BILINGUAL PUBLISHING GROUP

Forum for Linguistic Studies

https://journals.bilpubgroup.com/index.php/fls

ARTICLE

Young Women from an Understudied Student Population: Worries, Writing Anxiety, and Performance in a General Education Course

Maura Pilotti [1,2*] **, *Maryam BoJulaia*** [1,2] **, *Khadija El Alaoui*** [1,2]

[1] *Department of Sciences and Human Studies, Prince Mohammad Bin Fahd University, P.O. Box 1664, Al Khobar 31952, Saudi Arabia*

[2] *Cognitive Science Research Center, Prince Mohammad Bin Fahd University, P.O. Box 1664, Al Khobar 31952, Saudi Arabia*

ABSTRACT

For second-language freshmen enrolled in a topical course of the general education curriculum, writing anxiety can be an obstacle to desirable performance. A key component of writing anxiety is worrying, which depletes students' working memory of the necessary resources to carry out writing. This study first examined the extent to which, before the final exam, students experienced second-language writing anxiety and particular worries. Then, it assessed whether these epiphenomena were related to one another and could account for poor performance. Participants belonged to an understudied population of female undergraduate students whose access to gender-equitable education is of recent making. Purposeful sampling yielded 203 English-Arabic bilingual speakers. Since most of the evidence about second-language writing anxiety had been collected from courses specifically devoted to writing, students were selected from a writing-intensive topical course of the general education curriculum taught in English. Before the final exam, students' writing anxiety and worries were measured. Final exam performance was then collected. Female students were mainly worried about time and academic performance, and reported the most writing anxiety arising from appraisal concerns. At moderate levels, this type of writing anxiety and worrying predicted desirable final exam performance. In conclusion, appraisal concerns specific to writing or

*CORRESPONDING AUTHOR:

Maura Pilotti, Department of Sciences and Human Studies, Prince Mohammad Bin Fahd University, P.O. Box 1664, Al Khobar 31952, Saudi Arabia; Cognitive Science Research Center, Prince Mohammad Bin Fahd University, P.O. Box 1664, Al Khobar 31952, Saudi Arabia; Email: mpilotti@pmu.edu.sa

ARTICLE INFO

Received: 15 October 2025 | Revised: 7 November 2025 | Accepted: 12 November 2025 | Published Online: 5 December 2025
DOI: https://doi.org/10.30564/fls.v7i12.12475

CITATION

Pilotti, M., BoJulaia, M., El Alaoui, K., 2025. Young Women from an Understudied Student Population: Worries, Writing Anxiety, and Performance in a General Education Course. Forum for Linguistic Studies. 7(12): 1747–1759. DOI: https://doi.org/10.30564/fls.v7i12.12475

academic performance can propel effort in courses where the acquisition of topical knowledge is demonstrated through writing. Yet, the degree to which these epiphenomena are experienced may determine whether they operate as promoters or impediments. Thus, interventions intended to regulate students' emotive reactions can optimize learning in such courses.

Highlights

- For second-language freshmen enrolled in a topical course of the general education curriculum, writing anxiety can be an obstacle to desirable performance.
- Participants belonged to an understudied population of female undergraduate students from a society shedding its patriarchal past.
- Female students were mainly worried about time and academic performance, and reported the most writing anxiety arising from appraisal concerns.
- At moderate levels, this type of writing anxiety and worrying predicted desirable final exam performance.

Keywords: Second-Language Writing Anxiety; Second Language; Worrying; Freshmen

1. Introduction

In a society distancing itself from a patriarchal order to develop a sustainable, internationally viable economy, women of college age are expected to become leading contributors. For female students, the pressure to succeed is intense and unavoidable. In Saudi Arabia, one of such societies, women have ceased to be a neglected, low-expectation subgroup of the workforce. They are now a key engine of an economy envisioned to become gender-equitable, sustainable, and part of the international marketplace[1]. Thus, of growing interest is the extent to which particular dispositions of female college students are related to academic performance. In the present study, we examined second-language writing anxiety (SLWA) in a writing-intensive course. The reason is simple. In a globalized world, English writing plays a pivotal role in learners' academic and professional success[2]. SLWA (i.e., a trait-like individual difference) has the potential to impair written English communication[3]. Thus, in a country aspiring to become a global economic player while emerging from patriarchy, curtailing occurrences of SLWA is key to female students' academic and professional success.

Anxiety can be described as a state of apprehension characterized by elevated arousal[4] and task-irrelevant thoughts (e.g., worries) that reduce the attentional resources devoted to task-relevant information[5]. It can impair writing by interfering with the functioning of working memory, the device through which input from the external environment and long-term memory records are processed. Specifically, it can disrupt the quality and quantity of the writer's output[6]. However, evidence regarding Arabic-English speakers' SLWA and its relationship to performance is not only scarce but also mixed[7]. For instance, Al-Ahdal and Abduh[8] and Waked et al.[9] reported a negative relationship, whereas Alfarwan[10] reported a positive one.

SLWA is a multifaceted phenomenon, which includes somatic anxiety (e.g., physical symptoms of nervousness), behavioral avoidance (e.g., procrastination), and cognitive manifestations, such as writers' worries pertaining to appraisal or state of mind concerns (e.g., muddled thoughts and difficulty in sustained attention). Namely, the negative affective state of this type of anxiety is punctuated by the resource-demanding cognitive activity of worrying about the undesirable consequences of writing. Worrying, however, may not be confined to writing. Thus, in our study, we also asked whether SLWA exists in an ecosystem of broader worries about particular aspects of students' lives, such as academic performance, peer relations, health, career, social acceptance, and time constraints. Davey et al.[11] reported that students worry about their academic work and related deadlines the most, followed by relationships and social acceptance. McIntyre et al.[12] underscored students' social acceptance concerns. Worrying has also been linked to diminished academic performance, but not unequivocally. For instance, Owens et al.[13] found that worries about tests predicted poor performance. Hamid[14] reported that social and health worries were related to higher academic perfor-

mance. Yet, evidence from the extant literature is unclear as to whether SLWA exists in an ecosystem of broader worries not specifically stemming from the activity of writing.

As members of a collectivistic society[15] emerging from patriarchy, Saudi Arabian female students are expected to demonstrate proficiency in a world once dominated by men[16]. Undeniably, women have flocked to higher education immediately after it ceased to be a privilege afforded only to men. Young women may view education programs as acceptable paths to financial independence[17]. Yet, in this sea of legal and social changes, it is unclear whether, almost a decade after the opening of higher education to both women and men, archaic gender stereotypes have remained unscathed[18–20]. Such archaic gender stereotypes portray professional endeavors as largely unsuitable to women[21]. Notwithstanding the likely persistence of the remnants of archaic gender stereotypes, the expectation of women's contribution to the workforce is unyielding. Thus, the pressure to succeed may be of recent origin, but intense and unavoidable. Based on the extant literature and features of the selected population, the following hypotheses were formulated:

H1. Worries about academic attainment and career may be prevalent along with concerns about social acceptance, as women's gender roles have changed from being predominantly homemakers to being members of the labor force (H1a). Furthermore, as second-language learners enrolled in a writing-intensive course, Saudi Arabian female students may also experience writing anxiety. If they do, the dominant type will reflect appraisal concerns (H1b).

H2. If worrying is a cognitive activity linked to negative affect, whereas writing anxiety is a trait-like, task-specific negative affective state, their relationships will be content-specific. For instance, worries about particular facets of students' lives, such as academic performance, will be related to writing anxiety that reflects appraisal.

H3. In a writing-intensive, general education course, the cognitive dimensions of writing anxiety (i.e., concerns about appraisal and difficulties in sustained attention and information processing) will predict poor performance in open-ended questions of the final test. Worries about particular facets of students' lives may do so only if such worries refer to academic matters (i.e., concerns about one's academic performance).

2. Methods

2.1. Participant Sample

Purposeful sampling yielded 203 female undergraduate students who were enrolled in a writing-intensive course of the general education curriculum (6 sections of Introductory Psychology). They were in their first year of university studies pursuing either a STEM degree (computer science, engineering, and architecture; 46%) or a non-STEM degree (business, law, interior design, and graphic design; 54%). Before university enrollment, students had been deemed either moderate or competent English speakers according to the criteria of the International English Language Testing System (IELTS). At the selected university, the curriculum is of US import and accredited by the Texas International Education Consortium (TIEC). Courses are taught in English.

2.2. Procedure and Materials

At the end of the semester, students completed the Second Language Writing Anxiety Inventory (SLWAIr[7,22]) and the Worries Survey (WS[23], The SLWAI-r contained 4 subscales intended to assess one of four manifestations of anxiety: somatic anxiety (SA, e.g., physiological symptoms of increased sympathetic arousal), cognitive anxiety related to either appraisal concerns (CA, e.g., fears of negative evaluations) or state of mind concerns (CS, e.g., difficulties in sustained attention and information processing, including jumbled thoughts or a blank mind), and avoidance behavior (AB, e.g., procrastination and withdrawal). Students reported the degree to which each of the 22 items of SLWAI-r applied to them on a scale from 'strongly disagree' (0) to 'strongly agree' (4). Cronbach's alpha was 0.91.

The WS contained 30 items organized into 6 subscales of 5 statements. Each subscale was about a particular domain of the activity of worrying: academic performance, peer relationships, health and appearance, career, social acceptance, and time. The subscale devoted to money was discarded as it was judged culturally inappropriate. Each statement was to be evaluated on two dimensions, including (a) the frequency with which it was experienced on a scale from 'never' (0) to 'always' (4), and (b) its intensity on a scale from 'never' (0) to 'a great deal' (4). For each statement, the frequency score multiplied by its intensity score yielded a discomfort score.

Cronbach's alpha was 0.92.

Before administration, the face validity of each questionnaire was tested[24]. The assessment of face validity focused on the extent to which items were thought to be relevant to the construct of each questionnaire and were viewed as unambiguous[25]. A definition of each construct was provided to 10 students who had taken the course approximately a year before. They were asked to rate items on a 5-point scale from 'very clear' (+2) to 'very unclear' (−2), and then on a 5-point scale from 'relevant' (+2) to 'irrelevant' (−2) to the construct intended to be tested. All items received a score above the neutral cut-point of 0.

The course in which students were enrolled required 5 written assignments distributed across the semester, as well as a midterm exam and final exam (summative assessment) with short-answer questions. Final exam questions demanded processing at the application, evaluation, and analysis levels of the Bloom taxonomy[26]. Final exam performance was scored as a percentage. A randomly selected sample of the final exams (10%) was scored by two educators independently, yielding an inter-rater agreement of 97%. For the present study, academic performance was operationally defined as performance on the final exam (i.e., the summative assessment measure of the course). The reason behind this choice was that both anxiety and worries were thought to be epiphenomena most likely to transpire when final exams are completed. Attendance rates were also collected to determine whether they could account for performance above and beyond students' dispositional variables. Both excused and unexcused absences were deducted from the number of class meetings offered during the semester. For each student, the percentage of attended meetings was then computed. Debriefing sessions were conducted during the last week of classes. Students' comments during such sessions were anonymized.

The data-collection process was approved by the Deanship of Research of the hosting institution as complying with the guidelines of the Office for Human Research Protections of the U.S. Department of Health and Human Services. The informed consent form, which was obtained from the participants, was deemed to conform to the APA ethical guidelines for the treatment of human participants.

3. Results

All results of inferential statistics were considered significant at the 0.05 level. **Table 1** displays the descriptive statistics of the key variables (writing anxiety, worries, and academic performance) hierarchically organized by the mean values within each dimension assessed. In the sections below, the results of quantitative analyses are accompanied by commentaries from debriefing sessions to clarify the patterns obtained.

Qualitative responses gathered during debriefing sessions were arranged into themes (i.e., topics) by two evaluators who independently used an inductive (data-driven) approach to develop a code book[27]. Specifically, evaluators adopted the coding reliability approach to qualitative data suggested by Braun and Clarke[28]. Their codebook included three themes: cognitions, evaluative judgments, and self-reported behavioral responses. A theme comprised responses that were mentioned by at least 40% of the students. Reported below are comments upon which at least 40% of the students agreed by a show of hands.

Table 1. Descriptive statistics of the key variables, including writing anxiety, worries, performance, and attendance.

Writing Anxiety (0–4)	***Mean***	***SD***
CA	2.23	1.01
CS	1.78	0.77
SA	1.21	0.98
AB	0.95	0.76
Domain-Specific Worries (0–16)		
Time	7.28	3.44
Academic performance	6.65	3.34
Career	6.05	3.62
Health and Appearance	5.42	3.13
Relationships	4.03	3.53
Social Acceptance	3.78	2.96
Academic Performance (0–100)	74.32	24.62
Attendance (0–100)	79.25	15.45

3.1. Writing Anxiety and Domain—Specific Worries

To determine whether differences existed in the types of writing anxiety and particular worries, a repeated-measures ANOVA was conducted on the responses to each questionnaire. To control for alpha inflation, a Bonferroni correction was applied to pairwise comparisons.

Not all types of worries were equally endorsed [$F(5, 1010) = 64.92$, $MSE = 6.200$, $p < 0.001$, *partial* $\eta^2 = 0.243$]. Pairwise comparisons uncovered a hierarchical order for endorsements [$ts(202) \geq 5.54$]. Concerns about time, academic performance, career, and health prevailed over all others. Concerns about relationships and social acceptance were at the bottom and did not differ from each other in magnitude [$t(202) = 1.29$, *ns*]. Similarly, not all types of anxiety were equally endorsed [$F(3, 606) = 123.70$, $MSE = 0.544$, $p < 0.001$, *partial* $\eta^2 = 0.380$]. Anxiety types could be hierarchically organized, starting with CA, which was the most experienced, followed by CS. SA was less endorsed than CA or CS. AB was the least endorsed [$ts(202) \geq 3.99$].

In support of H1a, worrying about matters of time, academic performance, and career was prevalent. Not covered by H1a was worrying about health. In debriefing sessions, students reported that thoughts about health embodied the idea that sickness would prevent goal attainment, thereby linking academic performance and career to physical health. In contrast to H1a predictions, concerns about relationships and social acceptance were negligible, thereby yielding a pattern that only partially supported H1a. In debriefing sessions, students reported that they relied on a robust and unyielding support system of family members and friends to deal with the hiccups of daily life. Although students did not express much apprehension about social acceptance or relationships, uncertainty transpired outside this system, especially concerning the gender roles of women in the workforce. In support of H1b, writing anxiety that expressed appraisal concerns was dominant.

3.2. Writing Anxiety, Domain-Specific Worries, and Academic Performance

Spearman correlation analyses were conducted to determine whether cognitive manifestations of writing anxiety were related to particular worries in students' lives and whether writing anxiety or such worries were related to performance (see **Tables 2** and **3**).

Table 2. Spearman correlation coefficients between dimensions of writing anxiety and domain-specific worries.

Writing Anxiety	CA	CS	SA	AB
Worrying about Time	+ 0.13	+ 0.01	− 0.05	− 0.05
Worrying about Academic Performance	**+ 0.32**	+ 0.06	+ 0.04	− 0.05
Worrying about Career	+ 0.06	**− 0.17**	**− 0.15**	−0.14
Worrying about Health and Appearance	− 0.05	− 0.10	− 0.08	− 0.14
Worrying about Relationships	+ 0.01	+ 0.07	**+ 0.16**	+ 0.09
Worrying about Social Acceptance	+ 0.03	− 0.07	+ 0.13	− 0.10

Note: Significant relationships are marked in bold.

Table 3. Spearman correlation coefficients between dimensions of writing anxiety or domain-specific worries and final test performance or attendance.

Writing Anxiety	Final Test	Attendance
CA	**+ 0.48**	**+ 0.41**
CS	+0.01	− 0.12
SA	+0.05	− 0.10
AB	−0.13	**− 0.18**
Domain-Specific Worries		
Time	+0.12	+ 0.05
Academic Performance	**+ 0.19**	**+ 0.18**
Career	+0.13	+ 0.09
Health and Appearance	+ 0.08	+ 0.05
Relationships	**− 0.19**	− 0.12
Social Acceptance	− 0.01	+0.01

Note: Significant relationships are marked in bold.

H2 predicted that worries about particular facets of students' lives, such as academic performance, would be related to writing anxiety arising from appraisal concerns. Interestingly, there were no significant relationships between writing anxiety and different types of worries, with a few noticeable exceptions. As predicted by H2, the more students worried about their academic performance, the more they experienced symptoms of CA. Similarly, the more they were concerned about relationships, the more they experienced SA symptoms. In contrast, the more students worried about career matters, the less they reported experiencing both CS and SA. In debriefing sessions, students indicated that thoughts about a future career that was within reach made them less anxious about the present, although they were unable to indicate the specific symptoms of anxiety that these thoughts would temper. Students also spontaneously reported that undesirable events, such as challenging courses or grades lowering their GPA, triggered uncertainty. The more uncertain they were about their academic performance, the greater their apprehension about negative evaluations. They admitted that developing and preserving relationships while in college was not a major concern. They relied on rich social networks of family members and friends sustained by electronic tools (cell phones, chatrooms, etc.). When relationship concerns existed, they tended to pertain to new classmates and instructors. When probed further, students mentioned physiological symptoms of hyperactivity of the sympathetic nervous system linked to thoughts of rejection. Yet, even when significant, the links between types of worries and writing anxiety were rather modest. That is, writing anxiety did not account for more than 10% of the variance in worries.

As predicted by H3, relationships between worries and writing anxiety were specific. Indeed, the more students experienced CA and worried about their academic performance, the higher their exam performance. Thus, in the setting of a final exam, writing anxiety that expressed appraisal concerns and worries focused on academic matters could be described as beneficial to performance. Instead, worries about relationships exhibited a detrimental link to performance. Namely, students who worried less about relationships exhibited higher performance. In debriefing sessions, this type of worrying was restricted to new instructors and classmates. It could be described as concerning individuals who are not part of familiar social circles.

In our study, performance increased with attendance [r + 0.52, n = 203, $p < 0.001$]. Not surprisingly, course attendance could also be viewed as benefiting from CA and worries about academic performance. Indeed, the more students experienced either epiphenomenon, the more likely they were to attend class meetings. In contrast, attendance increased with declining AB. Because AB underlies avoidance behaviors, such as procrastination and withdrawal, this pattern suggests a potentially beneficial link between a specific type of anxiety and desirable behavioral choices. Of course, our study is correlational in nature. As such, links can be bidirectional. For instance, higher AB may lead students to avoid class meetings. Absences may further foster AB, leading to students avoiding class with frivolous excuses. Furthermore, as noted earlier, the percentage of variance in behavioral outcomes (performance or attendance) accounted for by dispositional variables (type of writing anxiety or worrying) ranged from 23% to 3%. These modest values suggest that other factors may contribute to academic outcomes (e.g., preparation for the final exam) and behavioral choices (e.g., attendance may be lowered by family obligations). One robust contributor to academic performance is undoubtedly attendance, accounting for 27% of its variance.

4. Discussion

The findings of the current study can be summarized into three points, encompassing the type and intensity level of worrying and anxiety, as well as their relationship with academic performance. First, in our study, Saudi Arabian female students were found to worry about performance matters and available time, confirming the generality of such worries in students around the world, e.g., Davey et al.[11]. In contrast to the findings of Hamid[14], who reported elevated health and social worrying in students from the United Arab Emirates, our Saudi Arabian students did not report worrying much about social acceptance. Local cultural differences may be responsible for discrepancies among students from countries of the Arabian Gulf region. In Saudi Arabia, social changes offering equal education and employment opportunities to women and men are recent[29–31]. The neoliberal framework of the economy that supports educational changes is also recent[32]. As a result, the traditional collectivistic so-

cial framework, which creates a robust support system, may be stronger against individualistic motives, thereby making Saudi Arabian female students less likely to worry about social acceptance and relationships. An alternative explanation is that Saudi Arabian female students are less likely to report this type of worrying, as it signifies an undesirable disruption of the social bonds necessary to survive in a collectivistic ecosystem.

Second, above and beyond the relative intensity level at which each type of worrying is experienced, its particular type is a key factor in its relationship to academic attainment. Indeed, higher intensity is not always accompanied by a negative association with performance. A case in point is made by worrying about relationships, which, notwithstanding its moderate level, was linked to performance declines. Instead, worrying about academic performance, whose level was higher, was linked to performance increases. Thus, it is reasonable to assume that being concerned about performance can be a motivation for action in academic settings, whereas, in the same settings, being concerned about relationships can be distracting.

As noted earlier, if the level at which social relationship concerns are reported by female students is considered in isolation, two interpretations appear feasible but difficult to pull apart. Namely, a reasonable assumption is that the traditional collectivistic social framework of Saudi Arabia may lead female students to be less likely to worry about social acceptance and relationships. Alternatively, it may indicate that students are less likely to report this type of worry (i.e., a response bias). However, if the link between concerns about social relationships and academic performance is considered, a very different interpretation emerges. In this broader context of examination, the fact that such concerns are the least likely to be reported suggests that students may be engaged in minimizing or even repressing thoughts of apprehension about social acceptance or relationships. Minimization or repression may demand cognitive resources that are to be devoted to the task at hand (e.g., preparing for and completing a final exam), thereby being cognitively costly. Minimization or repression may also have the unintended consequence of highlighting these thoughts, bringing them to the forefront, and thus making them even more distracting. These cognitive operations may be triggered by the larger and more complex dynamics of the economic, cultural, and social ecosystem in which students exist. In this ecosystem, the neoliberal framework of the economy of Saudi Arabia, which fosters individualistic motives in its citizens, may have the unintended effect of highlighting the waning benefits of the traditional collectivistic social framework. However, by fostering individualistic motives, it may discourage traditional coping strategies, such as those typical of the Islamic tradition (e.g., Tawakkul, Sabr, and Du'a). In agreement with this interpretation of the larger sociocultural-economic context in which these young women exist, no female student mentioned any traditional coping strategy in debriefing sessions.

Third, SLWA was not related to poor final exam performance as reported by Owens [13]. On the contrary, a cognitive dimension of SLWA, apprehension about writing, was linked to desirable performance. The same pattern was observed for self-reported worrying about one's academic performance. In agreement with our findings, Hamid [14] found a positive link between worrying and grade point average (GPA), a general measure of performance. However, in his study, the uncovered link specifically involved social and health worries. Our findings are also congruent with those of Perkins and Corr [33], who reported a positive relationship between worrying and performance in the workplace. They described anxiety as an important drive of motivated cognition, adding that it is essential for functioning effectively in situations that require caution and self-discipline. Undoubtedly, final exam settings are instances of these types of situations.

5. Conclusions

Our results contrast with those of Thompson et al. [34], Bonaccio et al. [35], and D'Agostino et al. [36], who reported a negative relationship. In an experiment, Thompson et al. [34] found that when students who tend to worry are made to believe that they failed on a given task, they subsequently exhibit poor performance. These students also tend to experience elevated anxiety (as measured by the State-Trait Anxiety Inventory of Spielberger et al. [37]). Thompson et al. argued that a greater level of cognitive interference may differentiate these students from those who do not worry. Instead, in a field study, Bonaccio et al. [35] specifically explored the relationship between test anxiety and final exam performance (see also DordiNejad et al. [38]). They found

that final exam performance in an introductory psychology course decreased as worrying (i.e., the cognitive dimension of anxiety) and self-reported somatic anxiety symptoms increased. On a much broader scale, D'Agostino et al.[36] also found a negative relationship between test anxiety and school performance, as measured by the Programme for International Student Assessment (PISA).

The sources of the discrepancies between our results and those of Thompson et al.[34], Bonaccio et al.[35], and D'Agostino et al.[36] are difficult to pinpoint, as their studies were conducted in the Global North. Along with cultural variables linked to collectivism and individualism, the intensity of anxiety and worries experienced by students might shape the relationship between these variables and academic performance. In our study, both anxiety and worries were modest in intensity and selective in their content (e.g., appraisal fears specific to writing and concerns about academic performance). Thus, moderate levels of anxiety may motivate students to put more effort into their work. High levels may create intrusive thoughts that do not allow students to concentrate during exams[39]. Cases of high levels of SLWA may be linked to low competency[40]. If selective interventions[40] are needed, both emotional regulation training and practice with writing may be advisable.

5.1. Implications and Applications

The findings of the present study have implications for teaching and learning. In our study, for instance, not all worries were equally consequential. The more students worried about their academic performance and were concerned about the appraisal of their writing, the better they performed on the final exam. Furthermore, increased worries about academic performance were accompanied by increased attendance during the entire semester. In contrast, other worries were unrelated to performance. Thus, one cannot assume that worrying uniformly interferes with working memory performance. In agreement with Hamid[14], our findings instead suggest that specific types of worrying can be motivating. Taken together, these findings falsify the commonly held assumption that the cognitive activity of worrying, irrespective of the domain, uniformly interferes with working memory functioning and thus academic performance[41]. They also suggest the need for targeted rather than generic interventions.

The idea that worrying can be beneficial to performance fits the notion that worrying, at moderate levels, can be a drive to action. It is a notion supported by other research, such as that of Sweeny and Dooley[42], who acknowledged that worrying is an unpleasant emotional experience, filled with difficult-to-control negative thoughts about the future. Notwithstanding its negative connotation, Sweeny and Dooley found that, at moderate levels, it drives people to action in an attempt to avoid the undesirable outcomes that are expected to follow. At the same time, it keeps the problematic situation (e.g., the source of the worry) in people's working memory, thereby ensuring that obstacles for actions capable of reversing expected undesirable outcomes are acknowledged and that such actions are taken. Sweeny and Dooley also found another benefit to worrying as a motivational factor. It serves as an emotional buffer, which contradicts the notion that worrying makes the problematic situation faced by an individual always seem worse than it is in reality. According to the affective contrast theory[42], the pleasure of a positive experience is enhanced if an unpleasant experience precedes it. For instance, people's worrying over a future outcome may make the outcome they ultimately experience seem less catastrophic in comparison to the forecasted outcome. Sweeny and Shepperd[43], for instance, found that learners' emotive responses to receiving an undesirable grade on an exam depended on the nature of the expectation. If they had feared the worst rather than expecting the best, they would feel relieved and overall have more positive emotions about the outcome. Not surprisingly, people recognize the benefits of worrying as well as its costs. When Davey et al.[44] asked participants to indicate the many ways in which worrying would affect their lives, positive aspects of worrying included its ability to motivate action and to foster analytic thinking and planning. In other studies, people were reported to value worrying for its ability to enhance motivation, promote problem-solving through a critical examination of the available options for goal-directed responses, buffer against other negative emotions, and, most importantly, illustrate to others one's desirable personality dispositions, such as conscientiousness and diligence[45,46].

For students who are adjusting to university life and its demands, training can be helpful if it lessens the level of worrying experienced and offers tools to translate its potentially negative effects into positive ones. Yet, training may be more effective if it is specific to a particular student

population. For instance, in the case of the female students of our study, training may target worrying about social relationships, due to the link between this type of worrying and performance declines. Of course, one's knowledge that something unpleasant is about to happen differs from the knowledge of how to stop the event and its related dreaded outcome. Efforts to control or reduce the intrusive thoughts that define worrying may further clutter students' working memory, be ineffective, and even impair their ability to cope with the problematic situation they are facing [47]. Furthermore, the suppression of unavoidable negative thoughts may have a limited temporal effectiveness, as negative thoughts are likely to bounce back [48]. Thus, any effective training needs to first focus on how to diminish the potentially negative impacts of worrying on students' cognition. Mindfulness training, which emerges from the view of worrying as 'affectively motivated cognition' [49], is one sensible solution. This type of training entails learning the practice of attending to one's thoughts and emotions without allowing them to overwhelm task-related cognitive operations by becoming uncontrollable, exceedingly distracting, and able to raise the levels at which anxiety is experienced [50]. This type of training can highlight the benefits of worrying in students' minds (e.g., a drive to goal-directed action and a manageable activation of the sympathetic nervous system). Along with mindfulness training, overt instruction devoted to illustrating and practicing coping strategies may be helpful. Research has shown that strategies may involve direct actions, such as confronting the problem, looking for social support, and planning problem-solving actions. Strategies can also cover more indirect actions, such as reappraising an unpleasant situation, distancing, and even accepting responsibility for it. All can be taught through practical examples that can engage students' minds and encourage transfer of learning to their own quotidian lives [51]. For instance, students may review a manual on behavioral and cognitive coping strategies with a mental health professional serving as facilitator [52]. Then, they can be asked to apply the cognitive and behavioral strategies they learned to hypothetical unpleasant situations that they would be likely to encounter in academic settings.

Surprisingly, the female students of our study, although they have been known for displaying both a grade orientation and a learning orientation [53], exhibited neither high levels of writing anxiety nor the expected relationship between worrying about academic performance and performance declines. High levels of anxiety in settings where assessment is performed are often associated with students' grade orientation, along with poor performance [54]. Besides the several drawbacks that a grade-oriented approach to education [54] possesses, the most concerning one is that it can undermine learning and thus be responsible for its diminishing quality (e.g., surface learning, such as merely memorizing information for short-term recall). Within this orientation, courses are viewed as the arenas where students are tested and graded. Courses become the unavoidable steps students are expected to take and endure to get a degree that permits employment, and perhaps the practice of a given profession. That is, the appearance of attainment overshadows attainment itself. Grades, rather than the acquisition of relevant knowledge and skills, become the main objective of academic activities [54]. In the present study, if a learning orientation is viewed as a buffer for elevated and uncontrolled arousal, the coexistence of a grade orientation and a learning orientation in our participants may account for the moderate levels of anxiety reported. Although such moderate reports of anxiety may be an accurate reflection of students' emotive states, be the byproduct of a response bias or result from active suppression, minor worrying about social connections remains detrimental to students' performance. Thus, mindfulness training, which fosters self-reflection, may be beneficial to the female students of our study if it helps them divert their attention away from concerns about social relationships and directs it to academic tasks.

5.2. Limitations

Our study has limitations to be addressed in future research. For instance, its participants included only female undergraduate students. Thus, it is unclear whether the same pattern of results may be observed in males from the same understudied population. Some evidence exists that, compared to men, women tend to worry more and experience more anxiety (including writing anxiety [55]), especially during the first years of their academic journey [56,57]. Their worries may also be focused on different matters. In Saudi Arabia, young men have largely lost the privileges that they were once afforded. Thus, their worries and anxieties may not differ from those of women. Alternatively, they may experience unique sets of worries related to their lost privileges. Another limita-

tion of our study is that it was concerned with writing anxiety. As such, it differs from the research of Núñez-Peña et al. [58], which assessed test anxiety directly. The link between these two types of anxiety needs to be explored.

Our study has not directly explored the factors that underlie worries and anxiety in female college students of Saudi Arabian descent. Types of worries merely indicate potential areas of insecurity, rather than the particular sources of such insecurities. Additionally, the tendency to respond in socially desirable manners to personally relevant statements may have reduced the level of writing anxiety and worrying reported by our participants. Acquiescent response biases have been noted in members of societies with family collectivism and uncertainty avoidance, such as Saudi Arabia [59]. However, in these contexts, social desirability is not to be viewed as a methodological artefact, but rather as a way of bringing to the forefront cultural meaning [60]. Notwithstanding the unique cultural contexts in which anxiety and worries are manifested, physiological measures of students' autonomic nervous system reactivity (e.g., skin conductance, heart rate, and blood pressure changes) in response to different circumstances of everyday life [61] may offer a realistic window into the level at which anxiety and worries define students' self-reports. Such physiological measures may also help identify instances of repression of undesirable worries and anxiety by bringing to light discrepancies [62,63] between physiological responses and self-reported states (i.e., elevated levels in physiological recordings and moderate levels in self-reports).

Author Contributions

All authors contributed equally to the conception, design, data collection, analysis, and writing of this study. All authors have read and agreed to the published version of the manuscript.

Funding

This work received no external funding.

Institutional Review Board Statement

The data-collection process was approved by the Deanship of Research of the hosting institution to comply with the guidelines of the Office for Human Research Protections of the U.S. Department of Health and Human Services (PMU-DoR-2023-2024-002ID).

Informed Consent Statement

Informed consent was obtained from participants. It was deemed to comply with the APA ethical guidelines for the treatment of human participants.

Data Availability Statement

Data and materials are available upon request.

Acknowledgments

The authors thank research assistants and colleagues for their assistance and helpful advice.

Conflicts of Interest

The authors declare no conflicts of interest.

References

[1] Parveen, M., 2022. Women empowerment: New paradigm shift of Saudi women into labor workforce. Society and Business Review. 17(1), 66–91. DOI: https://doi.org/10.1108/SBR-10-2020-0123

[2] Rao, P.S., 2019. The importance of English in the modern era. Asian Journal of Multidimensional Research. 8(1), 7–19. DOI: https://doi.org/10.5958/2278-4853.2019.00001.6

[3] Badrasawi, K.J., Zubairi, A., Idrus, F., 2016. Exploring the relationship between writing apprehension and writing performance: A qualitative study. International Education Studies. 9(8), 134–143. DOI: https://doi.org/10.5539/ies.v9n8p134

[4] Sarason, I.G., Sarason, B.R., Pierce, G.R., 1990. Anxiety, cognitive interference, and performance. Journal of Social Behavior and Personality. 5(2), 1–18. https://psycnet.apa.org/record/1990-22508-001

[5] Sari, B.A., Koster, E.H., Derakshan, N., 2017. The effects of active worrying on working memory capacity. Cognition and Emotion. 31(5), 995–1003. DOI: https://doi.org/10.1080/02699931.2016.1170668

[6] Saeedi, M., Farnia, M., 2017. Iranian EFL learners' perceived writing anxiety and the complexity, accuracy, and fluency of their task-based writing: Are they correlated? Journal of Applied Linguistics and Language

Research. 4(8), 68–78. https://www.jallr.com/index.php/JALLR/article/view/723

[7] Pilotti, M.A., Al Mulhem, H., El Alaoui, K., et al., 2023. Implications of dispositions for foreign language writing: The case of the Arabic-English learner. Language Teaching Research. Advance online publication. DOI: https://doi.org/10.1177/13621688241231453

[8] Al-Ahdal, A.A.M.H., Abduh, M.Y.M., 2021. English writing proficiency and apprehensions among Saudi college students: Facts and remedies. TESOL International Journal. 16(1), 34–56. Available from: https://files.eric.ed.gov/fulltext/EJ1329867.pdf

[9] Waked, A., El Alaoui, K., Pilotti, M.A., 2023. Second-language writing anxiety and its correlates: A challenge to sustainable education in a post-pandemic world. Cogent Education. 10(2), 2280309. DOI: https://doi.org/10.1080/2331186X.2023.2280309

[10] Alfarwan, S., 2022. Is it all bad? Saudi EFL student perceptions of the role of anxiety when writing. Saudi Journal of Language Studies. 2(1), 1–16. DOI: https://doi.org/10.1108/SJLS-10-2021-0019

[11] Davey, G.C., Meeten, F., Field, A.P., 2022. What's worrying our students? Increasing worry levels over two decades and a new measure of student worry frequency and domains. Cognitive Therapy and Research. 46, 406–419. DOI: https://doi.org/10.1007/s10608-021-10270-0

[12] McIntyre, K., Worsley, J., Corcoran, R., et al., 2018. Academic and non-academic predictors of student psychological distress: The role of social identity and loneliness. Journal of Mental Health. 27, 230–239. DOI: https://doi.org/10.1080/09638237.2018.1437608

[13] Owens, M., Stevenson, J., Hadwin, J.A., et al., 2012. Anxiety and depression in academic performance: An exploration of the mediating factors of worry and working memory. School Psychology International. 33(4), 433–449. DOI: https://doi.org/10.1177/0143034311427433

[14] Hamid, A.A.M., 2020. The impact of worry on academic performance. Journal of Education and Human Development. 9(3), 103–108. DOI: https://doi.org/10.15640/jehd.v9n3a11

[15] Al Mulhem, H.A., Alaoui, K.E., Pilotti, M.A., 2023. A sustainable academic journey in the Middle East: An exploratory study of female college students' self-efficacy and perceived social support. Sustainability. 15(2), 1070. DOI: https://doi.org/10.3390/su15021070

[16] Song, J., 2019. "She needs to be shy!": Gender, culture, and nonparticipation among Saudi Arabian female students. TESOL Quarterly. 53(2), 405–429. DOI: https://doi.org/10.1002/tesq.488

[17] Pilotti, M.A.E., 2021. What lies beneath sustainable education? Predicting and tackling gender differences in STEM academic success. Sustainability. 13(4), 1671. DOI: https://doi.org/10.3390/su13041671

[18] Islam, S.I., 2017. Arab women in science, technology, engineering, and mathematics fields: The way forward. World Journal of Education. 7(6), 12–20. DOI: https://doi.org/10.5430/wje.v7n6p12

[19] Islam, S.I., 2019. Science, technology, engineering, and mathematics (STEM): Liberating women in the Middle East. World Journal of Education. 9(3), 94–104. DOI: https://doi.org/10.5430/wje.v9n3p94

[20] Kayan-Fadlelmula, F., Sellami, A., Abdelkader, N., et al., 2022. A systematic review of STEM education research in the GCC countries: Trends, gaps, and barriers. International Journal of STEM Education. 9, 1–24. DOI: https://doi.org/10.1186/s40594-021-00319-7

[21] Al-bakr, F., Bruce, E.R., Davidson, P.M., et al., 2017. Empowered but not equal: Challenging the traditional gender roles as seen by university students in Saudi Arabia. Forum for International Research in Education. 4(1), 52–66. http://preserve.lehigh.edu/fire/vol4/iss1/3

[22] Cheng, Y.-S., 2004. A measure of second language writing anxiety: Scale development and preliminary validation. Journal of Second Language Writing. 13(4), 313–335. DOI: https://doi.org/10.1111/j.1944-9720.2002.tb01903.x

[23] McDaniel, P.S., Eison, J., 2008. Assessing student worries. In: Benjamin Jr, L.T. (Ed.). Favorite Activities for the Teaching of Psychology. American Psychological Association (APA): Washington, DC, USA. pp. 160–164.

[24] Allen, M.S., Robson, D.A., Iliescu, D., 2023. Face validity: A critical but ignored component of scale construction in psychological assessment. European Journal of Psychological Assessment. 39(3), 153–156. DOI: https://doi.org/10.1027/1015-5759/a000777

[25] Nevo, B., 1985. Face validity revisited. Journal of Educational Measurement. 22(4), 287–293. DOI: https://doi.org/10.1111/j.1745-3984.1985.tb01065.x

[26] Krathwohl, D.R., 2002. A revision of Bloom's taxonomy: An overview. Theory into Practice. 41(4), 212–218. DOI: https://doi.org/10.1207/s15430421tip4104_2

[27] Azungah, T., 2018. Qualitative research: Deductive and inductive approaches to data analysis. Qualitative Research Journal. 18(4), 383–400. DOI: https://doi.org/10.1108/QRJ-D-18-00035

[28] Braun, V., Clarke, V., 2021. Can I use TA? Should I use TA? Should I not use TA? Comparing reflexive thematic analysis and other pattern-based qualitative analytic approaches. Counselling and Psychotherapy Research. 21(1), 37–47. DOI: https://doi.org/10.1002/capr.12360

[29] Aburizaizah, S., 2021. Higher education in Saudi Arabia: Rooted in bureaucracy, inspired by an EFL semi-decentralization model. International Journal of English Language Education. 9(1), 1–25. DOI: https://doi.org/10.5296/ijele.v9i1.17941

[30] Alhawsawi, S., Jawhar, S.S., 2023. Education, employment, and empowerment among Saudi women. Gender and Education. 35(4), 401–419. DOI: https://doi.org/10.1080/09540253.2023.2189917

[31] Allmnakrah, A., Evers, C., 2020. The need for a fundamental shift in the Saudi education system: Implementing the Saudi Arabian Economic Vision 2030. Research in Education. 106(1), 22–40. DOI: https://doi.org/10.1177/0034523719851534

[32] Alhazmi, A.A., Almashhour, R.A., 2024. Fragmentation of organizational identity in Saudi Universities: The impact of neoliberalism. Studies in Higher Education. 49(12), 2311–2327. DOI: https://doi.org/10.1080/03075079.2023.2299326

[33] Perkins, A.M., Corr, P.J., 2015. Can worriers be winners? The association between worrying and job performance. Personality and Individual Differences. 38(1), 25–31. DOI: https://doi.org/10.1016/j.paid.2004.03.008

[34] Thompson, T., Webber, K., Montgomery, I., 2002. Performance and persistence of worriers and non-worriers following success and failure feedback. Personality and Individual Differences. 33(6), 837–848. DOI: https://doi.org/10.1016/S0191-8869(01)00076-9

[35] Bonaccio, S., Reeve, C.L., Winford, E.C., 2012. Test anxiety on cognitive ability test can result in differential predictive validity of academic performance. Personality and Individual Differences. 52(4), 497–502. DOI: https://doi.org/10.1016/j.paid.2011.11.015

[36] D'Agostino, A., Schirripa Spagnolo, F., Salvati, N., 2022. Studying the relationship between anxiety and school achievement: Evidence from PISA data. Statistical Methods & Applications. 31(1), 1–20. DOI: https://doi.org/10.1007/s10260-021-00563-9

[37] Spielberger, C.D., Gorsuch, R.L., Lushene, R., et al., 1983. State-Trait Anxiety Inventory for Adults. Consulting Psychologists Press: Palo Alto, CA, USA.

[38] DordiNejad, F.G., Hakimi, H., Ashouri, M., et al., 2011. On the relationship between test anxiety and academic performance. Procedia–Social and Behavioral Sciences. 15, 3774–3778. DOI: https://doi.org/10.1016/j.sbspro.2011.04.372

[39] Vitasari, P., Wahab, M.N.A., Othman, A., et al., 2010. The relationship between study anxiety and academic performance among engineering students. Procedia-Social and Behavioral Sciences. 8, 490–497. DOI: https://doi.org/10.1016/j.sbspro.2010.12.067

[40] Fu, M., Li, S., 2024. The associations between foreign language anxiety and the effectiveness of immediate and delayed corrective feedback. Foreign Language Annals. 57(1), 201–228. DOI: https://doi.org/10.1111/flan.12708

[41] Mihăilescu, A.I., Diaconescu, L.V., Donisan, T., et al., 2016. The impact of anxiety and depression on academic performance in undergraduate medical students. European Psychiatry. 4, 27–40. DOI: https://doi.org/10.1016/j.eurpsy.2016.01.761

[42] Sweeny, K., Dooley, M.D., 2017. The surprising upsides of worry. Social and Personality Psychology Compass. 11(4), e12311. DOI: https://doi.org/10.1111/spc3.12311

[43] Sweeny, K., Shepperd, J.A., 2010. The costs of optimism and the benefits of pessimism. Emotion. 10(5), 750–753. DOI: https://doi.org/10.1037/a0019016

[44] Davey, G.C.L., Tallis, F., Capuzzo, N., 1996. Beliefs about the consequences of worrying. Cognitive Therapy and Research. 20, 499–520. DOI: https://doi.org/10.1007/BF02227910

[45] Freeston, M.H., Rhéaume, J., Letarte, H., et al., 1994. Why do people worry? Personality and Individual Differences. 17, 791–802. DOI: https://doi.org/10.1016/0191-8869(94)90048-5

[46] Hebert, E.A., Dugas, M.J., Tulloch, T.G., et al., 2014. Positive beliefs about worry: A psychometric evaluation of the Why Worry-II. Personality and Individual Differences. 56, 3–8. DOI: https://doi.org/10.1016/j.paid.2013.08.009

[47] Nolen-Hoeksema, S., Wisco, B.E., Lyubomirsky, S., 2008. Rethinking rumination. Perspectives on Psychological Science. 3(5), 400–424. DOI: https://doi.org/10.1111/j.1745-6924.2008.00088.x

[48] Wenzlaff, R.M., Wegner, D.M., Roper, D.W., 1988. Depression and mental control: The resurgence of unwanted negative thoughts. Journal of Personality and Social Psychology. 55(6), 882–892. DOI: https://doi.org/10.1037/0022-3514.55.6.882

[49] Armitage, E., 2024. The nature of worry (ing). Review of Philosophy and Psychology. 16, 833–853. DOI: https://doi.org/10.1007/s13164-024-00755-8

[50] Johnson, B.T., Acabchuk, R.L., George, E.A., et al., 2023. Mental and physical health impacts of mindfulness training for college undergraduates: A systematic review and meta-analysis of randomized controlled trials. Mindfulness. 14(9), 2077–2096. DOI: https://doi.org/10.1007/s12671-023-02212-6

[51] Hunt, S., Wisocki, P., Yanko, J., 2003. Worry and use of coping strategies among older and younger adults. Journal of Anxiety Disorders. 17(5), 547–560. DOI: https://doi.org/10.1016/S0887-6185(02)00229-3

[52] Nabors, L., Odar Stough, C., Combs, A., et al., 2019. Implementing the coping positively with my worries manual: A pilot study. Journal of Child and Family Studies. 28(10), 2708–2717. DOI: https://doi.org/10.1007/s10826-019-01451-3

[53] Pilotti, M., Al Kuhayli, H., Libdeh, N.A., 2022. Grade orientation, decision-making habits, and academic performance. The International Journal of Learning in Higher Education. 29(2), 125–140. DOI: https://doi.org/10.18848/2327-7955/CGP/v29i02/125-140

[54] Pollio, H.R., Beck, H.P., 2000. When the tail wags

the dog: Perceptions of learning and grade orientation in, and by, contemporary college students and faculty. The Journal of Higher Education. 71(1), 84–102. DOI: https://doi.org/10.1080/00221546.2000.11780817

[55] Loureiro, M., Loureiro, N., Silva, R., 2020. Differences of gender in oral and written communication apprehension of university students. Education Sciences. 10(12), 379. DOI: https://doi.org/10.3390/educsci10120379

[56] Conley, C.S., Shapiro, J.B., Huguenel, B.M., et al., 2020. Navigating the college years: Developmental trajectories and gender differences in psychological functioning, cognitive-affective strategies, and social well-being. Emerging Adulthood. 8(2), 103–117. DOI: https://doi.org/10.1177/2167696818791603

[57] Zhang, M., Zhang, J., Zhang, F., et al., 2018. Prevalence of psychological distress and the effects of resilience and perceived social support among Chinese college students: Does gender make a difference? Psychiatry Research. 267, 409–413. DOI: https://doi.org/10.1016/j.psychres.2018.06.038

[58] Núñez-Peña, M.I., Suárez-Pellicioni, M., Bono, R., 2016. Gender differences in test anxiety and their impact on higher education students' academic achievement. Procedia-Social and Behavioral Sciences. 228, 154–160. DOI: https://doi.org/10.1016/j.sbspro.2016.07.023

[59] Mahmood, S.I., Daim, S.A., Borleffs, J.C., et al., 2015. The transferability of Western concepts to other cultures: Validation of the Zuckerman–Kuhlman Personality Questionnaire in a Saudi Arabic context. Medical Teacher. 37(sup1), S67–S74. DOI: https://doi.org/10.3109/0142159X.2015.1006606

[60] Smith, P.B., 2004. Acquiescent response bias as an aspect of cultural communication style. Journal of Cross-Cultural Psychology. 35(1), 50–61. DOI: https://doi.org/10.1177/0022022103260380

[61] Bigalke, J.A., Carter, J.R., 2022. Sympathetic neural control in humans with anxiety-related disorders. Comprehensive Physiology. 12(1), 3085–3117. DOI: https://doi.org/10.1002/j.2040-4603.2022.tb00206.x

[62] Asendorpf, J.B., Scherer, K.R., 1983. The discrepant repressor: Differentiation between low anxiety, high anxiety, and repression of anxiety by autonomic–facial–verbal patterns of behavior. Journal of Personality and Social Psychology. 45(6), 1334–1346. DOI: https://doi.org/10.1037/0022-3514.45.6.1334

[63] Weinberger, D.A., Schwartz, G.E., Davidson, R.J., 1979. Low-anxious, high-anxious, and repressive coping styles: Psychometric patterns and behavioral and physiological responses to stress. Journal of Abnormal Psychology. 88(4), 369–380. DOI: https://doi.org/10.1037/0021-843X.88.4.369