

A measure of second language writing anxiety: Scale development and preliminary validation

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Abstract

Evidence has been accumulating that shows the promise of multidimensional conceptualizations of anxiety in investigating the effects of anxiety on different aspects of human behavior and intellectual performance. In view of the lack of an L2 writing anxiety scale explicitly developed from a multidimensional perspective, this study aims to develop and evaluate a self-report L2 writing anxiety measure that conforms to a three-dimensional conceptualization of anxiety. Sixty-five EFL learners' reports of L2 writing anxiety were drawn upon to generate an initial pool of scale items. A pilot test was conducted on the initial pool of items to help establish a preliminary version of L2 writing anxiety scale for further refinement and evaluation in the formal study. A sample of 421 EFL majors enrolled in seven different colleges in Taiwan participated in the formal study. Exploratory factor analysis was employed to determine the final make-up of the Second Language Writing Anxiety Inventory (SLWAI) that consists of three subscales: Somatic Anxiety, Cognitive Anxiety, and Avoidance Behavior. In addition to reliability coefficients, the validity of the SLWAI total scale and subscales was assessed by means of correlation and factor analysis. The results suggest that both the total scale and the individual subscales of the SLWAI have good reliability and adequate validity. © 2004 Elsevier Inc. All rights reserved.

Research background

For the past three decades, a great body of research has been devoted to examine the role of anxiety in second language (L2)¹ learning. However, as shown in Scovel's (1978) review of the literature then available, early studies on anxiety and L2 learning produced

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¹ In this paper, second language or L2 is used to refer to either a second language or a foreign language.

contradictory results regarding the relationship between anxiety and L2 achievement or performance. Many researchers have attributed these discrepant findings in part to the use of inadequate anxiety measures, such as scales of test anxiety and general trait anxiety, which do not assess an individual's responses to the specific stimulus of second language learning (Horwitz, 1986; Horwitz, Horwitz, & Cope, 1986; MacIntyre, 1999). Furthermore, these researchers proposed conceptualizing second/foreign language anxiety as a unique form of anxiety specific to the L2 learning context. Since then, several instruments have been developed and widely adopted to measure this anxiety, including Gardner's (1985) French Class Anxiety Scale and French Use Anxiety Scale, and Horwitz et al.'s (1986) Foreign Language Classroom Anxiety Scale.

These L2-learning-specific measures of anxiety have contributed to a clearer picture regarding the relationship between anxiety and L2 learning. In general, research adopting these anxiety measures has indicated a consistent negative association of second language anxiety with students' L2 learning attitudes (Phillips, 1992), self-ratings of proficiency (MacIntyre, Noels, & Clément, 1997), language processing (Steinberg & Horwitz, 1986; MacIntyre & Gardner, 1994a, 1994b), and with L2 academic achievement (Aida, 1994; Horwitz, 1986; Saito & Samimy, 1996).

Nevertheless, some researchers, taking heed of the dominance of speaking-related items in the above-mentioned second language anxiety measures, began to question the adequacy of using them to measure anxiety aroused in performing language skills other than speaking (Aida, 1994; Cheng, Horwitz, & Schallert, 1999; Phillips, 1992). Some language anxiety researchers even took a step further, proposing to distinguish language-skill-specific anxiety from general second language classroom anxiety that seems to be more associated with oral aspects of L2 use (Cheng et al., 1999; Horwitz, 2001). Meanwhile, researchers have increasingly focused their attention on identifying and examining anxiety associated with specific language skills such as reading (Saito, Horwitz, & Garza, 1999; Sellers, 2000), listening (Vogely, 1998; Kim, 2000), and writing (Cheng et al., 1999; Leki, 1999). This trend of investigation suggests a pressing need to develop proper and standardized measurement instruments for researchers who are interested in the quantitative assessment and investigation of various kinds of skill-specific second language anxiety. For "adequate measures are a necessary condition for valid research" (DeVellis, 1991, p. 11).

There have been some studies on second language writing anxiety. In them, the Daly–Miller Writing Apprehension Test (WAT; Daly & Miller, 1975) was the most commonly used measurement instrument of second language writing anxiety (e.g., Cheng et al., 1999; Hadaway, 1987; Lee, 2001; Masny & Foxall, 1992; Wu, 1992). Although the Daly–Miller WAT as a whole has been shown to be an instrument of satisfactory internal consistency reliability as well as concurrent and predictive validity, there seems to be plenty of room for further improvement if the WAT is to be used in future studies of second language writing. First of all, the WAT was originally developed with reference to first language learners, particularly English native speakers. It might not tap the most essential aspects of second language writing anxiety. Moreover, several researchers have raised questions about the construct validity of the WAT. In his investigation of L1 writing anxiety, McKain (1991, pp. 22–25) did a content analysis of the WAT and classified the 26 items on the WAT into five categories: (1) nine items on positive feelings that are more or less incompatible with

anxiety (e.g., “I enjoy writing” and “I like to write my ideas down”); (2) nine items on self-efficacy or outcome expectancies (e.g., “I feel confident in my ability to clearly express my ideas in writing” and “I expect to do poorly in composition class even before I enter them”); (3) five items on the presence ($n = 4$) or absence ($n = 1$) of anxiety (especially evaluation anxiety) (e.g., “I have no fear of my writing being evaluated” and “I am afraid of writing essays when I know they will be evaluated”); (4) one item on the value of writing (i.e., “Expressing ideas through writing seems to be a waste of time”); and (5) two items dealing with miscellaneous events or behaviors that might be caused by anxiety (i.e., “I avoid writing” and “My mind seems to go blank when I start to work on a composition”). Because only 14 of the 26 WAT items deal with feelings (among them, only four items concern the presence of anxiety), McKain called into question the WAT as a pure measure of writing anxiety.

On the grounds that 9 of the 26 WAT items have to do with individuals’ self-efficacy beliefs and outcome expectancies, McKain (1991) further argued that the WAT could be considered as “a measure of writing self-esteem just as much as a measure of writing apprehension” (p. 25). McKain’s argument has received some empirical support from Cheng et al.’s (1999) principal components analysis of an L2 version of the WAT. Originally, the WAT was reported to represent a unidimensional structure and capture a single construct by Daly and Miller (1975). All of the items on the WAT are thus expected to load on one factor or one component in a factor analysis of the measure. However, different from the expectation, data in Cheng et al. (1999) supported a three-component solution. That is, the WAT items loaded on three components. Among the three components, the Low Self-confidence component accounted for the largest part of the total variance of the L2 version of the WAT, followed by the components of Aversiveness of Writing and Evaluation Apprehension. Similarly, one of the three components that consistently emerged from Shaver’s (1990) three principal components analyses of the WAT on L1 learners was Writing Self-concept, although it did not always explain the greatest amount of variance in the three analyses. The other two components were labeled as Affective Performance Reaction and Reaction to Evaluation. The above results suggest that Low Self-confidence is a major component of the WAT.

Together with Burgoon and Hale’s (1983) finding that the WAT could be factor analyzed into three dimensions representing Discomfort or Ease in Writing, Enjoyment of Writing, and Rewards of Writing, Shaver (1990) argued that contrary to Daly and Miller’s (1975) proposed unidimensional structure, the WAT represents a multidimensional construct,² comprising three dimensions of L1 learners’ attitudes toward writing. However, the dimensionality of the WAT is still subject to debate because two-factor solutions have been obtained in other studies, as reported in Blane, Lowe, Meixner, Nouri, and Pearce (2001).

² A unidimensional conceptualization of anxiety treats anxiety as a unitary, global construct. A unidimensional measure of anxiety contains no subscales and produces only one single summed score. In contrast, a multidimensional conceptualization of anxiety defines anxiety as being composed of several different but intercorrelated facets or dimensions. Each facet or dimension of the anxiety construct can be seen as representing a separate construct. But at a more abstract level, these facets or dimensions are all integral parts of the more global anxiety construct. Developed from this perspective, a multidimensional measure of anxiety comprises several subscales designed to measure the various facets/dimensions of anxiety. The items on each subscale can be summed to get a score representing the degree of reaction in each facet/dimension of anxiety.

These conflicting results not only highlight the need to clarify the issue of how many and what dimensions are embedded in the WAT but also question the construct validity of the WAT. It should also be noted that [Shaver \(1990\)](#) treated the WAT as a measure of attitudes toward writing, a construct broader in scope than writing anxiety. Indeed, results of the aforementioned content and factor analyses suggest that treating the WAT as a specific measure of writing anxiety may be problematic.

In their report on two L1 studies that examined the predictive validity of the WAT, [Richmond and Dickson-Markman \(1985\)](#) held a similar view to [McKain \(1991\)](#) regarding the nature of the WAT. The two studies reported in [Richmond and Dickson-Markman \(1985\)](#) upheld the predictive validity of the WAT because the WAT was found to be a significant predictor of L1 achievement (i.e., the American subjects' performance on the English section of the American College Test) and L1 writing quality (i.e., the subjects' performance on a 15-minute essay). However, they doubted that the predictive power of the WAT came from anxiety. Based on the finding that low and moderate levels of writing anxiety, as measured by the WAT, did not produce significant differences in reports of state anxiety, [Richmond and Dickson-Markman \(1985\)](#) noted that the WAT might be "a measure of self-confidence in ability to write rather than anxiety about writing" (p. 259).

In the form of a subscale, self-confidence has been included in sport anxiety measures such as Competitive State Anxiety Inventory-2 ([Martens, Burton, Vealey, Bump, & Smith, 1990](#)) and the Anxiety Rating Scale-2 ([Cox, Robb, & Russell, 2000](#)). However, according to the theory from which these sport anxiety measures were developed, self-confidence is an individual difference construct that is separate from the construct of anxiety, which is conceptualized to be multidimensional and consist of two components: cognitive and somatic anxiety ([Craft, Magyar, Becker, & Feltz, 2003](#)). Cognitive anxiety refers to the mental aspect of anxiety experience, including negative expectations, preoccupation with performance, and concern about others' perceptions; whereas somatic anxiety refers to one's perception of the physiological effects of the anxiety experience, as reflected in increased "autonomic arousal and unpleasant feeling states such as nervousness and tension" ([Morris, Davis, & Hutchings, 1981, p. 541](#)). This approach is quite different from that taken for the WAT, which does not attempt to distinguish between self-confidence and anxiety or separate cognitive anxiety from somatic anxiety.

As a result, use of the WAT may create some difficulty in teasing apart the conceptual or causal links between anxiety and self-confidence, a subject of much research and discussion in the field of L2 learning ([Horwitz et al., 1986](#); [MacIntyre, Clément, Dörnyei, & Noels, 1998](#); [Oxford, 1999](#)). The finding of a close relationship between general second language anxiety and self-perceived competence in L2 has provided some insight into ways of reducing anxiety in the L2 classroom ([Cheng, 2001](#); [MacIntyre et al., 1997](#); [Onwuegbuzie, Bailey, & Daley, 1999](#); [Price, 1991](#)). However, similar results found in the studies of L1 or L2 writing (e.g., [Cheng, 2002](#); [Daly & Wilson, 1983](#); [Pajares & Johnson, 1994](#)) become more difficult to interpret. The writing anxiety scale (i.e., the WAT) used in these studies to examine the relationship between writing anxiety and self-confidence contains many items related to self-confidence in writing. Such attempts thus become a potential tautology.

One possible solution to this problem is to develop a measure of writing anxiety that does not confound writing anxiety with self-confidence or beliefs about one's writing

ability. To achieve such a goal, McKain (1991) devised an L1 writing anxiety measure by drawing 12 items from the WAT and Holland's (1978) Writing Problems Profile. The 12 items were chosen on the basis that at least three of four independent raters coded them as being related specifically and narrowly to "anxious feelings" associated with writing, but not other aspects of writing such as "behavior (e.g., avoidance of writing) or cognition (e.g., beliefs about one's writing ability)" (McKain, p. 81). Deliberately excluding items related to writing self-efficacy beliefs and enjoyment of writing, McKain's writing anxiety measure, the Writing Anxiety Questionnaire (WAQ), was shown to be an improvement over the WAT in terms of content validity and construct validity, despite their similarity in predictive validity.

Like the WAT, the WAQ defines L1 writing anxiety as a unidimensional, global construct and does not contain any subscales. However, as previous studies suggest, empirical evidence does not always support scale developers' categorization and definition of the scale items. For example, Russell and Cox (2003) found that the word "nervous" could be interpreted as being related to somatic anxiety or cognitive anxiety by different people. In a factor analysis of potential cognitive and somatic anxiety items drawn from existing anxiety scales, Morris et al. (1981) found that although some of the items, as expected, loaded differentially on either the worry factor (i.e., cognitive anxiety) or the emotionality factor (i.e., somatic anxiety), many of them did not. Likewise, the proposed unidimensional structure of the WAT has been challenged by several factor analyses of the WAT, as reviewed earlier. Therefore, the presupposed unidimensional structure of the WAQ requires validation via factor analytic methods. In addition, because the WAQ, like the WAT, was not developed specifically for L2 learners, its applicability in the L2 context is questionable.

More importantly, accumulating evidence has indicated the promise of multidimensional conceptualizations of anxiety in investigating the antecedents of anxiety as well as the effects of anxiety on different aspects of human behavior or intellectual performance (Morris et al., 1981; Smith & Smoll, 1990). For instance, following a multidimensional approach and conceptualizing test anxiety as consisting of two components—worry and emotionality—Morris and Liebert (1973) showed that the antecedents of the two components of test anxiety differed. To be specific, the threat of electric shock aroused merely emotionality when one worked on an intellectual task, but failure feedback at the same situation aroused worry only. On the other hand, Deffenbacher (1977) found that the two components of test anxiety varied in their impact on intellectual performance. That is, worry alone correlated with Miller Analogies Test performance among graduate school applicants; emotionality, however, produced debilitating effects only in the high-worry group. By the same token, when conceptualizing pain-related anxiety as consisting of four components: cognitive anxiety, somatic anxiety, fear, and escape/avoidance, Bishop, Holm, Borowiak, and Wilson (2001) found that somatic anxiety was the only significant predictor of pain tolerance among participants with tension headache. Obviously, the significant relationships between various facets of anxiety and human behaviors reported above would have been obscured by the use of a unidimensional conceptualization and measure of anxiety. No wonder more and more researchers advocate a multidimensional approach to anxiety conceptualization and measurement.

From the multidimensional perspective, anxiety is not a unitary, unidimensional phenomenon but involves various response dimensions. Various multidimensional measures of anxiety have been developed in fields such as test anxiety (see [Morris et al., 1981](#); [Sarason & Sarason, 1990](#)), speech anxiety (see [Fremouw & Breitenstein, 1990](#)), and sport performance anxiety (see [Smith & Smoll, 1990](#)). In these measures, anxiety symptoms are grouped along several relatively independent dimensions, including somatic/physiological (e.g., upset stomach, pounding heart, excessive sweating, and numbness), cognitive (e.g., worry, preoccupation, and negative expectations), and behavioral (e.g., procrastination, withdrawal, and avoidance). However, a measure of second language writing anxiety that takes into consideration the multidimensional nature of anxiety is still wanting. In light of the problems discussed above, the purpose of this study was to develop a self-report measure of second (here foreign) language writing anxiety grounded in both L2 learners' reports of anxiety experiences and the multidimensional conceptualization of anxiety. Further, this study presented preliminary information regarding the construct and criterion-related validity of the measure.

Method

Participants

Three groups of EFL students majoring in English in Taiwan participated in the present study. Only English majors were recruited due to the concern that students otherwise might not have sufficient English writing experiences to provide rich information regarding their writing anxiety experiences. First of all, to help generate an initial pool of L2 writing anxiety scale items, 67 undergraduate and graduate students (59 females and 8 males, ranging in age from 19 to 35 years, with a mean age of 22 years) from three intact classes in the English department of two universities were recruited to fill out an open-ended questionnaire that asked about their anxiety experiences when writing in English. The initial pool of scale items was then pilot-tested on another group of 56 undergraduates (42 females and 14 males, ranging in age from 19 to 35 years, with a mean age of 20 years) in the department of Applied English at a university. Finally, at the stage of item selection and scale validation, 421 freshman English majors enrolled in English writing courses at seven different colleges were asked to complete two sets of questionnaires administered at an interval of 2 or 3 weeks. Among them, 336 (79.81%) were females and 59 (14.01%) were males, with 26 (6.18%) participants not specifying their gender. The participants ranged from 18 to 24 years old with a mean age of 19.5 years. Details about the procedures in scale development and validation are presented in next section.

Procedures

Item generation procedures

This study adopted a multidimensional approach, specifically [Lang's \(1971\)](#) tripartite framework, in conceptualizing anxiety. In the tripartite model, anxiety is understood as consisting of three different and relatively independent components: cognitive,

physiological, and behavioral, as described previously. Based on the tripartite view of anxiety, L2 writing anxiety in this study is defined as a relatively stable anxiety disposition associated with L2 writing, which involves a variety of dysfunctional thoughts, increased physiological arousal, and maladaptive behaviors.

In order to ground the items of the newly developed L2 writing anxiety scale in L2 learners' experiences, an open-ended questionnaire with four questions written in Chinese was first distributed to students of three intact EFL writing classes ($N = 67$) in Taiwan to solicit information regarding learners' L2 writing anxiety experiences. To be specific, the participants were asked to (1) describe the situations under which they felt anxiety when writing in English; (2) specify their physiological and psychological reactions associated with their writing anxiety; (3) specify the effects of writing anxiety on their writing processes and behavior; and (4) explain the reasons for their anxiety feelings. The participants were allowed to skip any questions that did not fit their situations or they did not want to answer. Nevertheless, none of the students skipped any of the questions though their responses varied in richness of the details provided. Based on the participants' responses, an initial pool of scale items ($N = 33$) were generated, modeled after the statements on related communication anxiety measures, including [Daly and Miller's \(1975\) WAT](#), [McKain's \(1991\) WAQ](#), and [McCroskey's \(1970\) Personal Report of Communication Apprehension](#). A Likert-type response format was adopted consisting of a 5-choice response scale corresponding to 1 (strongly disagree), 2 (disagree), 3 (no strong feelings either way), 4 (agree), and 5 (strongly agree). The 33 items were then sent to two Chinese college teachers, who had been teaching EFL writing classes for years, to review their appropriateness as cognitive, physiological, and/or behavioral indicators of English writing anxiety. These two teachers were chosen for three reasons. First, they had taken graduate courses related to psycholinguistics and second language acquisition and were deemed to have adequate background knowledge about language anxiety. Second, they reported having experienced writing anxiety while writing their doctoral dissertations in English (their foreign language). Third, they had experience with students anxious about writing in English.

Because all of the 33 items were rated as appropriate indicators of L2 writing anxiety by both teachers, a pilot test was conducted with 56 undergraduate students majoring in Applied English. Based on the participants' comments on the readability of the statements and, in particular, the results of item analysis (i.e., calculation of item-total correlations³), six items that yielded item-total correlations below .40 were discarded, resulting in a 27-item preliminary version of L2 writing anxiety questionnaire.

Scale development and validation procedures

The preliminary 27-item L2 writing anxiety questionnaire was administered twice to a sample of 421 freshman English majors enrolled in EFL writing classes at seven different colleges for the purpose of determining the final make-up of the L2 writing anxiety scale and examining the psychometric properties of the resultant scale, termed Second Language Writing Anxiety Inventory (SLWAI). At the first survey, the participants completed a set of questionnaires consisting of the 27-item L2 writing anxiety questionnaire, a demographic

³ The item-total correlation is obtained by correlating each item under evaluation with the sum of all of the scale items.

questionnaire, and nine measurement instruments (see next section for a description) included for determining the validity of the finalized scale, the SLWAI. Depending on the schedule of the course instructors, two or three weeks after the first survey, another set of questionnaires was administered, which contained the 27-item L2 writing anxiety questionnaire, a demographic questionnaire, and a state anxiety scale (see next section for a description). Like the other nine measurement instruments mentioned above, the state anxiety scale was also included to examine the validity of the SLWAI.⁴ Upon completing the second set of questionnaires, the respondents were asked to write an English essay within 40 minutes, comparing their senior high school English classes with their college English classes. The main purpose of the second survey was to examine test–retest reliability of the SLWAI as well as its correlation with the quality of timed L2 writing. The latter served as one of the indexes of criterion-related validity of the SLWAI. Prior to the formal study, all of the instruments to be used for validation of the SLWAI had been pilot-tested for their readability and reliability.

Instruments

In addition to a demographic questionnaire and the preliminary 27-item L2 writing anxiety questionnaire, 10 other measurement instruments (9 at the first survey and 1 at the second survey) were used as validity criteria for the newly developed scale (SLWAI) in this study. The 10 instruments were adapted from existing instruments with good reliability and validity. Statements of the original instruments were modified to suit the EFL learning context in Taiwan. To facilitate the reading and responding processes, all of the instruments were translated into Chinese. All of the measurement instruments adopted a 5-point Likert response format (in all but one case, 1 = strongly disagree; 2 = disagree; 3 = no strong feelings either way; 4 = agree; 5 = strongly agree). Furthermore, the quality of a timed essay was used as an index of the participants' English writing performance. The instruments employed to determine validity of the SLWAI are discussed in more detail below.

English Use Anxiety Scale (EUAS)

This scale was adapted from [Gardner's \(1985\)](#) French Use Anxiety Scale (reported in [MacIntyre & Gardner, 1988](#), p. 21). It contains eight items that were balanced by positively and negatively worded statements.⁵ The scale was designed to measure the amount of anxiety experienced when using English in interpersonal situations. A sample sentence is "I am sure that I would get nervous if I had to speak French to a sales clerk." Internal consistency coefficient (α) of this scale was .89 in the pilot test and .92 in the formal study.

⁴ A sound validity evaluation of a newly developed measure requires various sources of evidence. As shown in the section of validity analysis, the 10 measurement instruments are necessary to thoroughly evaluate the validity of the SLWAI. Specifically, analyses of the relationships of the SLWAI to the 10 measurement instruments could provide three sources of validity evidence: convergent, discriminant, and criterion-related validity.

⁵ As defined in [DeVellis \(1991\)](#), negatively worded items "represent low levels or even the absence of the construct of interest," whereas "the more common positively worded items . . . represent its presence" (p. 59). The main purpose of wording items both positively and negatively within the same scale is to reduce the effect of an acquiescence bias, that is, "a respondent's tendency to agree with items irrespective of their content" (*ibid.*).

English Classroom Anxiety Scale (ECAS)

This scale was adapted from Gardner's (1985) French Classroom Anxiety Scale (reported in MacIntyre & Gardner, 1988, pp. 23–24) to assess anxiety experienced in any English class. Like the EUAS, this scale consists of four positively worded items and four negatively worded items. A sample sentence is "I was always afraid that the other students would laugh at me if I spoke up in English class." Internal consistency coefficient (α) of this scale was .90 in the pilot study and .88 in the formal study.

English Writing Apprehension/Attitude Test (EWAT)

An EFL version of the Daly and Miller's (1975) WAT was adapted to assess a combination of learners' attitudes, beliefs, and anxious feelings toward EFL writing. The EWAT is a 26-item scale, with an equal number of positive and negative statements (e.g., "I have no fear of my English writing being evaluated," "I'm not good at English writing," and "Writing in English is a lot of fun"). The internal consistency coefficient (α) of this scale was .92 in the pilot study and .93 in the formal study.

English Writing Block Questionnaire (EWBQ)

The EWBQ consists of 24 items adapted from Rose's (1984) Writer's Block Questionnaire (WBQ). According to Rose (1984), the WBQ was intended to measure five factors associated with writer's block: (1) blocking behavior (7 items); (2) lateness in completing writing tasks (2 items); (3) premature editing (3 items); (4) inadequate strategies for dealing with complex topics (5 items); and (5) negative attitudes toward writing (7 items). Internal consistency coefficient (α) of the WBQ was .76 in the pilot study and .88 in the formal study.

English Writing Self-efficacy Scale (EWSS)

The EWSS is an expanded and adapted version of one subscale of Shell's Writing Self-efficacy Instrument (Shell, Murphy, & Bruning, 1989), which is composed of a writing component skill subscale and a writing task subscale. Because most of the items on the task subscale were believed to be inappropriate for use in the EFL learning context, the task items were not considered when constructing the EWSS. Instead, on the basis of the 8-item subscale of writing component skill, 10 items were generated to assess respondents' confidence in performing various English writing skills. Some examples are "I believe I am able to correctly spell every word in an English essay without referring to a dictionary," "I believe I am able to correctly punctuate an English passage," and "I believe I am able to write an English essay without making any grammatical mistakes." The EWSS was included to determine whether the SLWAI measures a separate construct from self-confidence, as desired. Internal consistency coefficient (α) of the EWSS was .84 in the pilot test and .90 in the formal study.

Personal Report of Communication Apprehension-College (PRCA-C)

The PRCA-C is a 20-item questionnaire designed by McCroskey (1970) to measure communication-bound anxiety in college students (reported in MacIntyre & Gardner, 1988, p. 24). Examples of the statements include "When communicating (in Chinese), my posture feels strained and unnatural" and "I look forward to an opportunity to speak (in

Chinese) in public.” After reversing the scoring of nine negatively worded items, a higher score on the measure indicated a higher degree of anxiety about communicating in one’s native language (Chinese in this study). The PRCA-C was included to determine whether the SLWAI measures general communication anxiety or L2 communication specific anxiety. Internal consistency coefficient (α) of the PRCA-C was .92 in the pilot test and .93 in the formal study.

Test Anxiety Scale (TAS)

The TAS is an adapted version of the shortened, 16-item measure of test anxiety developed by [Sarason and Ganzer \(1962\)](#) (reported in [MacIntyre & Gardner, 1988](#), p. 29). Two of the 16 statements are negatively worded. Examples of the statements are “While taking an important exam, I perspire a great deal” and “When taking a test, my emotional feelings do not interfere with my performance.” The TAS was used to examine the extent to which the SLWAI measures general performance evaluation anxiety as opposed to L2-specific anxiety. Internal consistency coefficient (α) of the TAS was .83 in the pilot test and .85 in the formal study.

Math Anxiety Scale (MAS)

The MAS is a 10-item measure of mathematics anxiety in college students created by [Betz \(1978\)](#), with five items positively worded and five items negatively worded. Two examples of the MAS items are “It wouldn’t bother me at all to take more math classes” and “I usually don’t worry about my ability to solve math problems.” The MAS was included to determine whether the SLWAI measures general anxiety or L2-specific anxiety. Internal consistency coefficient (α) of the MAS was .96 in the pilot test and .94 in the formal study.

English Writing Motivation Scale (EWMS)

Modeled after [Gardner’s \(1985\)](#) Motivational Intensity Questionnaire, the EWMS is a 7-item measure designed by the researcher to assess learners’ strength of motivation for composing in English. Three of the seven items were negatively worded. Examples of the statements are “I would learn it elsewhere if English writing courses are not offered at school” and “I will never participate in any English writing clubs if there is any such club at school.” Internal consistency coefficient (α) of the EWMS was .77 in the pilot test and .73 in the formal study.

State Anxiety Scale (SAS)

The SAS is a 20-item questionnaire adapted from [Zuckerman’s \(1960\)](#) Affective Adjective Check List (reported in [MacIntyre & Gardner, 1988](#), p. 34), which describes various affective reactions at the moment of completing the questionnaire. The SAS contains 10 anxiety-plus and 10 anxiety-minus statements. Examples of the anxiety-plus statements include “I’m shaky now,” “I’m fearful now,” and “I’m tense now.” In contrast, the anxiety-minus items include statements such as “I’m calm now,” “I’m cheerful now,” and “I’m secure now.” The statements were answered on a 5-point scale ranging from a low of 1 (don’t feel so at all) to a high of 5 (strongly feel so). Internal consistency coefficient (α) of the SAS was .92 in the pilot test and .93 in the formal study.

Index of English Writing Performance

The participants' performance on a timed English essay writing task was used as an index of their English writing performance. The participants were asked to write an English composition within 40 minutes that compares English classes in college with those in senior high school. The task was chosen because it was a practice of end-of-semester performance evaluation common to the writing classes involved. Also, performance on such an essay writing task was believed to provide a more valid measure of English writing proficiency than course grade because the latter was often confounded by performance on tasks not directly related to essay writing such as grammar exercises and by attendance.

Once collected, each essay was graded independently by two experienced EFL writing raters, on a 20-point scale. Both of the two raters had been serving on the English composition grading committee of a nation-wide college entrance exam for more than six years. To take advantage of their expertise, the same grading rubric used for the entrance exam was adopted in this study. Five aspects in writing are considered in the grading rubric, including the content, organization, vocabulary, language use, and mechanics. The inter-rater reliability estimate was .98.

Results

Factor Analysis

Because the main purpose of this study was to construct a multidimensional measure of L2 writing anxiety, exploratory factor analysis was employed to help select items to form the subscales. Specifically, the Principal Axis Factoring method of extraction was conducted to examine the factor structure of the preliminary 27-item L2 writing anxiety questionnaire.⁶ Two separate analyses were performed on responses from the first and the second administrations of the 27-item L2 writing anxiety questionnaire. For both analyses, a variety of criteria were used to determine the number of common factors to retain, including the eigenvalue >1 criterion, the scree test, the amount of common variance explained, and conceptual interpretability of the factor structure. For both analyses, these criteria suggested the adequacy of extracting three factors. The three-factor solutions accounted for 47% and 48% of the common variance in the two analyses, respectively. Because dimensions of anxiety experience are generally expected to covary, an oblique rotation (Oblimin) was employed to increase interpretability of the factors. The correlations among the three retained factors were found to be moderate ($r = .32, .32$, and $.53$ for the first set of factors and $r = .37, .38$, and $.48$ for the second set). The magnitude of the correlation indicates the appropriateness of adopting oblique rotation in the analysis. Table 1 shows the factor loadings from the rotated pattern matrix for the two analyses. Note that the loadings from the pattern matrix are conceptually similar to standardized

⁶ Factor extraction is a process in a factor analysis that involves identifying hypothetical latent factors underlying the set of items within a scale (the factor structure). Principal axis factoring is one of the most common methods of factor extraction.

Table 1

Oblimin rotated factor pattern of the two analyses on the L2 writing anxiety items

Items	First administration ^a			Second administration ^b		
	Factor			Factor		
	I ^c	II ^d	III ^e	I ^c	II ^d	III ^e
13. <i>My thoughts become jumbled when I write English compositions under time constraint.</i>	.77			.79		
15. <i>I often feel panic when I write English compositions under time constraint.</i>	.77			.84		
9. <i>I tremble or perspire when I write English compositions under time pressure.</i>	.70			.70		
2. <i>I feel my heart pounding when I write English compositions under time constraint.</i>	.60			.81		
23. <i>I usually feel my whole body rigid and tense when I write English compositions.</i>	.57			.53		
18. <i>I freeze up when unexpectedly asked to write English compositions.</i>	.55			.49		
7. <i>My mind often goes blank when I start to work on an English composition.</i>	.38			.54		
19. <i>I would do my best to excuse myself if asked to write English compositions.</i>	.48	.41		.48		
27. <i>Whenever possible, I would use English to write compositions. (R)</i>		.75		.75		
22. <i>I usually seek every possible chance to write English compositions outside of class. (R)</i>		.72		.72		
4. <i>I often choose to write down my thoughts in English. (R)</i>		.72		.72		
6. <i>I usually do my best to avoid writing English compositions.</i>	.30	.58		.80		
14. <i>Unless I have no choice, I would not use English to write compositions.</i>	.41	.54		.76		
12. <i>I do my best to avoid situations in which I have to write in English.</i>	.40	.41		.65		
21. <i>I don't worry at all about what other people would think of my English compositions. (R)</i>			.68			.64
26. <i>I'm not afraid at all that my English compositions would be rated as very poor. (R)</i>			.66			.86
8. <i>I don't worry that my English compositions are a lot worse than others'. (R)</i>			.56			.42
17. <i>I'm afraid that the other students would deride my English composition if they read it.</i>			.46			.53
24. <i>I'm afraid of my English composition being chosen as a sample for discussion in class.</i>			.31			.51
1. <i>While writing in English, I'm not nervous at all. (R)</i>			.37	.31		.30
10. <i>If my English composition is to be evaluated, I would worry about getting a very poor grade.</i>	.32		.49	.52		.32
3. <i>While writing English compositions, I feel worried and uneasy if I know they will be evaluated.</i>	.37		.43	.46		.32

Table 1 (Continued)

Items	First administration ^a			Second administration ^b		
	Factor			Factor		
	I ^c	II ^d	III ^e	I ^c	II ^d	III ^e
16. While writing in English, I often worry that the ways I express and organize my ideas do not conform to the norm of English writing.			.60	.54		
5. While writing in English, I often worry that I would use expressions and sentence patterns improperly.			.55	.45		
25. I usually feel comfortable and at ease when writing in English. (R)	.38	.49			.43	
11. When I write in English, my ideas and words usually flow smoothly. (R)		.36	.42	.30	.34	
20. When I write in English, my mind is usually very clear. (R)		.34	.39		.36	
Percentage of variance	26.04	18.36	24.53	27.28	23.38	19.37

Note: To sharpen our focus on the salient loadings, loadings less than .30 in absolute value are blanked out. Items with an R in the parenthesis are those that require reverse scoring. Items in italics are those retained in the final version of the scale.

^a N = 376.

^b N = 384.

^c Somatic Anxiety.

^d Avoidance Behavior.

^e Cognitive Anxiety (worry).

regression coefficients and indicate the importance of a variable to a factor with the influence of other variables partialled out (Stevens, 1996, p. 370).

The retained three factors generally correspond to the three dimensions of Lang's (1971) theoretical model of anxiety: cognitive, physiological, and behavioral responses. More specifically, the 27 items loaded on three factors that could best be labeled as: (1) Somatic Anxiety, defined mainly by items relating to increased physiological arousal; (2) Avoidance Behavior, comprised of items indicative of avoidance behavior; and (3) Cognitive Anxiety, a subjective component that deals with perception of arousal and, in particular, worry or fear of negative evaluation. The result provides validity evidence regarding the internal structure of the 27-item questionnaire and consequently lends preliminary support to its construct validity. However, some steps are still needed to select the best items from each of the three clusters to construct the subscales.

As shown in Table 1, using a factor loading of .30 as the criterion, 15 of the 27 items loaded cleanly on the same factor in both analyses. That is, items 2, 7, 9, 13, 15, 18, 23 loaded on the first factor (Somatic Anxiety), items 4, 22, 27 on the second factor (Avoidance Behavior), and items 8, 17, 21, 24, 26 on the third factor (Cognitive Anxiety). The above three groups of items were thus chosen to form the basis of the subscales of the newly developed measure of second language writing anxiety, the SLWAI.

The remaining items were more difficult to categorize; they either loaded on different factors in the two analyses or double loaded in one or two of the analyses. Therefore, more subjective criteria were employed to determine the inclusion and exclusion of certain items in

the subscales—criteria that took into consideration the tendency of factor loadings across the two analyses and the face validity of an item in a given subscale. Specifically, items that involved the problem of face validity or a major inconsistency in factor loading pattern across the two analyses were eliminated. According to the above criteria, items 5 and 16 were eliminated because they clearly loaded on two different factors in the two analyses. Items 11, 20, and 25 were also removed because they involved a conflict in the two analyses and might suffer the problem of face validity as well. In specific terms, the three items double loaded on Factors 2 and 3 in the first analysis, with slight higher loadings on Factor 3. But in the second analysis they either loaded on Factor 2 (items 20 and 25) or double loaded on Factors 1 and 2 with similar loadings (item 11). In addition, dealing with one's feelings or states of mind, these items obviously lacked face validity if they were to be put in the Avoidance Behavior subscale on the grounds that they shared in loading on Factor 2.

Despite inconsistency in the factor they each were mainly associated with across the two analyses, items 3 and 10 were not removed because they consistently double loaded on Factor 1 (Somatic Anxiety) and Factor 3 (Cognitive Anxiety). Given that in some situations somatic anxiety and cognitive anxiety (or worry) covary and are hard to separate (Morris et al., 1981; Russell & Cox, 2003), this result seems to make good sense. Therefore, these items were kept to ensure a sufficient number of items in each subscale. Judging from the perspective of face validity, these two items were included in the Cognitive Anxiety subscale because they both reflect a concern about negative evaluation. Item 1 was also included in the Cognitive Anxiety subscale though it double loaded on Factors 1 and 3 in the second analysis. Item 1 had almost equal loadings on Factors 1 and 3 in the second analysis, and it loaded only on Factor 3 in the first analysis. Item 19 was included in the Avoidance Behavior subscale for a similar reason. Items 6, 12, and 14 were also kept to compose the Avoidance Behavior subscale because these items were consistent in that they all double loaded on Factors 1 and 2 in the first analysis (with a major loading on Factor 2) and loaded only on Factor 2 in the second analysis.

The resulting make-up of the three subscales comprised seven items on the Somatic Anxiety subscale (Items 2, 7, 9, 13, 15, 18, 23), seven items on the Avoidance Behavior subscale (Items 4, 6, 12, 14, 19, 22, 27), and eight items on the Cognitive Anxiety subscale (Items 1, 3, 8, 10, 17, 21, 24, 26).⁷ As a result, the final version of the SLWAI consisted of 22 items, scored on a 5-point response scale ranging from 1 (strongly disagree) to 5 (strongly agree). Seven of the items (see Table 1) are negatively worded and require reverse scoring before being summed up to yield total scores either for the SLWAI total scale or for the three individual subscales. A higher score obtained thereupon indicates a higher level of L2 writing anxiety, or more specifically, a higher degree of physiological arousal, avoidance tendency, or fear/worry associated with L2 writing.

Reliability Analysis

To determine the internal consistency of the 22-item SLWAI, Cronbach's coefficient α was calculated, yielding a reliability estimate of .91 for both of the two administrations of the

⁷ Correlation coefficients among the raw score sums of the three subscales ranged from .42 to .64, suggesting that they are distinguishable from each other.

scale. In addition, a series of α coefficients for the scale were computed with one item being deleted at a time. All of the resulting coefficients centered around .91, indicating that no improvement in the overall α could be obtained by omitting any item from the SLWAI. The correlation of the scores obtained across the two administrations of the SLWAI was also calculated, producing a test–retest reliability estimate of .85. These results indicated that the SLWAI as a whole was a measure of high internal consistency and respectable temporal stability.

Cronbach's coefficient α was also calculated for each of the three subscales. For the first and second administrations, the coefficient α was .87 and .88 for the Somatic Anxiety subscale, .85 and .88 for the Avoidance Behavior subscale, and .82 and .83 for the Cognitive Anxiety subscale. According to DeVellis (1991, p. 85), these α values suggest that the three subscales of the SLWAI had good internal consistency. Test–retest reliability estimates of the three subscales were also found to be satisfactory: .82 for the Somatic Anxiety subscale, .83 for the Avoidance Behavior subscale, and .81 for the Cognitive Anxiety subscale.

Validity Analysis

Factor analysis of the SLWAI with the self-efficacy measure

To examine whether items on the SLWAI were distinguishable from beliefs about ability to write in the L2, exploratory factor analysis was conducted with the 22 items from the SLWAI and the 10 items from the English Writing Self-efficacy Scale. Two separate factor analyses were conducted for the two administrations of the SLWAI. The same procedures and criteria described above were followed. Accordingly, a four-factor solution was determined for both of the two analyses. The pattern matrixes obtained for the two analyses were the same in terms of the distribution of items. All of the SLWAI items loaded on the same three factors as previously described in the two analyses. All of the EWSS items loaded on one factor. That is to say, no writing anxiety item from the SLWAI loaded on the self-efficacy factor and no self-efficacy item loaded on any writing anxiety factor. The results reveal that the SLWAI, unlike the Daly–Miller WAT,⁸ does not confound writing anxiety with beliefs about one's writing ability, thereby providing favorable evidence of the discriminant validity of the SLWAI.

Correlations with other anxiety-related measures

Correlation analysis between the SLWAI and other anxiety-related measures was conducted to examine further the convergent and discriminant validity of the 22-item SLWAI. The correlation matrix is presented in Table 2. On the whole, the SLWAI correlated more highly with scales of L2 writing dysfunctional behaviors or negative attitudes than with L2 anxiety scales not related to writing. Specifically, the SLWAI correlated more than moderately with an L2 version of Daly–Miller WAT, the EWAT (average $r = .79$), and with an L2 version of Rose's (1984) Writer's Block Questionnaire,

⁸ When the same factor analysis procedure was conducted with items from the Daly–Miller WAT and the self-efficacy scale, a three-factor solution appeared to meet the predetermined criteria best and was thus chosen. Although most of the WAT items loaded on two factors, three WAT items loaded on the factor defined by the self-efficacy items.

Table 2

Correlations among the SLWAI and other anxiety-related measures

	SLWAI-1 ^a	SLWAI-2 ^b
EWAT ^a	.82***	.75***
EWBQ ^a	.71***	.66***
EUAS ^a	.53***	.43***
ECAS ^a	.52***	.44***
TAS ^a	.48***	.51***
PRCA-C ^a	.23***	.24***
MAS ^a	.13*	.13*
SAS ^b	.46***	.55***

Note: SLWAI: Second Language Writing Anxiety Inventory; EWAT: Daly–Miller English Writing Apprehension/Attitude Test; EWBQ: English Writing Block Questionnaire; EUAS: English Use Anxiety Scale; ECAS: English Classroom Anxiety Scale; TAS: Test Anxiety Scale; PRCA-C: Personal Report of (L1) Communication Apprehension-College Version; MAS: Math Anxiety Scale; SAS: State Anxiety Scale.

^a From the first administration.

^b From the second administration.

* $p < .05$.

*** $p < .001$.

EWBQ (average $r = .69$). The magnitude, albeit great, was not strong enough to claim that they represented the same construct. On the other hand, the SLWAI only correlated moderately with English Use Anxiety Scale (EUAS; average $r = .48$) and English Class Anxiety Scale (ECAS; average $r = .48$), both of which contained a strong L2 speaking anxiety element. Similarly, the correlation between the SLWAI and other non-L2 learning-specific anxiety scales was either moderate or low. The average correlation coefficient of the SLWAI with the Test Anxiety Scale (TAS) was .50; with the Personal Report of (L1) Communication Apprehension (PRCA-C), .24; and with the Math Anxiety Scale (MAS), .13. In addition, measuring trait-like anxiety, the SLWAI correlated merely moderately with the State Anxiety Scale (SAS; average $r = .51$). This pattern of results offers further evidence of the convergent and discriminant validity of the SLWAI as a measure of a relatively stable anxiety disposition associated with L2 writing.

In a similar vein, correlation analysis was undertaken to examine the convergent and discriminant validity of the three subscales. The correlation matrix between the three SLWAI subscales and other anxiety-related measures is reported in Table 3. Generally speaking, the trend of associations described above was replicated. Correlations of the three SLWAI subscales with scales of L2 writing attitudes or behaviors (i.e., EWAT and EWBQ) were higher than those with non-writing-related L2 anxiety scales (i.e., EUAS and ECAS), and much higher than those with non-L2 learning-specific anxiety scales such as PRCA-C and MAS. Again, the three trait-like SLWAI subscales correlated no more than moderately with the State Anxiety Scale. The results are in support of the convergent and discriminant validity of the three subscales.

More revealing, the Avoidance Behavior subscale was found to be associated with the Test Anxiety Scale differently from the other two, Somatic Anxiety and Cognitive Anxiety subscales. To be specific, the Avoidance Behavior subscale had a much lower correlation with the TAS than the Somatic Anxiety subscale (average $r = .20$ versus .56) and the Cognitive Anxiety subscale (average $r = .20$ versus .44). Because test anxiety is generally

Table 3

Correlations among the SLWAI subscales and other anxiety-related measures

	Somatic ^a	Avoidance ^a	Cognitive ^a	Somatic ^b	Avoidance ^b	Cognitive ^b
EWAT ^a	.64***	.77***	.65***	.53***	.71***	.62***
EWBQ ^a	.67***	.54***	.56***	.62***	.49***	.52***
EUAS ^a	.43***	.48***	.41***	.34***	.37***	.33***
ECAS ^a	.40***	.49***	.41***	.35***	.38***	.35***
TAS ^a	.54***	.20***	.44***	.58***	.19***	.44***
PRCA-C ^a	.21***	.22***	.14**	.25***	.18**	.14**
MAS ^a	.12*	.10	.11*	.12*	.07	.13*
SAS ^b	.46***	.27***	.40***	.56***	.31***	.47***

Note: Somatic: Somatic Anxiety subscale; Avoidance: Avoidance Behavior subscale; Cognitive: Cognitive Anxiety subscale. EWAT: Daly–Miller English Writing Apprehension/Attitude Test; EWBQ: English Writing Block Questionnaire; EUAS: English Use Anxiety Scale; ECAS: English Classroom Anxiety Scale; TAS: Test Anxiety Scale; PRCA-C: Personal Report of (L1) Communication Apprehension-College Version; MAS: Math Anxiety Scale; SAS: State Anxiety Scale.

^a From the first administration.

^b From the second administration.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

defined as consisting of two components: worry and emotional arousal (Sarason & Sarason, 1990), the obtained differential strengths of correlations give further support to the divergent and discriminant validity of the three SLWAI subscales.

Correlations with other criterion-related measures

Correlation analysis was also conducted with other criterion-related variables, including L2 writing self-efficacy, L2 writing motivation, L2 writing performance, and willingness to take courses or jobs that require writing in L2. Since past research has generally agreed in the deleterious role of anxiety, negative correlations between L2 writing anxiety and the aforementioned criterion measures were expected. The results obtained for the SLWAI are given in Table 4. As expected, the SLWAI was found to be negatively and significantly correlated with English writing self-efficacy (average $r = -.48$); with English writing motivation (average $r = -.32$); with willingness to take English writing courses (average $r = -.21$) or jobs that require writing in English (average $r = -.25$); and with performance on a timed English writing task (average $r = -.17$). Moreover, to ensure that the significant correlation between the SLWAI and performance on the timed writing task was not confounded by state anxiety, partial correlation coefficients were computed between the SLWAI and the English essay grades, with state anxiety statistically controlled. The resulting partial correlation was still significant ($p = .000$) and, in fact, somewhat elevated (average $r = -.21$). The significant, negative correlations between the SLWAI and the criterion-related measures, though of moderate or small magnitude, help to establish criterion-related validity of the SLWAI.

The same correlation analysis was conducted between the above-mentioned criterion-related measures and the three SLWAI subscales. Here, not only negative correlations but also different strengths of correlations were expected due to differences in the nature of the three

Table 4

Correlations among the SLWAI and other criterion-related measures

	SLWAI-1 ^a	SLWAI-2 ^b
EWSS ^a	-.49***	-.47***
EWMS ^a	-.32***	-.32***
WWC ^a	-.20***	-.21***
WWJ ^a	-.24***	-.26***
EEG ^b	-.18**	-.15**

Note: SLWAI: Second Language Writing Anxiety Inventory; EWSS: English Writing Self-efficacy Scale; EWMS: English Writing Motivation Scale; WWC: willingness to take English (L2) writing courses (one item); WWJ: willingness to take jobs requiring English (L2) writing (one item); EEG: English essay grades.

^a From the first administration.

^b From the second administration.

** $p < .01$.

*** $p < .001$.

subscales. In particular, Avoidance Behavior was expected to have a stronger negative correlation than the other two subscales with L2 writing motivation indices such as L2 writing motivation (EWMS), willingness to take further L2 writing courses (WWC), and willingness to take jobs that require writing in L2 (WWJ). An expected trend of negative correlations between the SLWAI subscales and the criterion measures was observed, though in three cases the correlations were not significant (see Table 5). Somatic Anxiety and Cognitive Anxiety appeared to have minimal correlation with willingness to take further L2 writing courses. In fact, as expected, Avoidance Behavior accounted for much more variance in the three criterion measures related to motivation: EWMS, WWC, and WWJ.

The correlation between Somatic Anxiety and essay grade was also small. When partial correlations were computed to determine the relationship between the three subscales and the timed writing performance (with state anxiety controlled), the obtained partial correlation coefficients for both administrations were somewhat higher than the correlation coefficients summarized in Table 5: $-.12$ ($p = .029$) and $-.06$ ($p = .245$) for Somatic

Table 5

Correlations among the SLWAI subscales and other criterion-related measures

	Somatic ^a	Avoidance ^a	Cognitive ^a	Somatic ^b	Avoidance ^b	Cognitive ^b
EWSS ^a	-.36***	-.42***	-.43***	-.33***	-.42***	-.41***
EWMS ^a	-.17**	-.50***	-.15**	-.13*	-.51***	-.15**
WWC ^a	-.13*	-.32***	-.08	-.10	-.28***	-.12*
WWJ ^a	-.13*	-.35***	-.13*	-.15**	-.32***	-.17**
EEG ^b	-.11*	-.16**	-.17**	-.05	-.16**	-.16**

Note: Somatic: Somatic Anxiety subscale; Avoidance: Avoidance Behavior subscale; Cognitive: Cognitive Anxiety subscale. EWSS: English Writing Self-efficacy Scale; EWMS: English Writing Motivation Scale; WWC: willingness to take English (L2) writing courses (one item); WWJ: willingness to take jobs requiring English (L2) writing (one item); EEG: English essay grades.

^a From the first administration.

^b From the second administration.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Anxiety; $-.17$ ($p = .002$) and $-.18$ ($p = .001$) for Avoidance Behavior; and $-.21$ ($p = .000$) and $-.22$ ($p = .000$) for Cognitive Anxiety. However, the correlation between Somatic Anxiety and writing grade was still close to non-significant. This result is consistent with Morris et al.'s (1981) conclusion that the negative association between test anxiety and various performance variables is attributable primarily to the cognitive component, rather than the emotionality or somatic component, of test anxiety. To the three SLWAI subscales, the correlation results suggest evidence of adequate criterion-related validity.

Conclusions

The merit of this study lies in developing a three-dimensional self-report measure of second (here foreign) language writing anxiety that conforms to most anxiety researchers' recognition of anxiety as a complex phenomenon as well as accumulating evidence on the superiority of a multidimensional approach to anxiety analysis and research. Scale items were developed based on learners' reports of L2 writing anxiety experiences and with reference to relevant anxiety scales. Factor analysis techniques were employed to help select items to construct subscales that reflect three commonly accepted dimensions of anxiety: cognitive, somatic/physiological, and behavioral. Further correlational and factor analytic procedures were executed to examine the psychometric properties of the newly developed Second Language Writing Anxiety Inventory (SLWAI) as well as its three subscales: Cognitive Anxiety, Somatic Anxiety, and Avoidance Behavior. Results of this study demonstrate that the total scale and the subscales of the SLWAI had good internal consistency reliability, respectable test–retest reliability, adequate convergent and discriminant validity, and satisfactory criterion-related validity. The SLWAI was also found to be distinct from L2 writing self-efficacy, on the basis of a factor analysis of the SLWAI items with items on an L2 writing self-efficacy scale. Taken together, the results have provided preliminary evidence for the reliability and construct validity of the SLWAI total scale and subscales. In addition, the finding that the SLWAI was distinct from L2 writing self-efficacy makes the SLWAI preferable to the widely used WAT for use in investigating relationships between L2 writing anxiety and self-confidence or self-efficacy.

Given the findings of this study, the SLWAI appears to hold the potential of research and diagnostic utility. The multidimensional nature of the SLWAI makes it possible to investigate the relationships between different facets of L2 writing anxiety and aspects of writing performance and practices, using the three subscales. From a theoretical and methodological standpoint, this approach seems to be more promising than the use of a unidimensional measure of anxiety in advancing our knowledge of the antecedents, dynamics, and consequences of L2 writing anxiety, which might be masked otherwise. From a diagnostic perspective, use of the multidimensional version of the SLWAI may help to identify the specific facet(s), if any, of L2 writing anxiety that hinder writing performance or steer learners away from the road to success in L2 writing. Obviously, a more precise diagnosis of learners' problems obtained thereof will contribute to better decisions about intervention focuses and strategies. On the other hand, the finding of a higher coefficient α for the SLWAI total scale than for any of the three subscales offers justification for using the SLWAI as a unidimensional measure, whenever necessary.

Indeed, results of the present study lent encouragement for the validity of the SLWAI as a global measure of L2 writing anxiety. Therefore, depending on the needs of the researchers and practitioners, the subscale scores may be summed to provide a total L2 writing anxiety score for assessment purposes.

Considerable progress has been made during the past few decades in improving measurement instruments of second language anxiety. However, limited efforts have been devoted to the evaluation and improvement of existing L2 writing anxiety scales. By introducing a multidimensional measure, the present study constitutes a step forward in the assessment of L2 writing anxiety and opens up some interesting avenues for future investigation. Although there has been good support for the use of the SLWAI in the academic setting, caution should be taken, as with any scale at its initial stage of development. As DeVellis (1991) puts it, “validation is a cumulative, ongoing process” (p. 113); further validation research with a different sample or in a different learning context is desirable in order to help improve on this measurement instrument. First and foremost, because the SLWAI was developed based on a sample of college EFL majors, studies are needed to assess the psychometric properties of the SLWAI with non-majors or with students at a lower or higher educational level. The fact that the sample was composed of predominantly female students also points to the importance of verifying results of this study in samples of a more balanced male–female ratio. Also, further evaluation of the factor structure of the SLWAI through confirmatory factor analysis with a larger sample is recommended. Such research will contribute to further modification and refinement of the SLWAI subscales. It is hoped that with the advancement of L2 writing anxiety measures, more enlightening research will be stimulated and better knowledge about L2 writing anxiety can be gleaned, leading to more accurate diagnoses and more effective intervention strategies.

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