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Studying Academic Writing Skills among Doctoral Research Scholars

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Abstract

This study looked at students' thoughts on writing and how they regarded themselves as writers. The Writing Process Questionnaire was used to gather students' views on academic writing. The connection between PhD students' mental health and their writing ideas was also of interest. A survey of 669 PhD students from a big Finnish institution was used in the research. Scales for assessing blockages, procrastination, perfectionism, intrinsic talent, knowledge transformation, and productivity were created using 26 questions. The six-dimensional construct was confirmed using CFA. It was revealed that emotional weariness was associated to a greater risk of procrastination as well as a decreased rate of output. LISREL research verified the six-factor structure of the writing scale. For the study of academic writing and its emotional components, the questionnaire appears to be a useful and reliable tool.

Keywords: Academic writing: writer's block; procrastination, perfectionism, PhD education; doctoral students, writing process; learning environment; stress; feedback, commitment, instrument, questionnaire

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1. Introduction

All academic endeavours necessitate some form of writing. Experimenting with literate practises is especially beneficial for PhD students, as it offers them the skills they need to contribute to their areas in an important way (Bazerman, 2006; Dysthe, 1993; Kamler, 2008; Lea & Street, 1998). Developing new scientific ideas and information through academic writing is an important part of collaborative knowledge growth (Hakkarainen et al, 2004; Paavola, Lipponen, &Hakkarainen, 2004). All in all, PhD studies revolve around writing.

For those who want to pursue doctoral degrees, the process of writing a dissertation will take months or even years. However, a small number of PhD candidates are capable of writing a dissertation but never finish it (Boice, 1993; Golde 2000; Lovitts, 2001; McAlpine and Norton, 2006). There is a significant absence of academic writing help to blame for this difference (Boice 1993). It's difficult to improve one's academic writing abilities since it takes a long time to become well-versed in the conventions of academic writing. Consequently, teaching and exchanging academic writing is quite challenging (Lonka, 2003). PhD education often emphasises the end result, the thesis or degree, rather than the process of writing itself as a learning opportunity to be actively supported (Aitchison 2009; Björk&Räisänen 1996; Pyhältö, Stubb&Lonka 2009). Research suggests that putting too much emphasis on a product (like a thesis) might be detrimental to one's well-being as well as one's capacity to complete the thesis. As a result, new educational methodologies and procedures are needed to identify the most pressing challenges in PhD students' academic writing instruction.

Students' views of writing may have a significant impact on how they approach thesis writing, how they explain their successes and failures, how committed they are to improving their academic literacy, and how they actually write. An abundance of misguided and prejudiced notions is prevalent in academic circles. This influences people's interactions. For this survey, we were interested in finding out how PhD students see themselves as writers, as well as how they see their personal writing problems. Writing Process Questionnaire (Lonka, 1997; 2003) was designed to verify an instrument for measuring PhD candidates' understanding of academic production, particularly in terms of thesis writing.

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2. Writerly notions

Besides being an isolated activity, academic writing is also a social one: it serves as a means of integrating oneself into the academic community and culture (Dysthe, 1993; Lea & Street, 1998; McAlpine & Amundsen, 2008). For decades, academic writing has relied on genres and procedures that have been relatively stable, yet that are still used today (Bazerman, 2004). Genre may be described as a type of communication or discursive practise that has implicit social and cultural standards (Hyland, 2004). Understanding the literary standards and styles of thought of a tradition is essential for PhD students when they participate in scientific activity. Using specialised vocabulary and making arguments requires adhering to strict disciplinary and regulatory guidelines. Participants' implicit knowledge of academic genres is more frequent than they realise, making the technique more difficult to complete. Comprehension of textual practises is the foundation from which writing notions are generated (Lonka, 2003).

If you want to progress as a scholar, you can't do so without learning about the field's textual practises. It is vital for people to gain the required skills and information in order to fulfil their social and authorship tasks. Writing their dissertations is a form of "authoring themselves" for the students, who are finding their own unique academic voices (Holland, Lachicotte, Skinner, & Cain, 1998). As with any other author, PhD students (like any other writers) may get frightened when confronted with a large number of prospective present and future reviewers, which can lead to procrastination, perfectionist tendencies, and writer's block. It is common for beginners to produce scholarly writings that just rehash what has already been expressed, rather than providing fresh insights (Bereiter &Scardamalia, 1987). If you're a doctoral student who struggles with writing, you might want to avoid using technical writing guides (Thomson &Kamler, 2007). Instead, identity, conversation, and discursive labour challenges associated to academic writing (e.g. Ivani, 1998) are all too common. There are a variety of "side effects," to academic writing that have a positive impact on both the author's self-esteem and interpersonal relationships (Perpignan, Rubin, & Katznelson, 2007). Cognitive and epistemic processes impact the writing process, but so does the scientific community's culture and standards for exchanging information as they relate to research and scholarship. As a whole, PhD students perceive academic writing to be a challenging

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endeavour. If PhD students do not receive enough support, they may create and maintain writing notions that are not optimal for completing their doctorate studies.

2.1 Writing concepts that can be adapted

Scientists need a wide variety of skills and knowledge to write their work effectively. Academic talents that are related to specific topic knowledge are referred to as "literate expertise" by Scardamalia and Bereiter (1991). According to their original definitions, there are two main ways to reading and writing: "knowledge telling" and "knowledge transformation" (Bereiter and Scardamalia, 1987). Instead than requiring pupils to exert a great deal of mental energy, reproducible activities promote the use of writing as a tool for learning and growth.

Changing your mindset The research on skilled writers has indicated that knowledge-transforming abilities such as creating a detailed mental image of the work, actively and reflectively addressing problems, responding to the underlying qualities of the task, and reflecting on and relating to one's target audience are crucial (e.g. Hildyard, 1996; Olson, 1994). (1987) by (Bereiter and Scardamalia). According to our idea, PhD students who have learned to consider academic writing as a tool for knowledge transformation rather than just replication are more likely to finish their dissertations. They would view writing as an act of cooperation and creation rather than a simple repeating of already known material. Instead of working alone, they prefer working in groups, producing several draughts of their work, and then iterating on those draughts depending on feedback they get. An specialist in academic writing must have an in-depth awareness of the numerous disciplinary genres that may be employed to produce a compelling and rigorous "narrative" of one's research.

Effectiveness and self-confidence. Students who are enthusiastic and confident in their writing talents are more likely to succeed as authors, according a study by our team. Step one in this process is to consider oneself as a contributor and active part of the academic community. According to Bandura, all psychological activities have an impact on task-specific self-efficacy (1977). We put in more effort when we believe we are capable of completing a task than we do when we don't believe we are capable at all. Self-efficacy can help you avoid undesirable habits like procrastination when it comes to writing.

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Bandura was also aware of social conditions that might contribute to collective inefficacy (1982). To put it another way, a lack of awareness for the need of intentional and methodical efforts to develop one's writing ability may be connected to a common idea that writing is an innate "gift" Writing self-efficacy is strongly reliant on one's own estimation of one's own output. Maintaining a positive self-perception of oneself as a productive member of society and a successful author is essential, regardless of the obstacles faced while working on the thesis.

2.2 Faith in one's intrinsic abilities

Many people feel that authors have an inherent ability to communicate their most significant ideas clearly and succinctly, even though this is not always the case (see, e.g. Sawyer, 2009). Writing may appear to be done in solitude, but it is actually a kind of communication that is becoming more and more popular in research. Writing study emphasises the importance of perseverance, habit, and the presence of supportive friends and family members (Boice, 1993). Students' self-perceived ideas about what they can and cannot know can influence their academic performance in college (Lonka et al., 2008). Knowledge is divided into two camps: those who believe that knowledge is organised and absolute, while those who believe that knowledge is a collection of interpreted and integrated viewpoints (Lonka& Lindblom-Ylänne, 1996; Lonka& Lindblom-Ylänne, 1996).

One cannot rely solely on the dualist/relativist epistemologies split of Schommer (1990; 1993). She created an epistemological quiz to assess a person's personal epistemology based on a variety of different criteria. An important impact was the students' belief that they were born with a natural ability to study. Because of this, writing may be seen as a creative and collaborative act of knowledge transformation. As a result, this thought can take root in places where individuals are encouraged to pursue their own unique paths (Sawyer, 2009). Perhaps the capacity to write is seen as a "toggle switch" that can be turned on and off at will. There is a correlation between these beliefs and a lack of effort to improve as an author.

2.3 Problems in writing

Writing, as previously noted, involves adopting disciplinary genres as well as the individual act. In order to study academic writing, one must overcome the difficulty of translating information into an understandable and discipline-acceptable entity for a specific audience.

For this to work, a person must not only accept the discipline concepts and theories as true, but they must also learn how to apply them in practise, which is something that can only be done gradually and in an encouraging atmosphere. Academic literacy development may be hindered by some writing assumptions and practises.

The inability to write effectively, but not because of a lack of literary or intellectual capacity, is known as "writer's block" (Rose, 1980). Even the most accomplished and experienced authors have their share of writer's block. Anxieties about failure, perfectionist tendencies, childhood trauma and bullying were all cited as reasons for writers' block in Boice's (1993) study. His conclusion was that blocking is seldom a singular phenomenon, and that it might be produced by a range of misguided beliefs. It was a self-help guide for academic writers that contained a self-diagnostic quiz for identifying poor writing habits. From an educational perspective, inflexible rules, early editing, and the writer's limited alternatives for coping with complexity can all contribute to these problems (Thompson &Kamler, 2007).

It is the practise of delaying or ignoring to begin duties that are crucial to one's success, which lowers one's productivity. Failure to self-regulate is a typical problem in academic research (Steel, 2007). A study by Onwuegbuzie (2004) found that 42 percent of graduate students delay on writing projects, 40 percent on exam reading, and 60 percent on weekly reading assignments, respectively. Klassen et al. showed that writing assignments were more responsive to academic procrastination than other activities (2009). Due to the nature of writing, procrastination may be more prevalent than in other pursuits (Boice, 1990).

There are two sorts of procrastination: adaptive and maladaptive (Schraw et al 2007; Howell et al., 2007; Lee 2005; Chu & Choi 2005; Moon & Illingworth 2005; Klassen et al., 2008; Kearns et al., 2008a; Schraw et al., 2007; Ferrari& Thompson 2006; Knaus 2000; Ferrari et al., 2005; Bui, 2007; Spada et al., 2006). In the first example, procrastinators seek to improve their time management and efficiency. An adaptive procrastination may also involve a last-minute effort that results in high levels of involvement. The maladaptive version happens when children fear failure, are anxious, or lack motivation.

To be perfect in academic writing, one must be fixated on the idea of producing a faultless piece of work, even if it means attempting to change the content till it is perfect or just giving up (Boice, 1990). Anxiety over failing, a desire to avoid criticism, or an attempt to impress

others are all common causes of this sort of behaviour, and it can make it difficult for students to share draughts and get feedback, which can lead to writing problems. Procrastination is often tied to a person's perfectionism (Boice& Jones, 1984; Kearns et al., 2008a, 2008b; Onwuegbuzie, 2000; Ferrari & Thompson, 2006; Alexander & Onwuegbuzie, 2007; Bui, 2007; Steel, 2007; Van Eerde, 2003). It was Neumeister (2004; also see Seo, 2008) who first identified two sorts of perfectionists, the self-directed and the socially mandated. The self-directed perfectionist works hard and procrastinates less, whereas the socially mandated perfectionist attempts to prevent failure. To achieve this goal, one might either procrastinate or work harder to avoid failing at any costs.

Intertwined with academic writing difficulties (Boice, 1993). Students who delay in the face of negative criticism run the risk of being enmeshed in a self-perpetuating loop. Anxiety, a sense of failure, and a complete lack of creativity can all result from a lifetime of terrible events. Getting stuck in a rut and putting things off are two of the worst things you can do for your work and well-being. Starting to write might be difficult because of procrastination, but finishing it can be difficult because of perfectionism. It is obvious that a complete block means that nothing is being made. Procrastination, on the other hand, is more likely to have a negative impact on productivity than perfectionism.

2.4 Emotions that are generally dysfunctional when it comes to writing

Traweek, 1988; Delamont and colleagues, 2000): Writing a PhD dissertation is tough and even stressful. Almost all PhD students face some type of socio-emotional stress during their study. Stubb, Pyhältö, and Lonka (2009; 2011a) similarly found that Finnish PhD students reported feelings of frustration, inadequacy and bewilderment (Pyhältö et al., 2009). Anxiety during PhD studies was found to have a detrimental effect on thesis work and productivity.

According to research, there are conflicting findings on the relationship between the many factors that may cause a student to struggle with thesis writing. Blocks and procrastination, for example, were cited by Gute&Gute as examples of academic disengagement (2008). When it comes to procrastination, it has been found to be associated to feelings of exhaustion, exhaustion, and burnout (Schraw et al 2007; Blunt &Pychyl 2000; Chu and Choi 2005). (Ferrari & Thompson, 2006). Procrastination has been linked to anxiety (Schraw et al., 2007; van Eerde's meta-analysis, 2003; Fritzsche et al., 2003; Spada et al., 2006; Neumeister, 2004;

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Alexander & Onwuegbuzie, 2007); however, Steel's (2007) meta-analysis disputed this assertion. Anxiety has been linked to procrastination.

PhD students' approaches to writing assignments are examined in the current research. To ensure the validity of the writing questionnaire, this research was conducted. Disadvantageous feelings such as stress or boredom or exhaustion may be connected to writer's block, procrastination or perfectionist tendencies (Lonka et al., 2008).

3. The Purposes of the Research

When it comes to understanding how PhD students perceive academic writing, there has been no instrument expressly built for this purpose until now. However, despite the existence of a number of instruments that assess "by-products" of writing, a systematic and easy-to-use tool has not yet been developed. Researchers in this study are working to close the knowledge gap by creating a questionnaire to assess PhD students' understanding of scientific writing. We use data from a sample of Finnish PhD candidates to test the instrument's reliability and validity, with the objective of discovering student dispositions that may or may not aid their doctoral studies. Criteria factors that indicated negative emotions such stress, concern, boredom, and exhaustion were used to examine the validity of students' ideas about academic writing

3.1 Questionnaire on the Writing Process Development

According to a Lonka instrument, the Writing Process Questionnaire has a 25-item scale (1996, 2003). Rather than focusing just on PhD applicants, she developed a test to evaluate academic writing in higher education in general. The purpose of this study was to gather the viewpoints of PhD students on academic writing, thus we adjusted the questions to match the doctoral context. This questionnaire was put through its paces in a preliminary research. 41 PhD students from various fields, including physics, biology, and meteorology, were given the original scale. Based on the results of the pilot study and feedback from students, researchers, and academics, we revised and/or deleted any parts of the instrument that were found to be unclear. Writing Process Questionnaire, which featured six sub-scales on adaptive concepts or challenges in writing, comprised six sub-scales: (1) Block; (2) Procrastination; (3) Perfectionism; (4) Innate Ability; (5) Knowledge Transforming; and (6)

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Productivity. This study examined the reliability and validity of the final version of the Writing Process Questionnaire.

3.2 Research Issues

These four research questions are at the heart of our project: Reports say the Writing Process Questionnaire was designed to gather six distinct views on writing. This led us to believe the scale would include six factors (see Figure 1). But a more general two-factor structure was identified, based on adaptable writing concepts (formed by the items on knowledge transformation and productivity) and the other based on writing challenges (formed by the items on Block, Procrastination, Perfectionism and Innate Ability). This led us to the following questions: (I) Are Block, Procrastination, and Perfectionism all captured by the Writing Process Questionnaire? and (Ii) Are Natural Talents, knowledge transformation and Writing Process Productivity all captured by this questionnaire? The answers to both of these questions are yes. Or does it merely capture (1) difficulties and (2) adaptable thoughts about the writing process in general? For this question, the structure of the Writing Process Questionnaire was analysed using confirmatory factor analysis. The goodness-of-fit indices for a six-factor model were projected to be much higher than those for a two-factor model. (II) How consistent are the subscales of the Writing Process Questionnaire's sub-questions? A minimum of 0.6 was envisioned for the internal consistency of each scale. What are the relationships between the subscales, and how do these scales relate to the problematic emotions or dispositions that emerge throughout the writing process (e.g., stress, exhaustion, lack of interest, and anxiety)? Knowledge Transforming and Productivity were projected to have positive relationships, and so were Block, Procrastination, Perfectionism, and Innate Ability, among other factors. However, the other four factors were predicted to have a negative impact on Knowledge Transforming and Productivity. Knowledge Transforming and Productivity may also suffer as a result of unpleasant emotions.. Block, Procrastination, Perfectionism, and Innate Ability, on the other hand, have been found to be connected with negative feelings. These questions were crucial for testing the instrument's credibility. Last but not least, are there any differences in the performance of pupils in different groups? Studying for a lengthy amount of time was expected to cause difficulties with writing. As far as demographics were concerned, we had no expectations.

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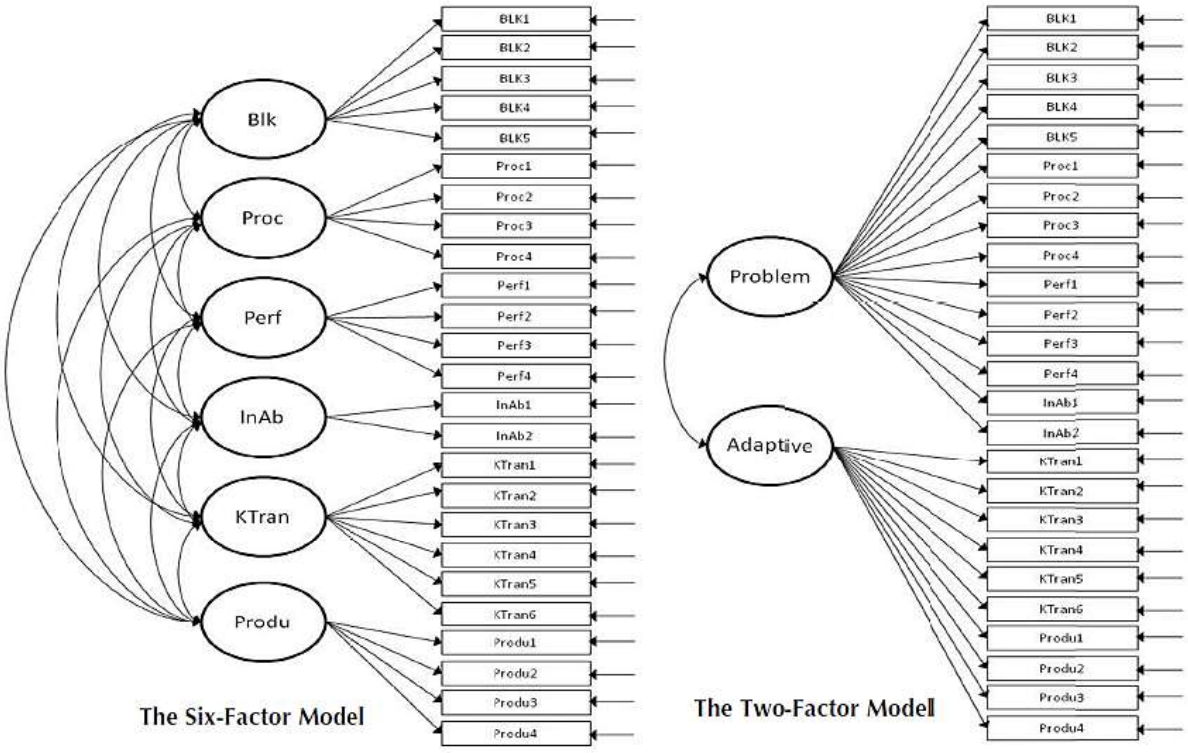

Figure 1. The hypothetical six-factor and two-factor model: Blk= Block, Proc = Procastination, Perf = Perfectionism, InAb = Innate Ability, KTran = Knowledge Transforming, Produ = Productivity, Problem = Problem in Writing, Adaptive = Adaptive ideas for Writing.

4. Method

4.1 Participants

It was found that the data in this study came from three different colleges at Helsinki University: the faculties of arts, medicine, and behavioural sciences. Six hundred and sixty-nine doctoral candidates participated in the survey (female: 496; male: 168; mean age: 39; Med: 35). 384.4% of people took the time to respond. A questionnaire was completed by 664 of these people, and their results were included in the research. Those in attendance all had master's or licentiate degrees and were in various stages of PhD study. There are half-time workers on their theses and full-time workers on them, as can be shown in Table 1. The majority of them worked alone, although one-fifth were part of a study team.

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During the thesis writing process, 43 percent of students contemplated quitting their PhD programme. For this study, a small sample of 41 PhD students in natural sciences participated in a pilot study and provided feedback on an earlier draught of the survey.

Table 1. Age, gender, research group status and working status of the participants (Stubb, 2012)

	Medicine	Arts	Behavioral Sciences	All
Age (mean/median)	38/34	34/34	34/34	39/35
Gender				
Women	129(80%)	244(70%)	123(79%)	496(75%)
Men	33(20%)	102(30%)	33(21%)	168(25%)
Research group status				
Alone	65(43%)	314(93%)	117(78%)	496(78%)
Both	29(19%)	14(4%)	20(13%)	63(10%)
In a group	59(38%)	9(3%)	13(9%)	81(12%)
Working status				
Full-time	85(55%)	183(55%)	51(34%)	319(50%)
Part-time	70(45%)	143(46%)	101(66%)	314(50%)

4.2 Materials

Pyhältö, Stubb, and Lonka (2009) conducted a bigger investigation that provided the data for this paper. This study employed the Writing Process Questionnaire, which includes Likert-scaled questions that indicate negative feelings and thoughts about writing. In addition, there were inquiries concerning the severity of the applicant's mental health and other relevant information.

The process of composing a piece of writing. Many facets of writing were addressed in the Writing Process Questionnaire. Table 2 covers the statements used to measure hurdles, negative thinking, knowledge transformation, productivity, procrastination, perfectionists, and intrinsic ability.

A lot of unreasonable emotions to cope with. These were assessed using a modified version of the MED NORD questionnaire (Lonka et al., 2008; Stubb, Pyhältö, &Lonka, 2011ab).

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Emotional dysfunction was measured by Elo et al., 2003, fatigue (Maslach & Jackson, 1981), anxiety (Mäkinen et al., 2004), and lack of interest (Mäkinen et al., 2004). Doctoral students' involvement in the thesis process also included a background inquiry on their intentions to take a break from their studies.

Table 2. The Writing Process Questionnaire

Scale	Items
Blocks	(Blk 1) Q6:"My previous writing experiences are mostly negative"
	(Blk 2) Q10:" I sometimes get completely stuck if I have to produce texts"
	(Blk 3) Q14:"I find it easier to express myself in other ways than writing"
	(Blk 4) Q15:"I only write when the situation is peaceful enough"
	(Blk 5) Q19: "I hate writing"
Procrastination	(Proc 1) Q3:" I often postpone writing tasks until the last moment"
	(Proc 2) Q9:"Without deadlines I would not produce anything"
	(Proc 3) Q11:"I find it difficult to start writing"
	(Proc 4) Q18:"I start writing only if it is absolutely necessary"
Perfectionism	(Perf 1) Q5:"I find it difficult to write, because I am too critical"
	(Perf 2) Q24:"Writing is difficult because the ideas I produce seem stupid"
	(Perf 3) Q21: "I could revise my texts endlessly"
	(Perf 4) Q17:"I find it difficult to hand over my texts, because they never seem complete"

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Innate ability	(InAb1) Q16:"The skill of writing is something we are born with; it is not possible for all of us to learn it"
	(InAb2) Q23:"Writing is a skill, which cannot be taught"
Knowledge transforming	(KTran1) Q26: "Writing often means creating new ideas and ways of expressing oneself"
	(KTran2) Q27: "Writing develops thinking"
	(KTran3) Q25:"Rewriting texts several times is quite natural"
	(KTran4) Q4:"Writing is a creative activity"
	(KTran5) Q1:" It is useful to get other people's comments on texts"
	(KTran6) Q2:"When I write I am concerned about whether the reader understands my text"
Productivity	(Produ1) Q8: "I produce a large number of finished texts"
	(Produ2) Q20" I am a regular and productive writer"
	(Produ3) Q7:"I write regularly regardless of the mood I am in"
	(Produ4) Q22:"I write whenever I have the chance"

Note. All the scales ranged from one to five; "1" meaning "Do not agree" and "5" meaning "Fully agree". In single item stress scale "1" meant "Not at all" and "5" meant "Very much".

The demographics of the population are discussed in Section 3. Student demographics, such as age and gender, as well as whether they worked full or part time throughout the semester, were covered in 18 questions (see Table 1). Additionally, students were required to answer a series of questions regarding their major subject, principal funding source, and how much time they spent working alone, in a research group, or with other researchers. How many alternative responses there were for each question was dependent on the type of question.

4.3 Information gathering

The spring 2006 semester saw the completion of the PhD student survey. Finnish and English questionnaires were first sent via mail to the students' homes, depending on the student's language preference. After that, an email was sent to each student's inbox with a reminder and a link to the survey, which they were expected to complete.

4.4 Statistical Investigations

A confirmatory factor analysis (CFA) was performed on the scale items using Mplus statistical programme version 7.11 (Muthén&Muthén, 2013). This was done to ensure that the hypothesised factor structure of the scale's items was correct. In order to construct

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measurement models that may be used to verify or question the anticipated latent variable structures, researchers can utilise it to describe the relationship between variables and latent factors (Byrne, 1998). According to Steiger (1990), the Root Mean Square Error of Approximation (RMSEA), the Comparative Fix Index (CFI), and the Standardized Root Mean Square Residual (SRMR) were used to evaluate the CFA model's statistical adequacy.... (1990). (SRMR). An excellent match was found when researchers looked at the data and found an RMSEA of less than 0.08, a CFI equal to or more than 0.09, and an SRMR of less than 0.08. (Kelloway, 1998; Hu &Bentler, 1999; Diamantopoulos &Siguaw, 2000). These are the methods used to conduct CFA analyses: a To begin, the two- and six-factor theoretical models of the Writing Process Questionnaire were separately estimated using Maximum Likelihood estimation to account for any missing data points. As a next step, we assessed the goodness-of-fit of the two hypothetical models based on their two statistics to see which was better at fitting the data as an alternative hypothesis. After completing the CFA questionnaire, Cronbach's alpha was calculated for each subscale to address the second research question. To answer the third research question, correlations between subscales and negative emotional measures were produced utilising data. In the end, several t-tests were conducted to see whether there were differences in ideas for writing items between a) male and female PhD students, b) students who have considered interrupting their studies and those who have not, c) students who are writing their theses in a monograph or summary of articles, and d) students who worked full-time and those who worked part-time. This is known as Cohen's d, which is the coefficient of determination used to calculate the t-test effect sizes. An effect size of 0.3 to 0.5 was deemed to be of little significance; the difference in significance between 0.5 and 0.80 was considered to be of medium importance; an effect size of higher than 0.80 was judged to be of substantial significance. Significant significance was defined as an effect size larger than 0.80, according to Cohen (1988).

5. Results

5.1 The Questionnaire on the Structure of the Writing Process

The instrument under inquiry, the Writing Process Questionnaire, has a latent component structure, which is the primary focus of the research. The Writing Process Questionnaire was also tested to see if it was better suited to measuring problems in writing and adaptive ideas

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about the writing process in general, or if it could capture six distinct constructs, such as block, procrastination, perfectionism, knowledge transformation, innate ability, and productivity. In order to address this question, the six-factor and two-factor models were each described in detail (see Figure 1). It appears that the six-factor model correctly predicted the data, according to the goodness-of-fit indices: CFI =.9; 2 = 917.1; df = 260; 664; p =.001; RMSEA =.06; RMMR =.06. Therefore, the two-factor model failed to adequately represent the data: RMSEE = 1,1, CFI = 0,6, and SMR = 0,9, all of which were statistically significant (p =.001). In a follow-up examination of the two models' 2 indices, it was shown that the six-factor model had a statistically significant improvement in fit compared to the two-factor model. Df = 14, N = 664, p =.001 for a two-way ANOVA According to these results, the Writing Process Questionnaire contains the six latent components, as anticipated and planned during questionnaire development. measurement invariance in terms of precision and dependability

The internal consistency of the questions and subscales of the University of Michigan's Writing Process Questionnaire is the subject of the second research. Scale descriptive analyses include, as indicated in Table 3, item counts, internal consistency (Cronbach"s Alpha), means, standard deviations, and maximum and lowest values for each variable. Table 3: Scale descriptive analysis Analyzing the item factor loadings on each subscale is done through the use of a CFA model (except innate ability, as such procedures could not be done on a subscale with only two items). There were loading factors of 0.24 to 0.68 for blocks, 63 to 79 for procrastination, 38 to 84 for perfectionism, 0.27 to 78 for knowledge transformation, and 53 to 75 productivity. Following procrastination and perfectionism in terms of loading coefficients were blocks. Each scale's reliability was found to be adequate or good, according to the results.

It was determined that measuring invariance may be used in order to compare male and female production in the areas of procrastination/perfectionism/knowledge shifting. Each subscale was compared to a baseline model with less restricted factor loadings, as opposed to a measurement model in which factor loadings were limited to be equal across genders (i.e., metric invariance model). It appears that the connections between items and their latent dimensions are equal for men and women in all three measures of procrastination, knowledge

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transformation, and productivity (RMSEA =.02 to.08, CFI =.99 to.99, and SRMR =.03 to.07). An analysis of block metrics (RMSEA =.06, CFI > 95%) confirmed prior findings that blocks are somewhat invariant (SRMR = 0.05). An experiment was conducted to compare metric and non-metric invariance models for procrastination, knowledge transformation, and productivity. Males and females were given equal intercepts. An invariance in the scale of scalar invariance (RMSEA =.03, CFI =.99 and.99) was found for procrastination and productivity, respectively (SRMR =.04 and 03, CFI =.99 and.99). RMSEA =.08, CFI =.92, SRMR =.07 were found with low RMSEA, CFI, and SRMR for knowledge change. Based on data, perfectionism did not show any indication of invariance between genders.

Measurement invariance studies were used to compare the subscales across individuals from the Faculty of Arts, Faculty of Medicine, and Faculty of Behavioural Sciences. RMSEA =.04, CFI =.99, SRMR =.05 were shown to be true for procrastination in terms of scalar invariance. Partially scalar invariance was found for knowledge transformation and productivity (RMSEA =.07 and.05; CFI =.90 and.99, SRMR =.08 and.06) whereas partial metric invariance was found for blocks (RMSEA =.06, CFI =.95, SRMR =.05). Measurement inconsistency across faculties was not found for Perfectionism.

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Table 3. Descriptive analyses of the scales, internal consistency (Cronbach's Alpha), scale means, standard deviations (SD), and minimum and maximum values.

Scale	N	Alpha	Mean	SD	Min	Max
Conceptions of writing						
Blocks	5	.60	2.3	.67	1	4.6
Procrastination	4	.81	2.8	.95	1	5
Perfectionism	5	.67	2.7	.79	1	4,75
Knowledge transforming	6	.63	4.4	.47	2.67	5
Innate ability	2	.75	2.0	.88	1	5
Productivity	4	.76	2.7	.83	1	5
Negative emotions						
Stress	1	_	2.8	1.2	1	5
Exhaustion	4	.82	2.7	.92	1	5
Lack of interest	2	.76	2.1	1.1	1	5
Anxiety	3	.65	2.7	.97	1	5

5.3 Validity (convergent, discriminant, and concurrent)

The validity of the concept is the focus of a third study. Convergent and discriminant intercorrelations between the six subscales of the Writing Process Questionnaires were observed. Correlation tables are included in Table 4 for each subscale. A positive correlation was found between impediments, procrastination, and perfectionism, as well as between knowledge transformation and productivity, as one might predict. These results confirmed the validity of the subscales. Procrastination, obstructions, and a lack of interest were all linked to lower productivity. Blockages and natural ability were also inversely related to knowledge transformation. Results like these showed that the subscales' discriminant validity was solid.

These subscales were correlated with negative mood measures in order to examine their contemporaneous validity with the Writing Process Questionnaire. Table 3 shows that all negative emotions were linked to writing problems. Blocks, perfectionism, and

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procrastination were all associated to stress, weariness, concern, and a lack of interest. Stress, exhaustion, worry, and boredom were more common symptoms in students who had difficulty getting started on their papers, as were procrastination and perfectionism. Furthermore, productivity was shown to be inversely associated to feelings of boredom, stress, and exhaustion. As a result, the lack of interest in writing might be connected to the belief that writing is something that comes naturally. Academic indifference was lowest among students who reported high levels of productivity and who viewed writing as a way of transforming information.

5.4 Comparisons between subgroups

Studying further, researchers found that students who considered interrupting their studies differed from others in terms of blocks, procrastination and perfectionist tendencies (t = 5.518, df = 656, p.001, Cohen's d = 0.43), as well as productivity (Students who contemplated interrupting their studies reported more roadblocks (mean = 2.43) than those who did not (mean = 2.15).) Compared to the general population, they had higher mean procrastination (2.59, mean perfectionism = 2.61) and perfectionism (2.80) scores. Another study found that pupils who didn't think about stopping school had a higher productivity rate than those who did (mean = 2.88). Productivity was higher among full-time students (t = 1.983, df= 622, p.05; Cohen's d = 0.16) than among part-time students. In comparison to full-time students, part-time students (mean = 2.67) reported being more productive. There were also less blocks (t=-4.082 df=645, p.001, Cohen's d=0.33) and more knowledge-converting writing (t=3.182 df=642, P.001, Cohen's D=0.24) for students producing monographs than for students writing papers (t=2.429 df=640, p.05, Cohen's D=0.2). It was also shown that students who were working on a monograph had greater degrees of perfectionism than their counterparts When it came to the transformation of information, males and females differed (t=3.498, df=657 p.001, Cohen's D=0.3). Writing is more likely to be viewed as knowledge altering by women (mean = 4.45) than men (mean = 4.31). For each of the comparisons above, we utilised Mplus (excluding those based on intrinsic ability). We evaluate two models for each subscale: one that constrains the means across groups to be equal, and the other one that does not. The outcomes of these investigations followed a similar trend.

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Table 4. Correlations among variables

	1	2	3	4	5	6	7	8	9
Problems									
1 Blocks	1								
2 Procrastination	.525**	1							
3 Perfectionism	.415**	.378**	1						
4 Innate ability	-.006	-.017	.011	1					
Adaptive ideas									
5 Knowledge transforming	-.164**	-0.005	.078*	-.175**	1				
6 Productivity	-.435**	-.586**	-.226**	.052	.126**	1			
Negative emotions									
7 Stress	.224**	.249**	.231**	.006	-.049	-.109**	1		
8 Lack of interest	.235**	.284**	.150**	.155**	-.163**	-.295**	.260**	1	
9 Anxiety	.327**	.446**	.326**	.039	.028	-.294**	.540**	.444**	1
10 Exhaustion	.300**	.234**	.263**	.019	-.048	-.085*	.678**	.274**	.592**

Note. ** Correlation is significant at the 0.01 level (2-tailed).* Correlation is significant at the 0.05 level (2-tailed)

The correlation between age and the belief that writing is an intrinsic skill was statistically significant (P=.099, p .01). When it came to reporting, older PhD students were more likely than younger students to see it as an inherent skill.

5.5 Comparisons with national data are made

We compared our group of participants to the overall population of Finnish PhD students, adjusted for gender and age disparities, in order to evaluate their representativeness (Table 5). Our sample represented a decent reflection of the broader population when it came to gender distribution. While medical students tended to be slightly older than the average participants, students in humanities and behavioural sciences appeared to be younger. There was a little overrepresentation of PhD students in the latter third of their programme in the sample. As a result of their greater experience, these students may have felt more secure in their abilities to explain their whole approach.

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Table 5. Statistics (year 2008) of gender distribution and mean age in different disciplines in the University of Helsinki according to Statistics Finland and the university's own statistics

Stub Head	Women	Men	Age (mean)
Humanities	66%	34%	42.4
Behavioural sciences	76%	24%	53.1
Medicine	71%	29%	35.3

Our sample was also compared to a bigger national survey of Finnish PhD students, which was done in the lack of particular national level information on Finnish doctorate students, to assess its representativeness (Hiltunen and Pasanen 2006, International Postgraduate Student Mirror 2006). A comparable percentage of full-time and part-time students (both 50 percent) as in our sample (both 50 percent) may be found in this data (both 50 percent full-time students). As far as working conditions go, there was little difference. Most students (71%) said they worked alone on their research projects, with only 6 percent saying they worked mostly in groups. This conclusion was based on data collected from students around the country. Only 23% of respondents said they could not tell the difference between working alone and in a group. A total of 78 percent of the participants in our study reported working alone; 13 percent reported working in a group; 9 percent of participants reported working in a group at the same time. According to our survey, the vast majority of students who replied were in their last year or two of their PhD studies, but in the national research, the vast majority of students were still in the early stages.

6. Discussion

All in all, the Writing Process Questionnaire appears to be a reliable and useful tool for appraising the ideas of PhD students who plan to write professionally. According to the available data, the instrument has a specific structure in place. There were other methods in which the foreground variables may be linked to the writing scales, as well.

Avoiding writing barriers requires an understanding of writing concepts and notions (Boice, 1993). The ability of writers to actively participate in and reflect on their writing will allow them to discuss challenges and approaches, to successfully monitor their work, and to develop a variety of adaptable writing abilities as they go through their careers (Lonka,

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2003). A new instrument was needed to capture some of the most fundamental aspects of textual communication, therefore it was necessary to design a new one. In practical workshops, PhD students found the Writing Process Questionnaire to be useful in reflecting on their writing processes. After developing an instrument based on a large data set, it seemed necessary for testing it in a situation where it would be acceptable and useful, such as in the framework of PhD studies.

Consequently, the study found a link between decreased productivity and scientific writing issues such as procrastination, perfectionism and the idea that writing is a natural talent. Self-reported productivity is positively associated with perceiving writing as a process of information transformation, whereas productivity was shown to be negatively associated with viewing writing as an intrinsic skill. For those students who believed in the transforming potential of information, our predictions came true: they were more likely to view writing as a skillset that could be developed through practise than as a natural ability.

Academic writing success may be predicted by one's understanding of writing, according to the findings of this study. Most individuals don't only regard them as unique ideas; they also see them as common worldviews. As a PhD student, your supervisor, and your classmates can all benefit from pause and consideration of such fundamental assumptions. How people relate to one another is influenced by their shared values and worldview. For example, if the PhD student feels that writing is a process of knowledge transformation and the supervisor believes that writing is a natural skill, communication difficulties may occur. One way to influence both individual and communal agency is through the concept of "self-efficacy" (Bandura, 2006). Self-efficacy beliefs about academic writing were thought to be at play when participants in this study reported feeling productive.

6.1 Representativeness

Humanities, social sciences, and behavioural sciences were all considered as possible target populations. University of Helsinki PhD students' gender and age distributions were quite consistent with those of other PhD students at the university. It's natural that postgraduate students are on average older than part-time students because part-time students are often working adults. Additionally, our demography was quite similar to those found in polls conducted across the country and around the world.

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Due to the lack of interest, the response rate was rather low. We couldn't acquire a greater response rate since students didn't sign up for the survey. While we sent out a questionnaire to every registered PhD student in each of the three settings, our data also contain a substantial number of students who had enrolled but were no longer actively engaged in their thesis projects. As late as a few years ago, it was feasible to keep registering, no matter how far along the process was. A PhD student in Finland enjoys several benefits, and many prefer to remain on the list even if they are not actively pursuing their degree. These persons could not be removed from our distribution list, for lack of a better alternative.

This study included interviews with students who had not finished their coursework by the conclusion of the semester under consideration. Follow-ups every three years at Finnish institutions have opened up this possibility: individuals who have not advanced must either resubmit a research plan or give up their status as a PhD student.

6.2 Reliability

There was a high degree of internal consistency among the six measures in terms of dependability. The questionnaire's six-scale structure was confirmed using the confirmatory factor analysis approach. Because the questionnaire is not meant to be a psychological exam, the Cronbach's Alphas are at the very least acceptable. The following are the trustworthiness metrics. Stumbling blocks, knowledge transformation, and perfectionist inclinations are all worth 70 points in this test. More than one dimensionality was predicted to be measured by these models, as was expected. Knowledge shifting, for example, asked participants about their chances of editing their writings and whether or not they considered writing to be a collaborative endeavour. For our part, we intended to preserve the idea of several dimensions as an abstract concept. In the same manner, severe self-criticism and the practise of continuously modifying a work characterise perfectionism. In the future, it's feasible that these two characteristics will be divided into two distinct scales. Writer's block is the most complex and nuanced statistic we have at our disposal theoretically. Even though procrastination, natural ability, and productivity were all shown to be one-dimensional constructs, the scales employed to assess these three qualities proved to be more stable.

6.3 Validity

One such argument is that every new context in which a research instrument is used should be verified from the bottom up. Researchers have found that occurrences that appear to be identical, but are perceived differently depending on the system or culture analysed, have been discovered in studies across different systems of higher education (Richardson 2004). The results of a questionnaire are particularly sensitive to little differences in wording and meaning. We spent several years translating and customising our instrument for use in both Finnish and English. Pilots and back-translations were used extensively.

To be considered "construct valid," a scale must be able to accurately measure the objects for which it is designed. Factor analyses are commonly used to measure concept validity in psychometrics. Due to our testing of our questionnaire's format in the context of giving confirmation studies, our analyses were adequate in this context. In terms of content validity, we may state that our exploratory analyses were valid because they were in line with well-established theories of writing while also introducing some new and surprising components. In order to increase criterion validity, the scales and variables that describe emotional discomfort were linked to each other. The Writing Process Questionnaire appears to be a viable and reliable tool for assessing PhD students' attitudes toward writing.

A great deal of testing has been done on both the Finnish and the English translations. In addition to the United States, this instrument can be utilised in other nations for research purposes. When working with people from diverse cultures and languages, a cross-cultural validation approach is highly suggested. There is already a Spanish version of the questionnaire, and preliminary findings show that it will be beneficial. It will be interesting to see if or not this instrument is linked to the creation of more and better works in the future.

6.4 Implications for education in terms of improving the PhD writing process

The intellectual and scientific community provides a supportive environment for graduate-level research. Researchers believe that the scientific community is an ideal learning environment because it includes practises such as monitoring and education in addition to the actual physical learning environment. (PyhältöStubbLonka 2009; PyhältöStubb and Lonka 2009). According to research, a student's thoughts and academic writing habits are influenced by the learning environment in which they are enrolled. As a result, the challenges posed by

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the learning environment may make it difficult for PhD students to adopt a knowledge transformation approach, which is a trait shared by great authors (Bereiter &Scardamalia, 1987).

A PhD student's past learning experiences, objectives, and techniques are all crucial aspects to examine when it comes to the relationship between a student and his or her learning environment. Postgraduates' views on their learning environment have been shown to impact supervisors' supervisory methods and their views on R&D (McAlpine & Weiss 2000; Zhao, Golde, McCormick 2007). There may be a positive or negative effect on learning when students have preconceived beliefs about what it means to write a thesis or an academic paper.

We found a link between PhD students' general happiness and their ability to generate good ideas for new research papers. Written communication has an important instructional function in addition to its technical significance (Perpignan, Rubin, & Katznelson, 2007; Thomson &Kamler, 2007). The development of literate knowledge and reflective thinking is crucial while dealing with PhD students.. Modes of instruction such as process writing and tactics for constructive criticism may help to prevent students from abandoning their PhD programmes in the future (Lonka, 2003). Writing clubs and various types of assistance have been suggested as feasible remedies in the previous months, but, Academic writing abilities should be given more emphasis in doctoral studies, according to academics. One of the most important facets of this evolution is the encouragement of flexible approaches to academic writing that boost output while also improving well-being. This circumstance may benefit from the use of the Writing Process Questionnaire as a diagnostic test.

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