Writing Motivation Profiles and Their Association With Writing Performance
A Person-Centered Approach

Ana Camacho, Fien De Smedt, Rui Maio, Joana Cadima, Hilde Van Keer, and Rui A. Alves

Prior research has consistently shown that motivation is a catalyst for students' writing performance, with important implications for writing instruction. However, this body of research has mainly relied on a variable-centered approach that does not acknowledge the similarities and differences between and within groups of students. In the current study, we sought to address this research gap by examining the association between different motivational profiles and writing performance using a person-centered approach. Accordingly, we aimed to (a) identify different motivational profiles in writing, based on students' implicit theories and achievement goals, and (b) examine whether students in different profiles varied in writing performance. To this end, we sampled 212 Portuguese sixth-grade students ($M = 11.11$ years, $SD = 0.56$) and collected motivational and writing performance measures at a single time point. Cluster analyses revealed two distinct writing motivation profiles: one profile reflected students with a growth mindset who were less oriented toward performance-approach and performance-avoidance goals, and another profile represented students with a fixed mindset who were more oriented toward performance-approach and performance-avoidance goals. Subsequent analyses indicated that one profile could be considered as more adaptive than the other. Specifically, students in the growth mindset and less performance-oriented profile wrote opinion texts with better quality and earned higher writing grades than students in the fixed mindset and more performance-oriented profile. Overall, these findings suggest that teachers should add motivation-enhancing practices to writing instruction and tailor their teaching practices according to students' unique motivational profiles. **Key words:** *achievement goals*, *implicit theories*, *motivation*, *profiles*, *writing*

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WRITING WELL is a gateway for students' academic achievement, educational attainment, and future employment (Graham, 2019; Graham & Harris, 2019).

However, many students do not develop effective writing skills, which may hinder their achievements in school and limit their career choices (Graham et al., 2015). The difficulty with writing may be partially explained by the effortful nature of the task. Writing requires the coordination of multiple cognitive, linguistic, and motivational factors simultaneously (Hayes, 1996). The writer(s)-within-community (WWC) model proposed by Graham (2018) pointed to multiple cognitive and sociocultural factors involved in writing. According to this model, developing writers need to master writing skills to translate and transcribe their ideas into text; use strategies to plan, draft, and revise their text; have knowledge about what constitutes a good text and about their topic; make use of memory and attentional resources; develop adaptive motivational beliefs about themselves and about the writing task; and deal with the contextual influences of the communities in which writing occurs (such as the classroom). This multitude of factors clearly illustrates why developing writing competence is such a complex endeavor for students in general and for beginning writers in particular.

In this study, we focused on students' motivational beliefs and how these are associated with writing performance. We did this in two meaningful ways that add to previous research. First, we examined the association between motivational variables and writing performance of middle schoolers using a person-centered approach. So far, writing motivation research has mainly adopted a variable-centered approach, which is concerned with the association between measured variables. In this study, we adopted a person-centered approach, which allows the identification of profiles of students characterized by specific relations among their motivational beliefs (De Smedt et al., 2022; Ng et al., 2022; Troia et al., 2022). Second, we focused on two understudied motivational beliefs mentioned in Graham's (2018) WWC model—implicit theories and achievement goals. Implicit theories have been underexplored in writing research, which contrasts with its extensive study in other research fields (Camacho, Alves, & Boscolo, 2021; Camacho et al., 2022). To achieve these purposes, we sampled 212 Portuguese students enrolled in Grade 6 and collected both motivational and writing performance measures at a single time point. In what follows, we review definitions of implicit theories and achievement goals as well as recent research on the link between these motivational constructs and writing performance in school-age children.

WRITING AND MOTIVATION

Writing is a key tool to attain multiple goals and thrive in today's world. At home, writing allows people to connect with other people when physically apart and to reflect on one's deepest thoughts, feelings, and experiences (Pennebaker, 2018). At work, writing allows people to perform daily tasks, such as recording information, producing reports, giving presentations, and sending emails to coworkers and customers (Carpentieri, 2012; Graham & Perin, 2007). At school, writing allows students to communicate and learn within and across school subjects. As detailed by Graham et al. (2020), teachers require students to write across the school day for a variety of purposes, such as taking notes, composing summaries, demonstrating knowledge about a topic, endorsing perspectives using arguments, and presenting answers to document-based questions.

From a theoretical stance, writing has been mainly studied using cognitive and sociocultural research approaches. In an effort to bring these two research traditions together, Graham (2018) proposed the WWC model. This theoretical framework postulates that writing is "simultaneously shaped and bound by the characteristics, capacity, and variability of the communities in which it takes place and by the cognitive characteristics, capacity, and individual differences of those who produce it" (p. 258).

A writing community is a group of people who use writing to achieve their common goals (Graham, 2018), such as a teacher and the class of students, a parent and a child who write together, or friends who connect with each other through social media networks. The writing community encompasses not only the writers (i.e., those who produce a text or written output) but also the collaborators, teachers, mentors (i.e., people who teach or assist the writer), and the readers (i.e., the audience to whom the text or written output is directed). The members of a writing community share the same cognitive architecture, which encompasses four main cognitive mechanisms that influence writing: (1) long-term memory resources (e.g., linguistic knowledge and motivational beliefs); (2) control mechanisms (e.g., attention and working memory); (3) production processes (e.g., conceptualization, ideation, translation, transcription, and reconceptualization); and (4) modulators (e.g., emotions, physical traits, and physiological states).

Regarding the motivational beliefs stored in the long-term memory, these affect how much effort is exerted and how cognitive resources are applied to accomplish a written task. In this respect, Graham (2018) proposed a fine-grained set of motivational beliefs in the WWC model. The first set of beliefs includes the value and utility of writing, according to expectancy-value theory (Eccles et al., 1983). The second set consists of writing attitudes and interest. The third type of beliefs focus on perceived writing competence, such as self-efficacy and implicit theories about writing, consistent with social cognitive theory (Bandura, 1997) and self-theories (Dweck, 1999), respectively. Self-efficacy pertains to beliefs about one's ability to complete a task successfully, whereas implicit theories refer to whether that ability is thought as something fixed or malleable. The fourth set pertains to the reasons or motives to write, which encompass intrinsic and extrinsic motivation in line with self-determination theory (Deci & Ryan, 2000). These reasons also include achievement goals, namely,

mastery, performance-approach goals, and performance-avoidance goals, according to achievement goal theory (Elliott & Dweck, 1988). The fifth set of beliefs consists of the perceived causes of success in writing, in line with attributional theory (Weiner, 1985). The sixth and seventh sets of beliefs focus on sociocultural influences on writing, thus encompassing beliefs about multiple identities as a writer and beliefs about writing communities.

In our study, we focused on implicit theories and achievement goals, two of the motivational beliefs featured in the WWC model. Specifically, we sought to understand whether we could identify more or less adaptive motivational profiles in writing depending on how these translated into well-developed or less well-developed writing performance. The identification of such profiles is of utmost importance for writing instruction as teachers can tailor their teaching practices according to students' unique characteristics revealed through such profiles.

Implicit theories

Implicit theories, also known as mindsets or self-theories, pertain to the implicit beliefs that people hold about the malleability of their personal attributes, such as intelligence, personality, or, in our case, writing competence (Dweck, 1999; Dweck & Grant, 2008; Dweck & Leggett, 1988). Dweck and Leggett (1988) proposed that people can believe that a given personal attribute either is fixed and not subject to personal development (i.e., entity theory of intelligence or fixed mindset) or is malleable and developed through effort and persistence (i.e., incremental theory of intelligence or growth mindset). Prior empirical research has shown that implicit theories have important implications for motivation, including achievement goals (Chen & Pajares, 2010) and academic outcomes (Blackwell et al., 2007; Costa & Faria, 2018).

Particularly important for the current study is the association between implicit theories and achievement goals postulated by Dweck

and colleagues (Dweck, 1999; Dweck & Master, 2009). According to them, when students hold an incremental theory of intelligence, they seek to learn new things and develop their skills, which encourages them to adopt mastery goals over performance goals. In contrast, when students hold an entity theory of intelligence, they are concerned with displaying their intelligence and obtaining external validation, which leads them to pursue performance goals over mastery goals.

An influential study with adolescent students provided empirical evidence for the theoretical model proposed by Dweck (Blackwell et al., 2007). This study showed that incremental theories of intelligence were positively associated with mastery goals (along with positive effort beliefs, controllable causal attributions, and mastery-oriented strategies) and predicted higher grades in mathematics over time.

Dweck also delved into the contextual influences of implicit theories. The type of praise and criticism that teachers and parents give to students may support the development of one theory over the other (Dweck & Master, 2009). Praising students' ability or intelligence will likely promote an entity theory, whereas praising students' effort will likely foster an incremental theory. In the same line, criticism focused on the student may reinforce an entity theory whereas criticism focused on the learning process encourages the development of an incremental theory.

In the writing domain, one of our previous studies showed that implicit theories are directly linked to achievement goals and writing performance. Specifically, we showed that incremental theories were associated with mastery goals and higher text quality across text genres for girls and boys (Camacho et al., 2022). However, in this study, we employed a variable-centered approach, which precluded us from determining the percentage of students who fit into a profile characterized by incremental theories (i.e., a growth mindset) or, in opposition, a profile characterized by entity theories (i.e., a fixed mindset).

Achievement goals

Achievement goals pertain to one's beliefs about the reasons underlying achievement-related behavior and the standards used to judge one's performance (Pintrich, 2000). Initially, researchers proposed a dichotomy between mastery goals and performance goals. Mastery goals reflect a focus on learning and understanding the task at hand using intrapersonal standards for improvement. In contrast, performance goals represent an orientation to demonstrating one's own competence, using social comparative standards (Wirthwein et al., 2013).

Later on, the trichotomous achievement goal framework was proposed, splitting performance goals into performance-approach and performance-avoidance goals (Elliot, 1999). The former focuses on demonstrating more competence for a task than other individuals, whereas the latter focuses on avoiding appearing as incompetent to others. With progress in the field, researchers have further introduced the 2 × 2 (Elliot & McGregor, 2001) and 3 × 2 goal frameworks (Elliot et al., 2011), which extended the previous models.

Regarding the origins of achievement goals, goal theorists hold different positions whether goal endorsement is mainly determined by the person, the context, or both (Maehr & Zusho, 2009). One theoretical approach argues that individuals have goal tendencies that determine which goals they will endorse in a given situation (Elliott & Dweck, 1988). A different theoretical approach, however, emphasizes that the situation or context is more determinant of goal endorsement. If students perceive more environmental cues focused on competition and social comparison (i.e., performance-oriented goal structure), then they will be more likely to endorse performance-oriented goals. Conversely, if students perceive a context that prioritizes understanding and improving skills (i.e., mastery-oriented goal structure),

they will be more likely to adopt mastery-oriented goals (Ames, 1992). Finally, other theoretical approaches underline the interplay between personal characteristics and situational factors in determining goal endorsement (Nicholls, 1984).

Because the trichotomous goal framework is adopted in the WWC model (Graham, 2018), we focused on three achievement goals in writing: mastery goals, performance-approach goals, and performance-avoidance goals. In the context of school writing, mastery goals pertain to those endorsed by students who engage in writing tasks to learn about writing and develop their writing competence, performance-approach goals refer to those adopted by students who seek to display more writing competence than others, and performance-avoidance goals relate to those adopted by students who wish to avoid doing worse in writing than others.

Regarding previous empirical writing research, one of our studies indicated that a greater pursuit of mastery goals was related to higher text quality whereas a greater endorsement of performance-approach goals was linked to lower text quality across text genres, and for both girls and boys (Camacho et al., 2022). In the same line, other studies showed a positive association between mastery goals and writing performance (Pajares & Cheong, 2003; Troia et al., 2013). More mixed findings were found for performance-approach goals, which were not only directly linked to lower writing performance in a study (Troia et al., 2013) but also indirectly associated with writing performance via self-efficacy in another study (Yilmaz Soylu et al., 2017). Finally, performance-avoidance goals have been generally negatively associated with writing performance (Pajares & Cheong, 2003; Troia et al., 2013). These studies adopted a variable-centered approach, which prevented researchers from distinguishing between different motivational profiles in writing.

Motivational profiles in writing

As already mentioned, a variable-centered approach has dominated the writing research field whereas a person-centered approach has been overlooked (Camacho, 2021b; Camacho, Alves, & Boscolo, 2021). However, a set of recent studies employed a person-centered approach to study writing motivation along with other writing-related variables (e.g., De Smedt et al., 2022; Ng et al., 2022; Troia et al., 2022).

De Smedt et al. (2022) identified two writer profiles in adolescents based on motivational and cognitive variables. Specifically, the authors distinguished between one profile with higher levels of cognitive processes related to writing (e.g., planning, drafting, text generation, and monitoring) and higher levels of autonomous motivation and a second profile with lower levels of cognitive writing processes and lower levels of autonomous motivation. The authors also found that students categorized in the first profile (i.e., process-oriented writers with high levels of autonomous motivation) reported significantly higher self-efficacy than that in the second profile. However, no differences between profiles were found in argumentative writing performance. The authors argued that the use of self-report measures to assess students' cognitive writing processes—rather than online process measures such as screen recordings and keystroke logging or other direct measures of process-related behaviors—may partially explain the lack of association between the profiles and students' writing performance (De Smedt et al., 2022).

Troia et al. (2022) found five writer profiles among fifth and sixth graders, based on knowledge, motivation, and cognitive processes. These profiles were named as globally weak, at-risk writers, average motivated, average unmotivated, and globally proficient. Overall, the globally proficient writer profile showed the best performance across writing tasks in three genres (narrative, opinion, and informative) compared with the other

profiles. In addition, the average motivated writers performed close to or above average across most of the writing tasks.

Ng et al. (2022) identified seven writers' profiles among fourth graders, based on their motives to write (i.e., curiosity, involvement, grades, competition, emotional regulation, relief from boredom, and social regulation). Extremely motivated and highly motivated writer profiles had multiple writing motives. Curious and averagely motivated writer profiles had a strong focus on curiosity and involvement. Performance-focused and weakly motivated writer profiles included students for whom having good grades was the key motive to write. Finally, the unmotivated writer profile pertained to students who did not have any clear motive to write. Comparisons among the profiles indicated that the extremely motivated and highly motivated writer profiles showed higher self-efficacy for writing. A worrisome finding of this study is that almost one third of the sample (i.e., 31.72%) was characterized as weakly motivated or unmotivated, which was associated with lower self-efficacy and less time spent on writing.

Altogether, these studies revealed writer profiles based on motivational variables (and other writing-related variables), grounded on strong theoretical models. For instance, Troia et al. (2022) used the Hayes (1996) model as their theoretical foundation. Both De Smedt et al. (2022) and Ng et al. (2022) used the WWC model (Graham, 2018) and self-determination theory (Deci & Ryan, 2000; Ryan & Deci, 2000) as their theoretical frameworks. To the best of our knowledge, no studies to date employed a person-centered approach to inspect writer profiles based on students' implicit theories and achievement goals, simultaneously based on the WWC model (Graham, 2018) and self-theories (Dweck, 1999).

THE CURRENT STUDY

The current study focuses on the relation between different students' motivational profiles and their writing performance. We do this by using a person-centered approach, which acknowledges the heterogeneity among a student population and enables researchers to identify subgroups of students who share unique characteristics, such as motivation (Jang et al., 2021; Rosenzweig & Wigfield, 2017). In the writing motivation domain, a variable-centered approach has been dominant and there are still few studies employing a person-centered approach, such as those mentioned earlier. In addition, to the best of our knowledge, there are no person-centered studies examining implicit theories and achievement goals in writing. This is an important research gap as previous research showed that these motivational variables are influential on students' writing performance (Camacho, Alves, & Boscolo, 2021; Camacho et al., 2022; Pajares & Cheong, 2003; Pajares et al., 2000; Yilmaz Soylu et al., 2017).

To overcome such research gaps, we formulated two research questions. First, can we identify different motivational profiles of students based on their implicit theories and achievement goals in writing? Second, how do students' actual performance, self-reported writing competence, and teacher-reported writing grade vary across these motivational profiles? On the basis of previous literature, we formulated two research hypotheses. First, we hypothesized that incremental theories in writing (i.e., a growth mindset) would coincide with high levels of mastery goals and low levels of performance-approach and performance-avoidance goals, whereas entity theories in writing (i.e., a fixed mindset) would coincide with low levels of mastery goals and high levels of performance-approach and performance-avoidance goals. Indeed, according to Dweck's (1999) self-theories model, different implicit theories (incremental vs. entity) are associated with different achievement goals, which, in turn, can impact academic performance differently. Students holding an incremental theory tend to believe that effort will improve their competence, thus endorsing mastery goals. Conversely, students holding an entity theory

tend to devalue the importance of effort and are mostly concerned with displaying competence or avoiding failure, thus adopting performance-oriented goals (Dweck & Master, 2009; Dweck & Molden, 2017). Second, we anticipated that students in the profile characterized by incremental theories, high levels of mastery goals, and low levels of performance-approach and performance-avoidance goals would perform better in writing. According to our previous research, incremental theories in writing are associated with a greater pursuit of mastery goals and higher text quality (Camacho et al., 2022). In addition, we found that a greater endorsement of mastery goals was linked to higher text quality whereas greater adoption of performance-approach goals was linked to lower text quality.

METHOD

Portuguese educational context

The Portuguese educational system encompasses three cycles of basic education (primary school from Grades 1 to 4, lower middle school or second cycle from Grades 5 to 6, and upper middle school or third cycle from Grades 7 to 9) plus secondary education (from Grades 10 to 12). Students in this study were enrolled in the last year of lower middle school (i.e., Grade 6). According to the official guidelines issued by the Portuguese Ministry of Education, Portuguese sixth graders are expected to write several text genres for a variety of purposes (Directorate-General for Education, 2018, 2021). One of the text genres that sixth graders should master is opinion text, which is one of the foci of this study. As for writing instructional practices, official guidelines recommend teachers follow a process-oriented approach and establish a pleasant writing atmosphere (Directorate-General for Education, 2018, 2021); however, no specific guidelines on how teachers can nurture students' writing motivation are described.

Table 1. Student demographics

	n	%
Female students	98	46.2
Male students	114	53.8
Average age in years (*SD*)	11.11 (0.56)	–
Average school mark in Portuguese language (*SD*)[a]	3.43 (0.81)	–
Mother's educational level		
Fourth grade	4	1.9
Sixth grade	19	9
Ninth grade	25	11.8
Secondary school	50	23.6
College	41	19.3
Unknown	73	34.4

[a]School mark in Portuguese language ranged from 1 (low) to 5 (high).

Participants

Participants were 212 Portuguese sixth-grade students (98 girls and 114 boys), with a mean age of 11.11 years (*SD* = 0.56). Students were enrolled in 11 classrooms of one cluster of schools located in the second largest city of Portugal. Students were enrolled in this study after we obtained their legal guardians' consent and their own assent (see Table 1 for additional student demographic characteristics).

Although teachers did not directly participate in this study, we collected data on their attitudes toward writing and writing instructional practices. Four Portuguese language teachers, with a mean age of 43.25 years (*SD* = 9.64), were responsible for the 11 classrooms. On a scale ranging from 1 ("I completely disagree") to 5 ("I completely agree"), the four teachers indicated enjoying writing (*M* = 4.75, *SD* = 0.50), enjoying teaching writing (*M* = 4.50, *SD* = 0.58), and that teaching writing gave them a sense of personal satisfaction (*M* = 4.50, *SD* = 0.58). In addition, all teachers reported spending from 1 to 2 hr per week teaching writing to their sixth-grade students. Finally, two

teachers reported that they asked students to practice writing opinion text—the text targeted in this study—monthly, whereas the two other teachers indicated that they asked students to write opinion papers once every 2 months.

Measures

We used motivational self-report scales to assess implicit theories and achievement goals in writing. In addition, we used a 20-min writing performance task to assess opinion text quality and collected teacher-reported writing grades and self-reported writing competence. In the following text, we provide detailed information on these measures, namely, the internal consistency reliability coefficients of the motivational scales and the intraclass correlation coefficient of the text quality measure obtained with data from the current study.

Writing motivation measures

Implicit theories of writing. The Implicit Theories of Writing (ITW) scale (Limpo & Alves, 2014) was used to assess students' beliefs about the malleable or fixed nature of their own writing competence. The ITW scale is a short scale that asks students to rate their level of agreement with three writing-related statements, which are phrased in the entity direction (e.g., "My texts will always have the same quality, no matter how much I try to change it"). Students rate their agreement level with the statements using a 6-point Likert scale, ranging from "I completely disagree" to "I completely agree." This response scale implies that lower scores indicate more incremental beliefs about writing (i.e., growth mindset), whereas higher scores indicate more entity beliefs about writing (i.e., fixed mindset). The ITW scale showed good internal consistency reliability using data from the current study: $\alpha = .75$.

Writing achievement goals. The Writing Achievement Goals Scale (WAGS; Yilmaz Soylu et al., 2017) was administered to assess students' goals or intentions when writing. The WAGS is a scale that prompts students

to think to what extent 12 writing-related statements apply to them using a 5-point scale, ranging from "I completely disagree" to "I completely agree". The scale is based on the trichotomous achievement goal framework (Elliot, 1999), thus encompassing three factors operationalized by four items each: mastery goals, performance-approach goals, and performance-avoidance goals. Mastery goal items pertain to students who focus on improving their writing skills (e.g., "When I am in my Portuguese language classes, I am trying to improve how I express my ideas"). Performance-approach goal items focus on students who seek to display more writing competence than their classmates (e.g., "When I am in my Portuguese language classes, I am trying to be a better writer than my classmates"). Performance-avoidance goal items are about students who avoid looking incompetent in front of others (e.g., "When I am in my Portuguese language classes, I am trying to hide that I have a hard time writing"). Internal consistency coefficients for each WAGS subscale were adequate using data from this study: $\alpha_{\text{mastery goals}} = .75$, $\alpha_{\text{performance-approach}} = .79$, and $\alpha_{\text{performance-avoidance}} = .69$.

Writing performance measures

Actual writing performance. We assessed students' opinion text quality to obtain an independent measure of their actual writing performance. To that end, during a Portuguese language class, the first author asked students to write the most interesting opinion text they could, in Portuguese and with legible handwriting, in response to the following prompt: "Give your opinion about children eating candy every day." We focused on opinion text because official guidelines issued by the Portuguese Ministry of Education specify that sixth-grade students should be able to master this text genre by the end of the school year (Directorate-General for Education, 2018).

Students were given 5 min to plan on a blank paper and 20 min to compose on lined paper. After 10 min elapsed, students were

told they had 10 additional minutes. When only 2 min were left, students were directed to complete their texts within that time. When students asked about the required text length, the researcher told them that there was no minimum or maximum. If students took more than several minutes to start, the researcher encouraged them to begin. Whenever students asked how to spell a word, the researcher told them to do their best.

A research assistant, under the supervision of the first author, typed the handwritten texts using word processor software to avoid potential presentation biases (Graham et al., 2011). Then, three trained and independent research assistants, blind to the study purposes, assessed text quality of the typed texts, employing a holistic scoring procedure (Cooper, 1977; Graham et al., 2017; Huot, 1990) previously used in our studies (Camacho, Alves, De Smedt, et al., 2021; Camacho et al., 2020, 2022; Silva et al., 2021). Accordingly, the three judges assigned a holistic score, ranging from 1 (lowest text quality) to 7 (highest text quality), based on four criteria given equal weight: (1) ideas and arguments (i.e., relevance of reasons to support the opinion); (2) coherence (i.e., clarity, organization, and structure of the text); (3) syntax (i.e., syntax accuracy and diversity of sentence types); and (4) vocabulary (i.e., variety and appropriate use of words). The independent judges were explicitly told to pay attention to the text content rather than its length as well as to assign the same weight to the four quality criteria and consequently ascribe a single holistic score to each opinion text. To aid in the scoring process, the first author provided them with benchmark texts written by same-aged students in the scope of a previous study, which represented low- (score of 1), average- (score of 4), and high-quality texts (score of 7). In addition, the judges scored 30 texts separately, compared the scores, and resolved any disagreements with the assistance of the first author. Then, each judge scored the remaining texts independently. The interrater reliability using intraclass correlation was high in this study (ICC = .93). The final text quality score was the average score across the three judges. Even though we asked the judges to pay attention to the text content rather than its length, we found a positive, significant correlation between text length (i.e., number of words) and the average text quality score ($r = .69$, $p < .01$).

Teacher-reported writing grade. We asked teachers to inform us about the formal grades given to each student in Portuguese language studies. This grade refers to the formal score assigned to each student at the end of the school term. In this study, we collected this information at the end of the first marking period in Portuguese language classes because the study was conducted during this period. In the Portuguese school system, teachers use an evaluation scale ranging from 1 (lowest grade) to 5 (highest grade) to assess middle school students' performance in all school subjects. Scores of 1 and 2 indicate that the student is low performing on that school subject, a score of 3 represents that the student is performing at the average level, and scores of 4 and 5 indicate that the student is high performing. At the end of the school year, if students earn scores of 1 and 2, then they will not be approved on that school subject.

Self-reported writing competence. We asked students to rate their general writing competence on a scale ranging from 1 (lowest) to 5 (highest). We relied on the same evaluation scale used by teachers as students are familiar with it and recognize that scores of 1 and 2 represent low performance, a score of 3 indicates average performance, and scores of 4 and 5 represent high performance.

Procedure

We collected the data during one in-person 50-min morning lesson in the fall of 2020 (i.e., first term of the school year 2020–2021). The first author administered the motivational and writing performance measures in the presence of the Portuguese language teacher. Specifically, students completed a short demographic survey (on which they indicated

the score related to their self-perceived writing competence), completed the ITW scale and the WAGS subscales, and wrote an opinion text. After the on-site data collection, we asked teachers to provide us with the writing grades assigned to students, and the school board to give us information on mother's educational level for each student.

RESULTS

Data analytic plan

To answer our first research question, we used cluster-analytic approaches reported in prior motivation-related research to identify distinct motivational profiles (e.g., De Smedt et al., 2022). We started with a hierarchical cluster analysis, using Ward's method of clustering and the squared Euclidian distance metric. We then used k-means cluster analysis to corroborate the number of clusters obtained through the hierarchical clustering method (De Smedt et al., 2022; Merchie et al., 2014; Rogiers et al., 2019). To answer our second research question, we compared the means across the writing performance measures between the clusters using analysis of variance.

Research Question 1: Writing motivation profiles

To explore the presence of different cluster solutions, a hierarchical cluster analysis was conducted using the ITW scale and the WAGS subscales. The first large drop in agglomeration coefficients occurred when the first-cluster solution bifurcated into a two-cluster solution. This two-cluster solution was further examined and confirmed by visual inspection of the dendrogram.

In the next step, the clusters' subscale means were examined to identify and to bring meaning to the two motivational profiles. Table 2 presents the mean scores and standard deviations of both profiles, and Figure 1 depicts the clusters' subscale means for each profile. As hypothesized, students identified in the first writing motivation profile tend to have a fixed mindset and are more inclined to adopt performance-oriented goals ($n = 120$; 56.60%), whereas students belonging to the second writing motivation profile are characterized by a growth mindset and are significantly less oriented toward displaying competence or avoiding failure ($n = 92$; 43.40%). More particularly, students in the first profile reported significantly higher entity beliefs, $F(1, 211) = 37.59$, $p < .001$, $\eta^2 = .15$, performance-approach goals, $F(1, 211) = 37.59$, $p < .001$, $\eta^2 = .24$, and performance-avoidance goals, $F(1, 211) = 209.66$, $p < .001$, $\eta^2 = .50$, than students in the second profile. Contrary to our expectations, Profile 1 students also reported significantly higher adoption of mastery goals than Profile 2 students, $F(1, 211) = 7.26$, $p < .01$, $\eta^2 = .03$; however, the effect size was small. The two-cluster solution was validated by k-means cluster analysis and comparable results were found. Table 2 further presents the mean scores and standard deviations of both writing motivation profiles using this clustering method. Figure 2 depicts the subscale means for each profile. Furthermore, 75.47% of the students were identically

Table 2. Mean (*SD*) scores of the motivational writer profiles

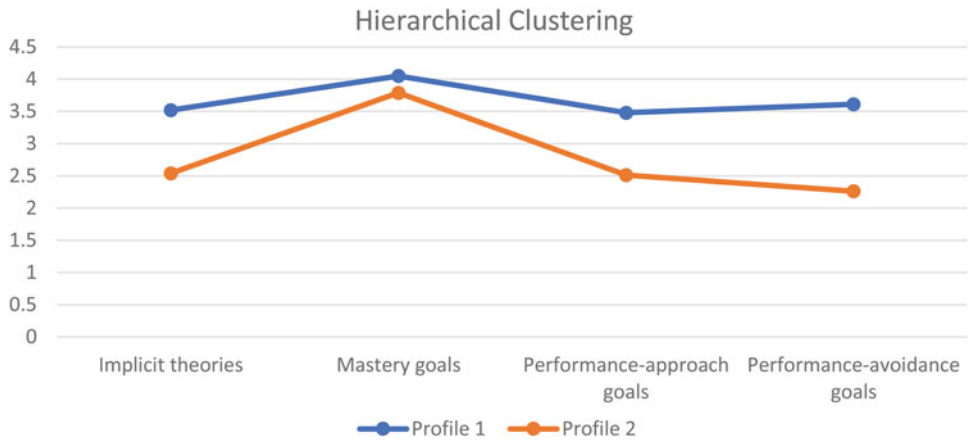|	Hierarchical Clustering		k-Means Clustering	
	Profile 1 ($n = 120$)	Profile 2 ($n = 92$)	Profile 1 ($n = 78$)	Profile 2 ($n = 134$)
Implicit theories	3.52 (1.30)	2.54 (0.93)	4.34 (0.84)	2.37 (0.81)
Mastery goals	4.05 (0.57)	3.79 (0.84)	3.94 (0.65)	3.94 (0.75)
Performance-approach goals	3.48 (0.94)	2.51 (0.74)	3.41 (1.05)	2.85 (0.89)
Performance-avoidance goals	3.61 (0.73)	2.26 (0.60)	3.45 (0.85)	2.77 (0.92)

Figure 1. Cluster subscale means based on hierarchical clustering. This figure is available in color online (www.topicsinlanguagedisorders.com).

classified by both cluster methods, indicating the robustness of the cluster groups. Similar to the hierarchical clustering method, *k*-means cluster analysis revealed that students belonging to the first writing motivation profile reported significantly higher entity beliefs, $F(1, 211) = 283.80$, $p < .001$, $\eta^2 = .58$, performance-approach goals, $F(1, 211) = 17.48$, $p < .001$, $\eta^2 = .08$, and performance-avoidance goals, $F(1, 211) = 28.38$, $p < .001$, $\eta^2 = .12$, than students in the second profile. In contrast with the results of hierarchical clustering, *k*-means cluster analysis indicated no significant differences between both pro-

files concerning mastery goals, $F(1, 211) = 0.00$, $p = .995$, $\eta^2 = .00$.

Research Question 2: Differences in students' writing performance between profiles

Figure 3 represents the mean scores for students' actual writing performance, self-reported writing competence, and teacher-reported writing grades. As to students' actual writing performance as measured by holistic text quality, the results indicate that students characterized by a growth mindset and who report less performance-oriented goals (i.e.,
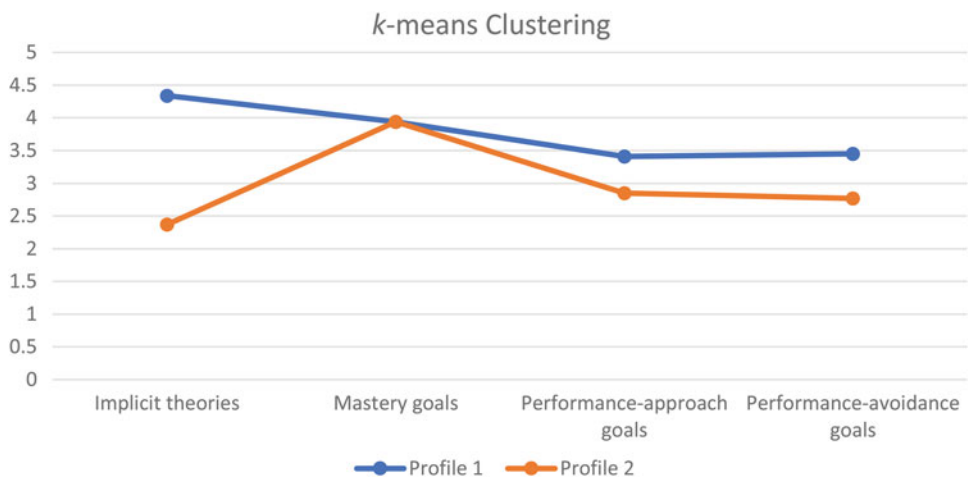

Figure 2. Cluster subscale means based on *k*-means clustering. This figure is available in color online (www.topicsinlanguagedisorders.com).
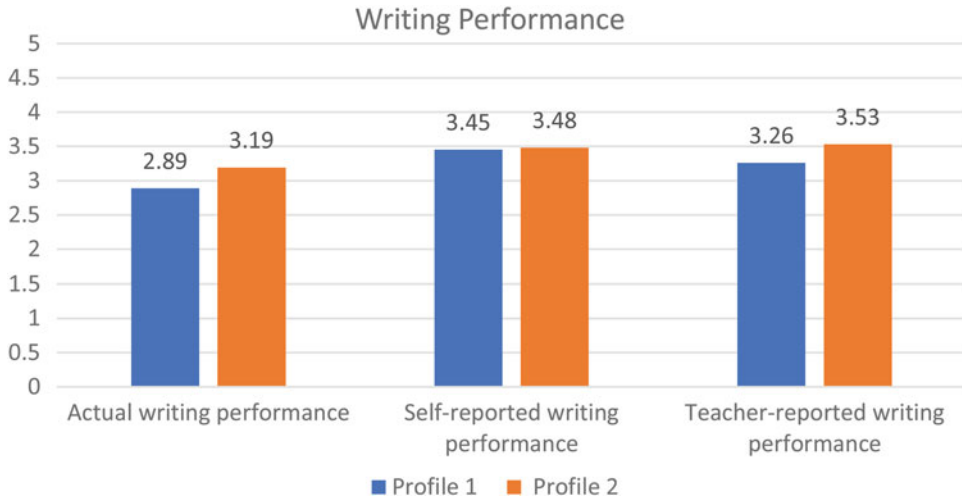
Figure 3. Mean scores for students' actual writing performance, self-reported writing competence, and teacher-reported writing grades. This figure is available in color online (www.topicsinlanguagedisorders. com).

Profile 2; $M = 3.19$, $SD = 1.00$) outperformed the students who have a more fixed mindset with a clear focus on performance-oriented goals (i.e., Profile 1; $M = 2.89$, $SD = 0.90$), $F(1, 210) = 4.37$, $p < .05$, $\eta^2 = .02$.

In the same line, Profile 2 students ($M = 3.53$, $SD = 0.83$) received significantly higher writing grades from their teachers than Profile 1 students ($M = 3.26$, $SD = 0.75$), $F(1, 211) = 5.77$, $p < .05$, $\eta^2 = .03$. Finally, no significant differences between the profiles were found concerning students' self-reported writing competence, $F(1, 207) = 0.06$, $p = .81$, $\eta^2 = .00$.

DISCUSSION

In this study, we sought to identify distinct writing motivation profiles in sixth-grade students based on measures of implicit theories and achievement goals. In addition, we aimed to examine how profile membership was associated with students' writing performance.

Research Question 1: Writing motivation profiles

In line with our first hypothesis, our study revealed two heterogeneous motivational profiles in writing using a cluster-

ing analytic approach. More than half of our sample (nearly 57%) was characterized as having a fixed mindset and more orientation toward performance-approach and performance-avoidance goals, whereas 43% of the surveyed students were characterized as having a growth mindset and less orientation toward performance-approach and performance-avoidance goals. The fact that more students in our sample fit into a fixed mindset and performance-oriented profile may be partially explained by the competitive Portuguese educational system, in which achievement may be considered the most important factor to succeed in school and later in the workplace (Costa & Faria, 2018).

Mastery goals were not determinant for defining profile membership because the hierarchical cluster analyses showed a significant difference in mastery goal means, with a very low effect size between profiles and the k-means analyses showed no significant differences. On the one hand, this specific finding does not concur with previous domain-general achievement goal research showing that mastery-oriented students are one of the most prevalent profiles from a person-centered approach perspective (Niemivirta et al., 2019). Possibly, the fact that the

mastery items in our domain-specific achievement goals scale were somewhat more abstract (e.g., "When I am in the Portuguese language classes, I am trying to improve how I express my ideas"; Yilmaz Soylu et al., 2017) than items in domain-general scales (e.g., "I like school work that I'll learn from, even if I make a lot of mistakes"; Midgley et al., 1998) may partially explain the results. On the other hand, previous studies also revealed that performance-approach goals may overlap with both mastery and performance-avoidance goals (Hulleman et al., 2010). In this regard, Meece and Holt (1993) found that students simultaneously endorsing mastery goals and performance-oriented goals performed significantly worse than students primarily focused on mastery goals. These conclusions may partially justify why students in Profile 1 exhibited high scores not only on performance-approach and performance-avoidance goals but also on mastery goals.

Research Question 2: Differences in students' writing performance between profiles

Consistent with our second hypothesis, we found that students in the fixed mindset plus performance-oriented profile (i.e., Profile 1) wrote texts of significantly lower quality and earned lower writing grades from teachers than students in the growth mindset profile (i.e., Profile 2). These findings concur with previous studies showing that students with performance-oriented motivations display lower levels of academic achievement (for a systematic review, see Niemivirta et al., 2019). Our findings also align with those of Troia et al. (2022), who found that students in the average motivated and average unmotivated writer profiles performed slightly worse in writing than students in the globally proficient writer profile. However, our results need to be interpreted with caution considering the low eta-square (i.e., effect size) values we obtained. Future studies with a larger sample size and students from other grade levels are warranted to replicate the writing motivation profiles identified in our study and examine whether these profiles differ on a wider range of writing performance measures.

We did not find any differences between profiles as to students' self-reported writing competence. In this respect, a mismatch emerged between writing performance as assessed by independent researchers and teachers on the one hand and students themselves on the other hand. One possible explanation is that low-performing students may be metacognitively unaware of their difficulties, which leads them to overestimate their competence (Kruger & Dunning, 1999). This difficulty of students accurately estimating their performance has been previously reported in writing research (Graham et al., 2005; Harris et al., 2006). Another plausible reason is that students who fit into the fixed mindset and performance-oriented profile may value high performance so much that they misrepresented their actual performance (Dweck & Master, 2009).

In sum, our findings partially corroborate the tenets of the self-theories framework (Dweck, 1999; Dweck & Molden, 2017), which points to two different motivational meaning systems (incremental vs. entity theories) that differently impact academic achievement. Although students in the fixed mindset and performance-oriented profile may be just conforming to a competitive school system, which uses writing as a form of evaluation (Boscolo & Hidi, 2007) and emphasizes the importance of school grades to succeed in school (Costa & Faria, 2018), our study seems to indicate that students with a growth mindset and less oriented toward performance goals may have a more adaptive profile as they performed slightly better in writing. Altogether, the findings of our study underline the key role that motivational beliefs play in students' writing performance (Graham, 2018) and especially stress the need of teachers to address the diversity in writing profiles of their students.

Limitations and directions for future research

We recognize at least six limitations of the current study. First, we used the trichotomous goal framework as the theoretical basis for assessing achievement goals. Future studies could use more recent conceptualizations of achievement goals to obtain more refined writing motivation profiles, such as the 2 × 2 (Elliot & McGregor, 2001) and 3 × 2 (Elliot et al., 2011) achievement goals frameworks.

Second, we identified writing motivation profiles only of sixth graders and did not examine the stability of these profiles over time. A future research avenue is thus to combine longitudinal designs and person-centered approaches to study how membership in more and less adaptive profiles may change over the school years (Schwinger et al., 2016) and relate to writing performance. In addition, another research direction would be to explore how different teaching practices in writing are associated with membership in distinct writing motivation profiles over time.

Third, we included a limited set of motivational variables mentioned in the WWC model (Graham, 2018), implicit theories and achievement goals. Future studies could examine writing profiles based on the current variables together with other motivational constructs identified in the WWC model. An example is self-efficacy, as Graham (2018) placed both this construct and implicit theories in the third set of motivational beliefs of the WWC model, which pertain to the beliefs about one's writing competence. In this respect, previous empirical research has shown that implicit theories and achievement goals are directly or indirectly related to self-efficacy (e.g., Limpo & Alves, 2017; Yilmaz Soylu et al., 2017). Other motivational variables that could be added are intrinsic and extrinsic motivation, considering that Graham placed these constructs together with achievement goals in the fourth set of motivational beliefs of his model, which focus on the reasons to engage in writing. Future studies could also fully identify motivational profiles based on the other motivation-related variables mentioned in the self-theories framework, such as effort, causal attributions, and strategies (Blackwell et al., 2007; Dweck & Master, 2009).

Fourth, we did not include any cognitive-related variable mentioned in the WWC model (Graham, 2018). In this regard, studies by De Smedt et al. (2022) and Troia et al. (2022) are good examples of person-centered studies combining motivation and cognitive-related variables embedded in the WWC model (Graham, 2018). Future studies could do the same while assessing implicit theories and achievement goals with cognitive variables.

Fifth, we only used self-report measures to assess students' implicit theories and achievement goals, which might have prompted socially acceptable answers and may have posed difficulties for students in accurately assessing themselves. As noticed by De Smedt et al. (2022), the triangulation of measurement methods is highly recommended when studying writing profiles based on cognitive and motivational variables. Although self-report measures are still widely used in achievement motivation research, other alternatives, such as phenomenological, physiological, and behavioral methods, are available and can be used to achieve the proposed measurement triangulation (Fulmer & Frijters, 2009). Finally, we used hierarchical and k-means clustering approaches to analyze our data, but the latest person-centered approach research is increasingly using latent profile analysis, which could be considered a more sophisticated alternative to obtain student profiles (Jang et al., 2021; Troia et al., 2022).

Implications for instructional design in writing

As stated by Troia et al. (2022), "Heterogeneous writing profiles have implications for educational practice in that they indicate the need for teachers and educational specialists to design and implement instructional practices and interventions that match the unique writing capabilities and needs of their students" (p. 10). Overall, our study

highlights the relevance of teachers adding motivation-enhancing practices to their instructional repertoires for teaching writing (Bruning & Horn, 2000; Camacho, 2021a; Camacho, Alves, De Smedt, et al., 2021; Camacho et al., 2022, 2023; De Smedt, 2019; Latif, 2020). These practices may be especially uplifting for students who fit into a less adaptive writing motivation profile characterized by a fixed mindset and performance-oriented goals, which was associated with slightly lower text quality and writing grades.

In this regard, a prior systematic review showed that Self-Regulated Strategy Development (i.e., an evidence-based instructional program combining background knowledge, self-regulation, and writing strategies), collaborative writing (i.e., planning, composing, and revising a text with a peer or in groups), and digital tools (such as blogs) are promising strategies to foster students' writing motivation (Camacho, Alves, & Boscolo, 2021). In addition, teachers can systematically emphasize to students that writing is not an innate trait but, instead, a malleable skill that can be developed through intentional and extended practice over time (Camacho et al., 2023; Dweck, 1999; Kellogg, 1994). According to Dweck's theory, teachers can foster a growth mindset in students by using process feedback that focuses on students' work progress, learning, and effort (e.g., "You must have worked hard on your text plan"; "Good job revising your text"). On the contrary, ability feedback focused on students' traits or abilities (e.g., "You are good at writing"; "You are really smart") is expected to promote a fixed mindset.

Next to that, teachers may want to avoid establishing a performance-oriented classroom structure, in which students' success depends on how well one performs compared with others instead of one's progress (Ciani et al., 2010). Previous research has shown that such performance-oriented classroom structures may jeopardize students' well-being, motivation, and performance in school (Meece et al., 2006). As explained by Dweck and Master (2009):

Students have no control over the performance of other students, so comparing themselves to others can be frustrating and demotivating. Indeed, a student may improve substantially but still not yet compare well to others. However, when teachers use the students' own past performance as the standard, the students see more clearly that their effort leads to better outcomes, and that their lack of effort leads to worse outcomes. When they see the direct link between their own actions and the outcomes of their work in school, students are often more motivated to learn. (p. 136)

In short, our study adds to previous person-centered research in writing (De Smedt et al., 2022; Ng et al., 2022; Troia et al., 2022) by revealing two distinct writing motivation profiles, based on implicit theories and achievement goals, with practical implications for writing instruction. Our findings reinforce the need for teachers to assess students' writing motivation and tailor their writing instructional practices according to students' unique characteristics and needs (Boscolo & Gelati, 2019; Bruning & Horn, 2000; Camacho, 2021a).

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