Journal*, *13*(1), 17-27.

Merriam, S. B. (1998). *Qualitative research and case study applications in education*. San Francisco, CA: Jossey-Bass.

Mungra, P., & Webber, P. (2010). Peer review process in medical research publications: language and content comments. *English for Specific Purposes, 29*, 43-53.

Okamura, A. (2006). Two types of strategies used by Japanese scientists, when writing

research articles in English. *System, 34*(1), 68-79.

Oxford, R. L., & Schramm, K. (2007). Bridging the gap between psychological and sociocultural perspectives on L2 learner strategies. In A.D. Cohen & E. Macaro (Eds.), *Language learner strategies: thirty years of research and practice* (pp. 47-68). New York: Oxford University Press.

Prior, P. (2006). A sociocultural theory of writing. In C.A. MacArthur, S. Graham, & J, Fitzgerald (Eds.), *Handbook of writing research* (pp.54-66). New York: Guilford Press.

Swales, J. M. (1990). *Genre analysis: English in academic and research settings*. Cambridge: Cambridge University Press.

Thorne, S. L. (2004). Cultural historical activity theory and the object of innovation. In O, St. John, K. van Esch, & E, Schalkwijk (Ed.), *New Insights into foreign language learning and teaching* (pp.51-70). Frankfurt, Germany: Peter Lang.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.

Zamel, V. (1983). The composing processes of advanced ESL students: Six case studies. *TESOL Quarterly, 17*, 165-187.

Zhu, W. (2005). Source articles as scaffolds in reading to write. *Journal of Asian Pacific Communication, 15*(1), 129-152.

Appendix

Interview Questions

I. Basic information of the participants:

1)   What is your major? When did you obtain your Ph.D. degree?

2)   When did you embark on the postdoctoral research in the USA? Why

3)   How long have you been working on the scholarly writing for publication since you submitted your first paper to an international journal?

4) How many of your research papers have been accepted for publication in international refereed journals?

II. Questions about their publication strategies and experiences

1)   What goals do you set for your publication? Do the goals affect how you write?

2) What makes a good science writing in your opinion?

3) Who do you think the reader/audience is when you write?

4) What do you attend to before and during the writing?

5) Do you revise? Do others edit and offer suggestions? If yes, please elaborate on it (using texts when necessary).

6) What useful tools do you employ for your academic writing?

7) How do you use Chinese and English when thinking and writing?

8) Is there any factor that hinders your scholarly publication, to some extent?

9) Combining the study-at-home and study-abroad experience, please reflect on the activities you benefit from to have your research paper published in the target journal.

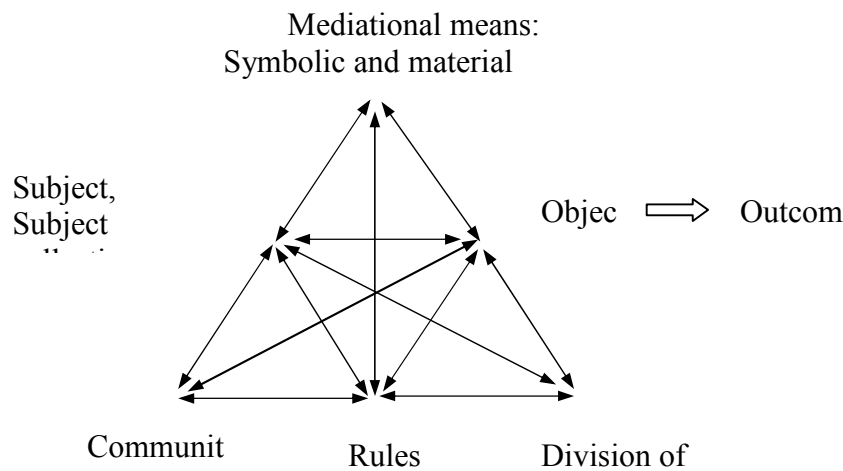**Figure 1**: Activity system (based on Engeström 1987, 1999)

Mediational means:
Symbolic and material

Subject,
Subject

Objec ⟹ Outcom

Communit   Rules   Division of

Figure 2: Writing for publication system (based on Engeström, 1987, 1999)

Mediating
artifacts
Tools and signs

Subject(s)
Science researcher(s)

Object(s)
Research paper
writing & reviewing

Outcome
Research publication

Rules
Publication norms

Community
Academic community and

Division of labor
Write paper(s) and review paper(s)