Motivation and feedback: How implicit theories of intelligence predict L2 writers' motivation and feedback orientation

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A B S T R A C T

Drawing on Dweck's (2000) theory of motivation, the current study investigated the relationships between language learners' implicit theories of writing intelligence, their writing motivation, and their orientation toward written corrective feedback (WCF). A questionnaire was developed based on previous studies and administered to 142 English as a Second Language (ESL) writers at a large university in the United States. The questionnaire included items measuring learners' implicit theories of general and writing intelligence, their orientation toward WCF, their writing motivation, and their background information. Multiple regression results showed that the incremental theory of writing intelligence (the belief that writing intelligence is dynamic and can grow through effort and experience) significantly and positively predicted the students' feedback seeking orientation, whereas the entity theory of writing intelligence (the belief that writing intelligence is fixed and unchangeable) was a significant predictor of their feedback avoiding orientation. Moreover, the incremental theory of writing intelligence, but not the entity theory of writing intelligence, was a statistically significant predictor of second language (L2) writing motivation. Writing motivation, in turn, was most strongly correlated with the participants' feedback seeking orientation, accounting for 41% of its variance. Pedagogical implications and future research directions are discussed.

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Thirty years of research on written corrective feedback (WCF) in the field of Second Language Writing have shaped our current understanding of how WCF works (for reviews see Bitchener, 2008; Bitchener & Ferris, 2012). Due to a lack of consistency in the results of the conducted studies, the topic, nonetheless, remains controversial and our understanding incomplete (see Evans, Hartshorn, & Tuioti, 2010; Ferris, 2006; Goldstein, 2005; Hyland & Hyland, 2006; Lee, 2004; Montgomery & Baker, 2007; Saito, 1994; Schulz, 1996; for a review, see Shao, 2015). One of the main reasons for the inconsistent findings concerning WCF can be a lack of attention to basic individual differences among second language (L2) learners (Ferris, 2010; Hendrickson, 1978; Kormos, 2012; Zamel, 1985). Researchers typically investigate the effects of WCF on student learning collectively or only describe attitudinal and behavioral differences among learners without any regard for the connection between learners' individual characteristics and those behaviors and attitudes. This shortcoming is not limited to the area of WCF and has been highlighted by Ferris (2010) and Kormos (2012) as a problem in scholarly research on different aspects of second language writing. When it comes to L2 writing pedagogy, on the other hand, individual learner

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differences are still to some extent taken into consideration. This is simply because L2 writing instructors observe on a daily basis that "some students benefit more from corrective feedback than others" (Ferris, 2010, p. 196). Perhaps that is what makes these teachers intuitively aware of such differences among their students and leads them to individualize the feedback they give to students (e.g., Hyland, 1998).

There is no question that teachers' intuitions and personal observations are of great practical value; however, these alone cannot provide a theory-driven and evidence-based explanation for the individual differences in how students perceive and respond to WCF. In addition, even though research on individual differences in learners' response to WCF has highlighted the existence of such differences, the studies conducted in this area have not led to a theoretical understanding of the issue. Individual differences in students' orientations toward WCF has thus remained one of the poorly understood areas in the field of Second Language Writing. The present study is a theory-based attempt to close this gap by examining how students' orientations toward WCF are influenced by their motivational characteristics.

Understanding the motivational basis of differences in students' orientations toward WCF is of utmost importance because it is hard to imagine learners with little or no motivation for writing in a second language to care about learning from WCF. To benefit from WCF, learners need to set learning goals, proactively position themselves in an environment where they receive WCF, make plans for and invest sufficient time and effort in studying the feedback, and willingly engage their attentional and cognitive resources in order to optimally benefit from the feedback. Such strategic decisions and investments cannot be expected from learners who do not enjoy some sort of motivation for improving their L2 writing skills. The significance of student motivation in the effectiveness of WCF has been acknowledged by many researchers in the field (e.g., Ferris, 2010; Ferris, Liu, Sinha, & Senna, 2013; Goldstein, 2005; Hyland, 1998, 2011; Kormos, 2012). Goldstein (2005), for instance, argued that lack of motivation is one reason students may not be paying enough attention to WCF. Along the same lines, Hyland (2011) emphasized that form-focused WCF "can be a useful tool for language learning when given to active and engaged learners who are willing to utilize its potential to encourage a deeper processing of the formal aspects of the language" (p. 177). Kormos (2012) also made a case for the key role of motivational variables in different aspects of the L2 writing process, including WCF. She argued that motivation "affects learners' attention paid to feedback and their further development in creating text revisions" (p. 399). Similarly, Ferris et al. (2013) highlighted attitudes and motivation as factors that "can and do affect how WCF impacts student writers" (p. 324).

Despite the prominent role of student motivation in relation to WCF, we are not aware of any theory-driven attempts to examine the connection between L2 writers' motivational characteristics and their orientations toward WCF. In the present study we draw on Dweck's (2000) theory of motivation in order to bridge this gap and investigate how learners' motivational dispositions can influence the way they view and respond to WCF. We chose Dweck's theory because we subscribe to the idea that chronic motivational characteristics can result in qualitative differences in the way learners perceive and pursue a goal (Papi, 2016; Papi & Teimouri, 2014). The core of Dweck's theory is the idea that learners' beliefs about the malleability of their intelligence can have strong effects on their motivation and level of engagement in the classroom (e.g., Grant & Dweck, 2003; Dweck & Sorich, 1999; Farrell, 1985; Mangels, Butterfield, Lamb, Good, & Dweck, 2006) as well as their approach toward learning feedback (e.g., VandeWalle, 2003; VandeWalle & Cummings, 1997).

Below, we first review a number of survey studies on individual differences in L2 writers' orientations towards WCF, and argue that the studies lack a sound theoretical basis to account for such differences. We then present Dweck's theory of motivation and review studies that show the connection between the constituent components of this theory and learners' level of motivation and achievement, suggesting the relevance of this theory for developing a sound understanding of how WCF works.

1. L2 writers' orientations toward corrective feedback

Several studies have highlighted the importance of considering individual differences in learners' orientations toward WCF. These include case studies (e.g., Ferris et al., 2013; Hyland, 2011) and survey studies (e.g., Ferris, 1995; Hedgcock & Lefkowitz, 1994, 1996; Leki, 1991). However, for the purpose of the present study and given our survey method of data collection, we only review the most relevant survey studies on this issue.

Over the last thirty years, the surveys, which have evolved from a two-item questionnaire (Cardelle & Corno, 1981) to multi-item surveys on both teachers' and students' orientations to WCF (Montgomery & Baker, 2007), highlight important differences among L2 learners in their WCF preferences. These studies have explored major questions related to L2 writers' reaction to positively-framed versus negatively-framed WCF (e.g., Cardelle & Corno, 1981), what they do with the feedback they receive (e.g., Cohen, 1987), their openness to WCF (e.g., Radecki & Swales, 1988), and the amount of WCF they prefer to receive (e.g., Montgomery & Baker, 2007). These studies are briefly described below.

Cardelle and Corno (1981) investigated how WCF influenced the writing motivation and performance of 80 Spanish-speaking students at Stanford University. They divided the participants into four groups based on the types of feedback they received on their homework assignments: one group was given praise, a second group criticism, a third group both praise and criticism, and a control group received grades only. The results of the study showed that the majority of the students in the three treatment groups reported that feedback improved both their motivation and final performance. However, a minority of the students from the criticism group preferred either solely criticism or no feedback, pointing to unexplained individual differences in feedback preferences. In terms of individual differences, the students were also categorized into high, middle and low performers according to their test scores. It was found that higher performing students preferred more

feedback (both criticism and praise) than low performers, suggesting a link between learners' orientations towards WCF and writing proficiency.

Building on Cardelle and Corno (1981), another survey study by Cohen (1987) provided further insight into individual differences in WCF preferences. The researcher had 217 second- and foreign-language learners enrolled in composition courses in the United States complete a one-page questionnaire about the WCF they received on their last papers. To account for individual differences, the participants were also asked to rate themselves as either "excellent learners" (19%), "good learners" (70%), or "fair learners" (11%). Although 81% of the students reported looking over almost all of the comments they received from their teachers, the better self-rated learners were more likely to read through and pay attention to their teachers' comments and use several strategies (e.g., taking mental notes) to process the feedback. In contrast, those who rated themselves as poorer learners were more likely to ignore teachers' comments and used few strategies, if any, to process the feedback.

Further differences across L2 writers in terms of their WCF preferences and attitudes were found by Radecki and Swales (1988). The researchers classified their participants—59 ESL learners—into three categories according to their self-reported feedback preferences: feedback receptors, feedback semi-resistors, and feedback resistors. Feedback receptors (46%) and semi-resistors (41%) preferred comments on content and grammar whereas feedback resistors (13%) preferred short adjectives and a grade. Feedback receptors saw the correction of errors as the responsibility of both teacher and student whereas feedback resistors viewed it solely as teacher's responsibility. Revisions were also welcomed by feedback receptors but seen as punishment by feedback resistors. Lastly, feedback receptors and semi-resistors felt an obligation to use their teachers' feedback while feedback resistors did not.

Montgomery and Baker (2007) investigated perceptions of WCF for both students and teachers and found individual differences in the amount of feedback given. In a study of 13 ESL writing teachers and 98 ESL students, questionnaires and teachers' comments on students' compositions were collected and coded for each instance of feedback given. The results showed that students seemed to believe their teachers gave sufficient amounts of feedback, whereas teachers thought they were not giving enough. Individual differences were apparent in that teachers gave different amounts of feedback to different students; this was not connected to the proficiency level of the students or their quality of writing. For instance, one teacher gave 210 grammar comments to one student but no grammar comments to another student while both students received the same passing grade. The researchers could not account for the differences in amount of feedback given to different students and called for more research on the issue.

In the studies reviewed above, most students, in one way or another, put some didactic value on receiving feedback. Many students indicated that they did look at teachers' feedback and wanted more feedback (Cohen, 1987; Radecki & Swales, 1988) whereas some showed they were content with the amount of feedback given (e.g., Montgomery & Baker, 2007). Some students seemed to prefer comments on grammar (Cohen, 1987) while others found more value in their teachers' comments on content, organization, and ideas (Radecki & Swales, 1988). Some students seemed open to revising their essays (Cohen, 1987; Radecki & Swales, 1988), while others saw it as punishment (Radecki & Swales, 1988).

These studies help to uncover major individual differences among learners in terms of how they perceive and respond to WCF. Individual differences regarding feedback preferences were found in terms of writing performance levels (Cardelle & Corno, 1981) and learner self-ratings (Cohen, 1987). Radecki and Swales (1988) categorize learners with regards to their receptivity. Montgomery and Baker (2007) point to individual differences. Without any explanation for these differences, they may not be well understood if we limit the focus of our investigations to describing students' typology of reported opinions and observed behaviors and lack a theoretical background that would account for such differences. Perhaps this is the reason researchers have nearly stopped conducting survey studies on WCF. As readers might have noticed, all but one of the studies reviewed above (i.e., Montgomery & Baker, 2007) were conducted in the 1980s. Studying learners' orientations toward such feedback can be more revealing if researchers consider the individual differences that are likely to have resulted in those orientations. To take a step in that direction and given the discussed relevance of motivation to students' WCF preferences, we employed Dweck's (2000) theory of motivation to examine how learners' long-held implicit beliefs about their intelligence could influence their WCF preferences.

2. Implicit theories of intelligence and achievement goals

Based on the *achievement goal theory* (Elliott & Dweck, 1988), there are two types of major goals individuals pursue toward achievement: (a) *performance goals*, "in which individuals seek to maintain positive judgments of their ability and avoid negative judgments by seeking to prove, validate, or document their ability and not discredit it" (Elliott & Dweck, 1988, p. 5) and (b) *learning goals*, "in which individuals seek to increase their ability or master new tasks" (Elliott & Dweck, 1988, p. 5). Several studies in the field of educational psychology show that students with learning goals exhibit different learning behaviors from those with performance goals (e.g., De Castella & Byrne, 2015; Elliott & Dweck, 1988; Grant & Dweck, 2003). For example, Farrell (1985) studied junior high school students who were taught a challenging new unit. The students with learning goals were more likely to search for and find strategies to master the content compared against those with performance goals. In another study, Grant and Dweck (2003) found students with learning goals were more likely to engage with course material, which, in turn, predicted higher grades.

More than a decade after the introduction of the achievement goal theory, Dweck (2000) stipulated that a learner's development of learning or performance goals has roots in what she calls the learner's dominant *implicit theory of*

intelligence. Learning goals are held by individuals who have an *incremental theory* of their abilities. These individuals see their intelligence as something that is dynamic and can be developed through effort and experience. Individuals with performance goals, on the other hand, hold an *entity theory* of their abilities: they believe their intelligence is fixed and unchangeable. Students who have an incremental theory of intelligence attribute their failures to their own efforts and strategies; for example, they may think they received a low test score because they did not study hard. Students who hold an entity theory about their intelligence, on the other hand, attribute their failures to their sense of self; they tend to think they failed a test because they were not smart enough (Dweck, Chiu, & Hong, 1995). According to Dweck, Mangels, and Good (2008), these implicit theories of intelligence greatly impact students' learning behaviors:

> When students believe that their intelligence is a fixed trait (an entity theory of intelligence), it becomes critical for them to validate their fixed ability through their performance. In contrast, when students believe that their intellectual skills are something that they can increase through their efforts (an incremental theory of intelligence), they become less concerned with how their abilities might be evaluated now, and more concerned with cultivating their abilities in the longer term (p. 42).

Many studies have examined Dweck's implicit theories of intelligence and found strong evidence for their relevance to students' motivation, learning, and achievement (e.g., Aronson, Fried, & Good, 2002; Blackwell, Trzesniewski, & Dweck, 2007; Dweck & Sorich, 1999; Elliott & Dweck, 1988). In Aronson et al. (2002), students at Stanford University who were trained in incremental theory at the beginning of the semester reported greater enjoyment in their classes and a higher grade point average at the end of the semester. Blackwell et al. (2007) found that over the course of seventh and eighth grades, students who held an incremental theory showed an upward trajectory in their math grades while students with an entity theory did not show any improvements. The researchers also employed an eight-week intervention to train a different sample of seventh grade students in an incremental theory of intelligence. The results of the study showed that compared against the control group, which received training about memory, the experimental group showed significant improvements in their incremental theory of intelligence, motivation, and math grades.

There have been other studies in the fields of social and educational psychology linking learners' achievement goal orientations to their desire for and reaction to feedback (e.g., Mangels et al., 2006; VandeWalle, 2003; VandeWalle & Cummings, 1997). For example, Mangels et al. (2006) studied students' reactions to feedback using electroencephalography. Participants were asked to perform a challenging general information task and were given two types of performance-related feedback: green lights signaling a correct answer and red lights indicating an incorrect answer. The red lights were then followed by learning-oriented feedback (i.e., corrective information). The researchers measured event-related potential (ERP) waveforms that were time-locked to presentation of the feedback types. The ERP waveforms were indicators of a state of anticipatory vigilance, when participants anticipated different kinds of incoming information during a waiting time right before the feedback was presented. For performance-related feedback (red light vs. green light), the results showed increased brain activity for all participants during their state of anticipatory vigilance regardless of their implicit theories of intelligence. However, when learning-oriented feedback (i.e., corrective information) was presented, increased brain activity was shown only by participants with an incremental theory of intelligence. Those with an entity theory of intelligence, on the other hand, did not show any notable brain activity, suggesting they were not motivated to learn from the feedback. Students' implicit theories of intelligence could thus be an indicator of how motivated they are to receive WCF.

Drawing on Dweck's theory of motivation, the present study intends to examine how students' implicit theories of intelligence influence their orientations toward WCF. By examining learners' feedback preferences through the lens of Dweck's theory of motivation, this study can further our understanding of individual differences in student responses to WCF, thus opening new avenues of research on WCF and offering pedagogical strategies to make WCF more effective.

3. L2 writing motivation

Learners' implicit theories of intelligence are assumed to affect the learning process through the medium of motivation. This argument has been supported by the studies reviewed above, which found evidence for the effects of implicit theories of intelligence on learners' motivation. In addition, motivation has been argued to have a significant role in whether WCF would be effective or not (e.g., Ferris, 2010; Ferris et al., 2013; Goldstein, 2005; Hyland, 1998, 2011; Kormos, 2012). Therefore, we included L2 writing motivation as another important factor that could help shed light on the dynamics of WCF. It would thus be interesting to see how L2 writers' implicit theories of intelligence could affect their writing motivation and how their writing motivation can, in turn, influence the way they view WCF. These questions are explored in the present study.

Before moving on, however, a distinction has to be made between feedback orientation and L2 writing motivation, which some may confuse given the traditional association between orientation and motivation in mainstream L2 motivation research (e.g., Gardner & Lambert, 1972). In the present work, when we talk about learners' orientation toward WCF, we specifically mean to denote how learners perceive (e.g., positively vs. negatively) and respond to (e.g., pay attention vs. ignore) the WCF they receive from teachers. On the other hand, when we talk about L2 writing motivation, what we mean is learners' general motivation to improve L2 writing proficiency through different means including, but not limited to, WCF. In other words, learners' L2 writing motivation is a measure of the amount of effort they intend to invest in improving their L2 writing, their desire for doing so, and how intensely they are engaged in this pursuit.

4. Research questions

Based on the rationale presented above, the current study aims to see how L2 writers' implicit theories of intelligence predict WCF preferences and L2 writing motivation and also how L2 writing motivation can, in turn, predict learners' WCF preferences. The following research questions were formulated:

1. What are the relationships between ESL learners' implicit theories of intelligence and their orientation toward WCF?
2. What are the relationships between ESL learners' implicit theories of intelligence and their writing motivation?
3. What is the relationship between ESL learners' writing motivation and their orientation toward WCF?

5. Method

5.1. Participants

One-hundred forty-seven English learners (101 males, 44 females, 2 missing gender) from an ESL center at a large university in the United States were recruited to participate in the present study. The students rated themselves on an ascending 5-point scale of English proficiency: advanced (8), upper-intermediate (67), intermediate (47), pre-intermediate (16), and beginner (4), with a mean rating of 3.4. The students' year of study at the university ranged from freshmen to graduate students with a wide variety of majors. The students' native languages included Chinese (60), Arabic (51), Portuguese (11), Korean (10), and other languages (11), with four responses missing. The students' ages ranged from 18 to 45 years old with a mean of 22. The average length of residency in the United States was 15 months and ranged from one to 84 months.

5.2. Instruments

Data were collected using a questionnaire that included a total of 73 items. This study was part of a larger study that included other motivational constructs. Therefore, only the data relating to the constructs under examination in the present study, that is, learners' writing motivation (7 items), attitudes toward WCF (13 items), implicit theories of general intelligence (5 items), and implicit theories of writing intelligence (5 items) are reported.

Dweck's (2000) original measures of implicit theories of general intelligence included items for both incremental and entity theories of intelligence (see Table 1). We developed the measures for implicit theories of writing intelligence based on Dweck's measures of implicit theories of general intelligence. As presented in Table 1, these included two items measuring the Incremental Theory of Writing Intelligence, and three items measuring the Entity Theory of Writing Intelligence. In addition, the questionnaire included Dweck's (2000) original five items measuring learners' incremental and entity theories of general intelligence.

The questionnaire also contained 13 items measuring learners' orientation toward WCF. This scale was developed using items from previous WCF studies (e.g., Cardelle & Corno, 1981; Cohen, 1987; Enginarlar, 1993; Ferris, 1995; Goldstein, 2005; Hedgcock & Lefkowitz, 1994, 1996; Leki, 1991; Radecki & Swales, 1988; Saito, 1994), and some items were specifically developed for the purpose of the present study. These items are presented in Table 2, with the items on top showing interest in receiving WCF and the items at the bottom showing lack of interest in such feedback. Following the guidelines recommended by Dörnyei (2010), we developed as many new items as possible based on an item pool from 15 ESL writing students who were from the same cohort as the participants for the main phase of the study. We asked the students to write down how they felt about WCF and what they did with the feedback they received from past teachers; we then used their ideas as the basis for developing our items. The developed questionnaire was then administered to the same students who were asked to write comments for the items that they did not easily understand. Problematic items were modified

Table 1
Implicit theories of intelligence items.

	Original items	Adapted items
Entity Theory of Intelligence	You have a certain amount of intelligence, and you can't really do much to change it.	You can improve your English writing skills, but you can't really change your writing talent.
	Your intelligence is something about you that you can't change very much.	As an English learner, you have a limited amount of talent for developing your English writing skills, and you can't really do much to change it.
	You can learn new things, but you can't really change your basic intelligence.	No matter how hard you try, as an English language learner you can never write like a native speaker.
Incremental Theory of Intelligence	You can always greatly change how intelligent you are.	With enough practice you will be able to write like a native speaker of English.
	No matter how much intelligence you have, you can always change it a lot.	No matter who you are, you can always learn to write as well as native speakers of English.

Adapted from Dweck (2000).

Table 2
Feedback orientation items and their sources.

Items showing interest in WCF	Sources
When I do not understand my teacher's comments, I talk to him/her.	Radecki and Swales (1988)
I like when my teacher corrects all of my mistakes (grammar, content, organization, spelling, punctuation).	Leki (1991)
I like when my teacher uses correction symbols to show me my mistakes.	Hedgcock and Lefkowitz (1994)
When I get my papers back, I read all of the comments carefully.	Ferris (1995)
Written corrective feedback from my teacher helps me to be a better writer.	Newly developed
I remember the mistakes my teacher points out to me and I try not to make them again.	Newly developed
I like when my teacher writes questions on my paper to make me think about my writing (not just gives me the answer).	Leki (1991)
Items showing lack of interest in WCF	Sources
I like when my teacher only writes a grade and not comments on my paper.	Cardelle and Corno (1981)
When I do not understand my teacher's comments, I ignore them.	Newly developed
After peer review, I never look at my classmate's comments on my paper.	Newly developed
When I get my papers back, I only look at the grade.	Cardelle and Corno (1981)
I would like to be told only what I did right in my paper.	Newly developed
I don't care about receiving feedback on my papers.	Newly developed

accordingly. The selection and development of the items were made in such a way that some items reflected interest and others a lack of interest in WCF. This aligned with one of the main objectives of the present study, which was to see how learners with different motivational characteristics varied in their preferences for WCF.

Finally, seven L2 writing motivation items were adapted based on general L2 motivation measures developed and validated by Taguchi, Magid, and Papi (2009) including items on students' intended efforts for learning the L2, desire to learn the L2, and L2 motivational intensity. As shown in Table 3, we modified the items simply by replacing "learning" with "writing" and making other minor changes.

A 6-point Likert scale ranging from 1 (never) to 6 (always) was used for all the items. Given the majority of the students at the ESL center spoke Chinese, Arabic and Portuguese as their first language, the surveys were translated into the three languages by native speakers of the languages who were also applied linguists. This was done in order to make the items easily understandable for as many students as possible. An English version of the survey was given to the 21 remaining participants who were native speakers of other languages. The questionnaire also included eight items asking about the students' age, gender, native language, year in college, major of study, perceived proficiency and length of residence in the United States.

5.3. Procedure

The data were collected during weeks five and six of the spring semester. After securing the Institutional Review Board's approval, teachers who were instructing writing classes at the ESL center were contacted. We emailed them details of the research study and asked for their voluntary participation. Having secured teachers' agreement, researchers visited each class and explained the purpose of the study to the students, established that participation was voluntary and asked the students to fill out the surveys if they wanted to participate in the study. If the participants spoke Chinese, Arabic, or Portuguese as their first language, they received the questionnaires in those languages. The questionnaires took about 10–15 minutes to complete. The questionnaires were anonymous, but researchers asked the participants to write fake names on their surveys in order to be entered into a drawing for three $25 gift cards, which were given to thank them for their cooperation.

Table 3
Writing motivation items adapted from Taguchi et al. (2009).

Original items	Adapted items
I really enjoy learning English.	I enjoy writing in English.
Studying English is important to me.	Writing in English is very important to me.
I always look forward to my English classes.	I always look forward to my ESL writing classes.
I would like to spend lots of time studying English.	I would like to spend lots of time learning to write in English.
I would like to concentrate on studying English more than any other topic.	I would like to concentrate on learning to write in English more than any other topic.
I actively think about what I have learned in my ESL class.	I actively think about what I have learned in my English writing class.
I think that I am doing my best to learn English.	I really try to learn how to write in English.

5.4. Data analysis

Different steps were involved in the analysis of the collected data. First, Cronbach's alpha coefficients were calculated to see how reliable the scales were. The items included in the feedback orientation questionnaire expressed either interest or lack of interest in receiving corrective feedback. Therefore, we only needed to reduce the data to a smaller number of manageable components (Dörnyei, 2010) rather than trying to uncover deeper underlying constructs. For this purpose, we employed Principal Component Analysis. According to Conway and Huffcutt (2003), "[i]f a researcher's purpose is pure reduction of variables . . . then use of PCA [Principal Component Analysis] represents a high quality decision." Finally, in order to answer the research questions of the study, correlations and multiple linear regressions were run. More details are presented in the results section.

6. Results

As presented in Table 4, Cronbach's alpha coefficients for all but one (Entity Theory of Writing Intelligence) of the already-established scales were higher than the minimum acceptable value of .60 (Dörnyei, 2007). The descriptive statistics for items related to WCF are presented in the following section, and after that, the emerged factors are introduced.

6.1. Principal component analysis

Principal Component Analysis was thus run using eigenvalues larger than 1 (Kaiser's criterion) and direct oblimin with Kaiser Normalization as method of rotation. Kaiser-Meyer-Olkin measure of sampling adequacy was larger than the acceptable value of 0.5, and Bartlett's test of sphericity was also statistically significant, $\chi^2(66) = 360.4$, $p < .001$, indicating an acceptable data set. As shown in Table 5, the analysis resulted in two factors, which together explained 45% of the variance. As can be seen in the table, all the items except one sufficiently loaded on either of two factors. The first factor included seven questionnaire items highlighting learners' desire for WCF, hence named *Feedback Seeking Orientation*, which explained 28.7% of the variance (eigenvalue = 3.29). The second factor, labeled *Feedback Avoiding Orientation*, included five items that indicated lack of interest in WFC. This factor explained 16.5% of the variance (eigenvalue = 2.29). The contents of the two factors seem to perfectly fall in with the definitions of achievement goals (Dweck & Leggett, 1988): Feedback Seeking Orientation items (e.g., When I get my papers back, I read all of the comments carefully.) resemble learning goals, and Feedback Avoiding Orientation items resemble performance goals (e.g., When I get my papers back, I only look at the grade.), as defined above.

In other words, Feedback Seeking Orientation seems to represent desire for learning-oriented feedback, that is, the feedback through which students could learn about their writing issues and improve their writing skills, whereas Feedback Avoiding Orientation appears to represent desire for performance-oriented feedback (e.g., grades) or lack of desire for learning-oriented feedback. The validity of the two-factor solution was further confirmed by the analysis of the scree plot produced by SPSS. There was also a small but significant and negative correlation ($r = -.23$, $p < .01$) between the two factors, which makes sense given the factors show two opposite sides of the same construct, that is, feedback orientation. Cronbach's alpha reliability coefficient was .78 for Feedback Seeking Orientation and .62 for Feedback Avoiding Orientation, confirming the results of Principal Component Analysis. The variables were ready at that point for our final analyses.

6.2. Correlation and multiple linear regression results

Table 6 presents the results of a Pearson correlation analysis between the scales for theories of general intelligence and theories of writing intelligence. The highest correlation, which is between the Entity Theory of General Intelligence and Entity Theory of Writing Intelligence, is .61, which is far from the figure that qualifies them as representing the same construct (Dörnyei, 2007). Therefore, in the remaining analyses, the relationship between implicit theories of writing intelligence and outcome variables are reported.

The correlations between predictor and outcome variables can be seen in Table 7. Incremental Theory of Writing Intelligence significantly and negatively correlated with Entity Theory of Writing Intelligence. Feedback Avoiding

Table 4
Cronbach alpha values and means and standard deviations for measured variables.

Scale	α	M/SD
Theory of General Intelligence (5 items)	.64	4.30/.91
Incremental Theory of Intelligence (2 items)	.72	4.25/1.16
Entity Theory of Intelligence (3 items)	.64	2.6/1.13
Theory of Writing Intelligence (5 items)	.65	4.42/.91
Incremental Theory of Writing Intelligence (2 items)	.67	4.65/1.09
Entity Theory of Writing Intelligence (3 items)	.55	2.76/1.08
Writing Motivation (7 items)	.86	4.44/.97

Table 5
Result of Principal Component Analysis and means and standard deviations of the emerged factors.

Items	M	SD	Pattern matrix		h
			Feedback seeking orientation	Feedback avoiding orientation	
1. Written feedback from my teacher helps me to be a better writer.	4.56	1.29	.73		.32
2. I like when my teacher writes questions on my paper to make me think about my writing and does not give me the answer.	5.24	1.11	.72		.40
3. I like when my teacher corrects all of my mistakes (grammar, content, organization, spelling, punctuation).	5.23	1.01	.70		.50
4. I like when my teacher uses correction symbols to show me my mistakes.	4.90	1.19	.67		.37
5. When I do not understand my teacher's comments, I talk to him/her.	4.62	1.29	.62		.45
6. When I get my papers back, I read all of the comments carefully.	5.19	.978	.62		.57
7. I remember the mistakes my teacher points out to me and I try not to make them again.	2.67	1.47	.50		.49
8. I would like to be told only what I did right in my paper.	2.76	1.50		.73	.56
9. After peer review, I never look at my classmate's comments.	2.06	1.21		.71	.47
10. When I get my papers back, I only look at the grade.	1.92	1.33		.67	.57
11. I like when my teacher only writes a grade and not comments on my paper.	1.94	1.33		.53	.24
12. When I do not understand my teacher's comments, I ignore them.	2.07	1.21		.51	.50
13. I don't care about receiving feedback on my papers.	2.3	1.5	—	—	
M/SD			4.87/.78	2.48/.9	
Variance: 45%			28.7%	16.5%	

Note: h = communality.

Table 6
Pearson correlation coefficients between implicit theories of general intelligence and implicit theories of writing intelligence.

	Entity theory of general intelligence	Incremental theory of general intelligence	Incremental theory of writing intelligence
Incremental theory of general intelligence	−.23[**]		
Incremental theory of writing intelligence	−.18[*]	.24[**]	
Entity theory of writing intelligence	.61[**]	−.18[*]	−.36[**]

[*] $p < .05$.
[**] $p < .01$.

Orientation positively and significantly correlated with Entity Theory of Writing Intelligence and showed a negative, but not significant, correlation with Incremental Theory of Writing Intelligence. Feedback Seeking Orientation correlated significantly and positively with Incremental Theory of Writing Intelligence but significantly and negatively with Entity Theory of Writing Intelligence. Writing Motivation positively and strongly correlated with Incremental Theory of Writing Intelligence and Feedback Seeking Orientation; it also showed a negative, but not significant, correlation with Entity Theory of Writing Intelligence and the Feedback Avoiding Orientation.

In order to answer the first research question (i.e., What are the relationships between ESL learners' implicit theories of intelligence and their orientation to WCF?), two multiple regression analyses were run using the forced entry method with Incremental Theory of Writing Intelligence and Entity Theory of Writing Intelligence as predictor variables and Feedback Seeking Orientation and Feedback Avoiding Orientation as outcome variables, respectively. Both models were statistically significant, suggesting good model fitness. In the regression model with Feedback Seeking Orientation as the outcome variable ($F = 6.15$, $p < .01$, $R^2 = .08$), Incremental Theory of Writing Intelligence emerged as a significant and positive predictor, ($\beta = .26$, $t(146) = 3.03$, $p < .01$), meaning with an increase of one unit in Incremental Theory of Writing Intelligence there will be an increase of .26 in Feedback Seeking Orientation. However, Entity Theory of Writing Intelligence did not emerge as a

Table 7
Correlations between predictor and outcome variables.

	Entity theory of writing intelligence	Incremental theory of writing intelligence	Feedback avoiding orientation	Feedback seeking orientation
Incremental theory of writing intelligence	−.36[**]			
Feedback avoiding orientation	.24[**]	-.13		
Feedback seeking orientation	−.19[*]	.30[**]	−.12	
Writing motivation	−.12	.41[**]	−.14	.64[**]

[*] $p < .05$.
[**] $p < .01$.

significant predictor of Feedback Seeking Orientation, $t < 1$. When Feedback Avoiding Orientation was entered as the outcome variable ($F = 5.53$, $p < .01$, $R^2 = .07$), Entity Theory of Writing Intelligence predicted a significant amount of variance, ($\beta = .23$, $t(146) = 2.7$, $p < .01$); the standardized Beta of .23 suggests that with a unit of increase in Entity Theory of Writing Intelligence, there will be an increase of .23 of a unit in Feedback Avoiding Orientation. Incremental Theory of Writing Intelligence showed a negative but non-significant tendency in predicting Feedback Avoiding Orientation, $t < 1$.

To answer the second research question (i.e., What are the relationships between ESL learners' implicit theories of intelligence and their L2 writing motivation?), another multiple regression analysis was run with Incremental Theory of Writing Intelligence and Entity Theory of Writing Intelligence as predictor variables and L2 Writing Motivation as outcome variable. In this analysis ($F = 16.01$, $p = .000$, $R^2 = .18$), Incremental Theory of Writing Intelligence emerged as a significant and strong predictor of Writing Motivation, $\beta = .44$, $t(146) = 5.46$, $p < .001$. This result suggests that with an increase of one unit in Incremental Theory of Writing Intelligence, there will be an increase of .44 points in Writing Motivation. Entity Theory of L2 Writing Intelligence, on the other hand, did not turn out to be a significant predictor of Writing Motivation, $t < 1$.

To answer the third research question (What is the relationship between ESL writers' writing motivation and their orientation to WCF?), the results of a Pearson correlation analysis (Table 7) showed that whereas Writing Motivation did not correlate with Feedback Avoiding Orientation, there was a positive and strong correlation between Writing Motivation and Feedback Seeking Orientation ($r = .64$, $p < .01$), explaining almost 41% of the variance.

7. Discussion

In the present study, we employed Dweck's (2000) framework of implicit theories of intelligence in order to gain more insight into ESL learners' writing motivation and orientation toward WCF. According to Dweck, students who have an incremental theory of intelligence view their intelligence as growing and malleable and see feedback as opportunity for growth and learning. In contrast, students with an entity theory of intelligence see their intelligence as fixed and unchanging, and view feedback, especially when negative, as threats to their ego and/or social image. These implicit theories of intelligence have been found to influence motivation as well as various learning processes and outcomes, including students' reactions to feedback (De Castella & Byrne, 2015; Dweck & Sorich, 1999; Elliott & Dweck, 1988; Farrell, 1985; Grant & Dweck, 2003; Henderson & Dweck, 1990; Mangels et al., 2006; Mueller & Dweck, 1998; VandeWalle, 2003; VandeWalle & Cummings, 1997). The present study examined the link between ESL learners' implicit theories of L2 writing intelligence, their L2 writing motivation and their orientation to WCF.

The results of this study provided an affirmative answer to the first research question: learners' implicit theories of writing intelligence significantly predicted their orientation toward WCF. The Incremental (and not Entity) Theory of Writing Intelligence significantly predicted the students' Feedback Seeking Orientation, whereas the Entity (but not the Incremental) Theory of Writing Intelligence emerged as a significant predictor of Feedback Avoiding Orientation. These results suggest that students who have an incremental theory of writing intelligence are willing to receive and seek more WCF and use it to improve their writing competence. On the other hand, those who have an entity theory of writing intelligence tend to avoid WCF because they see it as an invalidation of the positive image they have been trying to project.

The responses to the second and third research questions were affirmative as well. The Incremental (but not the Entity) Theory of Writing Intelligence was a statistically significant predictor of L2 Writing Motivation (the second research question), which, itself, was strongly correlated with Feedback Seeking Orientation, explaining almost 41% of its variance (the third research question). In other words, students who had an incremental theory of writing intelligence were more motivated to improve their L2 writing proficiency and tended to seek more feedback, but those with an entity theory of intelligence had lower motivation and showed feedback avoidance tendencies. These results support the findings of other studies in the field of educational psychology showing that learners' implicit theories of intelligence are related to their motivation and level of engagement in the classroom (e.g., Grant & Dweck, 2003; Dweck & Sorich, 1999; Farrell, 1985; Mangels et al., 2006) as well as their feedback seeking behaviors (e.g., VandeWalle, 2003; VandeWalle & Cummings, 1997).

The belief that one's writing intelligence can grow and develop can, and does, result in not only higher writing motivation but also in perceiving WCF as opportunities for learning. On the other hand, entertaining the belief that writing intelligence is fixed and cannot change is detrimental to the learners' motivation for writing and orientation toward WCF. Studies show that learners who adopt an incremental theory of intelligence are also more likely to develop learning goals (i.e., aiming to increase one's ability) whereas learners who develop an entity theory of their abilities have been found to adopt performance goals (i.e., aiming to validate one's ability). In other words, while learners with an incremental theory of intelligence come to class with the motivation to master and apply the content of the course, students with an entity theory of intelligence enter a class in order to prove their ability to others. WCF, thus, is seen by learners with an incremental theory of intelligence as an opportunity for learning and mastery of L2 writing skills but perceived by students with an entity theory of intelligence as a threat to the positive image they aim to project and/or have of themselves (VandeWalle, 2003; VandeWalle & Cummings, 1997). Viewing learning ability as a fixed entity is detrimental to learning and "unless teachers intervene to modify such attitudes prior to instruction, much valuable teacher time and effort are bound to be wasted" (Enginarlar, 1993, p. 203).

The findings of our study also provide a potential explanation for why students were found to respond to WCF differently in the previous studies in the field of Second Language Writing, reviewed in the introduction of this paper. While such individual differences have been found in these previous studies, no clear explanation has been provided as to why such

differences exist. The results of the present study provide empirical evidence that one important source of these individual differences appears to be motivational and has roots in the students' beliefs about the malleability versus stability of their intellectual capacity specifically when applied to writing in a second language.

8. Pedagogical implications

Many teachers feel WCF is time consuming and, sometimes, even disheartening. While lack of attention, on the part of language learners, to teachers' feedback on their written performance could have different reasons, one of the underlying causes could be related to students' detrimental beliefs about their L2 writing capability. The results of the present study showed that learners with an incremental theory of writing intelligence take advantage of WCF and are more likely to pore over teachers' comments, while those with an entity theory of writing intelligence are more likely to look at the grade and immediately put the paper away. Changing the students' negative and fixed mindsets toward their abilities and fostering an incremental theory of writing ability could thus make WCF more effective and beneficial to both teachers and students. According to Dweck (2006), learners' implicit theories of intelligence can be changed and result in better learning outcomes. She suggests giving students questionnaires to find out their theories of intelligence. Then, intervention programs could be employed in order to change learners' entity theories of their abilities and foster a more incremental theory in the classroom (e.g., Aronson et al., 2002; Blackwell et al., 2007; Jonsson, Beach, Korp, & Erlandson, 2012). For example, in Aronson et al. (2002), Stanford University students in the experimental condition participated in three one-hour training sessions aimed to help them see their intelligence as expandable. The participants were shown a short video clip including vivid color animation of the brain growing and making new neural connections in response to intellectual challenge. They were then instructed to write an encouraging pen pal letter to an at-risk middle school student and convince them to believe that, with hard work, they can change, grow and expand their intelligence "like a muscle" and become successful. These training programs resulted in the participants' greater enjoyment of their academic process, engagement in their classes and higher grade point averages. In a similar study by Blackwell et al. (2007), seventh grade students participated in eight incremental theory training sessions for 25-minute periods spanning eight weeks. The training sessions contained different activities including readings, vivid analogies between brain and muscles, examples of people who became very smart through hard work, and related group discussions. After this training, it was found that students transformed their entity theory of intelligence into incremental theories of intelligence, which, in turn, resulted in higher math grades. Therefore, establishing an incremental theory of intelligence in the L2 writing classroom could improve students' motivation for writing as well as their perceptions of WCF, resulting in better learning processes and outcomes.

9. Conclusion

This study introduced Dweck's (2000) conceptualization of the implicit theories of intelligence into the field of Second Language Writing. The results provided preliminary evidence for how learners' views of writing intelligence could shape their writing motivation and how they perceive and react to teachers' WCF. The study encourages employing practical ways to change L2 writers' detrimental, but internalized, theories of intelligence, in order to increase students' desire for and attention to WCF, thereby improving the quality of L2 writing instruction. The implicit theories of intelligence can be used as a useful theoretical and pedagogical lens to further our understanding of lack of motivation on the part of many L2 writers and their attitudes and behaviors towards WCF. This research hopes to encourage investigation into how we can increase learners' writing motivation through changing their beliefs about writing intelligence, and setting helpful learning rather than performance goals to motivate mastery of writing in a second language.

There were several limitations in this study. First, the participants' accuracy in understanding survey items is not always reliable. This problem is exacerbated when participants speak different languages. Translating the questionnaire into their mother tongues could help, but it is a limitation in and of itself. Assuring that the translations convey the exact meaning is a challenging task. This problem could have been minimized in the present study if the questionnaires had been professionally back-translated into English. The questionnaire was translated into Chinese, Arabic and Portuguese, but 21 of the participants had to complete the questionnaire in English. This might also have affected the results. Some of the scales developed in the present study barely met the minimum psychometric characteristics. For example, Incremental Theory of Writing Intelligence included only two items and showed a relatively low alpha coefficient. Increasing the number of items could add to the psychometric power of the scales. The data were collected from ESL writers studying at one university in the United States. Due to the absence of enough empirical evidence from different socio-educational contexts, the results could not be generalized to the entire population of second language writers.

It has been 30 years since Zamel (1985) examined the feedback teachers gave on students' writing and started reflecting on WCF. From her findings, she concluded, "we should respond not so much to student writing but to student writers" (Zamel, 1985, p. 97). When research first started on WCF, the researchers paid more attention to individual differences. However, that focus has been lost in the past decades. There have been valuable attempts highlighting differences in students' general attitudes and orientations toward WCF but without any reference to the underlying characteristics that result in those differences (e.g., Cohen, 1987; Cohen & Cavalcanti, 1990; Hedgcock & Lefkowitz, 1994, 1996; Leki, 1991; Montgomery & Baker, 2007). In other words, these attempts lacked a sound theoretical basis, which could have resulted in a better understanding of how WCF works. That was the motivation for the present study.

This was the first application of Dweck's (2000) implicit theories of intelligence in the field of Second Language Writing. This motivation theory could help us better understand individual learner differences in the process of learning to write in a second language. We call on researchers in the field of Second Language Writing to replicate and build on the study in different socio-educational contexts and among different learner populations. More evidence on the importance of this theory in our understanding of learners' orientations toward WCF can lead to constructive agreements on how to improve the effectiveness of WCF. In addition, appropriate interventions based on this theory could be employed to positively influence L2 writers' affective, motivational and learning processes and outcomes. For instance, similar to studies in the field of educational psychology (e.g., Blackwell et al., 2007), experimental studies on promoting an incremental theory of intelligence could be conducted to assess how intervention might help increase L2 writers' motivation, their desire for WCF, and their L2 writing achievement. Investigating how L2 writing teachers' theories of writing intelligence influence their teaching practice and their students' motivation and learning could also be interesting future research directions.

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