# Two Decades of Research in L2 Peer Review

Carrie Yea-huey Chang

Tamkang University | Taiwan

Abstract: One hundred and three (N=103) peer review studies contextualized in L2 composition classrooms and published between 1990 and 2015 were reviewed. To categorize constructs in research studies, this researcher used Lai's (2010) three Ps dimensions (perceptions, process, and product). Perceptions are the beliefs and attitudes of peer review. Process refers to the learning process or implementation procedures of peer review. Product is the learning outcomes of peer review. A thematic analysis of the studies' constructs showed that perception studies examined learners' general perceptions/attitudes, Asian students' perceptions/attitudes (cultural influences), and learner perceptions of peer feedback in comparison to self and/or computerized feedback. Process studies discussed the effects of training, checklists/rubrics, writer-reviewer rellationships, the nature of peer feedback, communicative language, timing of teacher feedback on peer feedback, grouping strategies, as well as communicative medium. Product research, on the other hand, investigated peer feedback adoption rates and ratio of peer-influenced revisions, effects of peer review on writers' revision quality, effects of peer review on reviewers' gains, and effects of peer review on writers' self revision. In light of this review, research gaps are identified and suggestions for future research are offered.

Keywords: Peer review, L2 writing, ESL/EFL, research



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Contact: Carrie Yea-huey Chang, Tamkang University, Department of English, 151 Ying-chuan Road, Tamshui District, New Taipei City 25137 | Taiwan – yechang@mail.tku.edu.tw

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#### 1. Introduction

Writing is an intricate activity, requiring the orchestration of linguistic, cognitive, social, affective, cultural, and even technological domains. To facilitate the writing process, an instructional strategy termed peer review is often employed. Peer review, also known as peer feedback or peer response, refers to the exchange of drafts between two or among multiple learners for oral, written or a mix of oral and written feedback. The feedback focus may be on global (e.g. content, cohesion/coherence, text organization), local (e.g. grammar, vocabulary, punctuations) or both global and local writing issues. Even the communicative medium can be various, from face-to-face to computer-medicated communication (CMC), which can be asynchronous (e.g. e-mail) or synchronous (e.g. chats). As opposed to peer editing, peer assessment, peer evaluation, peer critique or peer rating which emphasizes the judgment or rating of writing quality (I. Lee, 1997; Liu & Carless, 2006; Mangelsdorf, 1992) with or without the provision of feedback, peer feedback stresses the provision of rich feedback without grades or formal evaluations.

Peer review is informed by several schools of thought, process writing, social cognitive theory, and social constructionism (Bell, 1991; Ferris & Hedgcock, 2005), to name a few. Process writing, as its name suggests, espouses that writing is a process, not a product. In a process-oriented writing classroom, learners often experience the writing cycle of brainstorming, outlining, drafting, and revising. Peer review may occur at the early stages of writing (i.e. brainstorming and outlining) or it may also tactfully come between drafting and final revision. On the other hand, Vygotsky's (1978) social cognitive theory proposed that learning is a cognitive activity taking place through social interaction. This idea later evolved into social constructionism whose core principle lies in that meaning is socially constructed, thus interaction with peers plays a significant role in one's cognitive development. The close interaction between student writers and reviewers during peer review echoes these two theories.

Peer review has had a long history in both first language (L1) and second language (L2) writing classrooms, so has peer review research. Beginning in the 1980s, research in this area started to burgeon. Since then, researchers' interest in peer review has never diminished. With a large body of peer review studies contextualized in the L2 writing classes and published in the past decades, efforts have been made to synthesize them.

Chapter six, "Building a community of writers: Principles of peer response" in Ferris and Hedgcock's (2005) book was the first attempt. They began by discussing the benefits and criticisms of peer feedback, followed by a detailed summary of research findings in three strands: description of what happens during peer review, textual analysis of peer feedback on revisions, and learners' perception of/attitude toward peer review.

Surveying fourteen articles published in Journal of Second Language Writing between 1992 and 2009, Cheung (2011) commented that the reported findings are

"disappointing" (p. 536) and "not encouraging" (p. 537) in showing the effectiveness of peer feedback on writer's grammatical improvement. Such a claim can be misleading, as it appears to ignore that the influence of peer feedback on content and organization outweighs grammatical accuracy.

Recently, Chen (2014) published a literature review on technology-supported peer review. She first identified the 95 English as a second language (ESL) or English as a foreign language (EFL) peer review studies published in 1990-2010, and then synthesized the 20 studies on computer-mediated peer review (CMPR), using meta-analysis approach. The results were discussed in terms of a. characteristics of CMPR (i.e. interaction situations, discourse patterns and language usage, teachers' role, and students' role), b. the advantages and disadvantages of CMPR (affective, practical, and technical issues), c. functions of synchronous and asynchronous CMPR, and d. implications for future CMPR research (pedagogical, grouping dynamic, and training aspects).

Taken together, all three syntheses have significantly contributed to our understanding of L2 peer review research, yet Cheung (2011) appeared to over-stress grammatical accuracy in peer review, Chen's (2014) synthesis only included CMPR studies, and much research has been published since Ferris and Hedgcock's (2005) review. Now (exactly a decade after 2005) is the optimal time to revisit the issue and re-examine the research results and opinions in L2 peer review research, so that research gaps and directions for future research may be pinpointed.

#### 2. Method

# 2.1 Data Collection Procedure

To locate peer review studies contextualized in ESL/EFL writing classrooms and published in 1990-2015, I used the EBSCO Academic Search Premier, ERIC databases, and the Google Search Engine. Peer review (and its synonyms, including peer feedback, peer response) and L2/ESL/EFL writing were used as search keywords. Since provision of peer feedback, instead of peer rating, is a more common practice in the L2 composition classrooms and therefore of higher pedagogical and theoretical values, peer editing, peer assessment, peer evaluation, peer critique, and peer rating were excluded from the preliminary search.

The search was then narrowed down to studies, opinionated or research-based, published after 1990. Exclusion of master's theses or doctoral dissertations was necessary to narrow the scope of the initial search. Moreover, this review only sampled L2 studies conducted in the ESL/EFL writing classrooms, meaning that the bulk of peer review research contextualized in other content areas or disciplines (e.g. biology, psychology, business English) were also excluded.

Once the studies were identified, articles were retrieved. References at the end of the retrieved studies were also closely checked to locate more relevant studies. This snowballing technique produced a total of 156 publications, including books, book chapters, research journal articles, and conference proceedings.

To make the data analysis manageable, this researcher decided to focus the scope of this review on the 103 studies (see Table 1) published in books (N=2), book chapters (N=8), ERIC Document Reproduction Service (N=7), and research journals (N=85). The majority of the refereed journal articles were published in Journal of Second Language Writing (N=20), ELT Journal (N=8), Computers and Composition (N=7), System (N=7), TESL Canada Journal (N=6), TESOL Quarterly (N=5) and Language Teaching Research (N=5).

Table 1. Distribution of Reviewed Studies

Publication Types		Number
Books	Books	2
	Book chapters	8
ERIC	Document Reproduction Service	7
Refereed Journals	Journal of Second Language Writing	20
	ELT Journal	8
	Computers and Composition	7
	System	7
	TESL Canada Journal	6
	TESOL Quarterly	5
	Language Teaching Research	5
	Assessing Writing	3
	English Teaching & Learning	3
	CALICO Journal	2
	CATESOL Journal	3
	Computer Assisted Language Learning	2
	Modern Language Journal	2
	TESOL Journal	2
	Language Learning	2
	Applied Linguistics	1
	British Journal of Educational Technology	1
	English for Specific Purposes	1
	Journal of Educational Computing Research	1
	Language Learning & Technology	1
	Learning & Instruction	1
	RELC Journal	1
	TESL-EJ	1
	Written Communication	1
Total		103

#### 2.2 Data Analysis

The reviewed articles were first separated into opinionated and research-based ones. Opinionated articles consist of review of literature and discussion of classroom practices. Research-based articles, defined as those involving systematic data collection and analysis, were then categorized by their design (e.g. meta-analysis, correlational, experimental), context (e.g. ESL, EFL), grade level (e.g. high school, undergraduate, graduate school, adults), and research duration (e.g. one semester, two semesters). Meanwhile, Lai's (2010) three Ps dimensions (i.e. perceptions, process, and product) were utilized to further code the research constructs. The three Ps, first employed by Lai (2010) to understand the differences between peer and computerized feedback, were later adopted by Stevenson and Phakiti (2014) for a critical review of research on computerized feedback.

With Lai's three pre-determined dimensions in mind, I further embarked a thematic analysis of the studies' constructs. Studies were constantly compared and contrasted with one another to identify the similarities and differences in constructs. Often, more than one construct was examined in the research studies. Paulus (1999), for instance, investigated the influence of peer and teacher feedback on ESL students' feedback adoption rate and subsequent revisions. The two constructs under her investigation were "feedback adoption rate" and "writer's revisions."

Once the research constructs were identified and articles classified, research findings were summarized. Once again, results were constantly compared and contrasted with one another to identify consistent and inconsistent findings. Finally, similar research findings were synthesized as common threads.

#### 3. Results

In addition to opinion-based articles, Chen's (2014) meta-analysis, and Lundstrom and Baker's (2009) quasi-experimental study, the majority of the L2 peer review articles reviewed here are classroom-based research conducted at tertiary level. Data collection typically lasted one to two semesters, involving mixed methods, with quantitative (e.g. test measurement, questionnaire) and qualitative (e.g. textual analysis, interviews) analyses. To the best of my knowledge, the only correlational study was Hu and Lam (2010).

For the clarity of this paper, this results section is divided into three sub-sections based on Lai's (2010) three Ps dimensions: 1. perceptions, 2. process, and 3. product (see Table 2). Perceptions in this review refer to the beliefs and attitudes of peer review. Process refers to the learning process or implementation procedures of peer review. Finally, product refers to the learning outcomes of peer review.

In each sub-section, research constructs are further identified as headings 3.1.1, 3.1.2, 3.1.3, and so forth, and similar research results are summarized as common

threads. Inconsistent research findings are discussed in detail, so are the most recent research developments (2010-2015). Finally, research gaps are identified and suggestions for future research are provided.

Table 2. Overview of the Review

L2 Peer Review Research				
3.1. Perceptions	3.2. Process	3.3. Product		
3.1.1 Learners' general	3.2.1 Effects of training	3.3.1 Feedback adoption		
perceptions/attitudes	3.2.2 Checklists/Rubrics	rates and ratio of peer-		
3.1.2 Asian students'	3.2.3 Writer-reviewer	influenced revisions		
perceptions/attitudes	relationships	3.3.2 Effects on writers'		
(Cultural influences)	3.2.4 Nature of peer	revision quality		
3.1.3 Learner perceptions of	feedback	3.3.3 Effects on reviewers'		
peer feedback in comparison	3.2.5 Communicative	gains		
to self and/or computerized	language	3.3.4 Effects on writers' self		
feedback.	3.2.6 Timing of teacher	revision		
	feedback on peer feedback			
	3.2.7 Grouping strategies			
	3.2.8 Communicative			
	medium			

#### 3.1 Perceptions

Perceptions refer to learners' beliefs and attitudes toward peer review. Research examining learners' perceptions generally centered on three main strands: Learners' general perceptions, Asian students' perceptions (cultural influences), and learner perceptions of peer feedback in comparison to self and/or computerized feedback.

#### 3.1.1 Learners' general perceptions of peer review

Questionnaires (C. Chang, 2014a, 2014b; Jacobs, Curtis, Braine, & Huang, 1998; M.-K. Lee, 2015; Saito, 1994; Sengupta, 2000; Wang, 2014; Zhang, 1995), journals/logs (Huang, 1995; Wachholz, 1997), and interviews (C. Chang, 2014a; Chi, 2005; M.-K. Lee, 2015; Min, 2007, 2008; Sengupta, 2000; Wachholz, 1997; Wang, 2014) were the three major instruments to understand learners' general perceptions of peer review. Because peer feedback is often an addition to the existing teacher feedback in the composition classrooms, learners' perceptions of peer review in comparison to teacher feedback became the center of investigation. Consistently research findings showed that L2 students welcomed peer review when it complemented rather than replaced teacher feedback (Caulk, 1994; Hu, 2005; Jacobs et al., 1998; I. Lee, 1997; M.-K. Lee, 2015; Miao, Badger, & Zhen, 2006; Tsui & Ng, 2000). Unsurprisingly, when prompted to

choose between teacher and peer feedback, L2 learners robustly opted for teacher input (Berger, 1990; Hu & Lam, 2010; M.-K. Lee, 2015; Leki, 1990; Rothschild & Klingenberg, 1990; Saito, 1994; Tsui & Ng, 2000; Zhang, 1995).

Yet, students overall found peer review linguistically and cognitively beneficial and socially and affectively enjoyable (C. Chang, 2014a; Huang, 1995; I. Lee, 1997; Mangelsdorf, 1992; Mendonca & Johnson, 1994; Tang & Tithecott, 1999). Specifically, peer review nurtures student writers' audience awareness (Ho & Savignon, 2007; Jacobs et al., 1998; Mendonca & Johnson, 1994; M.-K. Lee, 2015; Paulus, 1999; Rollinson, 2005; Tsui & Ng, 2000) and scaffolds social support from peers (De Guerrero & Villamil, 2000; Jacobs et al., 1998).

Despite these advantages, some learners still questioned peer's language competency and the credibility/quality of peer feedback (Jacobs et al., 1998; Sengupta, 1998; Tang & Tithecott, 1999; Tsui & Ng, 2000; Wang, 2014) while others were concerned about the vague peer comments (C. Chang, 2014b; Leki, 1990; Mangelsdorf, 1992; Min, 2005; Tsui & Ng, 2000; Wang, 2014) and their over-emphasis on local errors (Nelson & Carson, 1998; Tsui & Ng, 2000).

One of the most recent publications by M.-K. Lee (2015) targeted junior high school students, an under-represented group in L2 peer review research. Not only Hong Kong ESL learners' general perceptions of teacher and peer feedback were investigated, but also their attitudes toward intra-feedback (reviewers providing feedback on one another's feedback performance), a new strategy never proposed or examined before. M.-K. Lee (2015) explained that "intra-feedback was well received...because it provided assurance for peer assistance, promoted task engagement, enhanced reviewers' capability and reflective awareness, and eased feedback quality concerns" (p. 1).

Despite the refreshing discussion of a new peer feedback strategy by M.-K. Lee (2015), an obvious gap in this research strand is that only the general learner perceptions were investigated, leaving student writers' and reviewers' perceptions unexamined. Reviewing peer's drafts is often perceived more helpful than being reviewed (Rothschild & Klingenberg, 1990; Tsui & Ng, 2000), although the underlying reasons remained unclear. One recent research development to address this gap is C. Chang (2014a) who investigated both Taiwanese college student writers' and reviewers' perceived benefits of peer review. Not only did peer feedback help student writers with error correction and idea development, it also provided different reader perspectives. Peer feedback was equally beneficial for the student reviewers, as they acquired new vocabulary, good sentences, organization or writing skills from their classmates. More importantly, reviewing helped students introspect their writing deficiencies, and gain a sense of accomplishment as a helper. Albeit these encouraging findings, the perceived drawbacks of peer review were unfortunately unexamined. Given that this is the very first attempt to understand student writers' and reviewers' respective perceptions, more research in this area is needed. Likewise, the reasons why reviewing is more beneficial than being reviewed also need to be better understood.

#### 3.1.2 Asian learners' perceptions of peer review

In addition to learners' general perceptions of peer review, particular learner groups' perceptions (Asians for instance) are also of research interests. Peer review (whose main purpose is problem identification) is inherently a face- and harmony-threatening activity, regardless of individualism or collectivism. For example, an American native speaker pairing with non-native ESL speakers wrote in his journal, ""...It calls for me to act superior to my peer...most people are too scared to correct another writer's paper for fear of upsetting them...'" (Wachholz, 1997, p. 12). Learners' resistance to peer review appears universal, but this resistance especially magnified in Asian cultures where collectivism (group cohesion) prevails.

Several studies (Carson & Nelson, 1994, 1996; Connor & Asenavage, 1994; Hu & Lam, 2010; Nelson & Carson, 1998; Tang & Tithecott, 1999) endeavored to tackle this cultural issue. Through surveys and/or interviews, researchers (Allaei & Connor, 1990; Carson & Nelson, 1996; Hu & Lam, 2010; Mangelsdorf, 1992; Nelson & Carson, 1998) documented Asian learners' attitudes toward peer review. Findings, however, have been far from conclusive.

Both Allaei and Connor (1990) and Mangelsdorf (1992) observed that learners who were uncomfortable critiquing peer writing or held completely negative attitudes happened to be of Asian origins. Carson and colleague's series of studies on Chinese learners (Carson & Nelson, 1994, 1996; Nelson & Carson, 1998) yielded similar results. Only Hu and Lam (2010) found otherwise. Although Chinese students studying in Singapore agreed that peer feedback could be an acceptable pedagogy in their country, Hu and Lam (2010) cautioned that since these EFL Chinese students had been living in ESL Singapore for at least six months, their perceptions could have been different from their counterpart in China.

While research on Asian (Chinese in particular) speakers' perceptions (Carson & Nelson, 1994, 1996; Hu & Lam, 2010; Nelson & Carson, 1998) abounds, a direction for future research is to investigate the perspectives of L2 learners from other collectivist (e.g. Southeastern Asian) or individualist (e.g. European) cultures.

# 3.1.3 Learner perceptions of peer feedback in comparison to self and/or computerized feedback.

Learner perceptions of peer review are often compared/contrasted with their attitudes toward self and/or computerized feedback. Studies in this category fall into several strands: perceptions of peer- and self-evaluation (Berger, 1990; Yang, 2010), peer and computerized feedback (Lai, 2010), and learners' preference for teacher-, peer- or self-directed feedback (Lam, 2013; Zhang, 1995).

The focus of Berger (1990) was learners' perceptions of peer- and self-evaluation. Unsurprisingly, peer feedback was preferred to self-evaluation. The comparison

between peer and computerized feedback is another emerging research area (Lai, 2010). EFL Taiwanese students appreciated the immediacy of computerized feedback offered by MyAccess!, albeit its somewhat form-focused and low-quality (i.e. vague, formulaic, and repetitive) feedback (Lai, 2010). The "dehumanizing instruction" (p. 442) was especially disfavored. By contrast, peer feedback was perceived more concrete. The enjoyable peer-to-peer social interaction and the presence of real audience were also acknowledged.

A third research strand is to understand learners' preference for teacher-, peer- or self-directed feedback (Lam, 2013; Zhang, 1995). ESL learners who experienced all three kinds of feedback expressed their preference for teacher feedback to non-teacher feedback, and peer feedback to self-directed feedback (Zhang, 1995). In Lam (2013), the reliability of self assessment was of doubt for ESL students in Hong Kong.

In conclusion, there is a pressing need to extend our current knowledge by examining the benefits of peer feedback in relation to computerized feedback, as Lai (2010) appears to be the first and only study. It also remains to be understood if the immediate yet form-focused computerized feedback may complement the content-focused peer feedback in the L2 writing classrooms. With regard to the last research strand, learners' unfavorable attitudes toward self feedback suggest that moving students from other- to self-regulation is still a long way to go. Several researchers (De Guerrero & Villamil, 1994; Hyland, 2000; Liou, 2010; Tsui & Ng, 2000; Villamil & De Guerrero, 2006) expressed their confidence in peer feedback in promoting learner autonomy, as learners' reliance on the instructor as the only feedback-provider is significantly reduced.

#### 3.2 Process

Process refers to the learning process or implementation procedures of peer review, including the effects of training, checklists/rubrics, writer-reviewer relationships, the nature of peer feedback, communicative language, timing of teacher feedback, grouping strategies, and communicative medium.

#### 3.2.1 Effects of training

Training is believed to be essential in the success of peer review (C. Chang, 2015; Liou & Peng, 2009; Min, 2005, 2006, 2007, 2008). Studies examining the effects of peer review training have generally employed two research designs: either intra-group (i.e. reviewer performance over time: before versus after training) (C. Chang, 2015; Liou & Peng, 2009; Min, 2005, 2006, 2007) or inter-group comparisons (i.e. trained versus untrained groups simultaneously) (Berg, 1999b; McGroarty & Zhu, 1997; Min, 2008; Rahimi, 2013; Rothschild & Klingenberg, 1990; Stanley, 1992).

Significant variances existed in the quantity and quality of training. Some researchers simply provided grading sheets or checklists/rubrics, without training (Tsui & Ng, 2000) or with little training (Rothschild & Klingenberg, 1990); others offered

Regardless of the research design, training durations or formats, research findings overall substantiate that untrained reviewers' feedback quality tend to suffer, evident in their focus on local issues (grammar, vocabulary, and mechanics), and provision of vague comments (Keh, 1990; Leki, 1990; Mangelsdorf, 1992; Min, 2005; Rahimi, 2013; Rothschild & Klingenberg, 1990; Stanley, 1992; Tsui & Ng, 2000). Trained reviewers, by contrast, are more likely to produce higher-quality feedback, characterized as more balanced in addressing global and local issues, as well as more text-specific and revision-oriented (C. Chang, 2014b, 2015; Min, 2006, 2008; Rahimi, 2013). Trained writers, in turn, made significantly more meaning revisions than untrained writers (Berg, 1999b; Rahimi, 2013).

The effect of peer review training was again under investigation in Rahimi's (2013) recent study. EFL Iranian college students were randomly assigned to the trained and untrained groups. Before training, the two groups performed similarly on the types of feedback given (i.e. local comments); however, after training, the trained group made more global comments than the untrained group. Because of this, the writing quality of the trained group who received more balanced local and global feedback was higher than the untrained group who mainly received local feedback. When feedback correctness and appropriateness were put into perspective, the percentages of wrong local and global comments from the trained group were so low that they "could not have influenced the revision quality" (Rahimi, 2013, p. 81).

On the whole, all the reviewed studies' training duration, except C. Chang (2015), lasted only weeks to one semester. The effect of prolonged training (beyond one semester) on peer feedback quality warrants research attention. Furthermore, peer review training's short-term effect appears effective, yet this by no means suggests that the long-term or carry-over effect will be equally positive. Researchers have previously identified the gap: "...we have almost no longitudinal evidence about the extent to which (peer) feedback helps students to improve their writing over the long term" (Ferris, 2003, p. 135; Wachholz, 1997). Unfortunately, this overdue call remains unanswered and definitely needs to be taken into consideration in future studies.

# 3.2.2 Checklists/Rubrics

Checklists/Rubrics are teacher-initiated guidelines used during peer review to direct reviewers to whatever issues the instructor wishes them to pay attention to and address. To the best of my knowledge, the efficacy of review checklists/rubrics has never been empirically investigated in L2 peer review research, though the implementation of them

in the composition classrooms is common (C. Chang, 2014a, 2014b, 2015; C. F. Chang, 2009; Connor & Asenavage, 1994; M.-K. Lee, 2015; Lundstrom & Baker, 2009; Miao et al., 2006; Min, 2006, 2007; Wachholz, 1997; Zhu, 1995, 2001; Zhu & Mitchell, 2012). The debate over teacher-initiated checklist/rubrics hence continues.

The pro-checklists/rubrics scholars put forward that checklists/rubrics help raise writer's awareness of the writing criteria, direct the reviewer to global writing issues (Wang, 2014), and make their checklist/rubrics-based comments more acceptable to the writer. C. Chang (2014b) described EFL Taiwanese student writer's decision-making process and revision behaviors in peer review. Two of the eighteen undergraduate participants underlined the importance of the checklists. When asked how to decide to adopt or abandon peer comments, one student writer replied, "I'll see the checklist on the platform and compare with the suggestions my partners (partner) advertice (advise)..." (p. 183). Without the checklist/rubrics as a guideline, students may focus overtly on local writing issues or even drift or stray off task (Wachholz, 1997).

The con-checklists/rubrics researchers have also voiced their opinions. When checklists/rubrics are initiated by the instructor in a top-down manner, which is "'teacher-choreographed'" (Ferris, 2003, p. 132) or "a kind of conspiracy geared less toward communicating peer to peer than pleasing a teacher" (DiPardo & Freedman, 1988, p. 144), oppression of student autonomy and self-directed learning may possibly occur (Hansen & Liu, 2005; Hyland, 2000; Liu & Hansen, 2002).

In view of this continuing dispute, advocates for the unstructured peer review where agendas are learner-set surfaced (Lockhart & Ng, 1995; Nelson & Murphy, 1992, 1993). That is, under the teacher-set course structure where learners cannot decide whether peer input is needed or not, student writers' autonomy should be respected and honored whenever possible. Emerging research in self-directed learning has produced fairly consistent, yet less encouraging results. When student writers, trained or untrained, were asked to voice their personal needs in annotations to teachers (so they were able to obtain customized feedback on areas of their concerns in addition to onesize-fits-all checklist-based comments), they tended to be concerned about local issues, such as grammar, syntax, vocabulary, spelling, and length (Storch & Tapper, 1996; Wachholz, 1997). The most noteworthy is that even the trained writers behaved like the untrained ones in annotations (Cresswell, 2000; Romano & Martinez, 2014; Xiang, 2004). The reason, unfortunately, remains unclear. Contradictory findings were reported in Li (1994) who analyzed 2 high-proficient and 2 low-proficient secondary school students' annotations. Li found that 79% and 12% of peer annotations focused on content and form respectively, and 85% of the peer comments were responses to writers' concerns in their annotations. Besides, low-proficient learners were more likely to be concerned about sentence level writing issues than their high-proficient counterparts.

To date, our understanding of student writers' needs is limited to learners' self-report data (Storch & Tapper, 1996; Wachholz, 1997), lacking a more objective assessment of the writers' actual writing problems. Little do we know how aware

student writers are of their own needs. Some students indeed confessed that the lack of self-awareness disabled them to articulate personal needs in annotations (Storch & Tapper, 1996). A promising direction for future research is to compare the instructor's assessment of learners' problems against learners' own self-assessment in writer annotation (Storch & Tapper, 1997).

To sum up, the debate over teacher-initiated checklists/rubrics can best be conceptualized as the tug of war between teacher-imposed structure and learner autonomy. A compromise may be to actively involve learners in the creation of the review checklists/rubrics or to launch writer annotations. When learners have a say in how their writing should be assessed, they may become more receptive of instructor assessment (Charles, 1990) or even the teacher-student co-constructed checklists/rubrics. These, however, are at best speculations which demand research-informed verification.

#### 3.2.3 Writer-reviewer Relationships

Our understanding of writer-reviewer relationships, or the social distance between the student writer and reviewer, in L2 peer review is still in infancy, limited to one EFL study. C. Chang's (2014a) recent investigation of the influence of writer-reviewer relationship on reviewers' social behaviors and review stances revealed fairly interesting results. EFL Taiwanese students' seating and social behaviors were first recorded to validate friend or non-friend relationship among students. Students then worked with a self-selected partner (friend) during the first semester, and two randomly assigned partners (non-friends), one reviewer and one reviewee, in the second semester. C. Chang found that reviewers' collaborative stance increased from 38% to 54%. Although prescriptive stance remained the second highest stance in both semesters, it decreased from 37% to 29%. Respect for authorship, collaboration (the use of "we" and "together"), and the use of emoticons were more common in friend relationship while adopting reader/writer roles (role-switching) was more prominent in non-friend relationship. Her conclusion was that writer-reviewer friendship, to certain extent, influenced reviewers' social behaviors and review stances.

To summarize, it is impossible and improper to draw any conclusion based only on one EFL study. More classroom-based research is therefore needed to better understand whether friendship bias exists and how friendship-based peer review partnership could possibly accelerate or foster community building.

# 3.2.4 Nature of Peer Feedback

The nature or characteristics of peer feedback, is an area that has been extensively investigated through content analysis of peer feedback quantity and quality (Bradley, 2014; Wachholz, 1997), peer feedback quality in comparison to teacher feedback (Caulk, 1994; Paulus, 1999), reviewer stances (Lockhart & Ng, 1995a, 1995b; Mangelsdorf & Schlumberger, 1992; Min, 2007, 2008; Villamil & de Guerrero, 1996;

Zhu & Mitchell, 2012), and the interactional patterns, namely, the descriptions of learners' social, affective, cognitive or linguistic behaviors in peer review (Carson & Nelson, 1996; De Guerrero & Villamil, 1994, 2000; I. Lee, 1997; Jones, Garralda, Li, & Lock, 2006; Mendonca & Johnson, 1994; Nelson & Carson, 1998; Nelson & Murphy, 1992, 1993; Villamil & de Guerrero, 1996; Zhang, 1995; Zhu, 2001).

On the one hand, Bradley's (2014) text analysis of asynchronous wiki peer feedback yielded positive, encouraging findings: 4/5 of global comments and 1/5 of local comments; 9/10 of revision-oriented comments and 1/10 of non-revision-oriented comments. High-quality peer feedback was observed. On the other hand, the somewhat negative, discouraging findings by Wachholz (1997) demonstrated that reviewers were reluctant to criticize, neglected problems in the drafts, overly emphasized mechanics than content, and side-tracked from tasks.

Caulk (1994) took a slightly different approach to understanding the nature of peer feedback. He noted that 89% of the peer feedback was considered valid by himself, the course instructor. The specific and local peer feedback complemented the general and global instructor comments. Yet somehow contradictory findings emerged in Paulus (1999) who reported that 14% and 34% of students' revisions were peer- and teacher-influenced, 62% and 58% of which were meaning-based changes.

Different from the inconsistent research results in peer feedback quantity and quality, research on reviewer stances has produced relatively more consistent findings, although slightly different terms were coined to name the stances. Mangelsdorf and Schlumberger identified prescriptive, collaborative, and interpretive stances in their 1992 study. Lockhart and Ng (1995a, 1995b) reported authoritative, interpretive, probing, and collaborative reviewer stances. Min (2008) used probing, prescriptive, tutoring, and collaborative stances to categorize reviewer comments. Notwithstanding the differing terminologies, prescriptive/authoritative stance which dictates what the writer should do is the least desirable. In contrast, the most desirable is collaborative stance when the reviewer goes beyond problem identification and initiates revision-oriented suggestions.

The two groups of pioneers in peer interactional patterns research are Nelson and colleagues, and De Guerrero and Villamil. Particularly intriguing are Nelson and colleagues' case study results. They were interested in the interactional styles of three ESL Chinese-speaking learners (Carson & Nelson, 1996; Nelson & Carson, 1998) scattered in three review groups of mixed nationalities: Group 1 (China, Laos, Bangladesh, and Mexico), Group 2 (Taiwan, Iran, and Argentina), and Group 3 (Taiwan, Thailand, Thailand, and Haiti). Chinese speakers (aged 19, 20, and 23) showed tendency to withhold feedback, fearing that negative comments would embarrass the writers or hurt their ego. They also presented criticism in indirect question forms (such as tag questions), or "underspecify the writer's problems" (1996, p. 17), to soften the negative tone. These hedging strategies were to avoid group conflicts and maintain cohesion.

Interestingly, conflicting results were observed in Nelson and Murphy's earlier (1992) case study on one review quad of ESL learners, again a mix of Chinese (a 38-year-old female Taiwanese), and Spanish (a 32-year-old male Chilean, a 26-year-old female Colombian, and an 18-year-old male Peruvian) speakers. When the common scenario of the Taiwanese dominating group discussion and attacking other learners happened, the other three students withdrew from the interaction, became defensive, and tried to get back to her. Albeit such a seemingly negative group dynamics, all four perceived this review activity to be beneficial, except the weakest writer from Peru. While this Taiwanese female learner clearly showed atypical collectivist behaviors, it is unclear how the gender (2 females and 2 males), age (1 teenager and 3 adults) or ethnicity (1 Asian and 3 Hispanics) composition in this unique review group could have separately or collectively influenced her behaviors. Unfortunately, these were beyond the scope of this case study.

The conflicting results in Nelson and colleagues' series of research (Carson & Nelson, 1996; Nelson & Carson, 1998; Nelson & Murphy, 1992, 1993) which have thus far never been carefully scrutinized absolutely deserve our attention here. A cross-study comparison points out a few inherent group discrepancies, which may be able to account for the differing research findings. First, the Chinese speaker (aged 38) in Nelson and Murphy (1992) was much older than those (aged 19-23) in Carson and Nelson (1996) and Nelson and Carson (1998). It is reasonable to hypothesize that age may have been at play in these Chinese speakers' interactional styles in multi-national review groups. Beside age difference, the Taiwanese also happened to be the only non-Hispanic in Nelson and Murphy (1992), but in Carson and Nelson (1996) and Nelson and Carson (1998), except Group 2, the ratio of Asian to non-Asian was 3:1 in both Groups 1 and 3, suggesting that Asians were the majority in these two review groups. It is plausible that Chinese speakers were more prone to behave like collectivists in Asian groups than non-Asian groups. These age or in-group/out-group factors are my personal speculations, which certainly call for validation from empirical research.

In short, re-examination of the cultural influence of individualism and collectivism on L2 reviewers' interactional patterns is a necessity, with the precaution not to stereotype based on learners' cultural background. Moreover, how factors such as age or in-group/out-group may influence the peer review group's dynamics is yet another interesting topic to tackle. Most importantly, since studies focusing overly on the interactional patterns of Chinese and Spanish speakers, attention may be extended to other under-researched ESL/EFL countries in Southeast Asia, North and Latin Americas, as well as Europe.

## 3.2.5 Communicative Language

When peer review is implemented in the L2 composition classrooms, the language for communication may be learners' mother tongue (L1) or English (L2). To date, the investigation of communicative language (L1 vs. L2) in peer review is limited to two EFL

studies, both involving Mandarin Chinese speakers (Huang, 1996b; Yu & Lee, 2014). Huang (1996b) stated that the debate over the communicative language in peer review evolves around a paradoxical idea. While communication in L1 makes the peer review more productive and efficient because of the removal of the L2 language barrier, "the use of L1 may deprive the students of opportunities to practice the target language" (Huang, 1996b, p. 4). It seems that depending on whether the peer review's major goal is to improve peer writers' drafts or for the peer reviewers to practice their writing skills in the target language, learners' L1 or L2 may be opted.

The first study was conducted by Huang (1996b) in Taiwan. She divided students into Mandarin Chinese (L1) and English (L2) review groups. The L2 group excelled the L1 groups in the coverage of writing aspects, with the former addressing more evenly with language usage, rhetoric, and reasoning while the latter concentrating mainly on grammar and usage. The L1 groups also gave relatively more specific comments than the L2 group, although the former communicated more effectively due to the use of L1, whereas the latter seemed more supportive, particularly in the use of praise.

Yu and Lee (2014) recently undertook a study in which Chinese students offered written comments in whatever language (L1 Mandarin or L2 English) they felt comfortable with. The results demonstrated that with individual differences in L1 usage, overall students commented more in L1 or L1 mixed with L2 (code-switching). Dissimilar to Huang (1996b), Yu and Lee (2014) noticed that L1 comments addressed form, content, and organization, but 95% of the L2 comments focused exclusively on form. The L1 comments, of better quality than L2 comments, included explanations of the identified problems and revision-oriented suggestions, echoing Huang's (1996b) findings. Students' rationales for language choice were uncovered in interviews. L1 was essential to precisely express reviwers' opinions, when their goal was to complete the review task only. On the other hand, when the goal was not only to finish the review task but also to practice their English writing, L2 would be preferred. Reviewers' low L2 proficiency level and lack of confidence in L2 abilities had prevented them from commenting in L2. Students' previous experiences with class requirement and teacher feedback also played a crucial role. Some were encouraged by their former teachers to comment in L2, so they continued to do so. Most students recalled that their teachers used L2 or a mix of L1 and L2 in their written feedback. Reviewers also demonstrated audience awareness, taking into consideration that the feedback recipient was a Chinese speaker. Reviewers used "'more convenient, more direct, much clearer, more explicit, and more appropriate' to emphasize the role of L1" (p. 34). Finally, the writer's English proficiency was also considered. Even though the writer's identify was unspecified, reviewers could judge writer's proficiency from the writing sample, and employed the most suitable language accordingly.

Several studies (De Guerrero & Villamil, 2000; Levine et al., 2002; Villamil & de Guerrero, 1996; Zhao, 2010), although not examining the communicative language as a construct, have reported the facilitative effect of L1. Levine et al. (2002) and Villamil and de Guerrero (1996), for instance, reported homogeneous Israeli and Puerto Rican

All in all, since Huang (1996b) and Yu and Lee (2014) differed not only in their research designs (teacher assignment of language vs. self-choice), but also in their results of coverage of writing aspects, it is premature to draw any generalization based solely on two studies. The balance between precision of comments written in learners' native language and opportunities to practice writing in the target language is another important yet unaddressed research question. Furthermore, since both studies involved Mandarin Chinese speakers, more research needs to be done in other L2 contexts.

#### 3.2.6 Timing of teacher feedback on peer feedback

Timing of teacher feedback on peer feedback is relevant because learners often perceive the teacher, not the peer, as the authority or the only legitimate feedback-provider. "Teacher feedback on peer feedback may shape students' perceived usefulness of peer comments or their general perceptions about peer feedback practice," thus posing a threat to validity (M.-K. Lee, 2015, p. 3). Therefore, it appears the prime time for teachers to evaluate or give feedback to reviewer comments is after revision (Hansen & Liu, 2005; M.-K. Lee, 2015; Liu & Hansen, 2001; Zhao, 2010). This statement, nevertheless, is more a claim than a verified fact, as timing of teacher input is never a research construct. Even so, classroom implications may still be inferred from existing studies.

The effect of peer and teacher feedback on ESL college students' revision was the research focus of Connor and Asenavage (1994), Paulus (1999), and Tsui and Ng (2000), in which peer feedback was given to students' first draft, and teacher feedback to the following draft(s). Drafts were then revised based on the type of received feedback. Paulus (1999) explained that 32% and 1% of the revisions made to the first and second drafts, respectively, were peer-influenced. Tsui and Ng (2000) substantiated that 78% of the students incorporated less than 50% of peer feedback.

The most intriguing findings come from Zhao (2010) who maintained that 74% of teacher feedback and 46% of peer feedback were adopted. Because the teacher commented on peer feedback before writers revised, she speculated that only teacher-validated peer comments were incorporated, but this speculation was unfortunately unverified. Nevertheless, interviews indeed confirmed that students equaled teacher feedback to revision requirement, but peer feedback to suggestions.

So, it seems that the best time for teachers to evaluate peer feedback is after the writers have completed all the revisions, so writers' critical judgment of peer comments

and the subsequent decision to incorporate or abandon them would not be influenced by the instructor. This hypothesis certainly merits further investigation.

#### 3.2.7 Grouping Strategies

Peer review grouping strategies include group size (small vs. large groups), group membership (static vs. dynamic), and grouping by abilities (same vs. mixed proficiency groups).

#### Group size: Small vs. large groups

No peer review research, to my knowledge, has examined peer review group size (small vs. large) as a construct. Discussions, therefore, are opinionated. Advocates of pair work believe that peer collaboration is more intimate in dyads (Ferris, 2003). Liu and Hansen (2002) posited that with young learners, groups of 2-3 are optimal for teachers to closely supervise. A close examination of research studies actually confirms that dyads were popular in ESL (e.g. De Guerrero & Villamil, 1994, 2000; Hu & Lam, 2010; I. Lee, 1997; Mendonca & Johnson, 1994; Paulus, 1999; Sengupta, 1998a, 1998b; Tsai & Kinginger, 2015; Villamil & de Guerrero, 1996, 1998) and EFL (e.g. Allen & Mills, 2014; Chang C., 2014a, 2014b, 2015; DiGiovanni & Nagaswami, 2001; Jin & Zhu, 2010; Kamimura, 2006; Lockhart & Ng, 1995a, 1995b; Min, 2006, 2007, 2008; Villamil & de Guerrero, 1998; Wang, 2014) settings.

Equally common is the formation of triads or larger groups in ESL (e.g. Berger, 1990; Carson & Nelson, 1996; Connor & Asenavage, 1994) and EFL (e.g. Hedgcock & Lefkowitz, 1992; Huang, 1995, 1996a, 1998a; Min, 2005, 2006, 2007; Rothschild & Klingenberg, 1990) classrooms. Ferris and Hedgcock (2014) contended that "...small groups are more comfortable and provide a broader variety of perspectives and writing styles than dyads so" (p. 258). While this recent statement appears to contradict with Ferris' (2003) earlier claim, findings from several studies (Caulk, 1994; M.-K. Lee, 2015; Liu & Hansen, 2002; Sullivan & Pratt, 1996; Tuzi, 2004) indicated that multiple reviewers help the writer attain a second or third opinion, thus strengthening the interrater reliability of feedback or "a sense of assurance" (M.-K. Lee, 2015, p. 6). For example, one ESL writer in Tuzi (2004) elucidated,

First of all I ignored the response and said to myself that this person doesn't have a clue. But after I got several more feedbacks which sounded all similar, I started to rethink my paper. Maybe they are right? (p. 230).

Large groups, however, are not free from criticisms. Reviewers may have little time to read multiple writers' drafts, thus making the review unfruitful (Bell, 1991; Liu, 1998). Liu's (1998 cited in Liu & Hansen, 2002) study with ESL graduate students demonstrated that triads functioned more efficiently than groups of 4-6. Student interviews further revealed that in larger groups, reviewers were prone to comment at the surface level, "leaving much explanation and justification underdeveloped and thus making peer response less effective when it came to revision" (p. 62). Decreased

To summarize, with differing opinions on group size, more empirical research is warranted to examine small and large review groups' pedagogical benefits and drawbacks. The importance of multiple reviewers to secure the inter-rater reliability of feedback is apparent, but the premium reviewer number is yet to be determined. Future research can try to understand if two reviewers are sufficient to safeguard feedback reliability.

#### Group membership: Static vs. dynamic

Peer review research on group size is literally non-existent, so are studies on group membership (static vs. dynamic). In static review groups, members stay unchanged in multiple writing cycles; in dynamic review groups, members alternate throughout the semester. The static or dynamic grouping is often decided by the course instructor, as they see fit. The formation of static (e.g. C. Chang, 2014b; Connor & Asenavage, 1994; Hu & Lam, 2010; Nelson & Murphy, 1992; Vorobel & Kim, 2014) and dynamic (e.g. C. Chang, 2014a, 2015; Rahimi, 2013) review groups can both be observed in existing research, with static groups being the norm. Supporters of static grouping (Ferris, 2003; Ferris & Hedgcock, 2014) put forward that "...students become comfortable with their group members and their writing and response styles" (Ferris, 2003, p. 258), which in turn contributes to "effective and consistent collaboration within the groups" (Conner & Asenavage, 1994, p. 261).

Advocates of dynamic grouping, in contrast, emphasize the importance of student writers interacting with a wider range of audience (C. Chang, 2015; Nelson & Murphy, 1992). Nelson and Murphy's (1992) intriguing findings shed further light on this. Four ESL students worked as a review group throughout the semester. The researchers had believed that fixed grouping would facilitate group efficiency and cohesion, but findings suggested otherwise. Nelson and Murphy (1992) consequently recommended that "shifting group membership may discourage the development of negative roles in one group...students work with a variety of classmates over time, thereby interacting with a wider audience of readers" (p. 189).

In brief, the argument over group membership lies in how to allow intimate partnership to develop over time without sacrificing the benefit of wider range of audience. These opinion-based statements, again, should be grounded in research.

# Grouping by abilities: Same vs. mixed proficiency groups

Another peer review grouping strategy is to take learners' abilities or English proficiency into consideration. Thus far, learners' proficiency on peer review efficacy was only assessed in two studies, both happening to involve EFL Japanese learners (Allen & Mills, 2014; Kamimura, 2006). Upon training, one high- and one low-proficient classes of Japanese students gave both written and oral feedback to their partners (Kamimura, 2006). The low-proficient class produced a significantly higher number of peer

comments than the high-proficient class, but both classes produced high ratio of meaning-based comments (91% and 94% in high- and low-proficient classes). Equally high were the feedback acceptance rates (94% and 98% for the high- and low-proficient classes). Furthermore, both classes demonstrated significant improvement from the drafts to the revised essays, with greater improvement in the low-proficient class. A qualitative analysis of students' writing further indicated that the high-proficient students tended to make global comments at the discourse level while the low-proficient students make local comments at the sentence level. This interesting tendency may have reflected their varying degree of awareness that essay quality is mainly defined by content and text organization.

The impact of English proficiency on dyadic peer review was again under investigation in Allen and Mills (2014). Japanese college freshmen, categorized as highor low-proficient, completed drafts and peer reviews. Contrary to Kamimura's (2006) findings, the high-proficient reviewers made significantly more suggestions than their low-proficient counterpart. Moreover, high-proficient reviewers' suggestions were incorporated more than low-proficient reviewers' suggestions. When cooperating with low-proficient writers, high-proficient reviewers produced the most suggestions, but low-proficient reviewers produced the least suggestions when collaborating with high-proficient writers. While low- and high-proficient writers' incorporation of meaning-preserving suggestions showed similar patterns, high-proficient writers incorporated more meaning-related suggestions.

In sum, although both studies involved EFL Japanese learners, similar and dissimilar findings emerged due to the differing research designs. It remains unknown if peer review training and peer review itself would be of more benefit for low- or high-proficient learners. Likewise, it is still unclear if mixed (high-low) or matched (high-high or low-low) proficiency review groups produce the most desirable peer review outcomes, thus a research topic for future studies. Finally, attention needs to be expanded to other non-Japanese populations.

#### 3.2.8 Communicative Medium

Communicative medium research consists of three strands: face-to-face communication (oral vs. written), CMC, and face-to-face vs. CMPR.

#### Face-to-face communication: Oral vs. written

One area that has long been neglected in L2 peer review research is the communicative medium, specifically oral versus written feedback in face-to-face peer review. Oral feedback serves "as an immediate, socially appropriate response, providing more compelling impetus...to revise than revision with written comments (Chi, 2005, p. 35). In homogeneous groups where writers and reviewers share the same native language, oral face-to-face peer reviews may be more efficient when learners converse in their L1 (Ho & Savignon, 2007; Levine et al., 2002). Comparing peer interaction in an ESL (U.S.) and an EFL (Israel) setting, Levine et al. (2002) noticed that more oral than written

feedback was produced in the Israelis as they shared a common mother tongue; conversely, not having a common L1 had made it challenging for the ESL students to negotiate orally. To compensate for this, the ESL reviewers wrote relatively more extensive comments than their Israelis counterpart.

Also of more cognitive value than written review is oral face-to-face peer review, in which reviewers addressed content and organization more (Hedgcock & Lefkowitz, 1992). Nonetheless, one constraint of oral feedback is that in culturally diverse review groups, learners may either have difficulty understanding partners' accents (Braine, 1997; Braine & Yorozu, 1998; Wachholz, 1997) or suffering from speaking anxiety (Braine, 1997; Braine & Yorozu, 1998). Wachholz (1997) detailed the efficacy of oral peer review (a mix of native and non-native speakers) interaction with or without the written draft for reviewer's reference. When the ESL Japanese writers read aloud their drafts during peer review sessions and a written draft was unavailable, the native-speaking reviewers reportedly had difficulties understanding the writers' pronunciation/accent. Peer feedback quality, as a result, was low. By contrast, when read-aloud was in tandem with the written draft, native speakers' better understanding of the draft contributed to higher-quality peer feedback.

Written feedback, furthermore, not only provides opportunities for writing practice (C. Chang., 2015), but also could be more thoughtful and elaborated when time is allowed to compose (C. Chang, 2015; Liu & Hansen, 2001; Liu & Sadler, 2003). Beside this linguistic benefit, having a written review printout to refer to also facilitates the revision process, making it easier and more efficient to revise than when a written printout is absent (DiGiovanni & Nagaswami, 2001; Rollinson, 2005).

Thus, it appears that both oral and written peer reviews have their merits: oral reviews not only produce immediate feedback but also help learners concentrate on global writing issues, whereas written reviews are more elaborated and offer genuine opportunities to practice writing skills. This explains why a third, compromised approach emerged: written before oral peer review (Miao et al., 2006; Tsui & Ng, 2000). One student in Tsui and Ng (2000) articulated that after written feedback, being able to orally "explain his intended meaning to his peers and discuss how best to revise his writing" (p. 161) is the most helpful.

#### CMC: Anonymity in CMPR

The advancement of diverse and versatile computer technologies had made it possible to conduct peer reviews online (i.e. CMPR), which in turn enables the concealing of writer's and/or peer reviewer's identities, that is, writer/reviewer anonymity. Anonymity or pseudonym in cyberspace, the "deindividuation" (Jessup, Connolly, & Tansik, 1990), eliminates embarrassment and promotes honest and critical reviewer comments (DiGiovanni & Nagaswami, 2001; Guardado & Shi, 2007; Sullivan & Pratt, 1996; Wu, Petit, & Chen, 2015). In double blind CMPR, reviewer comments could be more objective when writer's identity or competence is unknown, since reviewer feedback is "based solely on the text itself and not its author" (Cote, 2014, p. 69). Similarly, writers

can assess reviewer feedback more objectively without the influence or bias of reviewer identity and competence (Strijbos, Narciss, & Dunnebier, 2010). Hence, writers' incorporation of peer feedback depends on the feedback quality itself, not the competence of the feedback-provider, which in turn may boost the feedback adoption rate (Cote, 2014).

Yet simultaneously, researchers such as Guardado and Shi (2007) argued that writers may feel uncomfortable interacting with anonymous reviewers in CMPR. Japanese students at a Canadian university conducted both face-to-face and computer-mediated peer reviews (Guardado & Shi, 2007). Drafts were randomly assigned to anonymous reviewers. More than 2/3 of the voluntary interviewees had favorable attitudes toward the online anonymity, believing that their comments could be more critical and honest. Writers who were comfortable with the anonymous peer review enjoyed the direct feedback from unidentified reviewers, but some students complained that they could not ask for further clarification when the reviewers were unidentified. However, the Bulletin Board actually allowed authors to talk back to the reviewers to seek clarification, but none took advantage of this function (Guardado & Shi, 2007).

In short, how to encourage honest and critical reviewer comments while at the same time maintain writer's comfort level is still a dilemma in anonymous CMPR. Our understanding of this anonymity issue in relation to learners' affective and cognitive gains definitely needs to be advanced in follow-up studies.

#### Face-to-face vs. CMPR

The comparison of learner behaviors in different environments, that is, face-to-face and CMC, is another emerging strand in L2 peer review research. Braine and colleagues' studies (Braine, 1997, 2001; Braine & Yorozu, 1998) utilized synchronous CMPR (Daedalus-InterChange) in ESL classrooms. In the 1997 study, two composition classes in the U.S. conducted face-to-face (oral and written) or synchronous chat peer review. A replication followed four years later in Hong Kong (Braine, 2001). In both studies, assessment of students' draft quality before and after peer feedback showed similar improvements, but statistical analyses were not employed to further test the significance of this difference. Hence, a clear conclusion could not be drawn.

Learner attitudes are another research focus in face-to-face and CMPR. Learners had favorable attitudes toward CMPR because technically the difficulty reading reviewer's handwriting is eliminated (Ciftci & Kocoglu, 2012), and technologically typing is more convenient than handwriting (Ho, 2012; Ho & Savignon, 2007). The most important benefit of CMPR lies in its affectivity, as there is no embarrassment, for both writers and reviewers, to speak English (Jones et al., 2006), and reviewers no longer feel uncomfortable pointing out writers' problems right in front of their faces (Bradley, 2014; Ho & Savignon, 2007). For instance, students purported that it was awkward, if not difficult, to give explicit feedback face-to-face "because you see the person and your know him, you get to see him or her next week, you can't give negative comments as easily" (Bradley, 2014, p. 91).

CMPR, nevertheless, still has its limitations. First, reading drafts on the computer screen is not as comfortable as reading paper printouts (Ho & Savignon, 2007). Second, computer literacies matter (Ho, 2012; Jin & Zhu, 2010). One inexperienced participant's slow typing skills and insufficient chat experiences had frustrated both himself and his partner in synchronous chats (Jin & Zhu, 2010). The discussion of low-quality real-time chat peer interactions can also be found in Liang (2010) who observed EFL Taiwanese students' engagement more in task management and social talks than in on-task activities.

Hence, computer literacies appear to be a prerequisite of an enjoyable and efficient CMPR, meaning that successful CMPR necessitates computer literacies. Yet on the technical, technological, and socio-affective levels, CMPR seems to hold the potential to ease learners' anxiety. A question of concern for all writing instructors and researchers alike is therefore how to maximize the advantages of CMPR while at the same time minimize the disadvantages.

#### 3.3 Product

L2 peer review researchers were not only interested in understanding learners' perceptions and the process of peer review, but also the final product/outcomes, which include the feedback adoption rates, the effects of peer review on writers' and reviewers' writing gains, as well as writers' self revisions.

# 3.3.1 Feedback adoption rates and ratio of peer-influenced revisions

What concerns educators and researchers most in the peer review outcome must be: feedback adoption rates (how much peer feedback is actually incorporated into the final revision) and ratio of peer-influenced revisions (how many revisions are triggered by peer feedback). Research in this area can be generally divided into three strands: Comparison of adoption rates between teacher and peer feedback, among teacher, peer, and self feedback, and peer feedback adoption rates or ratio of peer-influenced revisions per se.

Results from the first strand demonstrated that teacher feedback adoption rates are consistently higher than peer feedback adoption rates (Connor & Asenavage, 1994; Lam, 2013; Miao et al., 2006; Paulus, 1999; Tsui & Ng, 2000; Zhao, 2010), although learners may passively accept teacher feedback without fully understanding or agreeing with it (Tsui & Ng, 2000; Zhao, 2010). The revision changes after peer feedback were higher than those after self feedback, but revisions resulting from teacher feedback outnumbered both (Lam, 2013).

Findings from the last strand came from several studies (C. Chang, 2014b; Conner & Asenavage, 1994; Kamimura, 2006; Mendonca & Johnson, 1994; Miao, et al., 2006; Min, 2006; Nelson & Murphy, 1993; Paulus, 1999; Rahimi, 2013). The feedback adoption rates are usually calculated by dividing the number of adopted peer feedback by total number of peer feedback generated. The ratio of peer-influenced revisions, on

the other hand, is calculated by dividing peer-influenced revisions by total number of revisions.

Training has consistently shown to enhance writers' feedback adoption rate. Untrained groups' feedback adoption rates were relatively lower (below 50% in Tsui & Ng, 2000 and 61% in Allen & Mills, 2014) than trained groups, such as 60-70% in Miao et al. (2006) and 70-80% in Hu and Lam (2010), Min (2006), and C. Chang (2014b). Likewise, the ratio of peer-influenced revisions in total revisions also varies, from 14% (Paulus, 1999) in untrained groups to 53% (Mendonca & Johnson, 1994), 76% (Hu & Lam, 2010), and 90% in trained groups (Min, 2006). Surprisingly, even after teacher modeling and training, the peer-influenced revisions were still unbelievably low (5%) in Conner and Asenavage (1994).

One problem in existing research is that the feedback adoption rates only look at the face value, failing to take into account how much high-quality or low-quality feedback is incorporated. In the best-case scenario, writers incorporate high ratios of correct feedback and low ratios of wrong feedback. Noticing this problem, two EFL researchers (C. Chang, 2014b; Rahimi, 2013) addressed this critical issue in their recent publications. Examination of non-adopted peer feedback showed that 44% was inaccurate, off-target comments and 24% were on-target but vague comments (C. Chang, 2014b). Student writers appeared to be able to judge the quality of peer feedback. Rahimi's (2013) recent publication, by contrast, reported that the peer-triggered revisions of the untrained group were approximately 94% and that of the trained group, less than 75%. The untrained group's high peer-triggered revisions were because the majority of the peer feedback focused on easy-to-fix local issues, which were less time- and energy-consuming than global issues. When feedback accuracy was taking into consideration, the majority was on-target.

While the majority of studies overwhelmingly centered around feedback adoption rates or ratio of peer-influenced revisions using quantitative measures, two studies attempted to understand why peer feedback was abandoned or accepted using qualitative measures (C. Chang, 2014b; Min, 2003). Min (2003) approached this issue from student interviews, and C. Chang (2014b) from questionnaires. While Min's (2003) discussion of "why peer comments failed" is legitimate (p. 85), C. Chang's (2014b) study examining writer's decision-making process complements Min (2003). Both studies with Taiwanese college students identified writers' text ownership and reviewers' vague comments as the two main reasons of feedback non-adoption. C. Chang (2014b) argued that EFL writers were capable of making informed decisions at their own discretion, as high-quality comments were accepted and low-quality feedback was abandoned. Other reasons for feedback non-adoption included whether writers agreed with the comments (writer's text ownership) and whether comments were checklist-based.

All in all, with fluctuating peer feedback adoption rates and ratio of peer-influenced revisions, more qualitative or mixed-method research should be conducted to better

understand student writers' decision-making process in feedback adoption or non-adoption.

#### 3.3.2 Effects of peer review on student writers' revision quality

While feedback adoption rate and the ratio of peer-influenced revisions emphasize revision quantity, the effects of peer review on student writers' revision highlight quality (Berger, 1990; Connor & Asenavage, 1994; Hedgcock & Lefkowitz, 1992; Min, 2005, 2006; Paulus, 1999). Research findings, however, have been inconclusive. That is, some reported positive effects (Hedgcock & Lefkowitz, 1992; Min, 2006; Paulus, 1999) while others did not (Berger, 1990).

Greater improvements in draft quality were found for the teacher-feedback-only group than the peer-feedback-only group (Miao et al., 2006). The peer feedback group's revisions of linguistic structure and form outnumbered the self-evaluation group's, but not content (Berger, 1990). Less than 1/3 of peer feedback addressed linguistic structures, yet over 1/2 of the revisions dealt with them, suggesting the ineffectiveness of peer review.

Notwithstanding the low-quality revisions in Berger (1990), high-quality revisions were more prominent (Hedgcock & Lefkowitz, 1992; Min, 2006; Paulus, 1999). Among the peer-influenced revisions, 62% were meaning changes (Paulus, 1999). Writer's improvements in content and organization were also observed by Hedgcock and Lefkowitz (1992). Min (2006) reported that after training, 72% of peer-influenced revisions were deemed effective, suggesting enhanced revision quality. In particular, the majority of revisions involved reordering of the thesis statement or topic sentences to match the format of an essay, and rearrangement or combination of paragraphs to improve coherence.

In short, these inconsistent research findings necessitate the need for more research to examine peer-influenced revisions and writer's subsequent revision quality.

# 3.3.3 Effects of peer review on student reviewers' gains

In peer review, the central attention is often paid to the student writers rather than the reviewers, as the presumed fundamental goal of peer review is to improve writers' draft quality. However, peer review is not only beneficial to the student writers, but also to the reviewers. "Students can improve their writing abilities not only as writers (due to the more precise and effective feedback they receive), but also as reviewers (since they have to provide very precise and comprehensive comments)" (Rahimi, 2013, p. 87). The act of reviewing boosts learners' audience awareness (C. Chang, 2015; Cho & MacArthur, 2010; Ho & Savignon, 2007; M.-K. Lee, 2015; Mendonca & Johnson, 1994; Tusi & Ng, 2000; Wachholz, 1997), raises learners' understanding of the importance of global writing issues (Berg, 1999; Miao et al., 2006; Min, 2005), and nurtures the

development of critical skills necessary for the analysis of self's writing (Cho & Cho, 2011; Leki, 1990; Lundstrom & Baker, 2009; Rollinson, 2005; Zheng, 2010).

Several studies indeed confirmed the benefit of peer feedback on reviewer's writing gains (Berggren, 2015; C. Chang, 2014a; Lundstrom, & Baker, 2009; Tsui & Ng, 2000). Most were classroom research (Berggren, 2015; C. Chang, 2014a; Tsui & Ng, 2000), with one quasi-experimental design (Lundstrom & Baker, 2009). All were conducted at tertiary levels (C. Chang, 2014a; Lundstrom, & Baker, 2009; Tsui & Ng, 2000), except Berggren (2015).

The two most recent publications are Berggren (2015) and C. Chang (2014a). Berggren (2015) compared secondary school student reviewers' revised essays against their drafts to identify how many of the revisions resulted from the feedback they offered. It was found that when reviewers commented on particular aspects of the drafts, they also voluntarily acted upon these aspects in their own revisions, confirming the benefits of peer review to the reviewer.

Similar results were documented in C. Chang (2014a) who applied Bandura's (1986) social cognitive theory of self-regulation (self-observation, self-judgment, and self-reaction) for the very first time in peer review research. EFL Taiwanese students were randomly assigned to two partners: one reviewer and one reviewee, so the source of revision may be traced. C. Chang noted that 86 revisions in reviewers' writing could be traced back to the feedback both given and received, and 16 to the feedback given. It was therefore hypothesized that reviewers first observed their own writing (self-observation), then compared and contrasted it with their similar others' (i.e. reviewee's) writing (self-judgment), and as a result of the comparison/contrast, evaluated and acted upon their own writing (self-reaction).

In sum, L2 peer review research has thus far over-emphasized student writers' gains, neglecting the student reviewers'. This research gap needs to be filled in future research. The reasons why reviewing is cognitively, linguistically or affectively more beneficial than being reviewed or why "to give is better than to receive" (Lundstrom & Baker, 2009, p. 30) in peer review also require further investigation.

# 3.3.4 Effects of peer review on writers' self revision

Another area of peer review outcome research focuses on the effects of peer review on writers' self revisions. The only two studies on whether teacher or peer feedback triggers more self revisions had yielded mixed findings. Miao et al. (2006) reported more self revision in peer feedback group, but Lam (2013) found otherwise.

Chinese students were divided into the peer feedback and teacher feedback groups (Miao et al., 2006). As opposed to the 90% incorporation rate of teacher feedback, merely 66% of the peer feedback was incorporated. The peer feedback group, nonetheless, showed stronger tendency to self-revise than the teacher feedback group.

Eight ESL students from Hong Kong received peer and teacher feedback respectively on their second and third drafts (Lam, 2013). Upon receipt of the feedback, students

were asked to self-assess. Findings suggested that 19% of revisions in the second draft could be traced back to peer feedback and 7% were a result of self-feedback; 59% of revisions in the third draft were teacher-influenced and 14% were self-feedback. Self-feedback almost doubled when teacher feedback was provided.

A close look at these two studies reveals dissimilar research designs. In Miao et al. (2006), two groups experienced different types of feedback, whereas in Lam (2013), one group experienced different types of feedback at different stages of their writing process. How such a design discrepancy could have contributed to their differing findings is yet an unanswered question that merits research attention.

In sum, Table 2 clearly shows that there are more research strands in the process area than perceptions or product. This is not surprising, given the large number of instructional strategies instructors need to consider in the implementation of peer review. This review also clearly points out several strands of under-researched topics in L2 peer review studies, including the long-term effect of training, the efficacy of checklists/rubrics, writer-reviewer relationship, communicative language (L1 vs. L2), timing of teacher feedback on peer feedback, grouping strategies (i.e. group size, group membership, and grouping by abilities), communicative medium (i.e. oral versus written feedback), and the effect of peer review on writer's self revision. The need to advance our current understanding in these under-explored areas, and therefore fill these research gaps, is more than imminent.

#### 4. Discussion

With the bulk of L2 peer review studies published in the past two decades, it is now the best time to synthesize and identify the gaps in existing research. This review of 103 ESL/EFL peer review research, including opinionated and research-based studies, published in 1990-2015 is an attempt to synthesize research findings. Lai's (2010) three Ps dimensions (perceptions, process, and product) were employed to code articles. Next, a thematic analysis was conducted to categorize research-based studies by constructs. Finally, through constant comparison and contrast, research findings were synthesized. Similar results were presented as common threads, and conflicting findings and recent research developments (2010-2015) were discussed in detail. Gaps in L2 peer review research are then identified, and suggestions for future research are given.

The initial coding of the research design, context, grade level, and research duration clearly points out several areas needing further investigations:

- 1. *Research design*: Most publications were classroom-based research, with very few correlational, (quasi-)experimental or meta-analysis studies.
- 2. *Context*: A large proportion of the subjects were ESL/EFL Chinese or Taiwanese speakers. Attention may be extended to other EFL contexts in Asia, or ESL settings in Europe or Latin America.

- 3. *Grade level*: Studies were conducted mostly at tertiary level, leaving the graduate, junior and senior high school or elementary levels under-represented.
- 4. Research duration: The peer review training or data collection periods were constrained to 1-2 semesters, leaving the effects of prolonged training and long-term effects of peer review on students' writing development unknown. This echoes Ferris's (2003) and Wachholz's (1997) long overdue call for longitudinal studies.

Most importantly, concrete suggestions for future research are offered below, in light of this review:

#### 1. Perceptions

- More studies are needed to understand student writers' and reviewers' respective attitudes toward/perceptions of the advantages and disadvantages of peer review.
- With the abundant research profiling Chinese/Taiwanese learners' perceptions
  of peer review, studies contextualized in other collectivist cultures (e.g. Japan or
  Korea) are few, so are studies on individualist learners.
- Learners' perceived benefits of peer feedback in comparison to computerized feedback are yet to be fully understood.

#### 2. Process

- Research can try to understand if teacher-learner co-constructed review checklists/rubrics help promote learner autonomy.
- It is yet to be determined whether and how friendship bias or friendship-based partnership influences community building.
- An examination of the impacts of the communicative language (L1 vs. L2) on the efficacy of peer review sessions, revision quality, and learners' writing development is necessary.
- Future studies can investigate the paramount group size for intimate partnership development and the establishment of inter-rater feedback reliability.
- Validation is needed to test whether static or dynamic review partnership is more beneficial for community building.
- Follow-up studies can examine the cognitive, affective, and social benefits of mixed- and matched-proficiency review groups.
- Our current understanding of the nature of oral and written peer feedback (e.g. spontaneity vs. thoughtfulness, focus on local or global issues) is limited, and therefore should be expanded.
- It remains unclear how to safeguard reviewers' honest and critical feedback within writers' comfort zone in anonymous CMPR.

#### 3. Product

- Our limited understanding of writer's decision-making process in peer feedback adoption and non-adoption has to be advanced. More qualitative studies are needed.
- The relationship between teacher feedback, peer feedback, and self revision remains unclear. A research question to explore may be: "To what extent do teacher and peer feedback prompt writers' self-revision."
- More studies are needed to better understand the benefits of peer review to the reviewers, in particular their improvement in local (e.g. grammar, vocabulary, punctuation) and global (e.g. content, coherence/cohesion, organization) writing areas.

#### 5. Conclusion

Lai's (2010) 3 Ps dimensions (perceptions, process, and product) were used as the main analytical framework in the categorization of 103 opinionated and research-based L2 peer review articles. Although this review has clearly presented what we know and what we wish to know about ESL/EFL peer review and therefore contributes to this area, its scope is still unfortunately restricted to published books, book chapters, ERIC documents, and refereed academic journal articles and thus unable to cover all the possible L2 peer review research. In particular, master's theses and doctoral dissertations, peer review studies contextualized in other content areas, and research on peer editing, peer rating, peer assessment, peer critique or peer evaluation were deliberately excluded. Future literature reviews of a larger scale and scope should be able to address this major limitation.

In addition, this literature review employed Lai's (2010) analytical framework, perceptions, process, and product. As we all know, an analytical framework is the lens through which a researcher sees and interprets the data, so whatever analytical framework a researcher adopts, it is certain that some details may have been inevitably magnified while others neglected. While Lai's analytical framework helps to make sense of L2 peer review research from the procedural perspective, other conceptual frameworks may be equally helpful in shedding light on our understanding of L2 peer review research findings. This is yet another area future researchers can address.

All in all, exactly a decade after Ferris and Hedgcock's (2005) discussion of the guiding principles of peer review, this review has successfully bridged the past, the present, and the future. It not only synthesizes and updates what we have learned from peer review research conducted in the ESL/EFL composition classes in the past 25 years (1990-2015), but also identifies the gaps and suggests directions for future research from today onward (2016-). As long as peer review continues to be practiced in the ESL/EFL writing classrooms, L2 peer review research will also continue to blossom and inform our classroom practice.

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