

**FEEDBACK EFFECTS  
ON STUDENTS' WRITING  
MOTIVATION, PROCESS,  
AND PERFORMANCE**

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# **FEEDBACK EFFECTS ON STUDENTS' WRITING MOTIVATION, PROCESS, AND PERFORMANCE**

Feedbackeffecten op de schrijfmotivatie,  
het schrijfproces en de schrijfprestatie van studenten  
(met een samenvatting in het Nederlands)

Proefschrift

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# 1. Introduction

At university, concerns regarding students' writing skills are regularly expressed. Educators feel that students have difficulties with academic writing, and that they often lack motivation for working on writing assignments. This is problematic, as writing is an important skill for both the educational and the professional career.

Since the development of writing skills is an explicitly stated educational goal, students frequently receive writing assignments. Teachers spend lots of time providing students with feedback on the quality of their texts. They try to motivate their students and to contribute to the writing process, for example through indicating important aspects of text quality and by providing suggestions on content. Despite their efforts the problems remain, and so teachers wonder how they can contribute more to students' writing motivation and performance.

These experiences and concerns from the educational field are corroborated by scientific literature. Literature confirms that writing education is open to improvement, since many freshmen's and graduate students' writing capacities are insufficient (Kellogg & Whiteford, 2009). Several approaches have been suggested to improve writing education, focussing on specific instructional practices that directly aim at writing skills (e.g., strategy instruction) (Graham & Perin, 2007; Kellogg & Whiteford, 2009), but also on practices that enhance students' writing motivation (e.g., giving students choices about the topic of writing) (Bruning & Horn, 2000). Motivation is pointed out as an important factor because, although students recognize the importance of writing for educational and career goals (Shell, Colvin, & Bruning, 1995), they suffer from feelings of incompetence and a lack of enthusiasm for writing (Cleary, 1991).

Feedback is indicated as enhancing both students' skills and motivation (Brown, 2004; Bruning & Horn, 2000; Crooks, 1988; Kellogg & Whiteford, 2009; Kluger & DeNisi, 1996). Despite the fact that teachers spend much time providing students with feedback on their writing (Stern & Solomon, 2006), research on the effects of feedback provided on the adequacy of written products is scarce

(Graham & Perin, 2007). For both scientific and practical reasons it is important that this gap is reduced.

Therefore, the central research question in this thesis is: Do feedback interventions exist that, through their content and/or formulation, contribute to students' writing motivation, process, and performance? This question is addressed in three empirical studies that each focus on another type of feedback. The three types of feedback are (a) progress feedback, which is feedback that informs students on their progress in writing since the previous assignment; (b) feedback that provides improvement strategies, which is feedback that suggests actions to improve text quality; and (c) feedback posing questions, which is feedback that contains interrogative formulations. These three kinds of feedback are suggested by literature as potentially effective means for contributing to students' task motivation, task process and task performance, but have not been systematically investigated.

The theoretical framework for the three empirical studies is presented in chapters 2 and 3. In chapter 2 the writing process, the assessment of writing tasks, feedback, and reflection on feedback are addressed. Several aspects of feedback that link to students' task motivation, task process, and task performance are discussed. The chapter ends with a discussion of the operationalisation of the writing process, writing performance, feedback and reflection in the respective studies. Chapter 3 discusses two motivation constructs and their link with the three kinds of feedback used in the empirical studies. Also the operationalisation of the motivation constructs is explained. The first empirical study, reported in chapter 4, deals with the effects of progress feedback on students' writing motivation and performance. In the second study, reported in chapter 5, the effects of feedback that provides students with improvement strategies for their text are investigated. Also, the effects of a reflection assignment dealing with students' intentions to use the feedback and their intended approach of the revision are examined. The effects explored concern students' writing motivation, process, and performance. The third study, reported in chapter 6, deals with the same dependent variables. In this study, the effects of feedback posing questions are examined. Also in the third study the effects of a reflection assignment are investigated. Chapter 7 provides a general discussion and concludes this thesis. This chapter lists the main findings of the three studies, discusses their theoretical implications, considers methodological issues, provides suggestions for future research, and describes the practical implications of the results.

## 2. Writing and feedback on writing tasks

This chapter provides the theoretical framework regarding writing and feedback, used for the three empirical studies that are presented in chapters 4, 5, and 6. The students in these studies are university students learning the discipline's academic discourse. We will first discuss the writing process, academic writing, and the assessment of writing tasks, and then consider feedback on tasks. We present a feedback definition, discuss a feedback theory dealing with its effect on performance, and examine feedback characteristics. Three of these characteristics will be discussed in more detail, as they concern the experimental interventions in the respective empirical studies. Subsequently, we discuss feedback use and suggest reflection on feedback as a means to optimize feedback use. A reflection assignment is part of the experimental intervention in two of the studies. Lastly, the operationalisation of the writing process, writing performance, feedback, and reflection is explained.

### **Writing: how and what**

The development of research on writing accelerated in the 1970s. Until then, studies on writing were isolated, and writing instruction focussed predominantly on prescriptive rules for text features (Nystrand, 2006). This focus on the writing product changed to a focus on the writing process in the early 1970s (Galbraith & Rijlaarsdam, 1999) as a result of research in cognitive psychology (Grabe & Kaplan, 1996). Two influential cognitive models of writing were formulated by Hayes and Flower (1980) and Bereiter and Scardamalia (1987), which took account of the alternating cognitive processes in writing (planning, translating, reviewing) and, respectively, the processing of knowledge during writing (knowledge-telling versus knowledge-transforming). As a critique of purely cognitive approaches of writing, an increasing emphasis on the social and motivational context of the writing process emerged (Galbraith & Rijlaarsdam, 1999). Socio-cognitive models of writing (e.g., Carter, 1990; Flower, 1994; Hayes, 1996; Zimmerman & Risemberg, 1997) incorporated for example discourse practices, motivational

goals, perceptions of writing capacity, and collaboration. In this thesis the focus is on the writing processes described by Hayes and Flower as well as on the motivation for writing (i.e., motivational goals and perceptions of self-efficacy) and students' help-seeking. We decided to focus on the well-known and often used Hayes and Flower model because this model and its revision (Hayes, 1996) encompass cognitive processes and the writer's motivation and environment. The cognitive processes and the writer's motivation may be the link between feedback on writing tasks and writing performance.

### *The writing process*

Hayes and Flower's (1980) writing model contains three major writing processes. During the *planning* process, information is retrieved from memory and the task environment in order to make a writing plan. This writing plan guides the *translating* process, in which information is transformed to text. During the *reviewing* process, the text produced is read and edited. The processes do not function as stages, but can be returned to recursively. The altering of processes is determined by the *monitor*. Monitoring and directing one's writing process is an important part of the writing skill (Hayes & Flower, 1980).

In a revision of the model, Hayes (1996) added working memory, and emphasized its role in the writing process. Working memory provides a limited capacity to process information and to temporarily store information (Kellogg, 1996) and is essential for the functioning of the cognitive processes involved in writing (Hayes, 2006). The alternation of the complex processes in writing puts a heavy load on working memory (Kellogg, 1996) or attentional capacity (Kellogg, 1994). There is a trade-off between working memory processing capacity and storage capacity (McCutchen, 2000). Knowledge on for example topic, audience and language, stored in long-term memory, may form a writing routine or structure that reduces constraints on working memory, and hence free attentional capacity for planning, translating and reviewing (Flower & Hayes, 1980; McCutchen, 2000).

Empirical results regarding the relation between components of the writing process and text quality seem mixed. With regard to planning, the process of content exploration (i.e., mind-mapping, brainstorming or rough-drafting) as part of a detailed planning strategy has been found to be predictive of essay marks (Torrance, Thomas, & Robinson, 2000). Also text planning has been found to correlate positively with text quality, but not when controlled for time on task (Hayes & Nash, 1996). Additionally, the relation between planning and text quality has been found to differ (from negative to positive) between writing tasks

(Van Weijen, 2009). With regard to revising, it has been reported that revisions improve text quality for students from high school age (Fitzgerald, 1987). It has also been found that students' writing strategies do not correlate with teachers' marks (Torrance, Thomas, & Robinson, 1999), and that correlations between the processes and text quality depend on the episode in which the processes occur (Breetvelt, Van den Bergh, & Rijlaarsdam, 1994; Van den Bergh & Rijlaarsdam, 2001).

The significant relations between the writing process and writing performance indicate that writing performance can be enhanced by interventions that aim directly at planning, translating, revising, and monitoring. For example, strategy-focussed writing instruction (part of the task environment) stimulates text planning activities (De La Paz & Graham, 2002; Fidalgo, Torrance, & García, 2008; Braaksma, Rijlaarsdam, Van den Bergh, & Van Hout-Wolters, 2004) and contributes to text quality (Fidalgo et al., 2008; Graham & Perin, 2007). To enhance writing performance, also interventions that optimize the social or physical task environment or students' motivation can be deployed, because these affect the cognitive processes (Hayes, 1996). For example, supportive interaction with peers contributes to generating persuasive text content (Harris, Graham, & Mason, 2006), a physical environment free from distraction enhances concentration (Zimmerman & Risemberg, 1997), and students with positive self-efficacy beliefs persist longer when faced with difficulties than students with negative self-efficacy beliefs (Bandura, 1986; Bouffard-Bouchard, Parent, & Larivée, 1991; Schunk, 1984; Zimmerman, 1995). In this thesis, the effects of three feedback interventions on students' writing motivation, writing process and writing performance are examined. With regard to the writing process we examine effects on planning and revising, effort (including concentration), and help-seeking. We will use the term "writing process" as an umbrella term for these constructs.

### *Academic writing*

By the time students enter university, a large part of writing development has already occurred. Far before they receive formal training, children start learning the graphical act of writing (Tolchinsky, 2006), which is refined at the start of primary school. In primary and secondary education attention is paid to spelling, grammar, punctuation, vocabulary, text coherence, the writing goal and reader directedness of texts, as well as to writing strategies (Expertgroep doorlopende leerlijnen taal en rekenen, 2008). This is not to say that students' writing skills with respect to these aspects are completely developed during primary and secondary school: complaints on students' writing skills are enduring (De

Glopper, 1995; Kellogg & Whiteford, 2009) and assessment of writing tasks in tertiary education still focuses on these aspects (Stern & Solomon, 2006). Nonetheless, undergraduates are not novice writers as they have considerable experience of argumentative and descriptive writing (Torrance et al., 2000). What is new is that university students have to learn the academic discourse of the discipline (Grabe & Kaplan, 1996; Prosser & Webb, 1994).

With advancement in the academic career, students develop their conceptions of essay writing towards more sophisticated levels, for example their conceptions on the role of evidence in their essays, the structure of their essays, the conclusions in their essays, and the synthesis of information (Campbell, Smith, & Brooker, 1998; Fitzgerald & Shanahan, 2000; McCune, 2004). Also, students' essays gain in cognitive structuring of the content: essays progress from listed information to synthesized information (Campbell et al., 1998). The main problems students experience in writing an academic text relate to difficulties in dealing with subject content (Nightingale, 1988; Kellogg & Whiteford, 2009). The combination of the content problem of what to say and the rhetorical problem of how to say it poses a huge cognitive challenge (Kellogg & Whiteford, 2009; Torrance et al., 2000). Extended and effortful practice, feedback, and motivation are required for developing academic writing proficiency (Kellogg & Whiteford, 2009). This entails that students' writing products are assessed on their quality. The assessment of writing tasks will now be examined and this leads to a discussion of feedback on tasks.

### **Assessment of writing tasks**

With regard to task assessment a distinction is made between formative assessment and summative assessment. Formative assessment is concerned with how the judgement of a student's work can be used to improve the student's competence, whereas summative assessment is concerned with summarizing the student's achievement status especially for certification purposes (Sadler, 1989). Both formative and summative assessment focus on the gap between the actual performance and some standard. Formative assessment takes one step further and deals with closing the gap: it is intended to lead to appropriate action to improve performance (Sadler, 1989).

In order to indicate the gap between the current performance and the intended performance, criteria and standards are required: criteria specify which characteristics are to be evaluated, standards indicate the levels of attainment that are considered as adequate (Sadler, 1987). Assessment of students' texts concerns the evaluation of complex learning outcomes which are not typified as either

correct or incorrect (as in objective testing) but are described or assigned a number based on a qualitative judgment by a person (Sadler, 1987). Typically, qualitative judgments are characterized by the use of multiple criteria, which are appraised individually as well as in a total picture (Sadler, 1989). The criteria used in appraising text quality tend to be fuzzy rather than sharp: they represent a scale as opposed to discontinuous states such as “right” or “wrong”. For example, with respect to a criterion like “originality” everything between totally unoriginal and totally original is possible (Sadler, 1989). As criteria for written composition are numerous (e.g., Elander, Harrington, Norton, Robinson, & Reddy, 2006; Hawkey & Barker, 2004; Sadler, 1989; Stern & Solomon, 2006) usually a subset of all possible criteria is used, instead of all criteria (Sadler, 1989). The selection of criteria will depend on the type of text as well as on the learning goals. For example, criteria to evaluate a position paper will relate to the reasons provided for the stated position, the elaboration of these reasons and the sources drawn upon, while criteria to evaluate a persuasive text on the solution of a particular problem will focus on the problem statement and its justification as well as on the provision of solutions (Odell & Cooper, 1980). For the development of students’ writing skills, criteria may be selected that focus on the skills that are to be learned in the particular course. For example, texts of first-year students in their first academic writing course may be evaluated on the quality of reasoning, but not on the quality of referencing (e.g., the use of APA style).

While a criterion determines what is evaluated, a standard specifies from which place of the continuum performance is considered adequate (or, when multiple performance levels are to be indicated, multiple standards may be set along a particular criterion) (Sadler, 1987). Three types of standards have been distinguished: criterion-referenced standards refer to an absolute criterion level, norm-referenced standards refer to the performances within a group, and self-referenced standards refer to the previous performance of an individual (Natriello, 1987). With the complex products and the fuzzy criteria entailed in writing, it is difficult to formulate criterion-referenced standards for students’ texts. No numerical cut-offs can be distinguished that indicate specific achievements (Sadler, 1987). Here, descriptive statements combined with exemplars may specify a standard. A description of high text quality may for example be: “There is a logical progression of ideas from an original hypothesis to a final conclusion. Facts are reported accurately, and the inferences drawn are plausible. [...] The whole piece hangs together well, the wording is appropriate, and the mechanical aspects of writing are flawless” (Sadler, 1989, p. 127; for other examples of descriptive statements see for instance Hawkey & Barker, 2004).

Examples of actual texts can illustrate this high level of text quality and make it concrete. Likewise, other levels of text quality can be described and provided with exemplars (Sadler, 1989). When norm-referenced standards are used, assessment indicates a student's position relative to the position of other students (Sadler, 1987). In fact, this standard cannot be communicated to students before they start working on an assignment, as the relative quality of their work can be indicated only when other students have handed in their assignments. A teacher using a norm-referenced standard will read all assignments and range them from low to high quality on the basis of certain criteria and probably implicit standards. Subsequently, the assignments are rewarded a grade on the basis of their relative quality. The use of a norm-referenced standard is ineffective for formative purposes: it does not inform the student on absolute text qualities (Sadler, 1987). Self-referenced standards refer to the student's previous performance. Self-referenced assessment indicates whether the student has improved (Sadler, 2005).

So, criteria and standards guide assessment, whether formative or summative. For summative purposes a resultant mark may suffice. However, for formative purposes a mark is insufficient. The goal of formative assessment is to improve the student's competence and performance, and therefore the student must be informed about the qualities of his or her performance. This is where we turn to feedback. Feedback, having a developmental focus (Brown, 2004), is central to formative assessment (Black & William, 1998).

### **Feedback on tasks**

Feedback research started about 100 years ago (Kluger & DeNisi, 1996). Until the early 1970s the behaviourist feedback-as-reinforcement model dominated (Kulhavy & Stock, 1989; Mory, 2004). Feedback, indicating whether a response was correct, was supposed to reinforce correct behaviour, that is, increase the likelihood that the correct response would be given on a later trial (Kulhavy, 1977). As the exploratory power of the operant approach was weak for the effect of feedback on incorrect responses, the focus turned to cognitive processes (Kulhavy & Stock, 1989). Feedback was seen not only as a reinforcer of correct responses, but also as provision of information on incorrect responses. Through information-processing inaccurate information could be corrected (Kulhavy & Wagner, 1993; Mory, 2004). In addition to the feedback message's informational value in terms of verification ("right" or "wrong"), the multifaceted nature of feedback became the focus of attention (Bangert-Drowns, Kulik, Kulik, & Morgan, 1991). Features of the substance of feedback were distinguished, such as the content, the form (appearance) and the amount of information (Kulhavy & Stock,

1989). Literature on communicative processes pointed out that besides characteristics of the feedback message, characteristics of the feedback provider (e.g., expertise) and the feedback recipient (e.g., experience) determine the processing of the feedback message and its use (Ilgen, Fisher, & Taylor, 1979).

With the change from a behaviourist to a cognitive perspective on feedback, more attention was paid to the psychological mechanisms through which feedback affects performance. Theories on motivation and self-regulation incorporated feedback as a theoretical component (e.g., social cognitive theory of self-regulation, Bandura, 1991; Butler & Winne, 1995; control theory, Carver & Scheier, 1981; goal-setting theory, Locke & Latham, 1990). A feedback theory, integrating varying theoretical perspectives, was formulated in 1996 by Kluger and DeNisi. The objective of this Feedback Intervention Theory was to account for the inconsistent findings regarding feedback effects on performance. The theory encompasses task-learning, task-motivation and meta-task processes, which function as a mediator of feedback effects on performance (Feedback Intervention Theory will be discussed in detail on p. 16 and 17).

While enhancement of task performance seems to be the ultimate goal of providing feedback, task characteristics (e.g., difficulty, duration) have received little attention in feedback research (Kluger & DeNisi, 1996). Research has been focussed mainly on relatively simple tasks and on tasks with a definite right answer or tasks that can be attributed an objective score (Kluger & DeNisi, 1996), for example vigilance tasks, memory tasks, following rules tasks and knowledge tasks. There has been little focus on higher-order learning (Mory, 2004). Feedback on writing tasks (which are complex problem-solving tasks requiring higher-order processes, Kellogg & Whiteford, 2009), has hardly been the focus of scientific research (Graham & Perin, 2007; for exceptions see Schunk & Swartz, 1993a, 1993b; Straub, 1996, 1997). Suggestions on how to provide feedback on writing must be derived from general advices on feedback (e.g., Brinko, 1993; Gibbs & Simpson, 2004) while it is not clear whether findings on other tasks hold for academic writing tasks. Even more, some general advices do not rely on empirical data (Brinko, 1993), and therefore the quality of these advices is unknown.

In this thesis on feedback on writing tasks, the feedback message plays the central role: feedback characteristics are examined that are supposed to enhance students' task process and task motivation, and, as a result, their task performance. Three empirical studies each focus on one feedback characteristic. In each study the presence of other potentially influential feedback characteristics is controlled for. Also some feedback recipient characteristics are taken into account

in the analyses: (a) students' writing motivation, writing process, and writing performance levels before the feedback intervention are controlled for; and (b) it is inspected whether the effect of the feedback intervention is dependent on the writing motivation, writing process or writing performance level before the intervention. The studies do not deal with feedback sender characteristics.

### ***Feedback definition***

Feedback has been defined in various ways, with reference for example to the information content, the aim, and the provider (Van de Ridder, Stokking, McGaghie, & Ten Cate, 2008). Central to feedback definitions is the provision of information to a performer. Definitions differ in the inclusion of a learner's *reaction* to this information and the *use* of the information (Van de Ridder et al., 2008). For example, Kluger and DeNisi (1996) restrict to the information provided as they define feedback as "actions taken by (an) external agent(s) to provide information regarding some aspect(s) of one's task performance" (p. 255), whereas for example Ramaprasad (1983) includes the information use: "Feedback is information about the gap between the actual level and the reference level of a system parameter which is used to alter the gap in some way" (p. 4). The latter definition defines feedback in terms of its effect rather than its informational content (Sadler, 1989). We exclude the effect from the feedback definition, as we consider it an empirical question what feedback effects are, or more specifically, when feedback has effect on particular outcome measures (cf. Kluger & DeNisi, 1996). Notwithstanding, the feedback provider's *intention* will be to alter the receiver's performance, or for instance his or her motivation or reflection (Van de Ridder et al., 2008). This intention is included in Shute's (2008) feedback definition. In her review of feedback research, she defined feedback as "information communicated to a learner that is intended to modify his or her thinking or behavior for the purpose of improving learning" (p. 154). In this thesis we combine the definitions of Kluger and DeNisi (1996) and Shute (2008) and define feedback as "information provided by an external agent regarding some aspect(s) of the learner's task performance, intended to modify the learner's cognition, motivation and/or behaviour for the purpose of improving performance".

### ***Feedback effects on performance: Feedback Intervention Theory***

The ultimate purpose of feedback is to enhance students' performance. For tasks concerning factual knowledge, feedback can directly improve performance through stating the correct answer (Smith & Ragan, 1993). With more complex

knowledge or skills such as writing, feedback is supposed to improve performance through its effect on motivation and/or strategy use (Kluger & DeNisi, 1996; Vollmeyer & Rheinberg, 2005). The student needs to be motivated and should learn how to approach the task and regulate the process. Just giving a correct answer will not lead to improvement of future performance. As such, feedback is as important for the “will and skill” to achieve as for the eventual achievement (Crooks, 1988; Maehr, 1976).

Kluger and DeNisi (1996) have argued that the effect of feedback on performance depends on the processes at which it directs attention. Central to their Feedback Intervention Theory (FIT) are three hierarchically organized control levels: meta-task processes, task-motivation processes, and task-learning processes. *Meta-task processes* involve the self and are at the top of the hierarchy. *Task-motivation processes* involve the focal task and are located in the middle of the hierarchy. *Task-learning processes* involve the task details and are at the bottom of the hierarchy. Higher-level processes can influence lower-level processes. Meta-task processes have the potential to affect task processes through linking higher-order goals (e.g., investing in my career) to the task (e.g., writing a paper for this course). Task-motivation processes will activate task-learning processes (e.g., checking and reformulating sentences) when performance is insufficient, additional effort offers no solution and the preferred strategy is to change behaviour (rather than changing the goal or the standard) (Kluger & DeNisi, 1996).

According to FIT, negative discrepancies between the performance and the standard will generally direct attention to task-motivation processes, leading to more effort. When this does not reduce the discrepancy, attention might shift to components of task execution (task-learning processes) resulting in alternative attempts to execute the task, or attention might shift away from the task to issues involving the self, such as self-esteem and impression management (meta-task processes). In general, feedback cues that direct attention to task-motivation processes or task-learning processes – coupled with corrective information on erroneous ideas or hypotheses – are assumed to enhance feedback effects on performance. Feedback cues that direct attention to meta-task processes are supposed to reduce the effect of feedback on performance, because they divert attention from the task. More positive effects of feedback on performance are expected for tasks that require fewer cognitive resources, because when performance is heavily dependent on cognitive resources, extra motivation does not per definition translate into better performance (Kluger & DeNisi, 1996).

### **Feedback characteristics**

#### ***Feedback aspects relating to the three levels of FIT***

In the literature several features of feedback messages have been mentioned, partly based on research and partly based on argumentation, that would enhance or deteriorate performance in general or writing performance in particular. These features can be linked to the three levels of FIT. We discuss features that are relevant for written feedback provided by the teacher (for other feedback characteristics such as timing, see Kulik & Kulik, 1988; for peer feedback, see for instance Van den Berg, Admiraal, & Pilot, 2006).

Grades (Brinko, 1993; Gibbs & Simpson, 2004; Kluger & DeNisi, 1996; Shute, 2008), information on personal characteristics (Brinko, 1993; Gibbs & Simpson, 2004) and information on the performance of others (Kluger & DeNisi, 1996) can be linked to the *meta-task level* of FIT. Such feedback is cautioned against as it directs attention to the self and thereby interferes with performance. In contrast, feedback should be descriptive and refer to the task. Feedback praising the person is also considered to lead attention to the self and to interfere with performance (Kluger & DeNisi, 1996), although students like praise when it is accompanied by an explanation (Straub, 1997). Possibly, explanations transform praise from information on personal characteristics to information on good performance. Furthermore, careful formulation is important for students to accept negative feedback (Brinko, 1993; Straub, 1997), or, to put it differently, harshly formulated feedback will probably be experienced as a threat to the self and as such will direct attention to the meta-task level.

Corresponding to the *task-motivation level* of FIT is the advice to compare the performance with some standard (Elliot & Thrash, 2001; Sadler, 1989, 1998). This implies that the performance is evaluated against a performance level decided on beforehand (criterion-referenced standard), or compared to the student's previous performance (self-referenced standard), rather than to other students' performances (norm-referenced standard) (Sadler, 1998). Using the previous performance as a standard, particularly feedback indicating progress (progress feedback; e.g., "you improved in structuring your text") can fulfil a motivational function (Kluger & DeNisi, 1996; Schunk, 2003). Another advice linking to the task-motivation level is to pose questions, as to inspire to work out ideas (Stern & Solomon, 2006; Straub, 1997). Furthermore, for motivational purposes it is important that the amount of feedback is manageable, rather than overwhelming (Shute, 2008; Stern & Solomon, 2006). In addition, the formulation of the feedback is important: moderately controlling comments that provide help, but leave decisions to the student do encourage students, as opposed to overly

controlling, dictating comments or comments that provide too little help (Straub, 1996).

Relating to the *task-process level* of FIT are directions to give feedback about the task approach or task process in relation to the performance (Smith & Ragan, 1993), and to provide strategies for performance improvement (Nicol & Macfarlane-Dick, 2006; Sadler, 1989; Stern & Solomon, 2006; Straub, 1996, 1997). Feedback should be specific to bring to light what to improve (Brinko, 1993; Gibbs & Simpson, 2004; Locke & Latham, 1990; Shute, 2008; Straub, 1997). Explications, examples and explanations can highlight important aspects of the process (Smith & Ragan, 1993; Straub, 1996, 1997). Feedback posing questions can make students reflect on their task process or reconsider certain choices (Smith & Ragan, 1993; Straub, 1996, 1997).

FIT does not make predictions concerning the effect of feedback sign (indicating good or bad performance) on attention direction, as its central premise is that performance-standard discrepancies can be resolved at all three levels. To feel able to resolve the discrepancy on task-level (as opposed to for example changing the goal or the standard) positive and negative comments should balance (Stern & Solomon, 2006).

The studies presented in chapters 4, 5, and 6 focus on progress feedback, feedback providing improvement strategies, and feedback posing questions, respectively. Therefore, these feedback aspects will be examined in more detail.

### ***Progress feedback***

Progress feedback can be defined as the information that performance has improved, compared to the previous performance on a similar task (see Kluger & DeNisi, 1996; Schunk & Swartz, 1993a, 1993b). So, progress feedback provides information regarding the performance based on a self-referenced standard. "Self-referenced" refers to an earlier task performance of the particular person, rather than to the self in terms of "person characteristics", that is, the meta-task level of FIT. Progress feedback is indicated as an intervention that draws attention to the task-motivation level (Kluger & DeNisi, 1996). Feedback aspects that direct attention to task-motivation processes instigate effort (FIT) or engagement (Butler & Winne, 1995) and may so augment feedback effects on performance (Kluger & DeNisi, 1996).

Positive effects of progress feedback on performance have been shown in the probably most comprehensive meta-analysis on the effects of feedback on performance to date (Kluger & DeNisi, 1996). This meta-analysis comprised studies on tasks that dealt with knowledge (knowledge tasks, memory tasks),

rapidity (reaction time tasks, vigilance tasks) and physical skills. Within the range of complexity of these tasks, Kluger and DeNisi found that the more complex the tasks were, the less effective feedback interventions were for performance. They argued that when performance is highly dependent on cognitive resources, extra motivation does not per definition translate into better performance. So, the question is whether positive effects of progress feedback on task motivation and performance occur for writing tasks, which seem more complex than the tasks involved in the meta-analysis. We know of two studies that investigated the effect of progress feedback on children's writing motivation and performance. Schunk and Swartz (1993a) provided children with feedback on their writing. Part of the children was assigned the goal to learn particular writing strategies and they received feedback that conveyed progress in the use of these writing strategies. These children tended to report higher self-efficacy for writing on the post-test and to perform better on the post-test than children who were assigned the same goal but did not receive progress feedback. In a similar study, Schunk and Swartz (1993b) found a significant effect of progress feedback on performance six weeks after the intervention. They also found that students who were assigned the goal to learn strategies and were provided with progress feedback reported a less strong ego goal (i.e., focus on performing well to please the teacher and to avoid trouble) compared to students who were assigned the same goal but did not receive progress feedback. So, feedback providing progress information may contribute to students' writing motivation and performance.

#### *Feedback providing improvement strategies*

Feedback providing strategies for performance improvement is suggested as help to approach the writing task (Stern & Solomon, 2006; Straub, 1996, 1997) and is thus supposed to direct the attention to the task-learning level. Providing improvement strategies is a form of instructional scaffolding: the teacher helps the student to internalize routines and procedures to complete the task that is just too difficult to perform alone (Applebee, 1986). In fact, improvement strategies are at the core of formative assessment as they are means to reduce the gap between the actual performance and the standard (Sadler, 1989). Strategies may vary in several respects. Strategies differ in the writing process they aim at, such as planning or revising (Graham, 2006) (e.g., for planning a strategy may explain how to make an outline in order to clarify text structure; for revising a strategy may suggest to reread the text solely on spelling). Strategies may aim at different text aspects, such as text structure or language (e.g., making an outline can be suggested to improve text structure, rereading on spelling can be indicated to improve

language). Strategies also differ in the involvement of others (e.g., rather than making an outline, the suggestion may be to discuss the text structure with a peer).

Strategy instruction – focussed on planning, translating and revising – has been found to improve the writing performance of students in primary and secondary school (Graham, 2006). From Graham and Perin's (2007) meta-analysis on several instructional practices, strategy instruction appeared as the most powerful instructional practice to improve the quality of adolescent students' writing (because of a lack of studies on feedback, effect sizes for feedback could not be calculated). Feedback that provides improvement strategies is different from strategy instruction as it is a response to a particular problem that appears from the student's text. Although such feedback relates to a specific performance deficiency, it is also broad because no specific solution is provided but some transferable manner to handle particular kinds of problems. For example, feedback can explain how to schematize the line of reasoning in order to make the text structure explicit to the reader. This strategy is not specific to the student's current text but can be used with other texts as well. The advantage of feedback providing strategies over strategy instruction is that since it is a response to a deficiency, its use or necessity is evident. It may be argued that a disadvantage is that students probably devote less time to feedback providing strategies compared to the time that strategy instruction generally takes up. However, as Wallace and colleagues (1996) showed, also a short revision instruction (eight minutes) can bring about positive effects on performance. So, like the effects of strategy instruction, positive effects of feedback providing strategies would be expected for students' writing performance.

Research on feedback that provides learners with improvement strategies is scarce. The use of writing revision strategies was modelled in a study of Zimmerman and Kitsantas (2002). In that study, one-third of the students watched a "coping model" making and correcting revision errors and improving in the use of revision strategies, one-third of the students watched a "mastery model" flawlessly implementing revision strategies, and one-third of the students did not watch a model. Students in both modelling groups performed better on a writing revision task than students who did not watch a model implementing revision strategies. Students who saw the coping model reported higher self-efficacy beliefs and performed better than students who saw the mastery model, so the combined information of revision strategies and dealing with errors was most beneficial. While in this study students watched a model using revision strategies, it may be more effective to provide feedback that includes

improvement strategies as it deals with the individual's particular performance deficiencies. Feedback including improvement strategies was provided in a study by Narciss and Huth (2006). They investigated the effect of the provision of strategic information for the correction of subtraction errors (e.g., information on the carry of "1" when calculating 68-29). Half of the fourth-grade pupils were provided with this information when they had made a subtraction mistake. The other half of the pupils did not receive this strategic information, but did receive information on the correctness of their response and the correct answer. Children who received strategic information reported higher motivation and performed better on the post-test than children who did not receive this information. In another study, Narciss (2004) investigated the effect of strategic information for the correction of errors in concept identification tasks (dealing with the identification of attributes and rules). An example of this strategic information is the information to use negative instances for the inference of rules. Students who received this information did not perform better than students who did not receive this information. If the available time-on-task was restricted, strategic information did contribute to students' effort and task engagement. Based on these results it can be expected that feedback providing improvement strategies contributes to students' writing motivation, writing process, and writing performance.

### *Feedback posing questions*

Feedback posing questions is feedback that contains interrogative formulations. This kind of feedback is indicated as inspiring students to work out ideas (Stern & Solomon, 2006; Straub, 1997). For example, feedback posing questions like "Why do you consider the conclusions of the authors valid and true? Could you think of counter arguments?" may energize students' thinking. Because of the challenging and non-controlling content and formulation, we suppose that this kind of questions directs attention to the task-motivation level. Feedback posing questions is also suggested to make students reflect on their task process or to reconsider certain choices (Smith & Ragan, 1993; Straub, 1996, 1997) (e.g., "How could you support these views, so that they are more convincing to the reader?"). Feedback posing questions may thus direct attention to the task-motivation level as well as to the task-learning level. In both cases questions are supposed to offer direction but to leave the control over revision with the student (Straub, 1997).

Questions can be typified in various ways. First, questions have a particular content. Ge and Land (2004) distinguished questions that focus on the task subject matter (elaboration prompts) and questions that focus on the task

process (reflection prompts). The instructional function of the question determines its content. For example, to guide students to construct arguments, questions may ask for elaboration and explication (e.g., “What evidence do you have...”); to make students think about their task approach questions may ask for reflection (e.g., “How could you take account of both viewpoints?”) (cf. the task-motivation and the task-learning level of FIT). Second, questions aim to elicit particular cognitive processes. Krathwohl (2002) reorganized Bloom’s taxonomy of educational objectives (see Anderson & Sosniak, 1994) and distinguished six cognitive processes: remember, understand, apply, analyze, evaluate and create. These cognitions form a hierarchy from simple (remember) to complex (create). For example, a question that asks for the viewpoint discussed in a particular article aims at remembering and will be easier to answer than a question that asks to evaluate that viewpoint. These questions differ in the extent to which they call for active processing (Kintsch, 2005). Third, questions vary in the extensiveness of the required answer. Closed-class questions require short answers. Verification questions can be answered with “yes”, “no”, “maybe” or “don’t know”, and concept completion questions call for a short answer on “who”, “what”, “when” and “where”. Appropriate answers to open-class questions are more elaborate. These questions start for example with “why”, “how” or “what if” (Graesser, Lang, & Roberts, 1991). Open-class questions require more effortful processing than closed-class questions (Kintsch, 2005). Fourth, questions can be categorized as “real” or “unreal” in the sense that they genuinely ask for information or are rhetorical (cf. Flammer, 1981). For example, a teacher posing questions like “What is your idea on the quality of the implementation of the training?” or “What was the main reason for the school to implement this training?” may not know the answers and therefore truly ask for information. On the other hand, questions like “Is it functional to use the same heading repeatedly?” and “Could you explain these points?” merely communicate the teacher’s opinion (i.e., use different headings; add an explanation), rather than stimulate students’ thoughts (of course in second instance such feedback, like other not interrogative feedback, will require the student to think on how to revise his or her paper).

There is little empirical research on the effect of questioning on solving ill-structured problems (Ge & Land, 2004) such as writing. In a study by Scardamalia, Bereiter and Steinbach (1984) elementary school children were instructed to use cues that stimulated self-questioning during writing, such as “An explanation would be ...” and “A better argument would be ...” These cues were combined with modelling and the instruction to look for high-level ways to reconcile inconsistencies (i.e., producing an idea that preserves what is valid on

both sides). Students who received this training wrote better essays on self-chosen topics than students who did not receive this training, and were more reflective in the planning of text content. As the training consisted of three elements, it is not entirely clear whether the question prompts brought about the effects. A positive effect of pure question prompting was found by Ge and Land (2003). In their study, students who received an ill-structured problem-solving task accompanied by elaborative and reflective question prompts achieved better than students who did not receive the questions. In both studies however, the questions were part of instruction and not of feedback on performance. So, the questions were not adapted to the student's performance.

With respect to the cognition that questions aim at, it has been found that questions that ask for complex cognition (manipulating information, reasoning) have a (small) positive effect on achievement (Samson, Strykowski, Weinstein, & Walberg, 1987). Questions that are unreal because the teacher knows the answer in advance are found to inhibit students' idea development (Flammer, 1977 in Flammer, 1981). Also these results have not been indicated to concern feedback posing questions, but rather seem to concern general instruction.

Nevertheless, based on the theoretical notions and scarce empirical results described above, we would expect feedback posing questions to contribute to students' writing motivation, writing process, and writing performance.

### **Feedback use**

The feedback features discussed above are supposed to lead to improved performance. Two conditions seem implicit in this line of reasoning though are very important. For feedback to fulfil its formative function, it is essential that students are required to use the feedback right away for a subsequent performance. If feedback is provided on a final draft, there is little incentive to process the information and to incorporate the feedback in future writing assignments (Kellogg & Whiteford, 2009). So, the first prerequisite for effective feedback is the opportunity and necessity to use it directly. This condition must be satisfied through course organization. The course scheme must warrant that at some moment during the course students receive feedback on their text, that they subsequently have time to revise their text, and then have to hand in a second draft.

The second condition relates to the reception of feedback. When feedback is given with the aim to enhance writing performance, the assumption is that it evokes at least some reflection on the content and the process of writing. Mindful reception of the feedback promotes learning and/or performance (Bangert-

Drowns et al., 1991; Salomon & Globerson, 1987). Lack of time and effort to engage in reflection in response to feedback has been suggested as a reason why feedback interventions do not have their intended effects (Anseel, Lievens, & Schollaert, 2009). Reflection can be described as a process that starts with the identification of a problem and the decision to seek a solution. A plan or decision to act is made up through cognitive activities (Rogers, 2001). Examples of such cognitive activities are comparing, analysing, evaluating, questioning, concluding, and intending (Stokking, Van der Schaaf, Leenders, & De Jong, 2004). As a result of feedback on writing, reflection would start with the identification that the text is not (yet) what it should be, and – in case the text has to be revised – the decision to seek a solution for the problems identified in the feedback. A student could for example analyse the text based on the teacher's comments, evaluate the feedback ("Do I agree with the teacher's point of view?"), conclude whether or not action should be taken, and make a plan (formulate an intention) on how to approach the revision. This example illustrates that, as Stokking and colleagues propose, not only cognitive activities can be distinguished, but also objects of these activities (the text in its present form, the feedback content, and the task approach for the subsequent draft; other objects might for instance be the first draft writing process and the way the feedback is communicated). The example also shows that feedback can instigate reflection, as well as be object of reflection.

Reflection on the feedback is supposed to aid to the effect of feedback on performance because it directs the feedback recipient's attention to the task level (cf. Anseel et al., 2009). A triggering situation can be employed to enhance reflection, supposed that the student is willing and ready to engage in the reflective process (Rogers, 2001). One of the triggering formal activities that may structure students' reflection process is asking questions (Seibert, 1999; Seibert & Daudelin, 1999; Smits, Sluijsmans, & Jochems, 2009). Instruction that provides students with questions to ask themselves during problem-solving has been shown to enhance performance (see p. 24; Ge & Land, 2003). Instructional procedures that pose questions that progress from what to why to how follow the reflection process as described. A problem is clarified, ideas on the causes generated, and action planned (Seibert & Daudelin, 1999). Since the utility of a reflection instigating procedure depends on the match between what is activated and what is required (Salomon & Globerson, 1987), we hypothesize that a reflection assignment that asks for students' opinion on the feedback, their intentions to use the feedback, and their intentions on the approach to writing the subsequent draft poses effective reflection enhancing questions. In the studies presented in chapters 5 and 6, the effects of this reflection assignment are

contrasted with the effects of a reflection assignment that poses questions that do not match with what is required: these questions relate to feedback perception rather than feedback use and the approach to writing the final draft.

## **Operationalisation**

### ***Writing process***

Students' writing process was measured in study 2 (chapter 5) and study 3 (chapter 6). In the pilot phase of the research project, our focus was on students' task approach – more general than the approach to writing or the writing process. In this phase, we searched for a questionnaire that measures students' motivation for and their approach of a particular task. Hence, we sought a questionnaire that poses items on task level, rather than on broader levels like the course or the college. The questionnaire had to be appropriate for university students. As none of the questionnaires we found satisfied our standards, we decided to adapt an existing questionnaire to our research purposes. The Motivated Strategies for Learning Questionnaire (MSLQ; Garcia & Pintrich, 1996; Pintrich, Smith, Garcia, & McKeachie, 1993) was chosen because its items are focussed on course level, which makes them (as opposed to items on studying in general) relatively easy to adapt to task level. The questionnaire entails both motivation and task approach scales. Also, the questionnaire has been widely used (Duncan & McKeachie, 2005).

The MSLQ is designed to “assess college students' motivational orientation and their use of different learning strategies for a college course” (Garcia & Pintrich, 1996, p. 323). It consists of six motivation scales and nine learning strategies scales. Items are scored on a 7-point Likert-type scale, from 1 (*not at all true of me*) to 7 (*very true of me*). Reliability of the motivation scales ranges from  $\alpha = .62$  to  $\alpha = .93$ , reliability of the learning strategies scales from  $\alpha = .52$  to  $\alpha = .80$  (Garcia & Pintrich, 1996).

In the pilot study, we used the items of five MSLQ scales: “metacognitive self-regulation”, “time and study environment management”, “effort regulation”, “help-seeking”, and “peer learning”. The author and a co-researcher independently adapted the items to assignment level (e.g., “I didn't spend much time on this writing assignment, because I had other things to do”), and translated the items into Dutch. In case we adapted the items in a different way, the definitive formulation was decided upon through discussion. In this pilot study, the items were administered with respect to two writing assignments. Because of the adaptation and translation, we did principal component analyses to inspect the relations between the items. To decide on the best factor solution, we used the following criteria: eigenvalue above 1, a simple factor structure, the scree

criterion, factor loadings of at least .40, and interpretability. Principal component analyses revealed four factors: attention/concentration, checking one's work, effort, and the involvement of others.

In study 2 we built on this, and extended the questionnaire to sharpen its focus on writing. Based on the pilot we used a selection of items from the MSLQ scales "metacognitive self-regulation" (5 items; 1 on concentration and 4 on checking the text), "time and study environment management" (5 items on time spending), "effort regulation" (1 item on effort spending), and "help-seeking" (1 item). We formulated additional items on concentration/efficiency (3 items), checking the text (1 item), time spending/effort (1 item) and help-seeking (3 items). We also formulated items on text planning (7 items), monitoring (7 items) and revision (7 items) for several text aspects (e.g., content, structure, language), inspired by Kieft (2006). Items were formulated on assignment level and scored on a 7-point Likert-type scale.

This writing process questionnaire was administered twice, with respect to the first and the second paper draft that students wrote. We did principal component analyses with varimax rotation, separately for both drafts (measurements). Based on the scree criterion three factors were extracted. Nine items did not load on a factor for both drafts, or loaded on more than one factor. We run the same analyses without these items, again extracting three factors. For the first and second draft respectively the variance accounted for was 53.5% and 55.4%. Using the criterion of at least .40 for the factor loadings resulted for both drafts in one factor consisting of seventeen items on planning and revising, one factor consisting of eleven items on effort, and one factor consisting of four items on help-seeking. For the second draft, one item loaded only .38 on the first factor, but this item was maintained. Three scales were constructed, labelled "planning/revising" (example items: "Before I started to write the first draft, I have thought about what the content should be"; "Sometimes I made changes to my first draft to improve structure"), "effort" (example items: "I think I have put enough energy in this first draft"; "While writing this first draft I regularly had difficulties with concentrating", reverse scored), and "help-seeking" (example items: "I have considered asking a peer for feedback on my first draft"; "I have asked a peer for feedback on my first draft"). Scale reliabilities were good (planning/revising:  $\alpha = .92$ ,  $\alpha = .91$ ; effort:  $\alpha = .90$ ,  $\alpha = .90$ ; help-seeking:  $\alpha = .87$ ,  $\alpha = .93$ ).

In study 3, the writing process questionnaire from study 2 was also administered twice, with respect to the first and the second paper draft. Scale reliabilities were good (planning/revising:  $\alpha = .84$ ,  $\alpha = .87$ ; effort:  $\alpha = .90$ ,  $\alpha = .86$ ;

help-seeking:  $\alpha = .87$ ,  $\alpha = .91$ ). Due to an administrative flaw, five items from the planning/revising scale were not administered for the first draft. To inspect the effect of the exclusion of these items, for the second draft the scale score including these items was correlated with the scale score excluding these items. As this correlation was  $.97$  ( $p < .01$ ), we concluded that the lack of these five items in the measurement on the first draft did not substantially reduce the quality of the planning/revising scale for this draft.

In the pilot study we had checked whether the first measurement affected the second measurement (an unwanted effect). One group of students had filled in the writing process questionnaire twice (with respect to two successive assignments of a similar kind) and one group of students had filled in the writing process questionnaire once (with respect to the second assignment). Comparison of the two groups on the results of the second questionnaire administration had revealed no measurement effects. Therefore, we felt confident to measure students' writing process twice in studies 2 and 3, in order to control for students' writing process before intervention.

### *Writing performance*

In the three studies presented, teachers' evaluation of text quality is the measure of writing performance. The teachers' evaluation is used because it is an ecologically valid performance measure (i.e., it is used in real-life settings). As discussed, assessment of students' texts is usually characterized by the use of a subset of all possible writing criteria, which are appraised as continuous scales. It is difficult to formulate a criterion-referenced standard to assess texts, as no numerical cut-offs can be distinguished that indicate specific achievements (Sadler, 1987, 1989). In all three studies, teachers put their evaluation on a feedback form that explicitly indicated the criteria. The standards were unarticulated, and evaluation was thus based on teachers' tacit knowledge (Sadler, 1987).

In study 1 (reported in chapter 4), teachers scored three texts on fourteen criteria relating to text clarity, efficiency and structure (criteria were posed as questions, e.g., "Is there a clear distinction between facts and opinions?" or "Has the answer been well ordered in paragraphs?"). Scores were "-" (*no, unsatisfactory*), "+/-" (*almost satisfactory*) or "+" (*yes, satisfactory*). Additionally, teachers graded the texts (1–10). The scores on the fourteen criteria did form a reliable scale for the first assignment ( $\alpha = .80$ ), but not for the second and third assignment ( $\alpha = .50$  and  $\alpha = .24$ ). However, the grade could be significantly predicted by the fourteen scores (for the first to third assignment respectively:

$R^2 = .80$ ,  $R^2 = .86$ ,  $R^2 = .80$ ,  $ps < .01$ ). Therefore, in study 1, the teacher's grade is used as a measure of performance quality.

In study 2, teachers evaluated two paper drafts. The feedback form contained five criteria: content, structure, reasoning, language, and layout. Teachers scored the texts on these criteria as "-", "+/-" or "+". The second (i.e., final) draft was additionally given a grade between 1 and 10. The scores on the five criteria did form a reliable scale (first draft:  $\alpha = .79$ ; final draft:  $\alpha = .84$ ). The grade could be significantly predicted by the final draft scores on the five criteria ( $R^2 = .40$ ,  $p < .01$ ). In study 2, the scale score is used as a measure of first draft text quality, the grade is used as a measure of final draft text quality. For the second draft we chose to use the grade instead of the scale score, because of its ecological validity and for the purpose of consistency between studies.

In study 3, the feedback form from study 2 was used. However, in study 3 the second draft was only graded and not scored on the five criteria. For the first draft, the scores on the five criteria formed a reliable scale ( $\alpha = .81$ ). In this study, like in study 2, the scale score is used as a measure of first draft text quality, the grade is used as a measure of final draft text quality.

### **Feedback**

In each of the three studies one feedback aspect was intentionally varied between students: respectively *progress* feedback, feedback providing *improvement strategies* and feedback posing *questions*. As feedback is dependent on the student's performance and so the number of progress comments, improvement strategies and questions might vary, the feedback provided by the teacher was coded on these aspects. So, the actually provided progress comments, improvement strategies and questions were coded. In addition, other feedback aspects that may affect students' meta-task process, task-motivation process, task-learning process, or task performance were coded, that is, aspects discussed in the paragraph on feedback characteristics (p. 18).

To code teachers' feedback (provided on a feedback form) a feedback coding protocol for feedback segmenting and coding was developed. The feedback was split up into segments. Segment splits were made where the feedback switched to another object, or where it switched to another sign (e.g., "The text shows a good line of reasoning // but you should use more formal language"; "You forgot to include references in the first paragraph // but in the second paragraph you did this very well"; see the Appendix on p. 33 for a description of feedback object and sign). To check the reliability of the feedback segmentation, in each study two researchers independently segmented ten

feedback forms. Reliability was computed as the proportion agreement from the perspective of each coder (Strijbos, Martens, Prins, & Jochems, 2006). In study 1 the proportion agreement had a lower bound of 80.8% (84 out of 104, author) and an upper bound of 86.6% (84 out of 97, research assistant), in study 2 the lower bound was 79.3% (138 out of 174, author) and the upper bound was 82.6% (138 out of 167, co-researcher), and in study 3 the lower bound was 71.7% (180 out of 251, co-researcher) and the upper bound was 78.9% (180 out of 228, author). The author then segmented all feedback forms.

To check the inter-rater agreement of the feedback coding, in each study the author and a co-researcher separately coded ten feedback forms (see the Appendix for the aspects, descriptions, and codes). Krippendorff's alpha was used as a measure of agreement, because it allows for missing categories (Hayes & Krippendorff, 2007). Table 2.1 shows the inter-rater agreement.

In study 1 the inter-rater agreement was low for "tone" and "progress explicitness". As this could be attributed to the low variability of scores for tone, and the limited number of segments that could be scored on progress explicitness (only 14), we considered it sufficient, the more so because inter-rater reliability was sufficient for both aspects ( $\alpha = .59$  and  $\alpha = .84$  respectively).

Not all aspects were coded in each study. Tone was not scored in study 3 because in both study 1 and study 2 its variability was very low. As in study 1 grade/descriptive turned out to be a constant, this aspect was not coded in studies 2 and 3. Reference was coded only in study 1, as it would turn out a constant in studies 2 and 3 (study 1 showed teachers never referred to other students' performances and in studies 2 and 3 it was not possible to provide progress information). As a result, progress explicitness was not scored either in studies 2 and 3. The strategy type was coded only in study 2 as in the other studies improvement strategies were hardly provided. Question was coded in an elementary way in studies 1 and 2, and more elaborate (cognition type and real/unreal) in study 3 in which the focus was on feedback posing questions. Specificity and control were coded in studies 2 and 3, as during the course of study 1 we were not able to code these aspects reliably.

### ***Reflection***

In studies 2 and 3 students received a reflection assignment concerning the feedback. The assignment consisted of six questions which students answered in pre structured spaces covering about two pages in total. In the experimental reflection condition students answered questions on their intentions to use the feedback and their intentions regarding the approach to writing the final draft.

Table 2.1

*Feedback Coding: Inter-Rater Agreement (Krippendorff's Alpha,  $\alpha_k$ )*

Aspect	Study		
	1	2	3
	Segments		
	104	174	248
	$\alpha_k$		
Object	.91	.73	.77
Sign	.92	.83	.83
Tone	.42	.66	
Grade/descriptive	–		
Explanation	.70	.71	.74
Reference	.96		
Progress explicitness	.56 ( $n = 14$ )		
Improvement strategy	.90	.74	.65
Strategy – type		.90	
Question	1	.91	
Question – cognition			.79
Question – unreal/real			.65
Specificity		.72	.70
Control		.67	.65
Length	1	1	1

*Note.* Empty cells indicate that in the particular study the aspect was not coded. The dash indicates a constant.

The questions were “What in the feedback did appeal to you? Why?”, “What had no or little appeal to you? Why?”, “Which feedback do you want to use in working on the final draft? Why?”, “Which feedback do you not want to use? Why?”, “How will you take on working on the final draft?”, “Based on the feedback, what will you do differently compared to working on the first draft?” In the control reflection condition students answered questions on their perception of the feedback. The questions were “Which feedback do you agree with? Why?”, “Which feedback do you disagree with? Why?”, “Which feedback did you expect to receive?”, “Which feedback didn’t you expect to receive?”, “What do you think about the way the feedback has been formulated?”, “If you would have given this feedback, would you have formulated it differently? If yes, how would you have

Table 2.2

*Reflection Coding: Inter-Rater Agreement (Krippendorff's Alpha,  $\alpha_k$ )*

	$\alpha_k$
Object	.90
Cognitive activity	
Differentiating	.80
Structuring	.68
Explaining/substantiating/ interpreting	.64
Evaluating – positively	.93
Evaluating – negatively	.84
Concluding	.65
Intending	.84

*Note.* Ten reflection assignments were coded and comprised 68 fragments in total.

formulated it?" The reflection assignment in the control reflection condition did not deal with feedback use or the approach to writing the final draft.

To determine whether the reflection assignment elicited the reflections aimed at, the reflection assignments of study 2 were segmented and coded to analyse the actual reflection. Students' answers were segmented so that each segment belonged to one question posed in the assignment, and referred to only one object. Each segment was coded on two aspects. *Object* indicated the object of cognition, in accordance with the questions posed in the assignment: the first draft, the feedback (related to the first draft), feedback use, the approach to writing the first draft, the approach to writing the final draft, the teacher's formulation of the feedback, or the student's formulation of the feedback. *Cognition* indicated whether or not the segment indicated the following cognitive activities: differentiating (distinguishing or comparing several aspects), structuring (organising information), explaining/motivating/interpreting (providing reasons, causes or arguments), evaluating (either positively or negatively), concluding, and intending. A segment could comprise none, one, or more than one cognitive activity.

To check the reliability of the reflection segmentation, the author and a co-researcher independently segmented ten forms. The proportion agreement had a lower bound of 69.9% (51 out of 73, co-researcher) and an upper bound of 75.0% (51 out of 68, author). The author then segmented all feedback forms. To check the inter-rater agreement for reflection coding, the author and a co-researcher independently coded ten reflection assignments. Inter-rater agreement proved sufficient (see Table 2.2).

### Appendix. Feedback Aspects, Codes, and Examples

Study	Aspect	Codes	Examples
All	Object		
	Feedback object	1: Layout 2: Language 3: Structure 4: Content 5: Documentation 6: Other	1: Tables are well designed. 2: Put more effort into grammar and spelling. 3: Try to connect paragraphs. 4: I don't understand what you mean by "echoic memory". 5: Use references to support your claims. 6: You receive five points out of seven for this part.
All	Sign		
	Indication of performance quality	1: Very poor 2: Poor 3: Sufficient/neutral 4: Good 5: Very good	1: I don't understand a word of it. 2: The central constructs are not completely clear to me yet. 3: It's okay, but could be better. 4: You gave a clear description of the constructs. 5: You took different perspectives and gave strong arguments, well done.
1,2	Tone		
	Agreeableness of tone	1: Very negative 2: Negative 3: Neutral 4: Positive 5: Very positive	1: I don't understand a word of it. 2: Have you proved smoking is bad, just by stating that it is? 3: What would it be like when you first discuss pros and then counter-arguments? 4: The central constructs are not completely clear to me yet, but when you use your own words you will certainly manage to clarify them. 5: Very good explanation!
1	Grade/descriptive		
	Refers to the grade to be obtained, or does not and is (only) descriptive	1: Grade 2: Descriptive	1: Focus on the paragraph order and you will receive a higher grade. 2: Focus on the paragraph order and your text will improve.

Study	Aspect	Codes	Examples
All	Explanation		
	Does or does not contain an explanation, explication, or example	0: No explanation 1: Explanation	0: The answer has no depth. 1: The answer has insufficient depth, for example where it concerns working memory.
1	Reference		
	Standard to which the feedback refers (1 = progress feedback)	1: Student's previous performance 2: Other student's performance 3: External standard (implicit or explicit)	1: Compared to the previous assignment your text has more depth. 2: More than other students you realized depth. 3: Your answer has sufficient depth.
1	Progress explicitness		
	Likelihood that the student would interpret the feedback as communicating progress - scored only when the code on "reference" is 1	1: Very unlikely 2: Unlikely 3: As much unlikely as likely 4: Likely 5: Very likely	1: Now your text has depth. 3: Now your text has more depth. 5: Compared to the previous assignment your text now has more depth.
All	Strategy		
	Does or does not contain an improvement strategy	0: No strategy; signals what is right or wrong 1: No strategy; indicates what could be improved 2: No strategy; provides a solution (can be simply copied and pasted) 3: Improvement strategy	0: Your text contains too much elaboration. 1: You might delete redundant elaborations. 2: Omit the second part of the third paragraph. 3: You may scan the text for paragraphs that could be deleted without reducing the quality of your answer.

Study	Aspect	Codes	Examples
2	Strategy – content		
	Strategy content - coded only when the code on “strategy” is 1	1: Think through exercise 2: Explicate/externalize 3: Go over complete text 4: Go over specific aspects 5: Consult with others 6: Submit to others 7: Use other sources	1: May be you can be the devils advocate and ask yourself where confusion may arise on concepts and terminology; to prevent confusion you might clarify or add information. 2: You could make a list of issues you discuss in your paper and ask yourself which issues form a cluster and whether they make up a paragraph or section. 3: You could read your paper out loud to hear which sentences do not yet flow smoothly. 4: You could check places with extra space, and see whether extra space is used consistently. 5: You could discuss with others what kind of sources are scientific sources. 6: You could ask a peer to read your paper and ask whether he understands your line of reasoning. 7: You could inspect an APA-article to check how to make up figures, tables, and a reference list.
1,2	Question		
	Does or does not contain a question	0: No question 1: Question (closed or open)	0: Your text contains too much elaboration. 1: Do you agree with the viewpoint of author X? 1: How could you decide on reducing the text without reducing the quality of your answer?
3	Question – cognition		
	Cognition the question aims at - coded for every separate question	1: Remember 2: Understand 3: Apply 4: Analyse 5: Evaluate 6: Create	1: Which term indicates competence-assessment in the case description? 2: Could you clarify what is meant with “the difference between educational goals and learning goals”? 2: You mention two ways and then you refer to “many different ways”, is that logical? [rhetorical question; no real evaluation required, only understanding/concluding] 3: Could you take up the list on p. 6 in a sentence? 4: How does the statement “often because it is a complex profession” (p. 5) fit the preceding and following sentence? 5: Do you agree with Stoof et al.? 6: How could you explain what is meant with “transformation”?

(appendix continues)

Study	Aspect	Codes	Examples
3	Question – unreal/real		
	Does not or does require to think about an answer - coded for every separate question	0: Unreal 1: Real	0: Could you clarify this? 0: Is it functional to use the same heading repeatedly? 1: What do you mean by “echoic memory”? 1: How could you decide on reducing the text without reducing the quality of your answer?
2,3	Specificity		
	Does or does not enable the student to find in the text the issues the teacher commented on	0: Not specific (a-specific or global) 1: Specific (clear location or repeated local issue)	0: You do <i>not always</i> use references correctly. 0: You could explicate your line of reasoning. 1: In the third paragraph there is no clear distinction between facts and opinion. 1: You should take up all references in the reference list.
2,3	Control		
	Expression of the teacher’s control over the student’s text	1: Reflective (explanation, reader response) 2: Interactive (request for student reaction) 3: Evaluative (advise or limited evaluation) 4: Controlling (criticism)	1: When I read your text I felt inclined to raise counter-arguments. 2: What is your opinion on ...? 3: You may consider removing this paragraph. 3: I think you withhold some important arguments. 4: Remove this paragraph.
All	Length		
	Number of words		(Number)

### **3. Motivation: self-efficacy beliefs and achievement goals**

As discussed in chapter 2, feedback can affect task performance through its effect on task motivation. The term motivation is derived from the Latin verb “movere”, which means to move (Pintrich, 2003). Motivation theories, dealing with what gets people moving and toward what tasks (Pintrich, 2003), exist in a wide variety (for overviews see for example Eccles & Wigfield, 2002; Tollefson, 2000). Theories often used in the context of education are self-efficacy theory (Bandura, 1977, 1997), achievement goal theory (Ames, 1992; Dweck, 1986; Nicholls, 1984; Elliot & McGregor, 2001), and self-determination theory (Deci & Ryan, 1985, 2000).

We focus on students’ self-efficacy beliefs and achievement goals. Self-efficacy theory deals with the control people experience to perform certain actions (Bandura, 1997). Self-efficacy beliefs have been shown to be important in the context of writing tasks (Pajares & Valiante, 2006). With regard to results to be achieved, achievement goal theory compares to self-determination theory in its differentiation of goals that people can pursue. Achievement goal theory distinguishes mastery goals (developing competence) and performance goals (demonstrating competence) (discussed in detail later) and self-determination theory distinguishes between intrinsic motivation (doing an activity for its interest), extrinsic motivation (doing an activity for its consequences), and amotivation (a lack of motivation). In self-determination theory the reasons why people pursue particular goals play a central role. These reasons are the fulfillment of three psychological needs (i.e., competence, relatedness, and autonomy). These needs deal with well-being and life satisfaction (Deci & Ryan, 2000). Achievement goal theory does not deal with the reasons for achievement in terms of its “psychological starting point” (Elliot & Thrash, 2001). We have chosen to focus on achievement goal theory for its explicit focus on achievement situations (see Pintrich, 2003).

Below, first the constructs of self-efficacy beliefs and achievement goals are discussed, as well as their relation to the feedback interventions that are central in

our empirical studies. Secondly, the operationalisation of self-efficacy beliefs and achievement goals in the successive studies is pointed out.

### **Self-efficacy beliefs**

People initiate action only when they feel able to do so at least to a certain extent (Bandura, 1997). Bandura (1986) has labelled the belief that students have in their own behavioural capacities as “perceived self-efficacy” and has defined this as “people’s judgment of their capabilities to organize and execute courses of action required to attain designated types of performances” (p. 391). For writing tasks, perceived self-efficacy is the judgment of one’s capability to perform actions that lead to the required text (Schunk & Swartz, 1993a).

Self-efficacy beliefs are based on previous performances, observation of others performing the task, verbal persuasion, and physiological and emotional states (Bandura, 1977). When students lack evaluative competence, for example because they have little experience with the task, teachers’ persuasive comments may contribute importantly to self-efficacy beliefs (Bandura, 1986; Pajares & Valiante, 2006). Students highly value their teachers’ comments to determine the quality of their texts, not only first-year students who have little academic writing experience (Straub, 1997), but also students already three or four years in college (Cho, Schunn, & Charney, 2006). Persuasion will be most effective when it slightly overestimates capacities because this mobilizes effort (Bandura, 1986). Of course, teachers should not try to reinforce self-efficacy beliefs far beyond reality. This will lead to failure, which in turn will undermine students’ self-efficacy beliefs (Bandura, 1997) as well as the teacher’s credibility (Bandura, 1986).

Undergraduate students’ writing self-efficacy beliefs predict their writing performance. Students who see themselves as more efficacious turn out to be better writers and to get higher grades (McCarthy, Meier, & Rinderer, 1985; Meier, McCarthy, & Schmeck, 1984; Shell, Murphy, & Bruning, 1989; Zimmerman & Bandura, 1994). Self-efficacy beliefs affect persistence (Bouffard-Bouchard, 1990; Cervone, 1989) and may so enhance performance (Bandura, 1986). It can thus be expected that feedback affects performance through its effect on students’ self-efficacy beliefs. In terms of Feedback Intervention Theory (FIT; Kluger & DeNisi, 1996) this would mean that feedback affects performance through its effect on task motivation. In this thesis the effects of three feedback interventions on students’ self-efficacy beliefs are investigated.

The first intervention deals with progress feedback. Meta-analysis has shown positive effects of progress feedback on performance (Kluger & DeNisi, 1996). As progress feedback provides the student with positive information about

the development of his or her performance, we hypothesize progress feedback to positively affect students' self-efficacy beliefs. Research with elementary school children (Schunk & Swartz, 1993a, 1993b) showed that progress feedback may indeed contribute to students' self-efficacy beliefs.

The second feedback intervention concerns the provision of improvement strategies. Feedback including improvement strategies suggests a means to reach a better performance and thus brings performance improvement under learner control (see Bruning & Horn, 2000). It communicates that although the task perhaps is difficult, it can be accomplished. Therefore, we hypothesize this feedback to enhance students' self-efficacy beliefs. This hypothesis is in line with the notion that strategy instruction enhances students' self-efficacy beliefs (Walker, 2003). Results for elementary school writers however, do not show this relation (e.g., Graham, Harris, & Mason, 2005; Page-Voth & Graham, 1999). For undergraduate students the positive relation has been found. Zimmerman and Kitsantas (2002) reported that students who saw a model making and correcting revision errors and improving in the use of revision strategies, reported higher self-efficacy beliefs for solving a sentence-combining problem than students who saw a model flawlessly implementing revision strategies, and than students who saw no model.

The third intervention is feedback posing questions. The effect of feedback posing questions on students' self-efficacy beliefs has, to our knowledge, not been investigated. Research on the effect of questioning on ill-structured problem-solving tasks is generally scarce (Ge & Land, 2004). As opposed to progress feedback and feedback providing improvement strategies, feedback posing questions does not seem to link directly to self-efficacy beliefs. Although feedback posing questions leaves the control over revisions to the student (Straub, 1996, 1997), it does not inform the student on his or her capacities, or provide an explicit method to enhance performance. Therefore, we hypothesize that feedback posing questions does not affect students' self-efficacy beliefs.

### **Achievement goals**

Students' purposes in achievement contexts are described as achievement goals (Ames, 1992). Achievement goals are cognitive representations of what individuals try to do or want to achieve (Pintrich, Conley, & Kempler, 2003) with respect to achievement tasks (Pintrich, 2000), and form an intermediate level between more general, higher level, life goals that specify the purpose ("why") of action and lower level goals that provide specific actions ("how") (DeShon & Gillespie, 2005; Elliot & Thrash, 2001; Pintrich, 2000). This hierarchical

organisation resembles the levels of FIT, where achievement goals match with the task-motivation level of FIT.

Achievement goals focus on competence (Dweck & Leggett, 1988). Competence can be determined by comparing one's performance with some standard. Based on the standard used to evaluate competence, two achievement goals have been distinguished (Elliot & Thrash, 2001): mastery goals and performance goals (e.g., Dweck & Leggett, 1988). People can have both goals to a smaller or larger extent (Hidi & Harackiewicz, 2000). As students have a stronger mastery goal they have a stronger focus on developing their competence (Ames, 1992). They evaluate their competence according to whether they have fully mastered the task at hand (i.e., a criterion-referenced standard), or have made progress in their performance, skills, or knowledge (i.e., a self-referenced standard) (Elliot & Thrash, 2001). As students have a stronger performance goal they have a stronger focus on getting their competence positively judged (Elliot & Dweck, 1988). They use a norm-referenced standard and evaluate their competence according to whether they performed better or attained greater skill or knowledge than others (Elliot & Thrash, 2001). Apart from the normative comparison, also the goal to validate one's ability (e.g., the goal to confirm one's intelligence), and the goal to reach positive outcomes (e.g., the goal to receive a good grade) have been labelled as performance goals (Grant & Dweck, 2003). In fact, a performance goal, whether normative, ability, or outcome focussed, deals with attaining positive competence evaluations, whereas a mastery goal deals with developing competence (cf. Dweck & Leggett, 1988). A student adopting a mastery goal for writing tasks in class could for example evaluate his writing competence according to whether he improved in creating a good text structure. A student adopting a performance goal could for example compare his grade for a text with other students' grades.

Mastery goals and performance goals have been further distinguished based on their approaching or avoiding character: the desire to reach a positive result (approach) versus the desire to avoid a negative result (avoidance) (Elliot & McGregor, 2001; for a review see Elliot, 1999). For example, a student adopting a performance-approach goal might strive to attain a higher grade than other students, while a student adopting a performance-avoidance goal might strive to avoid attaining a lower grade than other students. In this thesis, the focus is on students' mastery-approach goal for a writing task and their performance-approach goal for a writing task. In working on a writing task, a mastery-approach goal is the goal to develop writing competence; a performance-approach goal is the goal to demonstrate writing competence. We do not

investigate students' mastery-avoidance goal and performance-avoidance goal. Mastery-avoidance goal is a relatively new concept. Few studies have included this construct (Elliot & McGregor, 2001) and research dealing with its conceptualisation is of recent date (Van Yperen, Elliot, & Anseel, 2009). The only available research on the effect of feedback on students' performance-avoidance goal showed this goal to be not susceptible to feedback (Senko & Harackiewicz, 2005). Therefore, we decided to limit the extensiveness and complexity of our studies and to restrict to students' mastery-approach goal and performance-approach goal (further called mastery goal and performance goal, respectively).

Students' mastery goal and performance goal can change over a semester, over weeks (Fryer & Elliot, 2007; Muis & Edwards, 2009), and even within one laboratory session (Senko & Harackiewicz, 2005). New information, such as feedback, may instigate this change (Fryer & Elliot, 2007). There is hardly any research on the effect of feedback on students' achievement goals. Senko and Harackiewicz (2005) investigated the effect of feedback on solving math problems on students' achievement goals. In this study, students who received negative feedback (i.e., the information that their performance was "below average") reported a lower mastery goal for solving math problems than students who received positive feedback (i.e., the information that their performance was "above average"), and than students who received only information on the number of correctly solved problems. Negative feedback instigated a significant decrease in students' mastery goal, while the other two feedback types did not result in significant changes in students' mastery goal. Students' performance goal for solving math problems was not affected by the type of feedback. These results are remarkable, as the feedback was clearly normative and thus related to a performance goal. According to Senko and Harackiewicz, students' mastery goal reduced because of the disappointing feedback, rather than because the feedback was normative and therefore did not match their goal. They suggested that students' performance goal might also decrease after repeated negative feedback.

In this thesis we examine the effects of progress feedback, feedback providing strategies, and feedback posing questions on students' achievement goals. Progress feedback is based on an intrapersonal comparison, and thus provides self-referenced information. This matches the self-referenced focus of a mastery goal. As progress feedback provides *positive* self-referenced information, we hypothesize that progress feedback strengthens students' mastery goal for the task at hand. We do not expect progress feedback to affect students' performance goal.

Feedback providing improvement strategies offers information to improve writing skills and performance. This kind of feedback may focus students on skill development and thus enhance their mastery goal. Indeed, feedback providing strategies is perceived by students as having a developmental focus (Lizzio & Wilson, 2008). On the other hand, improvement strategies indicate performance deficiencies and may therefore be interpreted as negative feedback. In the study by Senko and Harackiewicz (2005), negative feedback lowered students' mastery goal. However, in that particular study negative feedback was referring to the performance of others. According to FIT, this feedback diverts attention from task motivation to the self, which can explain the lowering of students' mastery goal. So, we hypothesize feedback providing improvement strategies to enhance students' mastery goal. We do not expect feedback providing improvement strategies to affect students' performance goal.

Feedback posing questions is suggested to inspire students to work out ideas (Stern & Solomon, 2006; Straub, 1997) and to make students reflect on their task process or to reconsider certain choices (Smith & Ragan, 1993; Straub, 1996, 1997). This kind of feedback does not directly link to skill improvement (mastery goal) or the demonstration of competence (performance goal). However, Lizzio and Wilson (2008) found that students perceive questions as engaging. This was part of the perception of feedback as having a developmental focus, which matches the mastery goal concept. So, we expect questions, and especially real (i.e., not rhetorical) questions, to tempt students to engage in the task, and therefore to enhance their mastery goal. We hypothesize that feedback posing questions does not affect students' performance goal.

We have no reasons to expect our three feedback interventions (progress information, improvement strategies, and questions) to influence students' performance goal. Nonetheless we do investigate these effects, as no research has already confirmed this expectation. Moreover, if the feedback interventions would affect students' performance goal, these effects might explain feedback effects on performance. That is, one of the "roads" through which feedback may affect performance is through students' performance goal, since university students' performance goal positively predicts performance (Barron & Harackiewicz, 2003; Elliot & Moller, 2003; Harackiewicz, Barron, Pintrich, Elliot, & Thrash, 2002; Senko & Harackiewicz, 2005; for few exceptions see Elliot & Moller). Students' mastery goal is mostly found to be not predictive of performance (Barron & Harackiewicz, 2003; Harackiewicz et al., 2002; Lee, Sheldon, & Turban, 2003; Senko & Harackiewicz, 2005; for few exceptions see Harackiewicz et al., 2002). However, a meta-analysis by Utman (1997) showed that experimentally

induced mastery goals are more advantageous for performance than experimentally induced performance goals. In our studies, we do not instruct students to adopt a mastery goal, but we do expect to affect their mastery goal by means of the feedback. Therefore, also students' mastery goal may be a mediator of feedback effects on performance.

### **Operationalisation**

In all studies we measured students' self-efficacy beliefs and mastery goal with respect to the writing task at hand. In studies 2 and 3 also students' performance goal for the writing task was measured.

To measure students' self-efficacy beliefs, mastery goal, and performance goal, we used items from three scales of the Motivated Strategies for Learning Questionnaire (MSLQ; Garcia & Pintrich, 1996; Pintrich, Smith, Garcia, & McKeachie, 1993). The MSLQ items are formulated on course level and scored on a 7-point Likert-type scale, from 1 (*not at all true of me*) to 7 (*very true of me*). The author and a co-researcher independently adapted the items to assignment level (e.g., "I hope this writing task challenges me, so I can learn something"), and translated the items into Dutch. In case we adapted the items in a different way, the definitive formulation was decided upon through discussion.

Based on the results of our successive studies and suggestions found in the literature, several item adaptations were made from study to study. Because of these adaptations, we did in each study principal component analyses to inspect the relations between the items. To decide on the best factor solution, we used the following criteria: eigenvalue above 1, a simple factor structure, the scree criterion, factor loadings of at least .40, and interpretability.

In study 1, we used the MSLQ scales "self-efficacy for learning and performance" (8 items) and "intrinsic goal orientation" (4 items). An example item of the self-efficacy beliefs scale is "I expect to do well on this task". As the MSLQ scale "intrinsic goal orientation" deals with students' "focus on learning and mastery" (Garcia & Pintrich, 1996, p. 327), it matches the mastery goal concept (example items: "In a class like this, I prefer course material that really challenges me so I can learn new things"; "When I have the opportunity in this class, I choose course assignments that I can learn from even if they don't guarantee a good grade"). Items were scored on a 7-point Likert-type scale, from 1 (*not at all true of me*) to 7 (*very true of me*).

The questionnaire was administered twice, with respect to the second and the third writing assignment in the course. A principal component analysis with varimax rotation, done for both assignments (measurements) separately, revealed

two factors. For the second and third assignment respectively the variance accounted for was 58.4% and 64.5%. Using the criterion of at least .40 for the factor loadings resulted for both assignments in one factor consisting of all eight self-efficacy beliefs items, and the other factor consisting of all four intrinsic goal orientation items. Although one self-efficacy item cross loaded on the other factor, this item was maintained for reasons of content. Two scales were constructed, labelled “self-efficacy beliefs” (example item: “I expect to do well on this writing assignment”) and “mastery goal” (example item: “I hope this writing assignment challenges me, so I can learn something”). Scale reliabilities were satisfactory (self-efficacy beliefs:  $\alpha = .90$ ,  $\alpha = .91$ ; mastery goal:  $\alpha = .70$ ,  $\alpha = .66$ ).

In study 2, we focussed the self-efficacy measure on different aspects of the writing product and the writing process, and we tried to improve the mastery goal scale. To measure students’ self-efficacy for writing, we adapted five items from the “self-efficacy for learning and performance” scale of the MSLQ that dealt with producing a good final draft or with learning from the task (these items were also used in study 1). We added six self-efficacy beliefs items that focussed on specific text features (i.e., content, structure, line of reasoning, language) or on a part of the writing process (i.e., planning, revising). To measure students’ writing mastery goal and performance goal, we adapted items from the MSLQ scales “intrinsic goal orientation” (2 items) and “extrinsic goal orientation” (4 items) and from Elliot and McGregor’s (2001) scales “mastery-approach goal” (2 items) and “performance-approach goal” (1 item). As the MSLQ scale “extrinsic goal orientation” deals with students’ “focus on grades and approval from others” (Garcia & Pintrich, 1996, p. 327), it fits the performance goal concept (example items: “Getting a good grade in this class is the most satisfying thing for me right now”; “I want to do well in this class because it is important to show my ability to my family, friends, employer or others”). Elliot and McGregor’s performance-approach goal scale focuses exclusively on the goal to demonstrate competence relative to others (e.g., “It is important for me to do better than other students”). All items were adapted to assignment level and translated into Dutch. Items were scored on a 7-point Likert-type scale, from 1 (*not at all true of me*) to 7 (*very true of me*).

The motivation questionnaire was administered twice, with respect to the first and the second paper draft that students had to write for the course. Because of item adaptation and addition, we analyzed the factor structure of the items by means of principal component analyses with varimax rotation. This was done for both drafts (measurements) separately. Based on the scree criterion and interpretability, three factors were extracted. For the first and second draft

respectively the variance accounted for was 60.5% and 63.7%. Using the criterion of at least .40 for the factor loadings resulted for both drafts in one factor consisting of the eleven self-efficacy items, one factor consisting of the four mastery goal items and one factor consisting of the five performance goal items. For the first draft, one self-efficacy item cross loaded on the mastery goal factor. This item (dealing with self-efficacy regarding planning the text) was excluded from the self-efficacy scale, because of its dissimilarity from other items; except for the self-efficacy item on revising no self-efficacy items dealt with the writing process. Three scales were constructed, labelled “self-efficacy beliefs” (10 items, example: “I expect to be able to produce a good first draft concerning content”) “mastery goal” (4 items; example item: “I want to learn as much as possible from writing this first draft”), and “performance goal” (5 items; example item: “I want to write a good first draft, to show others my skill”). Scale reliabilities were satisfactory, except for the mastery goal scale for the first draft, which however was not adapted for reasons of comparability (mastery goal:  $\alpha = .57$ ,  $\alpha = .79$ ; performance goal:  $\alpha = .80$ ,  $\alpha = .70$ ; self-efficacy beliefs:  $\alpha = .93$ ,  $\alpha = .94$ ).

In study 3, we used the scales from study 2. To reduce the number of items, two self-efficacy items were excluded (of ten self-efficacy items in total). One item was excluded because it was highly similar to two other items. The other item dealt with self-efficacy for revising the text and was excluded because its counterpart (the only item on self-efficacy for planning) had been removed already in study 2. One mastery goal item was replaced by two items from Grant and Dweck (2003) to optimize scale quality. One performance goal item was replaced by one item from Grant and Dweck because they advised to exclude the focus on grade (a positive outcome) from the performance goal concept. Thereby, three performance goal items focussed on relative ability, and one on validating one’s ability.

The motivation questionnaire was administered twice, with respect to the first and the second paper draft that students had to write for the course. Once again we did principal component analyses with varimax rotation. This was done for both drafts (measurements) separately. Based on the scree criterion and interpretability, three factors were extracted. As for the first draft one mastery goal item cross loaded and one performance goal item did not load on a factor, factor analyses were run without these items. This resulted, apart from these two items, in the same three factors. For the first and second draft respectively the variance accounted for was 68.1% and 69.2%. Using the criterion of at least .40 for the factor loadings resulted in one factor consisting of all eight self-efficacy items,

one factor consisting of all four mastery goal items, and one factor consisting of all four performance goal items.

Three scales were constructed, labelled "self-efficacy beliefs" (8 items; example item: "I expect to write a good first draft") "mastery goal" (4 items; example item: "I want to learn as much as possible from writing this first draft"), and "performance goal" (4 items; example item: "I want to write a good first draft, to show others my skill"). Scale reliabilities were good (self-efficacy beliefs:  $\alpha = .91$ ,  $\alpha = .89$ ; mastery goal:  $\alpha = .74$ ,  $\alpha = .88$ ; performance goal:  $\alpha = .91$ ,  $\alpha = .91$ ).

In all three studies students' motivation was measured twice. To check whether the first measurement affected the second measurement (an unwanted effect), the first study had a Solomon four-group-design. Apart from an experimental feedback group and a control feedback group in which the motivation questionnaire was filled in twice (before and after the feedback), there were an experimental feedback group and a control feedback group in which the motivation questionnaire was filled in once (after the feedback). Comparison of the two experimental groups and of the two control groups, revealed no measurement effects on self-efficacy beliefs and mastery goal on the second administration. Also, no interaction effect of feedback condition and the number of measurements was found. Therefore, we felt confident to measure students' motivation twice in all studies, in order to control for students' motivation level before intervention.

## 4. Progress feedback effects on students' writing mastery goal, self-efficacy beliefs, and performance<sup>1</sup>

This chapter presents the first empirical study and deals with progress feedback. Progress feedback is the information that performance improved, compared to the previous performance on a similar task (see Kluger & DeNisi, 1996; Schunk & Swartz, 1993a, 1993b). Progress feedback effects on students' mastery goal, self-efficacy beliefs and performance are examined. We will first recapitulate the relevant theoretical notions.

### **Progress feedback: the link with mastery goal, self-efficacy beliefs and performance**

As discussed in chapter 2, Feedback Intervention Theory (FIT; Kluger & DeNisi, 1996) describes three levels through which feedback affects performance: task-learning processes, task-motivation processes, and meta-task processes. Generally, feedback cues that direct attention to task-learning and task-motivation processes are considered to enhance performance, while cues that direct attention to meta-task processes are expected to deteriorate performance. Progress feedback is indicated as an intervention that draws attention to the task-motivation level (Kluger & DeNisi, 1996).

Progress feedback is based on an intrapersonal comparison, which means that the student's previous performance is the standard to which the current performance is compared (e.g., "you improved in structuring your text"). As progress feedback provides self-referenced information it matches the self-referenced focus of a mastery goal. Students who pursue a mastery goal for a writing task aim at developing their competence by working on a writing task. Thus, feedback that indicates that the student has made progress in writing matches the focus of a student who wants to improve his writing. Since progress

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<sup>1</sup> This chapter is based on Duijnhouwer, H., Prins, F. J., & Stokking, K. M. (2010). Progress feedback effects on students' writing mastery goal, self-efficacy beliefs, and performance. *Educational Research and Evaluation*, 16, 53-74.

feedback provides *positive* self-referenced information, we expect that progress feedback strengthens students' mastery goal for the task at hand.

Progress feedback may also be a persuasive source of efficacy information. When students lack evaluative competence, for example because they have little experience with the task, teachers' persuasive comments may contribute importantly to self-efficacy beliefs (Bandura, 1986; Pajares & Valiante, 2006). Students highly value their teachers' comments to determine the quality of their texts, not only first-year students who have little academic writing experience (Straub, 1997), but also students already three or four years in college (Cho, Schunn, & Charney, 2006). As progress feedback provides positive efficacy information, we would expect it to enhance students' self-efficacy beliefs. Some support for this is found in a study by Schunk and Swartz (1993a). In their study, children were provided with feedback on their writing. Part of the children were assigned the goal to learn particular writing strategies and they received feedback that conveyed progress in the use of the writing strategies. These children tended to report higher self-efficacy for writing on the post-test than children who were assigned the same goal but did not receive progress feedback. The present study was set up to investigate whether positive effects of progress feedback on writing self-efficacy beliefs occur for university students.

Progress feedback may not only affect task motivation but also performance. Positive effects of progress feedback on performance have been shown in the probably most comprehensive meta-analysis on the effects of feedback on performance to date (Kluger & DeNisi, 1996). FIT suggests students' motivation as a road through which feedback affects performance. Feedback aspects that direct attention to task-motivation processes instigate effort (FIT) or engagement (Butler & Winne, 1995) and may so augment feedback effects on performance (Kluger & DeNisi, 1996). It is uncertain whether feedback will affect students' performance through its effect on mastery goal. Mastery goal is mostly found to be not predictive of performance (Garcia & Pintrich, 1996; Harackiewicz, Barron, Pintrich, Elliot, & Thrash, 2002; Senko & Harackiewicz, 2005), although in few studies mastery goal did predict performance (Harackiewicz et al., 2002). Possibly, feedback affects performance through its effect on self-efficacy beliefs, as undergraduate students' writing self-efficacy beliefs do predict their writing performance. Students who see themselves as more efficacious turn out to be better writers and to get higher grades (McCarthy, Meier, & Rinderer, 1985; Meier, McCarthy, & Schmeck, 1984; Shell, Murphy, & Bruning, 1989; Zimmerman & Bandura, 1994). Self-efficacy beliefs affect persistence (Cervone, 1989) and may so enhance performance (Bandura, 1986). The present study examines whether

progress feedback effects on writing performance are mediated by students' mastery goal and self-efficacy beliefs.

So, the present study investigates the effect of progress feedback on university students' writing mastery goal, self-efficacy beliefs, and performance. The following research questions are addressed:

1. What is the effect of progress feedback on students' writing mastery goal and self-efficacy beliefs? Because progress information concerns positive self-referenced information, we hypothesize that progress feedback enhances students' mastery goal and self-efficacy beliefs.
2. What is the effect of progress feedback on students' writing performance? If there is an effect of progress feedback on students' writing performance, is it mediated by students' mastery goal and self-efficacy beliefs? Based on FIT, we expect progress feedback to enhance students' performance. We hypothesize that this effect is mediated by self-efficacy beliefs. The mediating role of mastery goal is examined in an explorative way.

Half the students received information on their progress in writing compared to the previous task. For credibility purposes teachers only communicated progress if they thought the student really progressed. Other feedback characteristics, relating to the meta-task, task-motivation, and task-learning level of FIT (e.g., grades, questions, explanations), may also influence motivation and performance and were included as covariables.

## **Method**

### ***Participants***

The study took place in an 8-week Introduction to Psychology course at a university in the Netherlands. This course was the first course of the Psychology studies at that university. Eighty-six students (81% women), ranging in age from 18 to 35 years ( $M = 19.9$ ,  $SD = 2.8$ ) participated. They were split up randomly in four tutorial groups. Two teachers each supervised two tutorial groups. Students and teachers participated voluntarily.

### ***Writing assignments and feedback***

*Writing assignments.* As part of the tutorials the students received three writing assignments, the grades of which together took up 15% of the final course grade. The assignments consisted of topic-related questions based on the course book, which students had to answer in an essay format, with a length of about one A4. The three assignments were spread over six weeks. The course manual

contained the writing assignments, the assessment criteria for the assignments, a checklist students could use to assess the quality of their own texts, and a short instruction on how to approach the writing process.

*Feedback form.* Teachers gave feedback on each assignment by means of a feedback form. This form consisted of (a) a content part, in which teachers wrote down comments only on the quality of the content; (b) a writing skills part, which consisted of fourteen criteria to be scored; (c) an open space to summarize the good aspects of the text and aspects that could be improved; and (d) a space to note the grade (1-10). The grade was an overall indication of text quality, comprising the content and writing criteria.

The fourteen writing criteria concerned the text clarity, efficiency and structure, and were posed as questions. Two examples are “Is there a clear distinction between facts and opinions?” or “Has the answer been well ordered in paragraphs?” Teachers scored these criteria as “-” (*no, unsatisfactory*), “+/-” (*almost satisfactory*), or “+” (*yes, satisfactory*). The scores on the fourteen criteria significantly predicted the grade (for the first to third assignment respectively:  $R^2 = .80$ ,  $R^2 = .86$ ,  $R^2 = .80$ ). The teacher’s grade is used as a measure of performance quality.

To provide half of the students with progress feedback on the second assignment, the feedback form for these students (the experimental condition) contained two extra columns with respect to the writing criteria. In the first column teachers ticked the writing aspects (criteria) that had been improved since the first assignment, and in the second column they could add a specification or explanation.

### ***Design and procedure***

Figure 4.1 provides an overview of the study. Students handed in an assignment every other week. A week after they handed in their assignment they received feedback. For each writing assignment the teachers used a feedback form to provide each student with feedback. The feedback on the second assignment differed between tutorial groups. Students in two tutorial groups received progress feedback ( $n = 42$ ), by means of the feedback form that contained spaces to tick improved writing aspects. Students in the other two tutorial groups ( $n = 44$ ) received feedback on the “regular form”, that is, feedback without progress information. In both feedback conditions each teacher supervised one tutorial group. Teachers were instructed to provide their feedback only on the feedback form and not to put notes on students’ texts.

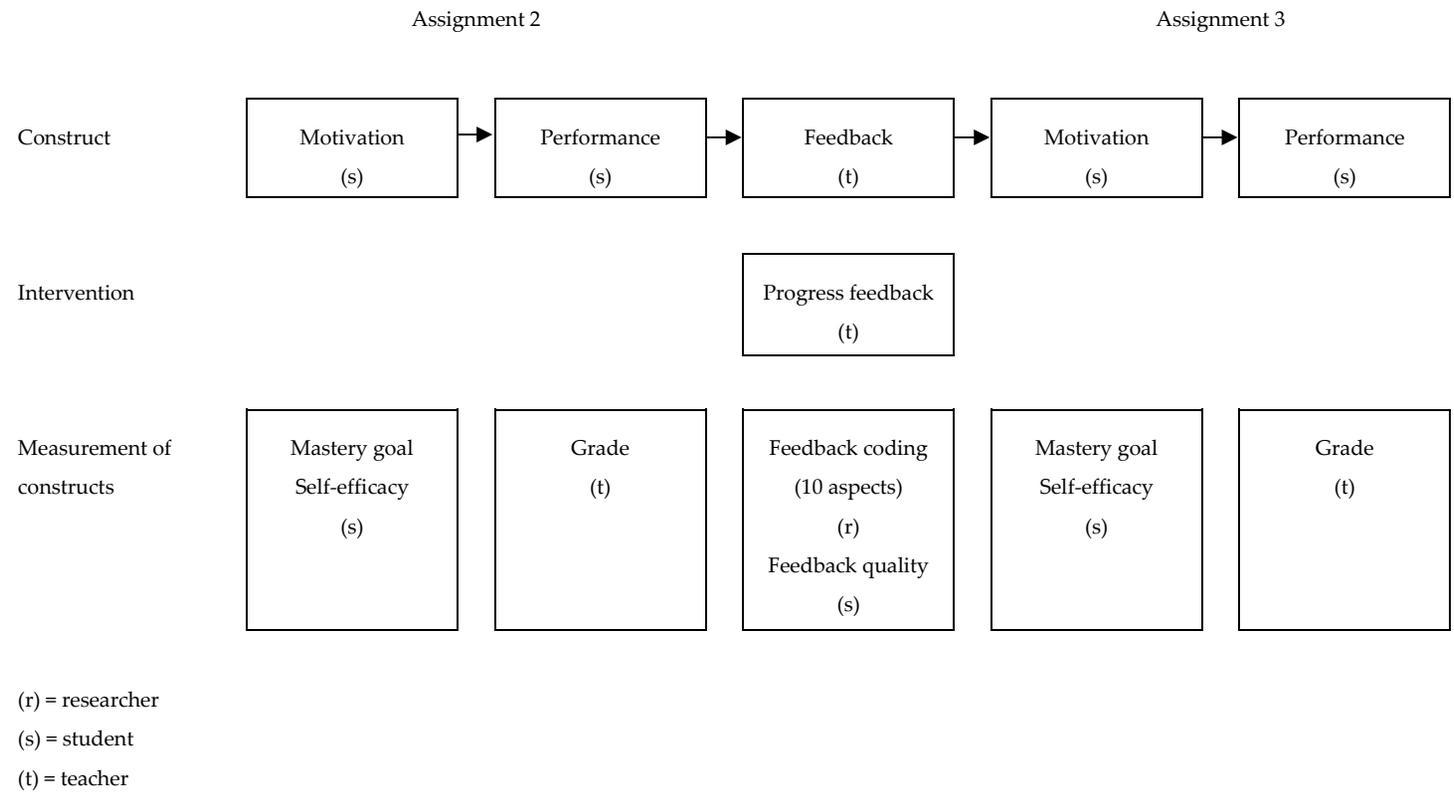


Figure 4.1. Overview of the study.

Students filled in the motivation questionnaire with respect to both the second and the third assignment (for practical reasons it was impossible to measure students' motivation for the first assignment). The questionnaires were administered during tutorial group meetings. Students completed the motivation questionnaire before they started working on the particular writing assignment, just after they had received feedback on the previous writing assignment. During the next tutorial group meeting, a week later, students turned in their assignment. After they handed in the third assignment, students filled in the feedback evaluation questionnaire.

Students' motivation for and performance on the third assignment are the dependent variables. Students' motivation for and performance on the second assignment are used to control for the motivation and performance level students started from.

### **Measures**

*Motivation questionnaire.* Two scales were used to measure students' writing motivation for the second assignment and for the third assignment (see p. 43): "mastery goal" (4 items; example item: "I hope this writing assignment challenges me, so I can learn something") and "self-efficacy beliefs" (8 items; example item: "I expect to do well on this writing assignment"). All items were scored on a 7-point Likert-type scale, from 1 (*not at all true of me*) to 7 (*very true of me*). Scale reliabilities were satisfactory (mastery goal:  $\alpha = .70$ ,  $\alpha = .66$ ; self-efficacy beliefs:  $\alpha = .90$ ,  $\alpha = .91$ ).

*Feedback evaluation questionnaire.* Five items measured students' evaluation of the feedback on the second assignment (e.g., "I have received useful feedback"). Students indicated their agreement on a 7-point Likert-type scale, from 1 (*totally disagree*) to 7 (*totally agree*). Reliability of the scale "feedback quality" was good ( $\alpha = .94$ ).

*Feedback coding.* The feedback students received on the second assignment was coded by the author and a co-researcher in order to be able not only to compare feedback conditions but also to analyse the feedback actually given. A feedback coding protocol for feedback segmenting and coding was used (see p. 29). Each feedback segment was coded on ten aspects, the most important aspect being whether it communicated progress. The other coded feedback aspects (see Table 4.1) concern the feedback object and aspects linking to the levels of FIT (see p. 18). For examples of the segments and the corresponding codes, see the Appendix on p. 33. Compared to the initial coding protocol, we reduced the aspect "strategy" to a dichotomy: either or not indicating a strategy.

The author and a co-researcher each coded half of the feedback forms. Per tutorial group, and therefore also per feedback condition, the coding was distributed over the two authors. Feedback coding was limited to students who had provided complete data (76% of the students).

### *Analyses*

The study had an experimental design, with two feedback conditions. These feedback conditions were compared on mastery goal, self-efficacy beliefs, and grade on the third assignment by means of t-tests and ANCOVAs. The t-tests simply compared feedback conditions, the ANCOVAs compared feedback conditions controlling for the effect of five groups of variables: motivation on the second assignment, performance on the second assignment, the difference between performance on the second and on the first assignment, scores on feedback aspects, and students' feedback evaluation. Mastery goal or self-efficacy beliefs on the second assignment was included to control for the mastery goal level respectively the self-efficacy level students started from. The grade on the second assignment, the difference between the grade on the first and the grade on the second assignment, and scores on feedback aspects were included to control for the effect of feedback aspects other than progress comments. The difference score of grade 2 and grade 1 was included as students might interpret this also as progress information. Scores on feedback aspects concerned frequencies of aspects (e.g., the number of comments on content, the number of comments that contain an explanation, the number of comments that pose a question), the mean scores for the aspects scored on interval level (i.e., the mean sign of comments, the mean tone of comments) and the sum scores for the aspects scored on ratio level (i.e., the total length [number of words], the total number of comments). In the analyses on students' performance, inclusion of the grade on the second assignment also entailed controlling for the performance level students started from. Students' feedback evaluation was included as we considered it additional information on the feedback.

The variables were included as a covariate only when they correlated significantly with the dependent variable. Scores on feedback aspects of nominal level were inspected only when the mean was at least one (see Table 4.4), because variables with values that only occur very rarely cannot be reliably and meaningfully related to other variables. The scores "reference: progress" and "progress explicitness" were not included in the ANCOVAs, because they were part of the factor (i.e., the feedback manipulation).

Progress feedback

Table 4.1

*Feedback Aspects: Description and Codes*

Aspect	Description	Codes
Reference	Standard to which the feedback refers (1 = progress feedback)	1: Student's previous performance 2: Other student's performance 3: External standard (implicit or explicit)
Progress explicitness	Likelihood that the student would interpret the feedback as communicating progress. - scored only when the code on "reference" is 1	1: Very unlikely 2: Unlikely 3: As much unlikely as likely 4: Likely 5: Very likely
Object	Feedback object	1: Content 2: Structure 3: Language 4: Other
Grade/descriptive	Refers to the grade to be obtained, or does not and is (only) descriptive	1: Grade 2: Descriptive
Explanation	Does or does not contain an explanation, explication, or example	0: No explanation 1: Explanation
Question	Does or does not contain a question	0: No question 1: Question (closed or open)
Strategy	Does or does not indicate an improvement strategy	0: No strategy 1: Improvement strategy
Sign	Indication of performance quality	1: Very poor 2: Poor 3: Sufficient/neutral 4: Good 5: Very good
Tone	Agreeableness of tone	1: Very negative 2: Negative 3: Neutral 4: Positive 5: Very positive
Length	Number of words	(Number)

Although the design was experimental – only students in the experimental condition received progress feedback – the *number* of progress comments varied within the experimental condition. Therefore, the feedback intervention was quantified into the *number of progress comments*. Regression analyses sought to predict students' mastery goal, self-efficacy beliefs and grade by the number of progress comments. These analyses pertained only to students in the experimental condition, because including students from the control condition, in which no progress feedback was given, would only conceal possible progress feedback effects. Like the covariables in the ANCOVAs, in the regression analyses additional predictors were students' mastery goal or self-efficacy beliefs for the second assignment, the grade on the second assignment, the difference between grade 2 and grade 1, scored feedback aspects, and students' feedback evaluation. These variables were included as predictor when they correlated significantly with the variable to be predicted. Variables were entered into the equation simultaneously.

For both feedback conditions together, regression analysis was done to inspect the predictive value of mastery goal and self-efficacy beliefs on the third assignment for grade on the third assignment. To control for the performance level students started from, grade for the second assignment was also included as a predictor.

One-sided tests were used for the hypotheses. All other tests were two-sided. The significance level ( $\alpha$ ) was set at .05.

## Results

### *Initial analyses*

*Missing data.* Twenty-one students (24%) had missing data on at least one of the motivation scales, the feedback on the second assignment, or the third text. Missing data mostly resulted from students' absence during tutorial group meetings. Students with missing data did not differ significantly from students with complete data on the motivation variables for the second and third assignment, and their grades on the assignments. Thus, the subsequent analyses focus on the 65 students with complete data (experimental condition  $n = 34$ , control condition  $n = 31$ ).

*Initial differences.* We checked for differences between feedback conditions concerning students' mastery goal and self-efficacy beliefs for the second assignment, and the grade on the first and second assignment. Unexpectedly, students in the experimental condition scored significantly lower on self-efficacy beliefs for assignment 2 ( $M = 4.2$ ,  $SD = 1.1$ ) than students in the control condition

Progress feedback

Table 4.2

*Mastery Goal and Self-Efficacy Beliefs for the Second and Third Assignment (n = 65; Experimental Condition n = 34, Control Condition n = 31)*

	Assignment											
	2						3					
	Feedback condition											
	Control		Experimental		Overall		Control		Experimental		Overall	
<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Mgoal	5.1	0.7	4.9	0.9	5.0	0.8	5.1	0.8	4.8	0.9	4.9	0.8
Selfeff	4.8	0.6	4.2	1.1	4.5	0.9	4.9	0.7	4.2	0.8	4.5	0.8

*Note.* Mgoal = mastery goal; Selfeff = self-efficacy beliefs.

Table 4.3

*Grades for the First, Second and Third Assignment*

Assignment	Feedback condition					
	Control		Experimental		Overall	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
1	6.6	1.1	6.2	1.1	6.4	1.1
2	6.6	1.5	6.6	1.1	6.6	1.3
3	7.0	1.2	7.1	0.9	7.0	1.0

( $M = 4.8, SD = 0.6$ ),  $t(52.92) = 2.75, p < .01$ . Analyses of covariance reported below, will take this initial difference in self-efficacy beliefs into account.

**Descriptives**

Table 4.2 shows students' mean scores on mastery goal and self-efficacy beliefs for the second and third assignment. Students scored above the scale midpoint at both assignments. Teachers' grades indicated text quality was sufficient for all three assignments (see Table 4.3). On average, the difference between grade 2 and grade 1 suggested little progress, but this varied to a large extent between students ( $M = 0.2, SD = 1.5$ ). Students fairly appreciated the feedback on the second assignment ( $M = 5.0, SD = 1.1$ ) and this appreciation did not differ significantly between conditions,  $t(63) = 0.17, ns$ .

There was a significant correlation between students' mastery goal and their self-efficacy beliefs, both for assignment 2 ( $r = .47, p < .01$ ) and assignment 3

( $r = .46, p < .01$ ). Students' mastery goal and self-efficacy beliefs did not correlate significantly with their grade, neither on assignment 2 nor on assignment 3.

Table 4.4 shows the frequencies of feedback aspects per feedback condition. Students in the experimental condition received feedback on progress while students in the control condition did not, so the manipulation was as intended. Furthermore, students in the experimental condition received significantly more comments than students in the control condition. Students in the experimental condition received more comments on content and on structure, more comments referring to a grade and more descriptive comments. As a result, the total feedback length was larger in the experimental condition. Comments indicated better performance (on average had a higher sign) in the experimental condition than in the control condition.

As can be inferred from Table 4.4, part of the differences between feedback conditions in feedback aspects can be attributed to the comments that indicated progress: when these comments were excluded from the analysis there were no differences between feedback conditions on the number of comments on structure, the mean sign of comments and the total feedback length. This is because like all other comments, progress comments were not only coded on reference, but also on the other aspects. Some of the differences in feedback aspects between feedback conditions cannot be explained by the progress comments, namely the number of comments referring to some standard, the number of comments on content, the number of descriptive comments, the number of comments referring to a grade and the total number of comments. In the analyses of covariance and regression analyses reported below, feedback aspects are considered respectively as covariables and predictors to control for differences in feedback other than progress comments.

In the experimental condition teachers ticked writing aspects on which students progressed. On average, teachers ticked few aspects ( $M = 2.9, SD = 2.1$ ). The number of ticked aspects correlated strongly with the number of comments on progress ( $r = .86, p < .01$ ), indicating that ticked aspects were accompanied by comments on progress. The number of aspects ticked correlated significantly positive with progress as indicated by teachers' grades (i.e., the difference between the grade for the first and for the second text;  $r = .50, p < .01$ ). So, the more aspects the teachers ticked, the more progress was indicated by their grades. The number of comments on progress also correlated significantly positive with progress as indicated by teachers' grades ( $r = .46, p < .01$ ). So, the more comments on progress teachers gave, the more progress was indicated by their grades.

Progress feedback

Table 4.4

*Feedback on the Second Assignment: Means and Standard Deviations of Feedback Aspects*

Feedback aspect <sup>a</sup>		Feedback condition					
		Control		Experimental		Experimental without progress comments	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Reference	Progress <sup>b</sup>	0	0	2.9**	2.1	0	0
	Other student	0	0	0	0	0	0
	Standard	8.7	1.4	10.4**	2.7	10.4**	2.7
Progress explicitness <sup>c</sup>				4.1	0.7		
Object	Content	7.2	1.5	10.8**	3.2	8.8**	2.5
	Structure	0.9	0.8	1.6**	1.1	0.8	0.7
	Language	0.4	0.6	0.5	0.9	0.4	0.9
	Other	0.2	0.4	0.5*	0.9	0.4	0.9
Grade/ descriptive	Grade	0	0	0.5*	1.2	0.5*	1.2
	Descriptive	8.7	1.4	12.8**	3.4	9.9*	2.5
Explanation		1.6	1.1	1.4	1.2	1.3	1.1
Question		0.3	0.8	0.4	0.7	0.4	0.7
Strategy		0.2	0.4	0.2	0.6	0.2	0.6
Sign		3.0	0.4	3.2**	0.3	3.0	0.3
Tone		3.1	0.1	3.0	0.1	3.0	0.1
Total length (words)		83.2	20.0	113.2**	46.1	90.9	39.4
Number of comments		8.7	1.4	13.3**	3.4	10.4**	2.7

*Note.* Scores on “explanation”, “question” and “strategy” concern comments that respectively contained an explanation, a question and a strategy. Comments that did not contain an explanation, question and strategy are not indicated, but can be calculated from the total number of comments.

<sup>a</sup>Means concern the sum of fragment scores per student, summed over students and then divided by the number of students, except for mean sign and mean tone. The mean sign and mean tone of fragments are calculated within students, the mean fragment score is summed over students, and subsequently divided by the number of students. <sup>b</sup>I.e., refers to previous performance. <sup>c</sup>Coded only when “reference” is progress.

\*  $p < .05$ . \*\*  $p < .01$ . Comparison between experimental and control condition.

*Feedback condition effects on students' mastery goal*

As students in the experimental condition did not report a higher mastery goal ( $M = 4.8$ ) than students in the control condition ( $M = 5.1$ ), our hypothesis was not confirmed. A two-sided t-test was done to check for an unexpected negative effect of feedback condition; no negative effect was found,  $t(63) = 1.07$ , *ns*. ANCOVA compared feedback conditions controlling for variables that significantly correlated with students' mastery goal for the third assignment: mastery goal for the second assignment ( $r = .43$ ,  $p < .01$ ), the number of comments on structure ( $r = -.31$ ,  $p < .05$ ), the mean feedback tone ( $r = .33$ ,  $p < .01$ ), and students' feedback evaluation ( $r = .38$ ,  $p < .01$ ) (there were no collinearity problems). ANCOVA also showed no effect of feedback condition on students' mastery goal for the third assignment,  $F(1,59) = 0.01$ , *ns*.

*Feedback condition effects on students' self-efficacy beliefs*

As students in the experimental condition did not report higher self-efficacy beliefs ( $M = 4.2$ ) than students in the control condition ( $M = 4.9$ ), our hypothesis was not confirmed. A two-sided t-test showed a negative effect of feedback condition on students' self-efficacy beliefs for the third assignment,  $t(63) = 3.52$ ,  $p < .01$ . Unexpectedly, the experimental condition scored significantly lower on self-efficacy beliefs than the control condition. The latter might be due to pre-existing differences (see "initial differences" above). ANCOVA controlled for these pre-existing differences. ANCOVA compared feedback conditions controlling for variables that significantly correlated with students' self-efficacy beliefs on the third assignment: self-efficacy beliefs on the second assignment ( $r = .66$ ,  $p < .01$ ), the number of comments on structure ( $r = -.30$ ,  $p < .05$ ), the mean feedback tone ( $r = .34$ ,  $p < .01$ ), and students' feedback evaluation ( $r = .34$ ,  $p < .01$ ) (no collinearity problems). The ANCOVA results also did not support our hypothesis. Controlled for the variables mentioned, students in the experimental condition did not show higher self-efficacy beliefs (Estimated marginal mean = 4.39,  $SE = 0.10$ ) than students in the control condition (Estimated marginal mean = 4.68,  $SE = 0.10$ ). The two-sided ANCOVA results confirmed the unexpected negative effect of feedback condition on students' self-efficacy beliefs for the third assignment,  $F(1,59) = 3.94$ ,  $p < .05$ , partial  $\eta^2 = .06$ .

*Feedback condition effects on students' grade*

Results of a t-test did not support our hypothesis. Students in the experimental condition did not receive a higher grade than students in the control condition,  $t(63) = -0.17$ , *ns*. ANCOVA compared feedback conditions controlling for variables

that significantly correlated with students' grade for the third assignment: grade for the second assignment ( $r = .48, p < .01$ ), the difference between the grade for the second and the first assignment ( $r = .31, p < .05$ ), the mean feedback sign ( $r = .37, p < .01$ ), and the mean feedback tone ( $r = .25, p < .05$ ) (no collinearity problems). ANCOVA also showed no effect of feedback condition on grade for the third assignment,  $F(1,59) = 0.09, ns$ .

***Number of progress comments: prediction of students' mastery goal***

The total number of progress comments was the variable of interest in the prediction of students' mastery goal for the third assignment. Additionally, regression analysis comprised predictor variables that showed a significant correlation with students' mastery goal for the third assignment: mastery goal for the second assignment ( $r = .42, p < .05$ ) and the mean feedback tone ( $r = .37, p < .05$ ) (no collinearity problems). Regression analysis showed that the number of progress comments did not predict students' mastery goal ( $\beta = .09, ns$ ); mastery goal for the second assignment ( $\beta = .39, p < .05$ ) and the mean feedback tone ( $\beta = .32, p < .05$ ) did significantly contribute to the prediction of students' mastery goal for the third assignment,  $F(3,30) = 4.07, p < .05, R^2 = .29$ .

***Number of progress comments: prediction of students' self-efficacy beliefs***

The total number of progress comments was the variable of interest in the prediction of students' self-efficacy beliefs for the third assignment. Additionally, regression analysis comprised predictor variables that showed a significant correlation with students' self-efficacy beliefs for the third assignment: self-efficacy beliefs for the second assignment ( $r = .65, p < .01$ ) and the mean feedback tone ( $r = .35, p < .05$ ) (no collinearity problems). Regression analysis showed that the number of progress comments did predict students' self-efficacy beliefs for the third assignment ( $\beta = .27, p < .05$ ); also self-efficacy beliefs for the second assignment did predict self-efficacy beliefs for the third assignment ( $\beta = .69, p < .01$ ), but the mean tone did not ( $\beta = .13, ns$ ),  $F(3,30) = 10.71, p < .01, R^2 = .52$ . So, more progress comments and a higher level of self-efficacy beliefs on the second assignment predicted higher levels of self-efficacy beliefs for the third assignment.

The positive contribution of the *number of progress comments* to the prediction of self-efficacy beliefs seems to contrast the unexpected negative effect of *feedback condition* on self-efficacy beliefs. Apparently, the negative effect of feedback condition can be countered by the number of progress comments, and progress comments can contribute to self-efficacy beliefs. So there must be a threshold number of progress comments: below that number, self-efficacy beliefs

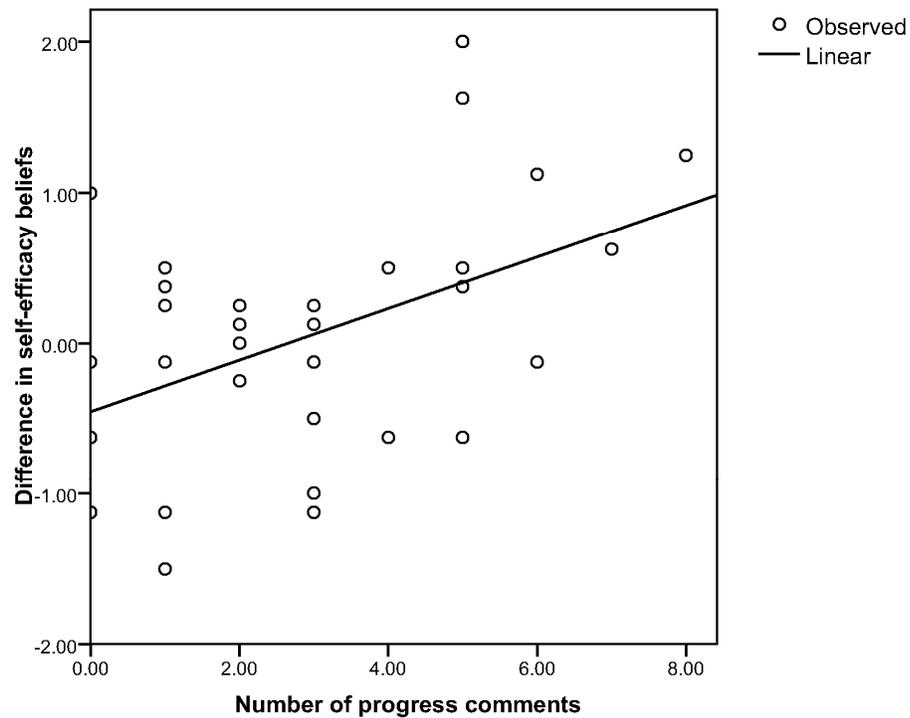


Figure 4.2. Difference in self-efficacy beliefs between the second and third assignment as a function of the number of progress comments (experimental condition).

decrease, and above, self-efficacy beliefs increase. The question is what the threshold number is in this setting. Figure 4.2 shows for the experimental condition the difference between self-efficacy beliefs for the third assignment and self-efficacy beliefs for the second assignment, as a function of the number of progress comments. The difference score is used here to take into account the effect of self-efficacy beliefs for the second assignment on self-efficacy beliefs for the third assignment. Positive difference scores indicate an increase in self-efficacy beliefs. In line with the regression analysis results, Figure 4.2 shows a positive linear relation between the number of progress comments and the change in self-efficacy beliefs ( $b_0 = -.46$ ;  $b_1 = .17$ ;  $R^2 = .21$ ;  $p < .01$ ). The figure indicates that in this setting there is a threshold of three progress comments. Above three progress comments, the trend is that self-efficacy beliefs increase, below that number self-efficacy beliefs decrease.

*Mastery goal and self-efficacy beliefs: prediction of students' grade*

The predictive value of mastery goal and self-efficacy beliefs for students' grade was calculated for students in both feedback conditions together. Regression analysis showed that mastery goal ( $\beta = .16$ , *ns*) and self-efficacy beliefs ( $\beta = -.15$ , *ns*) for the third assignment did not predict students' grade for the third assignment, but grade for the second assignment did ( $\beta = .48$ ,  $p < .01$ ),  $F(3,61) = 6.96$ ,  $p < .01$ ,  $R^2 = .26$ .

**Discussion**

The aim of this study was to investigate the effect of progress feedback on students' writing mastery goal, writing self-efficacy beliefs, and writing performance. As progress feedback provides positive performance information based on an intrapersonal standard, it was hypothesized to enhance students' writing mastery goal and self-efficacy beliefs. Based on FIT, progress feedback was hypothesized to enhance students' writing performance. This effect was expected to be mediated by self-efficacy beliefs, as FIT suggests that feedback effects on performance are mediated by task-motivation processes (as well as by meta-task processes and task-learning processes).

Contrary to our hypothesis, progress feedback did not affect students' mastery goal. An explanation may be that the effect of progress feedback on mastery goal was reduced because students also received a grade. Butler (1988) demonstrated that feedback comments alone increased students' subsequent interest in a task compared to a situation in which only marks were given and a situation in which both feedback and marks were given. Butler argued that students paid less attention to the comments when also given marks. Carless (2006) found that students tend to look first at their grade, rather than to the comments provided. As FIT states, grades divert attention away from the task. In the present study all students received a grade because of the psychology department's grading policy.

Another explanation may be that the strengthening of students' mastery goal requires more progress messages than provided in this study. To provide students with more and nevertheless realistic progress messages would have required extension of the study over a longer time span, as generally after a longer time span more progress will actually be realized. Providing students with more progress messages in the present study was no eligible option, as unrealistic progress messages are assumed to undermine students' self-efficacy beliefs (Bandura, 1997).

There was an unexpected negative effect of feedback condition on students' self-efficacy beliefs. Students in the experimental condition reported lower self-efficacy beliefs than students in the control condition. This result can be explained by the design of the feedback form for the experimental condition. For students in the experimental condition, teachers ticked in a pre structured column writing aspects that had improved. Thus, improved aspects were communicated explicitly. Although no explicit information was provided on unimproved aspects, the absence of ticks made salient which aspects had not improved. Of fourteen aspects that could be ticked, on average nearly three aspects were actually ticked. Likely, the eleven aspects not ticked were perceived by students as an indication that they had not progressed substantially. So, instead of the positive message of progress, the aspects not ticked may have communicated a stronger negative and therefore disappointing message. As a result, students in the experimental condition reported lower self-efficacy beliefs than students in the control condition, who did not receive any progress information (nor the implicit information that they had not progressed).

As expected, within the experimental condition, the number of progress comments did positively predict students' self-efficacy beliefs. Figure 4.2 suggests a threshold for the number of progress comments to improve students' self-efficacy beliefs. From a certain number of progress comments (in this setting three) the negative effect of the apparentness of not improved aspects is overruled and a positive effect of progress comments on self-efficacy beliefs occurs. Probably, the positive effect relates to the ratio of progressed and not progressed aspects, which was more balanced for students who received more progress comments. This is in accordance with the idea that for motivational purposes positive and negative comments should balance (Stern & Solomon, 2006). So, the results are in line with the notion that the self-efficacy beliefs of students who have little academic writing experience are sensitive to teachers' comments on their writing capacities (Bandura, 1986; Pajares & Valiante, 2006) and confirm the notion of FIT that progress feedback affects task motivation. The important qualification is that the direction of the effect depends on the number of progress comments, or plausibly, the ratio between progress and non-progress information. The latter may become visible simply through the design of the feedback form.

Contrary to our hypothesis, progress feedback did not affect students' performance. Both mastery goal and self-efficacy beliefs were considered as mediators of the effect of progress feedback on students' performance. Even when progress feedback would have affected students' mastery goal, mastery goal

would probably not have been a mediator of the effect of progress feedback on performance, because mastery goal did not predict students' performance. This is consistent with literature (see Harackiewicz et al., 2002). Students' self-efficacy beliefs did not predict students' performance either, and so self-efficacy beliefs could also not mediate the effect of progress feedback on students' performance. The fact that students were unfamiliar with academic writing – they attended their first psychology course – might explain why their self-efficacy beliefs did not predict their performance. They could not rely on previous experiences in academic writing to appraise their academic writing capacities and as such their self-efficacy beliefs may not have been accurate. As a result, self-efficacy beliefs did not instigate them optimally (Bandura, 1986) (e.g., made them put more effort into it or made them ask for help).

Based on the results and limitations of this study, several recommendations for future research can be made. A limitation of the present study is the relatively small sample in combination with the large number of variables. Future research must show whether the results hold for other samples. With respect to the design, future research may focus on the provision of progress feedback not accompanied by grades and may extend over longer time periods to be able to provide more progress feedback. Progress feedback should be formulated in a way that prevents unimproved aspects to be as salient as progressed aspects, for example through stating progress only in words and not by ticking aspects. With respect to measurement, it would be interesting to examine students' interpretation of progress feedback, particularly with respect to the number of progress messages and the ratio of progressed and not progressed aspects, and to inquire about the actual message they derive from progress information (i.e., is it perceived as positive or negative).

As this study demonstrates, it is no indisputable truth that expected positive effects of feedback occur; even negative effects may occur. Hence, validation of statements on the effect of feedback on writing motivation and performance requires more research. This study shows that investigations into progress feedback should consider the number of progress messages as well as the apparentness of not progressed aspects, and the balance between both.

## **5. Feedback providing improvement strategies and reflection on feedback use: effects on students' writing motivation, process, and performance<sup>1</sup>**

In the previous chapter the effects of progress feedback on students' writing motivation and writing performance were investigated. The present chapter deals with another feedback intervention: feedback providing improvement strategies. Improvement strategies suggest how to close the gap between the current product and the goal product, and as such are at the core of formative assessment (Sadler, 1989). The effects of feedback providing improvement strategies on students' writing motivation, as well as on their writing process and performance are investigated. In addition, the effects of a reflection assignment dealing with intentions to use the feedback and the intended approach to writing the subsequent draft are examined. First, we will recapitulate the theoretical notions and empirical results relevant to feedback providing improvement strategies and reflection on feedback.

### **Feedback providing improvement strategies**

As discussed in chapter 2, according to Feedback Intervention Theory (FIT; Kluger & DeNisi, 1996) feedback directs attention to task-learning processes, task-motivation processes, or meta-task processes. According to FIT, negative discrepancies between the performance and the standard will generally direct attention to task-motivation processes, leading to more effort. When this does not reduce the discrepancy, attention might shift to components of task execution (task-learning processes) resulting in alternative attempts to execute the task, or attention might shift away from the task to issues involving the self, such as self-esteem and impression management (meta-task processes). In general, feedback cues that direct attention to task-motivation processes or task-learning processes – coupled with corrective information on erroneous ideas or hypotheses – are

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<sup>1</sup> This chapter is based on Duijnhouwer, H., Prins, F. J., & Stokking, K. M. (2010). *Feedback providing improvement strategies and reflection on feedback use: effects on students' writing motivation, process, and performance*. Manuscript submitted for publication.

assumed to enhance feedback effects on performance. Feedback cues that direct attention to meta-task processes are supposed to reduce the effect of feedback on performance, because they divert attention from the task (Kluger & DeNisi, 1996).

One of the kinds of feedback that may direct attention to the task-learning level is feedback providing strategies for performance improvement (Stern & Solomon, 2006; Straub, 1996, 1997). In fact, providing improvement strategies is a form of instructional scaffolding: the teacher helps the student to internalize routines and procedures to complete the task that is just too difficult to perform alone (Applebee, 1986). Feedback providing improvement strategies may also direct attention to the task-motivation level, as through providing a means to reach a better performance it brings performance improvement under learner control (see Bruning & Horn, 2000). It communicates that although the task perhaps is difficult, it can be accomplished. Therefore, we expect this feedback to enhance students' judgment of their capability to perform actions that lead to the required text, that is, their self-efficacy beliefs (cf. Schunk & Swartz, 1993a). This is in line with the notion that strategy instruction enhances students' self-efficacy beliefs (Walker, 2003). As feedback providing improvement strategies offers information to improve writing skills and performance, this kind of feedback may also focus students on skill development and thus enhance their writing mastery goal. Indeed, feedback providing strategies is perceived by students as having a developmental focus (Lizzio & Wilson, 2008).

Strategies may vary in several respects. They differ in the writing process they aim at, such as planning or revising (Graham, 2006) (e.g., for planning a strategy may explain how to make an outline in order to clarify text structure; for revising a strategy may suggest to reread the text solely on spelling). Strategies may aim at different text aspects, such as text structure or language (e.g., making an outline can be suggested to improve text structure, rereading on spelling can be indicated to improve language). Strategies also differ in the involvement of others (e.g., rather than making an outline, the suggestion may be to discuss the text structure with a peer).

Research on writing instruction has shown that strategy instruction – focussed on planning, translating and revising – improves the writing performance of students in primary and secondary school (Graham, 2006; Graham & Perin, 2007). Research on feedback that provides learners with improvement strategies is however scarce. The use of writing revision strategies was modelled in a study of Zimmerman and Kitsantas (2002). In that study, one-third of the students watched a “coping model” making and correcting revision errors and improving in the use of revision strategies, one-third of the students

watched a “mastery model” flawlessly implementing revision strategies, and one-third of the students did not watch a model. Students in both modelling groups performed better on a writing revision task than students who did not watch a model implementing revision strategies. Students who saw the coping model reported higher self-efficacy beliefs and performed better than students who saw the mastery model, so the combined information of revision strategies and dealing with errors was most beneficial. While in this study students watched a model using improvement strategies, it may be more effective to provide feedback that includes improvement strategies. Feedback including improvement strategies was provided in a study by Narciss and Huth (2006). They investigated the effect of the provision of strategic information for the correction of subtraction errors (e.g., information on the carry of “1” when calculating 68-29). Half of the fourth-grade pupils involved in this study were provided with this information when they had made a subtraction mistake. The other half of the pupils did not receive this strategic information, but did receive information on the correctness of their response and the correct answer. Children who received strategic information reported higher motivation and performed better on the post-test than children who did not receive this information. In another study, Narciss (2004) investigated the effect of strategic information for the correction of errors in concept identification tasks (dealing with the identification of attributes and rules). An example of this strategic information is the information to use negative instances for the inference of rules. Students who received this information did not perform better than students who did not receive this information. If the available time-on-task was restricted, strategic information did contribute to students’ effort and task engagement.

The present study addresses the following research question regarding feedback: What is the effect of feedback providing improvement strategies on students’ writing motivation, writing process, and writing performance? Based on the theoretical notions and empirical results described above, we hypothesize feedback providing improvement strategies to enhance students’ self-efficacy beliefs, mastery goal, planning and revising, effort, and performance. We hypothesize that strategies that suggest to involve others (e.g., “Ask for feedback on the line of reasoning”) increase students’ help-seeking. Students’ performance goal is hypothesized to be unaffected by feedback providing improvement strategies. It will be explored whether the effect of the improvement strategies depends on the initial level of motivation, writing process, or performance (i.e., before strategies are provided).

### **Reflection on feedback**

When feedback is given with the aim to enhance writing performance, the assumption is that it evokes at least some reflection on the content and the process of writing. Mindful reception of the feedback promotes learning or performance (Bangert-Drowns, Kulik, Kulik, & Morgan, 1991; Salomon & Globerson, 1987). Reflection is a process that starts with the identification of a problem and the decision to seek a solution. A plan or decision to act is made up through cognitive activities (Rogers, 2001). Examples of cognitive activities are comparing, analysing, evaluating, questioning, concluding and intending (Stokking, Van der Schaaf, Leenders, & De Jong, 2004). As a result of feedback on writing, reflection would start with the identification that the text is not (yet) what it should be, and – in case the text has to be revised – the decision to seek a solution for the problems identified in the feedback. A student could for example analyse the text based on the teacher's comments, evaluate the feedback ("Do I agree with the teacher's point of view?"), conclude whether or not action should be taken, and make a plan (formulate an intention) on how to approach the revision. This example illustrates that, as Stokking and colleagues propose, not only cognitive activities can be distinguished, but also objects of these activities (the text in its present form, the feedback content, and the task approach for the subsequent draft; other objects might for instance be the first draft writing process and the way the feedback is communicated). The example also shows that feedback can instigate reflection, as well as be object of reflection.

Reflection on the feedback is supposed to aid to the effect of feedback on performance because it directs the feedback recipient's attention to the task level (cf. Anseel, Lievens, & Schollaert, 2009). One of the formal activities that may trigger and structure students' reflection process is asking questions (Seibert, 1999; Seibert & Daudelin, 1999; Smits, Sluijsmans, & Jochems, 2009). Instruction that provides students with questions to ask themselves during problem-solving has been shown to enhance performance (see p. 24; Ge & Land, 2003). Instructional procedures that pose questions that progress from what to why to how follow the reflection process as described. A problem is clarified, ideas on the causes generated and action planned (Seibert & Daudelin, 1999). Since the utility of a reflection instigating procedure depends on the match between what is activated and what is required (Salomon & Globerson, 1987), we expect that a reflection assignment that asks for students' opinion on the feedback, their intentions to use the feedback, and their intentions on the approach to writing the subsequent draft poses effective reflection enhancing questions.

In the present study, the research question regarding reflection is: What is the effect of a reflection assignment asking for students' opinion on the feedback, their intentions to use the feedback, and their intentions on the approach to writing the subsequent draft, on students' writing motivation, writing process, and writing performance? As such a reflection assignment makes the student formulate intentions on planning and revising, we hypothesize this assignment to contribute to planning and revising, as well as to performance.

## **Method**

### ***Participants***

The study took place at a university in the Netherlands, in a 9-week graduate course on competence-based education and assessment. Ninety-six students (81% women) participated in the course, ranging in age from 20 to 56 years ( $M = 26.85$ ,  $SD = 6.52$ ). Students participated in the study voluntarily. Eighty-two students (85.4%) had a complete data set. Analyses on the questionnaire data pertain to these students.

Three teachers provided the students with feedback. The students were randomly distributed over the teachers and the experimental conditions. Each teacher took an equal part in every experimental condition.

### ***Assignments and feedback***

*Writing assignment.* As part of the course the students received a writing assignment, the grade of which took up 60% of the final course grade. The assignment concerned a paper of 5 to 10 pages in which the student had to analyze and evaluate a case on competence-based training, educational design, or assessment policy. The course manual contained the assessment criteria. The electronic learning environment provided examples of written papers of high and moderate quality.

*Feedback.* The teachers provided students with feedback on the first draft of their paper by means of a feedback form. This form contained five criteria: content, structure, reasoning, language, and layout. Several sub criteria specified the criteria, such as "sufficient and high-quality references" and "adequate use of paragraphs". Teachers provided comments on the five criteria and scored them as "-", "+/-", or "+". Extra space was provided for additional comments. For the assessment of the second (i.e., final) draft teachers used the same form and additionally gave a mark between 1 and 10. The scores on the five criteria formed a reliable scale (first draft:  $\alpha = .79$ ; final draft:  $\alpha = .84$ ). Grade was significantly predicted by the final draft scores on the five criteria ( $R^2 = .40$ ,  $p < .01$ ). For the first

draft the scale score will be used as a measure of text quality, for the final draft, the grade will be used.

In the feedback on the first draft, the teachers provided students in the experimental feedback condition with improvement strategies, such as “You may summarize each paragraph in a few words. These words may help you to order the paragraphs so that the order supports your line of reasoning. You may try to explain to yourself the logic of why a specific paragraph follows another.” Teachers were instructed to provide a strategy when they scored a criterion as “-” or “+/-”, and to formulate this strategy as an approach (not a solution) and option (not a command). Teachers were provided with a list of several possible strategies per criterion. Students in the control feedback condition did receive feedback but no improvement strategies.

*Reflection assignment.* Students received a reflection assignment concerning the feedback on their first draft. The assignment consisted of six questions which students answered in pre structured spaces covering about two pages in total. In the experimental reflection condition students answered questions on their opinion on the feedback, their intentions to use the feedback and their intentions regarding the approach to writing the final draft. The questions were “What in the feedback did appeal to you? Why?”, “What had no or little appeal to you? Why?”, “Which feedback do you want to use in working on the final draft? Why?”, “Which feedback do you not want to use? Why?”, “How will you take on working on the final draft?”, “Based on the feedback, what will you do differently compared to working on the first draft?” To rule out the time devoted to the feedback as an explanation of eventual results, students in the control reflection condition also made a reflection assignment on the feedback. The questions in this condition did not ask for students’ intentions to use the feedback or for their intentions on the approach to writing the final draft, but asked for their feedback perception. The questions were “Which feedback do you agree with? Why?”, “Which feedback do you disagree with? Why?”, “Which feedback did you expect to receive?”, “Which feedback didn’t you expect to receive?”, “What do you think about the way the feedback has been formulated?”, “If you would have given this feedback, would you have formulated it differently? If yes, how would you have formulated it?” The reflection assignment did not contribute to the course grade.

### *Design*

The experimental design was a 2 (feedback) x 2 (reflection) factorial design. In the experimental feedback condition teachers provided students with strategies to improve their paper. In the control feedback condition teachers did not provide

improvement strategies. In the experimental reflection condition students answered questions on their intentions to use the feedback and their intentions regarding the approach to writing the final draft. In the control reflection condition students answered questions on their perception of the feedback.

### *Measures*

*Motivation questionnaire.* Three scales were used to measure students' writing task motivation for the first draft and for the final draft (see p. 43): "self-efficacy beliefs" (10 items; example item: "I expect to write a good first draft"), "mastery goal" (4 items; example item: "I want to learn as much as possible from writing this first draft"), and "performance goal" (5 items; example item: "I want to write a good first draft, to show others my skill"). All items were scored on a 7-point Likert-type scale, from 1 (*not at all true of me*) to 7 (*very true of me*). Scale reliabilities were satisfactory, except for the mastery goal scale for the first draft, which however was not adapted for reasons of comparability (mastery goal:  $\alpha = .57$ ,  $\alpha = .79$ ; performance goal:  $\alpha = .80$ ,  $\alpha = .70$ ; self-efficacy beliefs:  $\alpha = .93$ ,  $\alpha = .94$ ).

*Writing process questionnaire.* Three scales were used to measure students' writing process on the first draft and on the final draft (see p. 26): "planning/revising" (17 items; example items: "Before I started to write the first draft, I have thought about what the content should be"; "Sometimes I made changes to my first draft to improve structure"), effort (11 items; example items: "I think I have put enough energy in this first draft"; "While writing this first draft I regularly had difficulties with concentrating"), and help-seeking (4 items; example items: "I have considered asking a peer for feedback on my first draft"; "I have thought about which peers I could ask for help with writing my first draft"). Like the motivation items, writing process items were scored on a 7-point Likert-type scale. Scale reliabilities were good (planning/revising:  $\alpha = .92$ ,  $\alpha = .91$ ; effort:  $\alpha = .90$ ,  $\alpha = .90$ ; help-seeking:  $\alpha = .87$ ,  $\alpha = .93$ ).

*Time investment.* Students were asked to indicate their time investment (hours spent reading, making notes, or writing): (1) the time spent before handing in the first draft, (2) the time spent between handing in the first draft and receiving feedback, and (3) the time spent between receiving feedback and handing in the final draft.

*Feedback evaluation.* Nine items measured students' evaluation of the instructive qualities of the feedback (e.g., "I have received useful feedback"). Students indicated their agreement on a 7-point Likert-type scale. Scale reliability for feedback evaluation was good ( $\alpha = .88$ ).

*Reflection assignment evaluation.* Four items measured students' evaluation of the instructive qualities of the reflection assignment (e.g., "I found this reflection assignment challenging"). Students indicated their agreement on a 7-point Likert-type scale. Scale reliability for reflection assignment evaluation was good ( $\alpha = .92$ ).

*Writing assignment evaluation.* Eight items measured students' evaluation of writing assignment instructiveness (e.g., "I found this assignment useful"). Scale reliability for writing assignment evaluation was good ( $\alpha = .89$ ).

*Feedback coding.* The feedback on the first draft was coded in order to analyse the effects of improvement strategies, controlling for differences in other feedback aspects. A feedback coding protocol for feedback segmenting and coding was used (see p. 29). Each feedback segment was coded on ten aspects. One of these aspects is the presence of an improvement strategy. Compared to the initial coding protocol, in the present study we reduced the aspect "improvement strategy" to a dichotomy: either or not indicating a strategy. Because we expected a positive effect of improvement strategies, differentiation of comments not indicating a strategy was unnecessary. Also the strategy content was coded. Based on the strategy list we provided to teachers and the strategies the teachers actually suggested to the students, we specified seven types of strategy content. The other coded feedback aspects (see Table 5.1) concern the feedback object and the feedback aspects linking to the levels of FIT (see p. 18). For examples of feedback aspects the corresponding codes, see the Appendix on p. 33.

*Reflection coding.* To determine whether the reflection assignment elicited the reflections aimed at, the reflection assignments were segmented and coded to analyse the actual reflection (see p. 30). Each segment was coded on two aspects. *Object* indicated the object of cognition, in accordance with the questions posed in the assignment: the first draft, the feedback (related to the first draft), feedback use, the approach to writing the first draft, the approach to writing the final draft, the teacher's formulation of the feedback, or the student's formulation of the feedback. *Cognition* indicated whether or not the segment indicated the following cognitive activities: differentiating (distinguishing or comparing several aspects), structuring (organising information), explaining/motivating/interpreting (providing reasons, causes or arguments), evaluating (either positively or negatively), concluding, and intending. A segment could comprise none, one, or more than one cognitive activity. In this study, the focus is on the objects "feedback use" and "approach of the final draft", and the cognitive activity "intending".

Table 5.1  
*Feedback Aspects: Description and Codes*

Aspect	Description	Codes
Strategy	Does or does not indicate an improvement strategy	0: No strategy 1: Improvement strategy
Strategy – content	Strategy content - coded only when the code on “strategy” is 1	1: Think through exercise 2: Explicate/externalize 3: Go over complete text 4: Go over specific aspects 5: Consult with others 6: Submit to others 7: Use other sources
Object	Feedback object	1: Layout 2: Language 3: Structure 4: Content 5: Documentation 6: Other
Explanation	Does or does not contain an explanation, explication or example	0: No explanation 1: Explanation
Question	Does or does not contain a question	0: No question 1: Question (closed or open)
Specificity	Does or does not enable the student to find in the text the issues the teacher commented on	0: Not specific (a-specific or global) 1: Specific (clear location or repeated local issue)
Control	Expression of the teacher’s control over the student’s text	1: Reflective (explanation, reader response) 2: Interactive (request for student reaction) 3: Evaluative (advise or limited evaluation) 4: Controlling (criticism)
Sign	Indication of performance quality	1: Very poor 2: Poor 3: Sufficient/neutral 4: Good 5: Very good

(table continues)

Aspect	Description	Codes
Tone	Agreeableness of tone	1: Very negative 2: Negative 3: Neutral 4: Positive 5: Very positive
Length	Number of words	(Number)

The author and a co-researcher each coded half of the feedback forms and reflection assignments. Per experimental condition the coding was distributed over the two researchers.

*Logbook.* Twelve students, three in each experimental condition, kept a logbook during the writing process. One student (in the control feedback and control reflection condition) dropped out due to personal circumstances. Students filled in the logbook for each session they spent on their paper. A session was defined as the time worked on the paper without interruption of other activities (except for a short break). Students indicated the date and the time they had worked on the paper, and marked what they did during this session (reading, making notes, writing). When they had made notes and/or had written text, they answered the following questions: (1) Which part of the paper did you work on?, (2) Did you have a goal or plan for this session? If yes, what was the goal or plan?, (3) Which choices did you have to make? What did you choose and why?, (4) What kind of difficulties or problems did you face (for example, what were you uncertain about, what cost trouble), (5) How did you solve these difficulties or problems?, (6) Did you involve others in working on the text? Why did or didn't you? If you did, in which way did you involve others?, (7) Did you have to motivate yourself to start working on the text? If yes, how did you do it?, (8) What was the reason to quit working on the paper for this moment?

To code students' answers, all logbooks were first read to generate answer categories for each question. This resulted for most questions in more than ten answer categories, which differed between questions. Second, to reduce the number of answer categories and to make these comparable between questions, we classified the answer categories for questions 1 to 5 in components of Hayes and Flower's (1980) writing process model. The components and examples are presented in Table 5.2. With respect to organising the text (planning: organising) we differentiated between information selection and information structuring. Additional to the writing process categories, one category indicated that none of

Table 5.2

*Hayes and Flower's Model as a Framework for the Logbook Coding: Examples of Students' Answers on the Logbook Questions 1 to 5*

Process	Description	Examples
Planning: generating	Finding relevant material	Searching for a case and literature. [q2: goal] I can't find a case. [q4: problems]
Planning: organising/selecting	Selecting the most useful material	Should definitions be included? [q3: choices] How should I discuss the literature? [q4: problems]
Planning: organising/structuring	Organizing the most useful material	How will I structure the text? [q4: choices] Which headings should I use? [q4: problems]
Translating	Generating text	Working on the introduction. [q1: part of paper] Start writing. [q2: goal]
Reviewing	Checking and improving text quality	Checking the complete text. [q1: part of paper] Rereading my text. [q5: solutions]
Monitoring	Determining the altering of processes	Where to start writing? [q3: choices] Should I gather more information on the case or should I first submit it for approval? [q4: problems]
Task environment	The writing assignment and the evolving text	What is the purpose? I don't understand the assignment. [q4: problems]
None	Explicit indication that nothing occurred regarding what the particular logbook question referred to	None, just did what I had planned to do. [q3: choices]

*Note.* q = logbook question.

the processes took place. The answers on questions 6 and 7 (help-seeking and motivating oneself) were coded dichotomously as whether or not students

involved others or had to motivate themselves, the answers on question 8 (reasons for ending the session) could be classified as relating to (a) time (e.g., a deadline, other planned activities), (b) motivation (i.e., being motivated or unmotivated), or (c) goal (e.g., session goal reached, paper completed). Students' answers to the logbook questions were coded per question per session. Subsequently, these codes were summed per question over sessions and over students. So, for questions 1 to 5 respectively, this resulted in a total number of sessions in which students' reported each of the writing processes, for questions 6 and 7 respectively this resulted in a total number of sessions in which students had asked for help and had to motivate themselves, and for question 8 this resulted in a total number of sessions that were ended because of each of the three reasons mentioned. Subsequently, these sum scores were transformed to the percentages of sessions in which a particular process, help-seeking, motivating oneself, or reason for ending the session took place. Finally, a summary was made that included events that occurred in at least 10% of the sessions.

*Interview.* The eleven students who kept a logbook were interviewed after they had completed their final paper draft. The interview consisted of questions on the feedback and on the reflection assignment. The feedback students had received and their reflection assignment were used as retrieval cues at the start of the respective part of the interview. Students were asked about their ideas on the feedback (whether they agreed or disagreed with it, the motivating and demotivating parts, the useful and useless parts) and on the role the feedback took in working on the final draft. Students in the experimental feedback condition were asked whether they found the improvement strategies they had received motivating or demotivating, and useful or useless, and whether they had used the strategy. Students in the control feedback condition were provided with several improvement strategies that the teacher could have given them and were asked whether they would have found these strategies motivating or demotivating, and useful or useless. With respect to the reflection assignment students were asked about the motivating qualities and usefulness, and whether the assignment had influenced their working on the final draft. For both the feedback and the reflection assignment students were asked suggestions on how it could improve (more) their motivation for and approach to writing the final draft.

The interviews were taped and transcribed and the interview protocols were restructured by classifying the statements into categories that fit with the interview schedule. The feedback categories were: agreement/disagreement, the motivating/demotivating qualities, the useful/useless qualities, the actual use or

effect, and students' advice on motivating qualities and on useful qualities. The improvement strategies categories were: appreciation, the motivating/demotivating qualities, and the useful/useless qualities. The reflection assignment categories were: the motivating/demotivating qualities, the useful/useless qualities, the actual use or effect, and students' advice on motivating qualities and on useful qualities.

To summarize the interviews, per answer category students' comments were combined. When at least one third of the students made a particular comment, this comment was taken up in the summary of the interviews. Noteworthy or illustrative remarks made by less than one third of the students were included with the indication of the number of students who made the remark. Where answers were typical for one of the experimental conditions, this was indicated (i.e., comments on feedback provided in one of the two feedback conditions, and comments on the reflection assignment provided in one of the two reflection conditions).

### *Procedure*

Figure 5.1 provides an overview of the study. Questionnaires were administered during the lecture meetings. Students filled in the motivation questionnaire and the writing process questionnaire with respect to both the first and the final draft of their paper. Students completed the first motivation questionnaire before they started working on the first draft. Five weeks later, students handed in their first draft and filled in the first writing process questionnaire. This questionnaire also included the measure of time investment. In the lecture meeting one week after, students received feedback on their first draft and completed the reflection assignment. Subsequently, they filled in the second motivation questionnaire. This questionnaire also contained the measures of time investment and feedback evaluation. Two weeks later students handed in their final draft and completed the second writing process questionnaire. This questionnaire additionally included the measures of time investment, reflection assignment evaluation and writing assignment evaluation.

### *Analyses*

The study had an experimental design, with four conditions. These conditions were compared on self-efficacy beliefs, mastery goal, performance goal, planning/revising, effort, help-seeking, and performance on the final draft by means of ANCOVAs. ANCOVAs compared feedback conditions controlling for the effect of three groups of variables: (a) motivation on the first draft or first draft

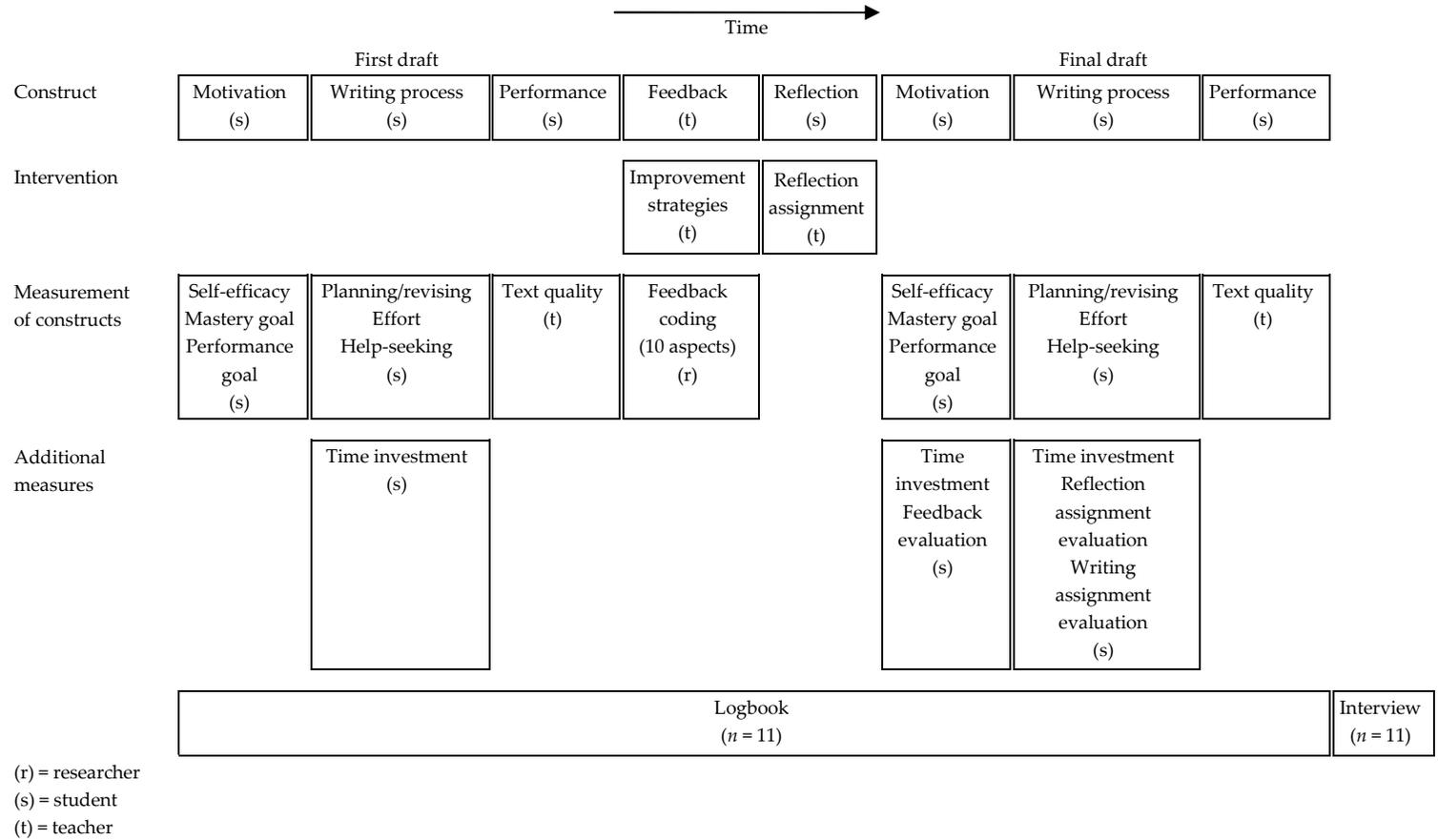


Figure 5.1. Overview of the study.

writing process, (b) performance on the first draft, and (c) scores on the feedback aspects. The first draft motivation score respectively the first draft writing process score was included to control for the motivation level and the writing process level students started from (for example, mastery goal on the first draft was included in analyses on mastery goal for the final draft). Because the feedback depended on the performance on the first draft, first draft text quality was included as a covariable. In the analyses on performance on the final draft, inclusion of first draft text quality also entailed controlling for the performance level students started from. Scores on the feedback aspects were included to control for the effect of feedback aspects other than improvement strategies. Scores on feedback aspects concerned frequencies of aspects (e.g., the number of comments on content, the number of comments that contain an explanation, the number of comments that pose a question), the mean scores for the aspects scored on interval level (i.e., the mean sign of comments, the mean tone of comments), and the sum scores for the aspects scored on ratio level (i.e., the total length [number of words], the total number of comments). With respect to the aspects “sign” and “tone” the mean score was used instead of the number of positive, neutral and negative comments, to prevent loss of degrees of freedom (we checked whether the use of the latter would change the results in terms of significance; this was not the case).

Variables were included as a covariate only when they correlated significantly with the dependent variable. First draft text quality did not correlate with all dependent variables, but was always included because it was important to control for the fact that the feedback was dependent on the performance on the first draft, and because of the purpose of consistency between analyses. (For the dependent variables that did not correlate with first draft text quality we checked whether exclusion of text quality as a covariate would change the results in terms of significance; this was not the case. The results including first draft text quality will be presented.) Scores on the feedback aspects were inspected only when the mean was at least one, because variables with values that occur very rarely cannot be reliably and meaningfully related to other variables. The scores “strategy” and “strategy – content” were not included in the ANCOVAs, because they were part of the factor (i.e., the feedback manipulation).

Although the design was experimental, the number of improvement strategies varied within the experimental feedback condition. Therefore, for the experimental feedback condition (half of the students), regression analyses were done to predict students’ motivation, writing process, and performance by the number of improvement strategies provided in the feedback. These analyses

pertained only to these students, as including students from the control feedback condition, in which no improvement strategies were provided, would only conceal possible feedback effects.

Like the covariables in the ANCOVAs, in the regression analyses additional predictors were students' first draft motivation or writing process, first draft text quality, and scores on the feedback aspects. So, variables that were covariates in the ANCOVA were predictor in the regression analysis. Similar to the ANCOVAs, we checked for the predicted variables that did not correlate with text quality, whether exclusion of text quality as a predictor would change the predictive value of the number of improvement strategies in terms of significance; this was not the case. For consistency purposes the results including text quality will be presented.

Variables were entered into the equation hierarchically. Step 1 included first draft motivation/writing process, first draft text quality, and scores on the feedback aspects. Step 2 additionally included the number of improvement strategies, searching for the unique contribution of improvement strategies to the prediction of the motivation or writing process score or the performance on the final draft. When the regression analysis showed feedback aspects (other than number of improvement strategies) that were non-significant predictors, the analysis was run again without these feedback aspects, to check whether this would change the predictive value of the number of improvement strategies in terms of significance. As this was never the case, these latter analyses will not be presented.

To check for the predictive value of the interaction of the feedback intervention and the first draft motivation score, or writing process score, or text quality (for the prediction of motivation, writing process, and text quality, respectively), hierarchical regression analyses were run. Step 1 included the number of improvement strategies, the first draft motivation or writing process score, first draft text quality, and scores on the feedback aspects. Step 2 included the interaction of the number of improvement strategies and the particular motivation score, writing process score, or first draft text quality. Following Kromrey and Foster-Johnson (1998) raw scores were used for this analysis.

If the regression analysis would show the number of improvement strategies to predict students' grade, the mediation of this effect by the motivation and writing process variables would be tested through the estimation of a series of regression equations (see Judd & Kenny, 1981). Sample size did not allow for path analysis (Kline, 2005).

Table 5.3

*Motivation for and Writing Process on the First and the Final Draft*

	Condition									
	cFcR		eFcR		cFeR		eFeR		Overall	
	<i>n</i>									
	18		20		23		21		82	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Selfeff-1	4.94	0.71	4.96	0.89	5.04	0.90	4.98	0.84	4.98	0.83
Selfeff-2	5.07	0.95	5.15	0.96	5.12	0.95	5.08	0.85	5.10	0.91
Mgoal-1	5.82	0.47	5.53	0.63	5.78	0.59	5.79	0.62	5.73	0.58
Mgoal-2	5.65	0.72	5.25	0.98	5.42	0.85	5.57	0.70	5.47	0.82
Pgoal-1	4.27	1.01	3.96	0.98	3.90	1.00	4.23	1.23	4.08	1.05
Pgoal-2	4.26	0.76	4.10	1.01	3.65	0.89	4.43	1.13	4.09	0.99
PlanRev-1	5.37	0.64	5.17	0.73	5.22	0.85	5.36	0.81	5.28	0.76
PlanRev-2	5.56	0.81	5.54	0.86	5.45	0.93	5.66	0.49	5.55	0.78
Effort-1	4.63	1.15	4.65	1.31	4.47	1.15	4.90	1.10	4.66	1.17
Effort-2	4.68	1.19	4.68	1.18	4.85	1.20	5.08	1.04	4.83	1.14
Help-1	2.57	1.47	3.14	1.92	2.77	1.43	3.49	1.92	3.00	1.71
Help-2	3.69	1.79	3.41	2.20	2.92	1.96	3.31	2.04	3.31	1.99

*Note.* Selfeff = self-efficacy; Mgoal = mastery goal; Pgoal = performance goal; PlanRev = planning and revising; Effort = effort; Help = help-seeking; 1 = first draft; 2 = final draft; cFcR = control feedback, control reflection; eFcR = experimental feedback, control reflection; cFeR = control feedback, experimental reflection; eFeR = experimental feedback, experimental reflection.

All tests were two-sided. The significance level ( $\alpha$ ) was set at .05.

The results of the logbooks and the interviews are used illustratively.

## Results

### *Motivation and writing process*

Table 5.3 shows students' mean scores on the motivation and writing process scales for the first and the final draft. There were no initial differences: the experimental conditions did not differ significantly on the motivation and writing process variables for the first draft. Students on average scored above the scale midpoint for self-efficacy beliefs, mastery goal, planning/revising and effort, just around the scale midpoint for performance goal, and below the scale midpoint for help-seeking. Scale scores on the first draft correlated significantly with the corresponding scale score on the final draft (mastery goal:  $r = .65$ ; performance

Table 5.4

*Correlations between Motivation, Writing Process, and Performance, per Draft*

	Mgoal		Pgoal		PlanRev		Effort		Help		TextQual	
	1	2	1	2	1	2	1	2	1	2	1	2
Selfeff	.30**	.44**	.13	.08	.25*	.06	.12	.24*	-.09	-.20	.10	.27*
Mgoal			.12	.07	.45**	.37**	.23*	.31**	.03	.00	.21	.12
Pgoal					.25*	.12	-.00	.05	.25*	.17	.02	-.11
PlanRev							.41**	.34**	.16	.27*	.13	.04
Effort									.21	.11	.27*	.03
Help											.03	.01

*Note.* Selfeff = self-efficacy; Mgoal = mastery goal; Pgoal = performance goal; PlanRev = planning and revising; Effort = effort; Help = help-seeking; TextQual = text quality; 1 = first draft; 2 = final draft.

\*  $p < .05$ . \*\*  $p < .01$ .

goal:  $r = .58$ ; self-efficacy beliefs:  $r = .68$ ; planning/revising:  $r = .52$ ; effort:  $r = .61$ ; help-seeking:  $r = .48$ ; all  $ps < .01$ ). Table 5.4 shows the correlations between the motivation measures, writing process measures, and performance, per draft.

From the logbooks it appeared that on average students spent 11 sessions (range 9-14;  $SD = 1.8$ ) on their paper, of which 7.5 (6-11) sessions took place before they received feedback, and 3.5 (1-5) after they received feedback. These sessions were distributed over 46 days (33-58). Over the sessions (123 in total) students indicated they had been reading in 48% of the sessions, making notes in 24% of the sessions, and writing text in 65% of the sessions (the percentages do not add up to 100%, as students could report more processes in one session). Students spent 33% of the sessions to planning the text content, 10% of the sessions to planning the text structure, 57% to generating text, and 24% to reviewing their text. These four processes were also the goals students set for the sessions. The choices students had to make aligned with the problems they mentioned. The main problem students encountered was selecting text content (24% of the sessions). Other problems, that each occurred in 11% of the sessions, dealt with structuring text content, generating text, and the task environment (mainly dealing with the assignment). Asked for the problem solution, students mostly indicated they did not solve the problem (24% of the sessions). If the problem was solved, this was done mostly by reviewing (15% of the sessions) and selecting text content (10% of the sessions). In 20% of the sessions students explicitly indicated they did not face any problems. Students indicated they sought help in 24% of the

sessions, and had to motivate themselves in 20% of the sessions. Sessions were ended mostly because of time restrictions (47% of the sessions), and less because students had reached the session goal (33% of the sessions) or were unmotivated (24% of the sessions).

### *Time investment*

The time students spent on writing the first draft varied from 9 to 170 hours ( $M = 34.01$ ,  $SD = 21.35$ ,  $n = 76$ ). Fifteen students spent time on their paper between handing in the first draft and receiving feedback ( $M = 11.67$ ,  $SD = 11.96$ , range 2-45). The time students spent on writing the final draft (after they had received feedback) varied from three to 46 hours ( $M = 16.72$ ,  $SD = 9.92$ ,  $n = 77$ ). The total time spent on the paper varied from 15 to 246 hours ( $M = 53.78$ ,  $SD = 29.69$ ,  $n = 73$ ). There were no significant differences between conditions in the time spent. Within the experimental feedback condition (students who received improvement strategies), there was a significant partial correlation (controlled for first draft text quality) between the number of improvement strategies and the time spent on the paper after receiving feedback ( $r = .40$ ,  $p = .01$ ,  $n = 36$ ). The more improvement strategies students received, the more time they spent on finishing their paper.

The logbooks indicated that the total time students spent on their paper was 40 hours on average (15-61). Forty hours is significantly less than the total time investment that appeared from the questionnaires  $t(72) = 3.97$ ,  $p < .01$ .

### *Performance*

Table 5.5 shows students' performance on the first draft and the final draft. On average, first draft text quality was insufficient and final draft text quality was sufficient. There were no initial differences: the experimental conditions did not differ significantly on first draft text quality. Overall, first draft text quality correlated significantly with final draft text quality ( $r = .61$ ,  $p < .01$ ). First draft text quality also correlated significantly with second draft self-efficacy beliefs ( $r = .33$ ,  $p < .01$ ), mastery goal ( $r = .34$ ,  $p < .01$ ), and help-seeking ( $r = -.31$ ,  $p = .01$ ), but not with the other second draft motivation and writing process measures.

### *Feedback*

*Feedback aspects.* Students in the experimental feedback condition received improvement strategies ( $M = 6.93$ ,  $SD = 3.26$ ), whereas students in the control feedback condition generally did not receive improvement strategies ( $M = 0.17$ ,  $SD = 0.44$ ),  $t(41.47) = -13.16$ ,  $p < .01$ . So, the feedback manipulation was successful. Within the experimental feedback condition the number of improvement

Table 5.5

*Performance: Text Quality of the First and the Final Draft*

	Condition									
	cFcR		eFcR		cFeR		eFeR		Overall	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
TextQual-1 <sup>a</sup>	1.83	0.51	1.82	0.59	1.81	0.45	1.88	0.41	1.83	0.48
TextQual-2 <sup>b</sup>	6.97	1.18	7.41	0.82	7.30	0.93	7.02	0.77	7.19	0.93

*Note.* cFcR = control feedback, control reflection; eFcR = experimental feedback, control reflection; cFeR = control feedback, experimental reflection; eFeR = experimental feedback, experimental reflection. TextQual-1 = first draft text quality; TextQual-2 = final draft text quality.

<sup>a</sup>First draft text quality is the mean of the 1-3 scores on five criteria. <sup>b</sup>Final draft text quality concerns a grade with possible scores between 1 and 10.

strategies correlated significantly negative with first draft text quality ( $r = -.52$ ,  $p < .01$ ). With less text quality more strategies were provided. Improvement strategies focussed on explication/externalization ( $M = 2.24$ ,  $SD = 2.18$ ) and going over the complete text ( $M = 2.10$ ,  $SD = 1.48$ ). Few strategies suggested to go over specific text aspects ( $M = 0.93$ ,  $SD = 0.98$ ), provided a think through exercise ( $M = 0.71$ ,  $SD = 0.75$ ), or suggested to use other sources ( $M = 0.73$ ,  $SD = 0.71$ ) or to submit the text to others ( $M = 0.22$ ,  $SD = 0.47$ ), and no strategies indicated to consult with others. The objects for which strategies were provided were mostly content ( $M = 3.05$ ,  $SD = 1.83$ ), language ( $M = 1.44$ ,  $SD = 1.00$ ), and structure ( $M = 1.29$ ,  $SD = 1.10$ ). Less strategies dealt with documentation ( $M = 0.83$ ,  $SD = 0.77$ ) and layout ( $M = 0.29$ ,  $SD = 0.51$ ).

Table 5.6 shows the frequencies of the feedback aspects other than improvement strategies. Generally, students received mostly comments that focussed on text content. For the most part comments did not contain an explanation or a question. Comments were predominantly specific and evaluative, and generally indicated insufficient text qualities. In the main, comments were posed neutral. The feedback was rather extensive. Apart from the number of improvement strategies there were some other differences between the experimental feedback condition and the control feedback condition. Compared to the control feedback condition students in the experimental feedback condition received less comments containing an explanation ( $M_{cF} = 7.98$ ,  $SD_{cF} = 3.35$ ;  $M_{eF} = 6.22$ ,  $SD_{eF} = 2.45$ ),  $t(80) = 2.71$ ,  $p = .01$ , less comments containing a question ( $M_{cF} = 5.20$ ,  $SD_{cF} = 3.33$ ;  $M_{eF} = 2.71$ ,  $SD_{eF} = 2.44$ ),  $t(73.41) = 3.86$ ,  $p < .01$ , less reflective comments ( $M_{cF} = 1.34$ ,  $SD_{cF} = 1.15$ ;  $M_{eF} = 0.78$ ,  $SD_{eF} = 0.94$ ),  $t(80) = 2.42$ ,  $p = .02$ , and

Table 5.6  
*Feedback Aspects: Means and Standard Deviations*

Feedback aspect		$M^a$	$SD$
Object	Layout	1.10	0.99
	Language	2.68	1.75
	Structure	2.33	1.24
	Content	10.90	5.26
	Documentation	1.52	1.02
	Other	1.07	1.32
Explanation		7.10	3.05
Question		3.95	3.16
Specific		10.30	5.80
Control	Reflective	1.06	1.08
	Interactive	2.00	2.41
	Evaluative	16.07	4.44
	Controlling	0.48	1.03
Sign	Mean	2.52 <sup>b</sup>	0.27
	Positive	3.80	2.48
	Neutral	2.46	2.18
	Negative	13.34	4.91
Tone	Mean	3.04 <sup>b</sup>	0.06
	Positive	0.89	0.99
	Neutral	18.55	5.32
	Negative	0.18	0.45
Total length (words)		594.73	242.30
Number of comments		19.61	5.27

*Note.* Scores on “explanation”, “question” and “specific” concern comments that respectively contain an explanation, contain a question, and are specific. Comments that do not contain an explanation, do not pose a question, and are not specific are not indicated, but can be calculated from the total number of comments (19.61).

<sup>a</sup>Means concern the sum of fragment codes per student, summed over students and then divided by the number of students, except for the mean sign and the mean tone. <sup>b</sup>The mean sign and the mean tone of fragments are calculated within students, the mean fragment score is summed over students, and subsequently divided by the number of students.

less interactive comments ( $M_{cf} = 2.71$ ,  $SD_{cf} = 2.58$ ;  $M_{ef} = 1.29$ ,  $SD_{ef} = 2.03$ ),  $t(80) = 2.76$ ,  $p = .01$ . The feedback comprised more words in the experimental

feedback condition than in the control feedback condition ( $M_{cf} = 497.27$ ,  $SD_{cf} = 198.23$ ;  $M_{ef} = 692.20$ ,  $SD_{ef} = 245.18$ ),  $t(80) = -3.96$ ,  $p < .01$ . Part of these differences can be attributed to the improvement strategies: when controlled for the number of improvement strategies, no differences appeared between feedback conditions on the number of comments containing a question, the number of reflective comments, and the number of interactive comments. When controlled for the number of improvement strategies, the difference between feedback conditions in feedback length turned the other way around (more words in the feedback control condition), indicating that the improvement strategies resulted in feedback comprising more words in the experimental feedback condition. Controlling for the number of improvement strategies did not change the difference between feedback conditions in the number of comments containing an explanation.

Table 5.7 shows the correlations of feedback aspects with the final draft motivation, writing process, and performance. The feedback aspects referring to improvement strategies are not included in this table as only the experimental feedback condition received improvement strategies. Feedback aspects that correlate significantly with final draft motivation, writing process, or performance are included in the analyses of covariance and the regression analyses.

*Feedback evaluation.* Students fairly appreciated the instructive qualities of the feedback ( $M = 5.54$ ,  $SD = 0.83$ ). This feedback evaluation did not differ between experimental conditions. The interviews provided a closer look on students' feedback appreciation. Of the students interviewed ( $n = 11$ ), those who had received improvement strategies (i.e., those in the experimental feedback condition,  $n = 6$ ) expressed mixed feelings about these strategies. Most did not see the strategies as either motivating or demotivating. Some appreciated that the teacher suggested an approach and some found some strategies helpful. Strategies were not appreciated where they concerned an approach that did not fit the student or were not "made-to-measure". Such strategies included approaches the student already knew, approaches that took too much time (e.g. "this strategy is time consuming [...] it showed me what had to be changed, but I approached it differently"), approaches that did not match with the students' writing habit (e.g., "I prefer to think about it, rather than to make notes or lists") or were perceived as an underestimation of their capacities to resolve the problems indicated (e.g., "It makes you wonder whether the teacher thinks we wouldn't come up with these ideas ourselves"; "Sometimes it's nice they provide you with an idea on how to continue, but sometimes it made me think 'I'm not a little child [...] do you really think I will read my paper out loud?"). Where students thought the strategies

Table 5.7

*Correlations of Feedback Aspects with Final Draft Motivation, Writing Process, and Performance*

Feedback aspect		Mgoal-2	Pgoal-2	Selfeff-2	PlanRev-2	Effort-2	Help-2	TextQual-2
Object	Layout	.11	.01	.05	.01	-.05	.02	-.03
	Language	.05	-.06	-.05	-.10	-.05	-.07	.09
	Structure	.03	.10	-.17	.04	-.07	-.06	-.10
	Content	.13	.04	-.01	-.05	-.02	-.24*	.12
	Documentation	.02	-.02	-.08	-.04	.02	.10	.12
Explanation		.01	.04	-.16	.04	-.05	.10	-.04
Question		.02	-.10	-.15	-.14	-.11	-.22	-.03
Specific		-.00	-.02	-.07	-.11	-.04	-.24*	.00
Control	Reflective	.13	-.00	.11	-.05	-.08	.05	.06
	Interactive	-.00	-.04	-.18	-.12	-.04	-.21	-.09
	Evaluative	.16	.07	.01	.05	-.04	-.07	.15
Sign	Mean	.31**	.01	.44**	-.08	.17	-.13	.53**
	Positive	.32**	-.02	.44**	-.06	.24*	-.14	.60**
	Neutral	.11	.05	-.04	-.13	-.24*	-.17	.07
	Negative	-.07	.03	-.26*	.01	-.12	-.06	-.21
Tone	Mean	-.12	-.13	-.01	-.06	.03	.22*	-.04
	Neutral	.16	.06	-.09	-.04	-.10	-.21	.09
Total length (words)		.00	.03	-.18	.20	-.03	.21	-.18
Number of comments		.13	.04	-.06	-.07	-.10	-.19	.12

*Note.* Only aspects with a mean frequency of at least 1 (see Table 5.6) are included in this table. The aspect "Object - other" is excluded because it relates to a diversity of objects. Mgoal = mastery goal; Pgoal = performance goal; Selfeff = self-efficacy beliefs; PlanRev = planning and revising; Effort = effort; Help = help-seeking. 2 = final draft.

\*  $p < .05$ . \*\*  $p < .01$ .

were not useful, they did not use the strategy but addressed the particular problem in their own way. The students who did not receive improvement strategies (i.e., those in the control feedback condition,  $n = 5$ ) were mixed in their opinion on the motivating or demotivating qualities of the improvement strategies that were shown as examples during the interview. Most students indicated that strategies could have been useful, but some students cast doubts that matched those of the students who did receive improvement strategies: they felt that they did not match their writing habit or underestimated their capacities.

Regarding the usefulness of the feedback and its motivating qualities students indicated that they found the feedback useful because it helped them on how to continue, mostly with respect to content. Less useful were comments concerning aspects students did not know how to improve. In line with this, students' advice concerning the feedback usefulness was that the feedback should be clear, for instance through providing examples. Feedback aspects students found motivating were the positive remarks, like the teacher expressing his or her confidence that the student would hand in a good or interesting final draft. Students also indicated that they perceived the feedback as a guideline and found this motivating. The repetition of comments (mentioned by students in the experimental feedback condition) and the absence of positive feedback were indicated as demotivating. In line with this, students' main advice concerning the motivating qualities of feedback was to provide positive comments (things well done). Generally, students agreed with the feedback. Half of the students in the experimental feedback condition reported they had received more negative feedback than expected. Overall, students indicated they had used the feedback.

### *Reflection assignment*

*Reflection.* Students in the experimental reflection condition reflected more than students in the control reflection condition on utilization of the feedback ( $M_{eR} = 1.68$ ,  $SD_{eR} = 0.74$ ;  $M_{cR} = 0.11$ ,  $SD_{cR} = 0.31$ ),  $t(59.50) = -12.88$ ,  $p < .01$ , and on the approach of the final draft ( $M_{eR} = 2.14$ ,  $SD_{eR} = 0.35$ ;  $M_{cR} = 0.05$ ,  $SD_{cR} = 0.23$ ),  $t(74.71) = -32.60$ ,  $p < .01$ . Students in the experimental reflection condition also formulated more intentions ( $M = 3.48$ ,  $SD = 0.76$ ) than students in the control reflection condition ( $M = 0.16$ ,  $SD = 0.44$ ),  $t(70.12) = -24.59$ ,  $p < .01$ . So, the reflection manipulation was successful.

*Assignment evaluation.* Students in the experimental reflection condition evaluated the reflection assignment significantly more positively ( $M = 4.17$ ,  $SD = 1.49$ ) than students in the control reflection condition ( $M = 3.40$ ,  $SD = 1.20$ ),  $F(1,78) = 6.45$ ,  $p = .01$ . In the interviews some students indicated that the reflection assignment helped or forced them to think about the feedback, some found it useless (to them) and some saw its purpose as to inform the teachers on the qualities of their feedback. Students indicated that the assignment had not affected their writing; the assignment asked them to think about something they normally already think about. Students did not see a motivational function for the reflection assignment. The advice on the reflection assignment of two students in the control reflection condition was to link the feedback with the paper and to ask students what they would do with the feedback to improve their paper: "Now it

was about the feedback itself and what you had expected, and in fact that is an earlier stage. Questions should ask how you will use the feedback". One student in the experimental reflection and experimental feedback condition indicated that as the feedback already contained strategies, the assignment would fit better with feedback that did not contain strategies: "then you might profit more from describing an approach for yourself". Most students had no suggestions on the reflection assignment as they did not think the assignment could be useful to them.

### *Writing assignment*

Students fairly appreciated the writing assignment ( $M = 5.40$ ,  $SD = 0.91$ ). This writing assignment evaluation did not differ between experimental conditions.

### *Feedback and reflection condition effects on motivation, writing process, and performance*

For none of the motivation and writing process measures there was a significant effect of feedback condition, reflection condition, or the interaction of feedback condition and reflection condition.

Regarding performance, ANCOVA showed a significant interaction effect of feedback condition and reflection condition,  $F(1,76) = 5.85$ ,  $p = .02$ , partial  $\eta^2 = .07$ , on final draft text quality. The main effects of feedback,  $F(1,76) = 0.04$ , *ns*, and reflection,  $F(1,76) = 0.02$ , *ns*, were not significant. Students in the experimental feedback condition gained from the control reflection (Estimated  $M = 7.37$ ,  $SE = 0.16$ ) compared to the experimental reflection (Estimated  $M = 7.01$ ,  $SE = 0.16$ ), while students in the control feedback condition gained from the experimental reflection (Estimated  $M = 7.36$ ,  $SE = 0.15$ ) compared to the control reflection (Estimated  $M = 6.96$ ,  $SE = 0.17$ ) (see Figure 5.2).

### *Number of improvement strategies: prediction of motivation, writing process, and performance*

*Self-efficacy beliefs.* Regression analysis showed that the number of strategies contributed to the prediction of students' final draft self-efficacy beliefs (see Table 5.8). More improvement strategies predicted lower self-efficacy beliefs. The subsequent regression analysis showed that the interaction of the number of improvement strategies and first draft self-efficacy significantly contributed to the prediction of second draft self-efficacy beliefs (see Table 5.9). To interpret the interaction effect, Figure 5.3 shows three regression lines for the predicted self-efficacy beliefs for the final draft: (a) for students with low self-efficacy beliefs for

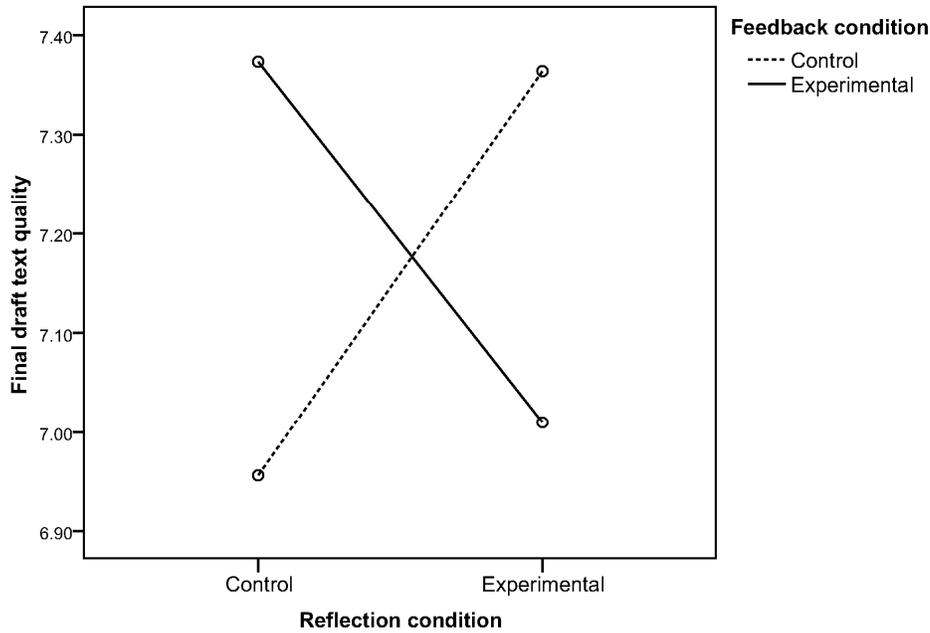


Figure 5.2. Final draft text quality in the experimental conditions (Estimated marginal means).

the first draft (a self-efficacy score of 2), (b) for students with moderate self-efficacy beliefs for the first draft (a self-efficacy score of 4), and (c) for students with high self-efficacy beliefs for the first draft (a self-efficacy score of 6) (see Jaccard, Turrisi, & Wan, 1990). This figure shows that improvement strategies are harmful to students' self-efficacy beliefs when their self-efficacy beliefs for the first draft are moderate and especially when these are low.

*Planning/revision.* Regression analysis showed that the number of strategies contributed to the prediction of students' planning/revision (see Table 5.10). More improvement strategies predicted more planning/revision. Regression analysis including the interaction term of the number of improvement strategies and first draft planning/revision showed that the predictive value of this interaction was not significant.

*Other measures.* Regression analyses showed that the number of strategies was not predictive for the other motivation and writing process measures and performance, nor was the interaction term of the number of improvement strategies and the first draft measure.

Table 5.8

*Improvement Strategies: Prediction of Students' Self-Efficacy Beliefs (Regression Analysis)*

Model	Variables	$\beta$	$t$	$p$	$R^2$	$\Delta R^2$	$\Delta F$	$df$	$p$
1	Selfeff-1	0.71	6.68	.00	.61	.61	19.08	3,37	.00
	TextQual-1	0.04	0.25	.80					
	F - Sign	0.16	1.03	.31					
2	Selfeff-1	0.69	6.99	.00	.67	.06	6.73	1,36	.01
	TextQual-1	-0.01	-0.09	.93					
	F - Sign	0.01	0.08	.93					
	F - Strategy	-0.32	-2.59	.01					

*Note.* Selfeff-1 = self-efficacy beliefs for first draft; TextQual-1 = first draft text quality; F - Sign = mean sign of comments; F - Strategy = number of comments providing an improvement strategy.

Table 5.9

*Interaction of Improvement Strategies and First Draft Self-Efficacy Beliefs: Prediction of Students' Self-Efficacy Beliefs (Regression Analysis)*

Model	Variables	B	$t$	$p$	$R^2$	$\Delta R^2$	$\Delta F$	$df$	$p$
1	Selfeff-1	0.73	6.99	.00	.67	.67	18.21	4,36	.01
	TextQual-1	-0.02	-0.09	.93					
	F - Sign	0.04	0.08	.93					
	F - Strategy	-0.09	-2.59	.01					
2	Selfeff-1	0.04	0.17	.86	.74	.07	9.35	1,35	.00
	TextQual-1	0.06	0.24	.81					
	F - Sign	0.21	0.48	.64					
	F - Strategy	-0.45	-3.67	.00					
	F - Strategy x Selfeff-1	0.08	3.06	.00					

*Note.* Selfeff-1 = self-efficacy beliefs for first draft; TextQual-1 = first draft text quality; F - Sign = mean sign of comments; F - Strategy = number of comments providing an improvement strategy. The main effects of Selfeff-1 and F - Strategy in Model 2 should not be interpreted (see Kromrey & Foster-Johnson, 1998).

### ***Strategy type: correlation with self-efficacy beliefs and planning/revising***

For students in the experimental feedback condition, the number of strategies negatively predicted students' self-efficacy beliefs and positively predicted their planning/revising. For the two strategy types whose mean

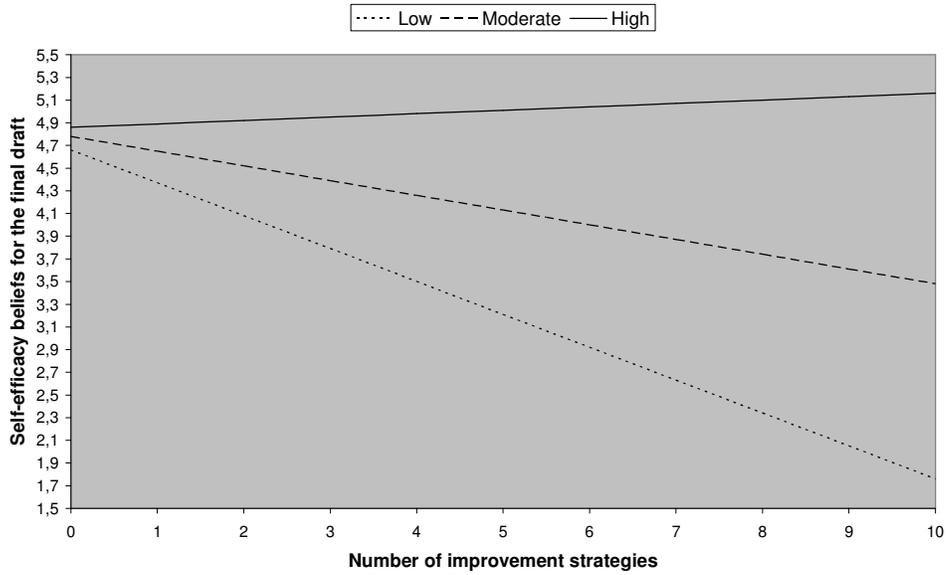


Figure 5.3. Predicted value of self-efficacy beliefs for the final draft as a function of the number of improvement strategies: regression lines for students with low, moderate, and high self-efficacy beliefs for the first draft.

Table 5.10

Improvement Strategies: Prediction of Students' Planning/Revising (Regression Analysis)

Model	Variables	$\beta$	$t$	$p$	$R^2$	$\Delta R^2$	$\Delta F$	$df$	$p$
1	PlanRev-1	0.48	3.19	.00	.21	.21	5.10	2,38	.01
	TextQual-1	-0.11	-0.71	.48					
2	PlanRev-1	0.51	3.70	.00	.35	.14	7.91	1,37	.01
	TextQual-1	0.11	0.71	.48					
	F - Strategy	0.44	2.81	.01					

Note. PlanRev-1 = planning and revising on first draft; TextQual-1 = first draft text quality; F - Strategy = number of comments providing an improvement strategy.

frequency was more than one, explicating/externalizing and going over the complete text, the partial correlation with self-efficacy beliefs and planning/revising was inspected (respectively controlled for self-efficacy beliefs and planning/revising on the first draft). These partial correlations were non-significant. Subsequently, the numbers of strategies per feedback object (e.g., the

number of strategies provided for the improvement of text structure) were inspected and correlated with students' self-efficacy beliefs and planning/revising (partial correlations). None of the partial correlations with self-efficacy beliefs and planning/revising was significant.

### **Discussion**

The aim of the present study was to investigate the effects of feedback providing improvement strategies and of a reflection assignment on students' writing motivation, writing process, and writing performance. In terms of FIT, feedback providing improvement strategies was hypothesized to direct students' attention to their task motivation as well as to their task process, and, as a result, to affect their performance. Particularly, it was expected that feedback providing improvement strategies would enhance students' writing self-efficacy beliefs, mastery goal, planning and revising, effort, and performance. Students' help-seeking was expected to be increased by strategies that suggest asking for help. A reflection assignment focussing on intentions to use the feedback and on the intended approach to writing the final draft was expected to enhance students' planning and revising as well as their performance.

In line with FIT, the number of improvement strategies was related to students' task motivation. However, contrary to our expectations, the number of improvement strategies negatively predicted students' self-efficacy beliefs: the more strategies were provided, the lower their reported self-efficacy was. This negative relation existed especially for students whose self-efficacy beliefs were moderate or low before they received improvement strategies (i.e., their self-efficacy for writing the first draft). The interview data provide an explanation for these results. Students did not see the strategies as generally motivating or demotivating, but did indicate that strategies came across as an underestimation of their capacities, and provided something they already knew. Students may thus have interpreted the strategies as the teacher communicating low confidence in the student's writing skills. As people are receptive particularly to information that confirms their beliefs (i.e., "confirmation bias"; Nickerson, 1998), this negative information affected the self-efficacy beliefs of students who themselves had initial low perceptions of efficacy, more than those of students who had higher initial self-efficacy beliefs. Indeed people with low self-efficacy beliefs have been found to be more acceptant of negative feedback than people with high self-efficacy beliefs (Nease, Mudgett, & Quiñones, 1999; see also Ilgen, Fisher, & Taylor, 1979).

In line with FIT, the number of improvement strategies also related to students' task process. In accordance with our expectations, the number of improvement strategies positively predicted students' planning and revising: the more strategies were provided, the higher their reported planning and revising was. In the interviews students indicated that, although they sometimes did not appreciate the kind of strategy, they took the strategy as an indication of a mistake, and resolved this mistake in their own way. They also mentioned that they compared the strategies with their own writing habit, and thus the strategies made students conscious of their own approach. This indicates that it was a matter of "production deficiency" rather than "availability deficiency": students failed to enact a particular strategy spontaneously, rather than did not have a strategy available (Flavell, 1976; Veenman, Kerseboom, & Imthorn, 2000). As the strategies provided in the feedback were not especially complex, they appeared not to offer students new information, but to have purely a prompting function: they prompted students to use their own strategies (Prins, 2002). However, as students did not appear to improve their quality of planning and revising (i.e., they did not write a better text) as a result of the prompted strategy use, the question is how feedback providing improvement strategies could add to graduate students' quality of planning and revising. Probably, because these students have an array of strategies available, the teacher should fine-tune his or her feedback to the particular student. This could be facilitated through a feedback dialogue (Askew & Lodge, 2000; Prins & Mainhard, 2009). In a conversation the teacher could ask the student for his or her strategies, and if necessary suggest ways to refine the strategy or suggest alternatives. This face-to-face communication would also facilitate the demonstration of strategies, which should be better than merely telling a strategy (Sadler, 1998).

Consistent with our expectations, within the experimental feedback condition more improvement strategies correlated with more effort in terms of time investment (controlled for first draft text quality). The more strategies were provided, the more time students spent on their final draft. This is in line with the positive predictive value of strategies for planning and revising. Students probably inferred from the strategies that substantial work had to be done, resulting in more time spending. On the other measure of effort (the questionnaire scale) however, no differences between feedback conditions were found, nor was the number of improvement strategies predictive of this measure. Apparently, students' report of concentration and effort in general terms (which the questionnaire measure asked for) is not susceptible to feedback providing strategies.

With regard to the reflection assignment, no effect was found on planning and revising. A significant interaction effect of feedback condition and reflection condition was found for performance. Students' performance gained from the reflection assignment dealing with intentions when they were in the feedback control condition (i.e., did not receive strategies). Thus, as expected, both improvement strategies and reflection on intentions can be beneficial for performance. However, it appears that the combination of both is profusion of support, and so only one of both should be deployed. Likely, improvement strategies instigate reflection on the approach to writing. As was indicated in the interviews, the strategies that did not fit the student did bring about reflection on the subsequent writing approach and thus made the reflection assignment dealing with the intended writing approach superfluous. The strategies that did fit the student made the formulation of an intention unnecessary as the action was already specified. Moreover, when students received improvement strategies, the reflection assignment dealing with intentions was even harmful to their performance. As the strategies and the reflection assignment led both to the consideration of one's writing approach, the reflection assignment may have interfered the process instigated by the strategies, leading to a qualitatively worse writing process. However, no interaction effect of feedback condition and reflection condition was found for the writing process measures. Future research must show whether this interaction effect on performance is a robust effect.

Regarding students' achievement goals, contrary to our expectations we found no effect of feedback providing improvement strategies on students' writing mastery goal. In accordance with our expectations also no effect on students' writing performance goal was found. The lack of effect on students' writing mastery goal may be explained by students' interpretation of the improvement strategies. As these were interpreted as an indication of the teacher's underestimation of their capacities rather than as information on how to improve their writing, it is not likely that improvement strategies focused students on learning. We suppose that more informative strategies would focus students on learning and thus enhance their mastery goal. For example, as the logbooks suggested that students experienced mainly problems with selecting text content, strategies might especially focus on this aspect of writing. Also, it may be informative to students when the feedback explains why or when particular strategies could be used.

No effect of feedback providing strategies was found for students' help-seeking. As hardly any strategy suggested submitting the text to others, and no strategies indicated to consult with others, this result is in accordance with our

expectations. Future research must show whether strategies that direct to help-seeking do indeed influence students' actual help-seeking.

Based on the results and limitations of this study, several recommendations can be made for future research. As in the present study improvement strategies appeared not to match students' capacities, future research should provide students with strategies that fit closely with their capacities, so that they can fulfil the intended scaffolding function (Applebee, 1986). For graduate students, this may require a feedback dialogue in which the teacher can closely attach to the student's own strategies. Also, future research may show whether the improvement strategies provided in the present study are helpful to less experienced writers, such as first-year students. Possibly, for these students the improvement strategies do have positive effects on their writing motivation, process, and performance. As they are less likely to have the strategies available, the feedback may be more informative to them. In short, future research should indicate which strategies are adaptive and useful to which students, and are perceived as such by students.

In the present study we provided teachers with a variety of improvement strategies. The teachers could select the strategy they believed was most helpful to the student. Future research may standardize the provision of strategies and so specifically aim at particular writing processes. For example, teachers may be asked to provide a particular number of particular strategies that aim at revising, or at asking peers for help. This procedure may be expected – more than the procedure in the present study – to show effects on the process aimed at. In the present study for example, on average one fifth of the strategies dealt with improvement of language, which are known to have little effect on the average writer (Graham, 2006). On the other hand, standardization of the strategies may be at the expense of the fit with the particular problems in the student's text, and thus be less likely to improve the student's writing.

With regard to the design, it was not possible in the present study to include a condition in which students did not make a reflection assignment. As students made the assignment during a lecture meeting, this would not have left them blind to the reflection condition they were in. Future research should find ways to include a condition in which no reflection assignment is made. This would show whether a reflection assignment, either focusing on intentions or on perceptions, is more beneficial to students' writing motivation, process, and performance, than no reflection assignment. Also, our results indicate that effects of a reflection assignment depend on the provided feedback. In future research, the effects of a reflection assignment could be explored for different kinds of

feedback. In addition, it could be explored whether a reflection assignment is more beneficial to less experienced writers such as first-year students, as students in the present study indicated that the assignment asked for reflective thought they would also have without the assignment.

With regard to measurement, we did not ask for students' thoughts while they read the strategies and made the reflection assignment, nor measured their use of the provided strategies and actual writing behaviour or thoughts while writing. Future research including these measures may substantiate our interpretations of the results of the present study. For example, these measures may indicate whether it is the specific content of the strategies or rather the perceived congruence with one's writing ability that brings about effects. These measures may also highlight whether strategy contents can be classified in terms of usefulness.

To conclude on FIT, it can be stated that feedback providing improvement strategies does indeed affect students' task motivation and task process. These effects are not univocally positive, but depend on students' interpretation of the improvement strategies and on their initial self-efficacy beliefs.

Finally, should educators provide students with improvement strategies and a reflection assignment? The results do not warrant the provision of strategies in written form to graduate students. However, the provision of strategies is at the core of formative assessment and thus should not be simply put aside. We suggest that teachers have a feedback dialogue with their students, so that they can fine-tune their strategies to the particular student and if necessary demonstrate strategies. Students could be asked to indicate the strategies they have used, and for what kind of problems they would like to receive strategies. This may prevent that the teacher's provision of strategies comes across as an indication of the teacher's underestimation of the student's capacities. When teachers do not provide students with improvement strategies, a reflection assignment dealing with the intentions to use the feedback and with the intended approach of the revision can be helpful to enhance students' performance.



## 6. Feedback posing questions and reflection on feedback: effects on students' writing motivation, process, and performance<sup>1</sup>

In the previous chapter the effects of feedback providing improvement strategies and a reflection assignment on students' writing motivation, process, and performance were investigated. In the present chapter, we examine our third approach regarding the feedback. This chapter focuses on feedback posing questions. Feedback posing questions is feedback that contains interrogative formulations. The effects of feedback posing questions on students' writing motivation, process, and performance are investigated. Also, the effects of a reflection assignment are examined, to check whether the results of the previous study can be replicated. First we will recapitulate the theoretical notions and empirical results relevant to feedback posing questions, as well as briefly return to reflection on feedback.

### Feedback posing questions

As discussed in chapter 2, according to Feedback Intervention Theory (FIT; Kluger & DeNisi, 1996), feedback directs attention to task-learning processes, to task-motivation processes or to meta-task processes. In general, feedback cues that direct attention to task-motivation processes or task-learning processes are assumed to enhance feedback effects on performance. Feedback cues that direct attention to meta-task processes are supposed to reduce the effect of feedback on performance, because they divert attention from the task (Kluger & DeNisi, 1996).

Feedback posing questions can be expected to direct students' attention to their task motivation or to details of the task process (i.e., FIT's task-learning process). This kind of feedback is indicated as inspiring students to work out ideas (Stern & Solomon, 2006; Straub, 1997). For example, feedback posing questions like "Why do you consider the conclusions of the authors valid and true? Could you think of counter arguments?" may energize students' thinking.

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<sup>1</sup> This chapter is based on Duijnhouwer, H., Prins, F. J., & Stokking, K. M. (2010). *Feedback posing questions and reflection on feedback use: effects on students' writing motivation, process, and performance*. Manuscript submitted for publication.

Because of the challenging and non-controlling content and formulation, we suppose that this kind of questions directs attention to the task-motivation level. Feedback posing questions is also suggested to make students reflect on their task process or reconsider certain choices (Smith & Ragan, 1993; Straub, 1996, 1997) (e.g., "How could you support these views, so that they are more convincing to the reader?"). Feedback posing questions may thus direct attention to the task-motivation level as well as to the task-process level. In both cases questions are supposed offer direction, but to leave the control over revision with the student (Straub, 1997).

Questions can be typified in various ways. First, questions have a particular content. Ge and Land (2004) distinguished questions that focus on the task subject matter (elaboration prompts), and questions that focus on the task process (reflection prompts). The instructional function of the question determines its content. For example, to guide students to construct arguments, questions may ask for elaboration and explication (e.g., "What evidence do you have..."); to make students think about their task approach questions may ask for reflection (e.g., "How could you take account of both viewpoints?") (cf. the task-motivation and task-process levels of FIT). Second, questions aim to elicit particular cognitive processes. Krathwohl (2002) reorganized Bloom's taxonomy of educational objectives (see Anderson & Sosniak, 1994) and distinguished six cognitive processes: remember, understand, apply, analyze, evaluate and create. These cognitions form a hierarchy from simple (remember) to complex (create). For example, a question that asks for the viewpoint discussed in a particular article aims at remembering, and will be easier to answer than a question that asks to evaluate that viewpoint. These questions differ in the extent to which they call for active processing (Kintsch, 2005). Third, questions vary in the extensiveness of the required answer. Closed-class questions require short answers. Verification questions can be answered with "yes", "no", "maybe" or "don't know", and concept completion questions call for a short answer on "who", "what", "when" and "where". Appropriate answers to open-class questions are more elaborate. These questions start for example with "why", "how" or "what if" (Graesser, Lang, & Roberts, 1991). Open-class questions require more effortful processing than closed-class questions (Kintsch, 2005). Fourth, questions can be categorized as "real" or "unreal" in the sense that they genuinely ask for information or are rhetorical (cf. Flammer, 1981). For example, a teacher posing questions like "What is your idea on the quality of the implementation of the training?" or "What was the main reason for the school to implement this training?" may not know the answers and therefore truly ask for information. On the other hand, questions like

“Is it functional to use the same heading repeatedly?” and “Could you explain these points?” merely communicate the teacher’s opinion (i.e., use different headings; add an explanation), rather than stimulating students’ thoughts (of course in second instance the feedback, like other not interrogative feedback, will require the student to think on how to revise his or her paper).

There is little empirical research on the effect of questioning on solving ill-structured problems (Ge & Land, 2004) such as writing. In a study by Scardamalia, Bereiter and Steinbach (1984) elementary school children were instructed to use cues that stimulated self-questioning during writing, such as “An explanation would be ...” and “A better argument would be ...” These cues were combined with modelling and the instruction to look for high-level ways to reconcile inconsistencies (i.e., producing an idea that preserves what is valid on both sides). Students who received this training wrote better essays on self-chosen topics than students who did not receive this training, and were more reflective in the planning of text content. As the training consisted of three elements, it is not entirely clear whether the question prompts brought about the effects. A positive effect of pure question prompting was found by Ge and Land (2003). In their study, students who received an ill-structured problem-solving task accompanied by elaborative and reflective question prompts achieved better than students who did not receive the questions. In both studies however, the questions were part of instruction and not of feedback on performance. So, the questions were not adapted to the student’s performance.

With respect to the cognition questions aim at, it has been found that questions that ask for complex cognition (manipulating information, reasoning) have a (small) positive effect on achievement (Samson, Sirykowski, Weinstein, & Walberg, 1987). Questions that are unreal because the teacher knows the answer in advance are found to inhibit students’ idea development (Flammer, 1977 in Flammer, 1981). Also these results have not been indicated to concern feedback posing questions, but rather seem to concern general instruction.

As the effects of feedback posing questions on students’ writing are unclear, the present study addresses the following research question: What is the effect of feedback posing questions on students’ writing motivation, writing process, and writing performance? Although feedback posing questions leaves the control over revisions to the student (Straub, 1996, 1997), it does not inform the student on his or her capacities, or provide an explicit method to enhance performance. Therefore, we hypothesize that feedback posing questions does not affect students’ judgment of their capability to perform actions that lead to the required text, that is, their self-efficacy beliefs (cf. Schunk & Swartz, 1993a). There

is no clear link between feedback posing questions and the development of competence (mastery goal) or the demonstration of competence (performance goal). However, Lizzio and Wilson (2008) found that students perceive questions as engaging. This was part of their perception of feedback as having a developmental focus, which matches the mastery goal concept. So, we hypothesize questions, and especially real (i.e., not rhetorical) questions, to tempt students to engage in the task and therefore to enhance their mastery goal. We hypothesize that feedback posing questions does not affect students' performance goal. With regard to the writing process it is hypothesized that questions, and especially more complex questions (e.g., asking to evaluate or to create), contribute to students' planning and revising. We also hypothesize that questions, which do not offer cut-and-dried solutions but leave control over revisions with the student, contribute to the investment of effort. As a result, questions can be hypothesized to contribute to students' writing performance. We hypothesize that questions do not affect students' help-seeking. It will be explored whether the effect of questions depends on the initial level of motivation, writing process, or performance (i.e., before feedback posing questions is provided).

### **Reflection on feedback**

In the present study, the research question regarding reflection is the same as in the previous study: What is the effect of a reflection assignment asking for students' opinion on the feedback, their intentions to use the feedback and their intentions on the approach to writing the subsequent draft on students' writing motivation, writing process, and writing performance? As such a reflection assignment makes the student formulate intentions on planning and revising, we hypothesize this assignment to contribute to planning and revising, as well as to performance.

### **Method**

#### ***Participants***

The study took place at a university in the Netherlands, in a 9-week graduate course on competence-based education and assessment. Seventy-six students (87% women) participated in the course, ranging in age from 21 to 50 years ( $M = 26.59$ ,  $SD = 6.41$ ). Students participated in the study voluntarily. Sixty-five students (86%) had a complete data set.

Two teachers provided the students with feedback. The students were randomly distributed over the teachers and the experimental conditions. Each teacher took an equal part in every experimental condition.

### *Assignments and feedback*

*Writing assignment.* As part of the course the students received a writing assignment, the grade of which took up 60% of the final course grade. The assignment concerned a paper of 5 to 7 pages in which the student had to analyze and evaluate a case on competence-based training, educational design, or assessment policy. The electronic learning environment provided the feedback form including the assessment criteria and examples of written papers of high and moderate quality.

*Feedback.* The teachers provided students with feedback on the first paper draft by means of a feedback form. This form contained five criteria: content, structure, reasoning, language, and layout. Several sub criteria specified the criteria, such as “sufficient and high-quality references” and “adequate use of paragraphs”. Teachers provided comments on the five criteria and scored them as “-”, “+/-”, or “+”. Extra space was provided for additional comments. The scores on the five criteria formed a reliable scale ( $\alpha = .81$ ). For the assessment of the second (i.e., final) draft the teachers used the same form. They did not score each criterion separately, but gave an overall mark between 1 and 10. In the analyses reported below, for the first draft the scale score is used as a measure of text quality, for the final draft the grade is used.

In the feedback on the first draft, the teachers provided students in the experimental feedback condition with questions, such as “I am curious what you think about those SBL competences; how useful are they?” or “What is the reason to provide the definition of learning on page 7?” Teachers were instructed to pose neutral and real questions, for example “What do you want the reader to understand about ‘the standards’ for competence based assessment?” instead of “Why would you come up with all those points?” (not neutral) or “Could you explain the points on page 7?” (not real). Teachers were instructed to formulate questions in a way that incited students to think about their text – usually questions that start with who, what, where, when, why, which and how – and were provided with some examples. For students in the control feedback condition comments were statements instead of questions (e.g., “The discussion of the standards is too limited” or “You should clarify the use of those standards”).

*Reflection assignment.* Students received a reflection assignment concerning the feedback on their first draft. The assignment consisted of six questions which students answered in pre structured spaces covering about two pages in total. In the experimental reflection condition students answered questions on their intentions to use the feedback and their intentions regarding the approach of the final draft. The questions were “Which feedback do you agree with? Why?”,

“Which feedback do you disagree with? Why?”, “Which feedback do you want to use in working on the final draft? Why?”, “Which feedback do you not want to use? Why?”, “How will you take on working on the final draft?”, “Based on the feedback, what will you do differently compared to working on the first draft?” To control for time-on-task, students in the control reflection condition also made a reflection assignment. The questions in this condition did not ask for students’ intentions to use the feedback or for their intentions on the approach to writing the final draft, but asked for their feedback perception. The questions were “What in the feedback did appeal to you? Why?”, “What had no or little appeal to you? Why?”, “Which feedback did you expect to receive?”, “Which feedback didn’t you expect to receive?”, “What do you think about the way the feedback has been formulated?”, “If you would have given this feedback, would you have formulated it differently? If yes, how would you have formulated it?” The reflection assignment did not contribute to the course grade.

As shown in chapter 5, the experimental reflection assignment elicits more reflections on feedback use, more reflections on the approach of the final draft and more formulated intentions than the control reflection assignment. Compared to the research presented in chapter 5, we changed the first two questions between the experimental reflection condition and the control reflection condition: in the present study, students in the experimental reflection condition answered questions on their agreement with the feedback (agree/do not agree) and students in the control reflection condition answered questions on the appeal of the feedback (appeal/does not appeal). This change was made because from students’ answers in the study presented in chapter 5 it appeared that these questions aligned better with the other questions in the respective assignments. The change did not diminish the intervention (the data from chapter 5 indicated that the differences in reflection on feedback use, reflection on the approach to writing the final draft, and formulated intentions arise from the other questions).

### *Design*

The experimental design was a 2 (feedback) x 2 (reflection) factorial design. In the experimental feedback condition teachers provided students with questions regarding their paper. In the control feedback condition teachers did not provide questions. In the experimental reflection condition students answered questions on their intentions to use the feedback and their intentions regarding the approach to writing the final draft. In the control reflection condition students answered questions on their perception of the feedback.

### Measures

*Motivation questionnaire.* Three scales were used to measure students' writing task motivation for the first and final draft (see p. 43): "self-efficacy beliefs" (8 items; example item: "I expect to write a good first draft"), "mastery goal" (4 items; example item: "I want to learn as much as possible from writing this first draft"), and "performance goal" (4 items; example item: "I want to write a good first draft, to show others my skill"). Items were scored on a 7-point Likert-type scale, from 1 (*not at all true of me*) to 7 (*very true of me*). Scale reliabilities were good (self-efficacy beliefs:  $\alpha = .91$ ,  $\alpha = .89$ ; mastery goal:  $\alpha = .74$ ,  $\alpha = .88$ ; performance goal:  $\alpha = .91$ ,  $\alpha = .91$ ).

*Writing process questionnaire.* Three scales were used to measure students' writing process on the first and the final draft (see p. 26): "planning/revising" (17 items; example items: "Before I started writing the first draft, I thought about what its content should be", "During writing, I have sometimes made changes to improve text structure"), "effort" (11 items; example item: "I think I have put enough energy in this first draft"), and "help-seeking" (4 items; example item: "I considered asking a fellow for feedback on my first draft"). Like the motivation items, writing process items were scored on a 7-point Likert-type scale. Scale reliabilities were good (planning/revising:  $\alpha = .84$ ,  $\alpha = .87$ ; effort:  $\alpha = .90$ ,  $\alpha = .86$ ; help-seeking:  $\alpha = .87$ ,  $\alpha = .91$ ).

*Time investment.* Students were asked to indicate their time investment (hours spent reading, making notes, or writing): (1) time spent before handing the first draft, (2) time spent between handing in the first draft and receiving feedback, and (3) time spent between receiving feedback and handing in the final draft.

*Writing assignment evaluation.* Eight items measured students' evaluation of the instructiveness of the writing assignment (e.g., "I found this writing assignment challenging"). Students indicated their agreement on a 7-point Likert-type scale. Scale reliability was good ( $\alpha = .85$ ).

*Writing importance and experience.* Five items measured students' perception of the importance of writing for study and career (e.g., "I think writing as a skill is important for my [future] career"). Students indicated their agreement on a 7-point Likert-type scale. Scale reliability was good ( $\alpha = .84$ ). One item measured students' writing experience ("I have experience with writing texts [beyond my studies]").

*Feedback expectancy.* Eight items measured students' expectancy of feedback instructiveness (e.g., "I expect to receive helpful feedback"). Students indicated their agreement on a 7-point Likert-type scale. Scale reliability was good ( $\alpha = .90$ ).

*Feedback evaluation.* Eight items measured students' evaluation of feedback instructiveness (e.g., "I have received helpful feedback"). These items matched with the items on feedback expectancy. Students indicated their agreement on a 7-point Likert-type scale. Scale reliability was good ( $\alpha = .79$ ).

*Reflection assignment evaluation.* Four items measured students' evaluation of the instructiveness of the reflection assignment (e.g., "I found this reflection assignment challenging"). Students indicated their agreement on a 7-point Likert-type scale. Scale reliability was good ( $\alpha = .91$ ).

*Feedback coding.* The feedback on the first draft was coded in order to be able not only to compare feedback conditions, but also to analyse the feedback actually given. A feedback coding protocol for feedback segmenting and coding was used (see p. 29). Each feedback segment was coded on nine aspects. Two aspects related to the questions that were posed. Each question was coded with respect to the cognition it asked for ("question – cognition") and whether it was a real question ("question – unreal/real"). During the pilot phase of coding we also coded whether the question referred to the task or the process, and whether the question asked for verification, concept completion, or elaboration. It appeared that the questions almost all referred to the task rather than to the process, so this aspect was not considered in the final coding. We were not able to code reliably whether the question asked for verification, concept completion, or elaboration, so also this aspect was discarded. Apart from the questions, feedback segments were coded on the object and the aspects linking to the levels of FIT (see Table 6.1; for examples of the codes see the Appendix on p. 33). Compared to the initial coding protocol, we reduced the aspect "strategy" to a dichotomy: either or not indicating a strategy. The author and a co-researcher each coded half of the feedback forms. Per experimental condition the coding was distributed over the two researchers.

*Reflection coding.* The reflection assignments were inspected for comments on the questions posed in the feedback. All comments on feedback questions were distilled from the reflection assignments. Subsequently, the diversity of comments was examined.

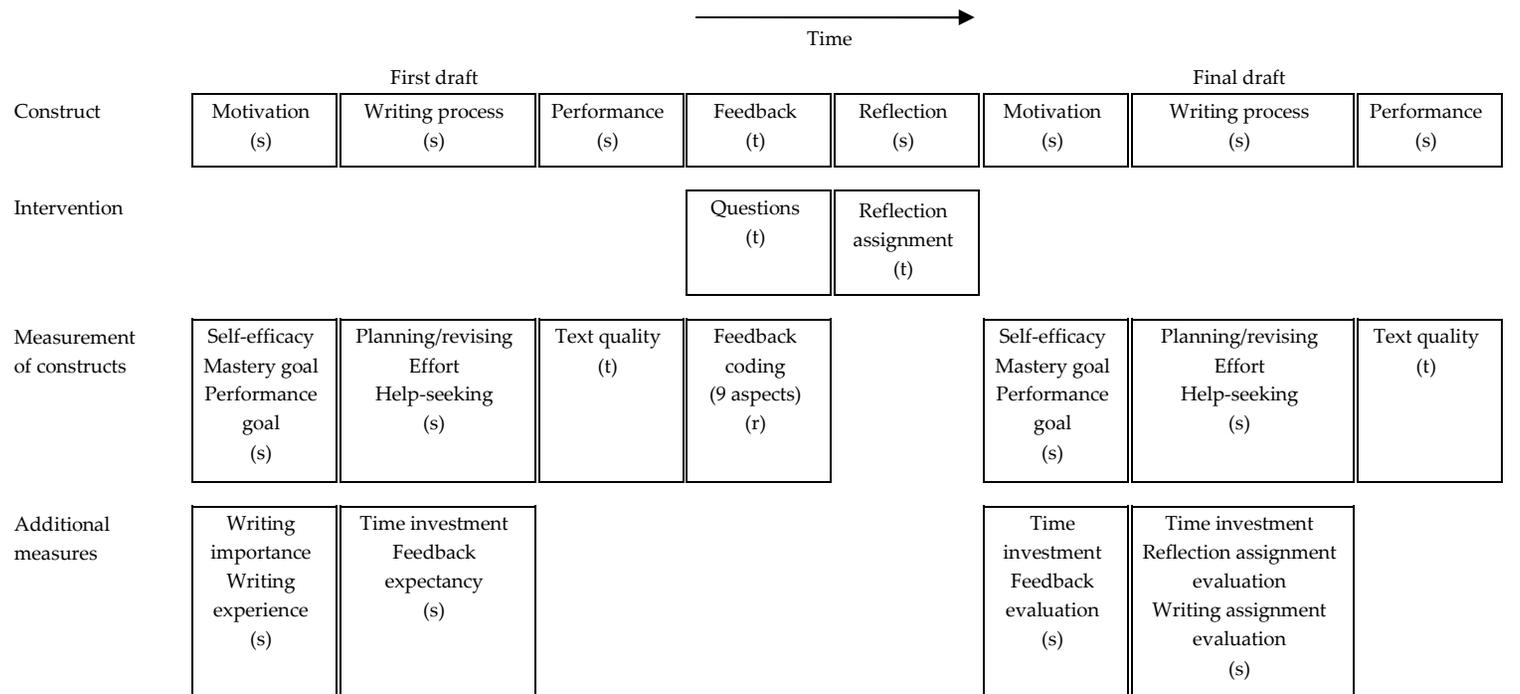
### ***Procedure***

Figure 6.1 provides an overview of the study. Questionnaires were administered during the lecture meetings. Students filled in the motivation and writing process questionnaire with respect to both the first and the final draft of their paper. Students completed the first motivation questionnaire before they started working on the first draft. This questionnaire also included the measures of

Table 6.1

*Feedback Aspects: Description and Codes*

Aspect	Description	Codes
Question – cognition	Cognition the question aims at - coded for every separate question	1: Remember 2: Understand 3: Apply 4: Analyse 5: Evaluate 6: Create
Question – unreal/real	Does or does not require to think about an answer - coded for every separate question	0: Unreal 1: Real
Object	Feedback object	1: Layout 2: Language 3: Structure 4: Content 5: Documentation 6: Other
Explanation	Does or does not contain an explanation, explication, or example	0: No explanation 1: Explanation
Specificity	Does or does not enable the student to find in the text the issues the teacher commented on	0: Not specific (a-specific or global) 1: Specific (clear location or repeated local issue)
Strategy	Does or does not indicate an improvement strategy	0: No strategy 1: Improvement strategy
Control	Expression of the teacher's control over the student's text	1: Reflective (explanation, reader response) 2: Interactive (request for student reaction) 3: Evaluative (advise or limited evaluation) 4: Controlling (criticism)
Sign	Indication of performance quality	1: Very poor 2: Poor 3: Sufficient/neutral 4: Good 5: Very good
Length	Number of words	(Number)



(r) = researcher  
 (s) = student  
 (t) = teacher

Figure 6.1. Overview of the study.

writing importance and writing experience. Four weeks later, students handed in their first draft and filled in the first writing process questionnaire. This questionnaire also included the measures of time investment and feedback expectancy. In the lecture meeting two weeks after, students received feedback on their first draft and completed the reflection assignment. Subsequently, they filled in the second motivation questionnaire. This questionnaire also contained the measures of time investment and feedback evaluation. Two weeks later students handed in their final draft and completed the second writing process questionnaire. This questionnaire additionally included the measures of time investment, reflection assignment evaluation, and writing assignment evaluation.

### *Analyses*

The study had an experimental design, with four conditions. These conditions were compared on self-efficacy beliefs, mastery goal, performance goal, planning/revising, effort, help-seeking, and performance on the final draft by means of ANCOVAs. ANCOVAs compared feedback conditions controlling for the effect of three groups of variables: (a) motivation on the first draft or first draft writing process, (b) performance on the first draft, and (c) coded feedback aspects. First draft motivation or first draft writing process was included to control for the motivation or writing process level students started from (the scale score for the first draft was included only for the respective scale score on the final draft; for example, mastery goal on the first draft was included in analyses on mastery goal for the final draft). Because the feedback depended on the performance on the first draft, first draft text quality was included as a covariable. In the analyses on performance on the final draft, inclusion of first draft text quality also entailed controlling for the performance level students started from. Scores on feedback aspects were included to control for the effect of feedback aspects other than posed questions. These scores on feedback aspects concerned frequencies of aspects (e.g., the number of comments on content, the number of comments that contain an explanation, the number of comments that pose a question), the mean score for the aspect scored on interval level (i.e., the mean sign of comments), and the sum scores for the aspects scored on ratio level (i.e., the total length [i.e., the number of words], the total number of comments). With respect to the aspect "sign" the mean score was used instead of the number of positive, neutral and negative comments to prevent loss of degrees of freedom (we checked whether the use of the latter would change the results in terms of significance; this was not the case).

The variables mentioned were included as a covariate when they correlated significantly with the dependent variable. First draft text quality did not correlate with all dependent variables, but was always included because it was important to control for the fact that the feedback was dependent on the performance on the first draft and because of the purpose of consistency between analyses. (For dependent variables that did not correlate with first draft text quality we checked whether exclusion of text quality as a covariate would change results in terms of significance; this was not the case. The results including first draft text quality will be presented.) Scores on feedback aspects were inspected only when the mean was at least one (see Table 6.5), because variables with values which occur very rarely cannot be reliably and meaningfully related to other variables. The scores “question – cognition” and “question – unreal/real” were not included in the ANCOVAs, because they were part of the factor (i.e., the feedback manipulation).

Although the design was experimental, the number of questions varied within the experimental feedback condition. Therefore, for the experimental feedback condition (half of the students) regression analyses sought to predict students’ motivation, writing process, and performance by the number of questions posed in the feedback. These analyses pertained only to these students, as including students from the control feedback condition, in which no questions were posed, would only conceal possible feedback effects.

Like the covariables in the ANCOVAs, in the regression analyses additional predictors were students’ first draft motivation or writing process, first draft text quality, and coded feedback aspects. So, variables that were covariate in the ANCOVA, were predictor in the regression analysis. Like in the ANCOVAs, we checked for the predicted variables that did not correlate with first draft text quality, whether exclusion of text quality as a predictor would change the predictive value of the number of questions in terms of significance; this was not the case. For consistency purposes results including text quality will be presented.

Variables were entered into the equation hierarchically. Step 1 included first draft motivation/writing process, first draft text quality, and scores on feedback aspects (those correlating with the predicted variable). Step 2 additionally included the number of questions, indicating the unique contribution of questions to the prediction of the motivation or writing process score or performance on the final draft. When the regression analysis showed feedback aspects (other than number of questions) that were non-significant predictors, the regression analysis was run again without these feedback aspects, to check whether this would change the significance of the predictive value of the number

of questions. As this was never the case, the results of these latter analyses will not be presented.

To check for the predictive value of the *interaction* of the feedback intervention and the first draft motivation score or writing process score or text quality (for the prediction of final draft motivation, writing process, or text quality), another hierarchical regression analysis was run. Step 1 included the number of questions, the first draft motivation/writing process score, first draft text quality, and the scores on feedback aspects. Step 2 included the interaction of the number of questions and the particular motivation score, writing process score, or first draft text quality.

If the regression analysis would show the number of questions to predict students' grade, the mediation of this effect by the motivation and writing process variables would be tested through the estimation of a series of regression equations (see Judd & Kenny, 1981). Sample size did not allow for path analysis (Kline, 2005).

All tests were two-sided. The significance level ( $\alpha$ ) was set at .05.

## Results

Analyses pertain to 64 students: 65 students had a complete data set, one student was excluded because she had received an extreme number (33) of feedback questions. An extreme value is defined as a value that differs more than three times the distance between the 25<sup>th</sup> and 75<sup>th</sup> percentile from either the 25<sup>th</sup> or 75<sup>th</sup> percentile. Here, the 25<sup>th</sup> percentile was 11 questions, the 75<sup>th</sup> percentile was 15.75 questions.

### *Motivation and writing process*

Table 6.2 shows students' mean scores on the motivation and writing process scales for the first and final draft. There were no initial differences: the experimental conditions did not differ significantly on motivation and writing process variables for the first draft. Students scored above the scale midpoint for self-efficacy beliefs, mastery goal, planning/revising, and effort, just around the scale midpoint for performance goal, and below the midpoint for help-seeking. Scale scores on the first draft correlated significantly with the corresponding scale scores on the final draft (self-efficacy beliefs:  $r = .43$ ; mastery goal:  $r = .67$ ; performance goal:  $r = .64$ ; planning/revising:  $r = .49$ ; effort:  $r = .50$ ; help-seeking:  $r = .66$ ; all  $ps < .01$ ). Table 6.3 shows correlations between the motivation measures, writing process measures, and performance, per draft.

Table 6.2

*Motivation for and Writing Process on the First and the Final Draft*

	Condition									
	cFcR		eFcR		cFeR		eFeR		Overall	
	<i>n</i>									
	15		17		14		18		64	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Selfeff-1	4.98	0.80	4.82	0.84	5.14	0.61	5.03	0.69	4.99	0.73
Selfeff-2	5.12	0.92	5.10	0.75	5.54	0.55	5.34	0.48	5.27	0.70
Mgoal-1	5.35	0.49	5.57	0.69	5.20	0.98	5.24	0.73	5.34	0.73
Mgoal-2	5.13	1.07	5.47	1.02	4.95	1.47	5.00	0.87	5.14	1.10
Pgoal-1	3.88	0.97	3.65	1.32	4.09	1.27	3.51	1.33	3.76	1.23
Pgoal-2	4.03	1.16	3.56	1.33	3.86	1.47	3.71	1.49	3.78	1.35
PlanRev-1	5.56	0.63	5.22	0.61	5.41	0.87	5.11	0.65	5.31	0.70
PlanRev-2	5.53	0.59	5.64	0.52	5.73	0.95	5.29	0.63	5.53	0.68
Effort-1	5.05	1.09	4.98	1.25	4.34	1.11	4.39	1.13	4.69	1.17
Effort-2	5.14	1.06	5.30	0.89	5.38	1.04	5.02	0.70	5.20	0.91
Help-1	3.18	1.78	2.16	1.03	3.54	2.26	2.40	1.28	2.77	1.67
Help-2	3.78	2.02	2.00	1.31	3.11	2.07	2.43	1.74	2.78	1.87

*Note.* Selfeff = self-efficacy; Mgoal = mastery goal; Pgoal = performance goal; PlanRev = planning and revising; Effort = effort; Help = help-seeking; 1 = first draft; 2 = final draft; cFcR = control feedback, control reflection; eFcR = experimental feedback, control reflection; cFeR = control feedback, experimental reflection; eFeR = experimental feedback, experimental reflection.

**Time**

The time students spent on writing the first draft varied from 6 to 65 hours ( $M = 30.92, SD = 13.01$ ). Only five students spent time ( $M = 0.49, SD = 1.83$ ) on their paper between handing in the first draft and receiving feedback. The time students spent on writing the final draft (after they had received feedback) varied from one to 50 hours ( $M = 14.39, SD = 9.72$ ). These three measures of time investment did not correlate. The total time spent on the paper varied from 16 to 90 hours ( $M = 45.44, SD = 17.21$ ). There were no significant differences between conditions in the time spent.

**Performance**

Table 6.4 shows students' performance on the first draft and the final draft. On average, first draft text quality was not satisfactory, text quality of the final draft

Table 6.3

*Correlations between Motivation, Writing Process, and Performance, per Draft*

	Mgoal		Pgoal		PlanRev		Effort		Help		TextQual	
	1	2	1	2	1	2	1	2	1	2	1	2
Selfeff	.16	.33**	.18	.12	.36**	.06	.12	.04	.09	-.11	.01	.30*
Mgoal			.26*	.10	.30*	.19	.28*	.29*	-.06	.08	-.08	-.00
Pgoal					.29*	.11	.12	-.17	.24	.06	.21	.01
PlanRev							.54**	.46**	.29*	.19	.12	-.04
Effort									.04	.30*	-.02	.18
Help											.32*	.12

*Note.* Selfeff = self-efficacy; Mgoal = mastery goal; Pgoal = performance goal; PlanRev = planning and revising; Effort = effort; Help = help-seeking; TextQual = text quality; 1 = first draft; 2 = final draft.

\*  $p < .05$ . \*\*  $p < .01$ .

Table 6.4

*Performance: Text Quality of the First and the Final Draft*

	Condition									
	cFcR		eFcR		cFeR		eFeR		Overall	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
TextQual-1 <sup>a</sup>	2.04	0.43	1.95	0.47	1.96	0.51	2.17	0.44	2.03	0.46
TextQual-2 <sup>b</sup>	7.18	1.09	7.09	0.54	6.93	1.27	7.31	1.06	7.14	0.99

*Note.* cFcR = control feedback, control reflection; eFcR = experimental feedback, control reflection; cFeR = control feedback, experimental reflection; eFeR = experimental feedback, experimental reflection. TextQual-1 = first draft text quality; TextQual-2 = final draft text quality.

<sup>a</sup>First draft text quality is the mean of the 1-3 scores on five criteria. <sup>b</sup>Final draft text quality concerns a grade with possible scores between 1 and 10.

was sufficient. There were no initial differences: the experimental conditions did not differ significantly on first draft text quality. Overall, first draft text quality correlated significantly with final draft text quality ( $r = .60, p < .01$ ). First draft text quality also correlated significantly with second draft self-efficacy beliefs ( $r = .46, p < .01$ ), but not with the other second draft motivation and writing process measures.

***Writing assignment evaluation, writing importance, and writing experience***

Students were positive about the instructiveness of the writing assignment ( $M = 5.27$ ,  $SD = 0.82$ ). On average, students thought writing was important for study and career ( $M = 5.53$ ,  $SD = 0.68$ ). They indicated they had not really much writing experience ( $M = 3.63$ ), but this varied to a large extent between students ( $SD = 1.80$ ). There were no significant differences between conditions on these three measures.

***Feedback***

On average, students expected to receive instructive feedback ( $M = 5.57$ ,  $SD = 0.78$ ), and evaluated the feedback actually received as instructive ( $M = 5.61$ ,  $SD = 0.70$ ). There were no significant differences between conditions in feedback expectancy and feedback evaluation.

The scores on the coded feedback aspects showed that students in the experimental feedback condition received 12.91 questions on average ( $SD = 3.78$ ), whereas students in the control feedback condition hardly received questions ( $M = 0.34$ ,  $SD = 0.67$ ),  $t(36.56) = -19.29$ ,  $p < .01$ . So, the feedback manipulation was successful. Questions (in the experimental feedback condition) aimed mainly at understanding ( $M = 7.14$ ,  $SD = 3.37$ ), but also at evaluating ( $M = 2.00$ ,  $SD = 1.80$ ) and remembering ( $M = 1.83$ ,  $SD = 2.64$ ). Few questions aimed at creating ( $M = 0.86$ ,  $SD = 1.19$ ), analysing ( $M = 0.77$ ,  $SD = 1.19$ ), and applying ( $M = 0.31$ ,  $SD = 0.83$ ). About three-quarters of the questions were real questions (real:  $M = 9.37$ ,  $SD = 3.93$ ; unreal:  $M = 3.54$ ,  $SD = 2.66$ ). The feedback object that the questions related to was mostly content ( $M = 10.42$ ,  $SD = 4.46$ ). Some questions dealt with language ( $M = 1.42$ ,  $SD = 1.61$ ) and structure ( $M = 1.03$ ,  $SD = 1.16$ ), and almost none of the questions dealt with documentation ( $M = 0.47$ ,  $SD = 0.61$ ) and layout ( $M = 0.14$ ,  $SD = 0.42$ ).

Table 6.5 shows the frequencies of the coded feedback aspects other than posed questions. Generally, students received mostly comments that focussed on text content, comments that were specific but did not contain an explanation or a strategy, and comments that were evaluative and indicated insufficient text qualities. The feedback was rather extensive. Apart from the number of questions, and as a result the specific kinds of questions, there were some other differences between the experimental feedback condition and the control feedback condition. Compared to the control feedback condition students in the experimental feedback condition received less explanations ( $M_{cf} = 8.69$ ,  $SD_{cf} = 3.26$ ;  $M_{ef} = 6.14$ ,  $SD_{ef} = 3.50$ ),  $t(62) = 2.99$ ,  $p < .01$ , less evaluative comments ( $M_{cf} = 19.66$ ,  $SD_{cf} = 4.99$ ;  $M_{ef} = 15.37$ ,  $SD_{ef} = 5.11$ ),  $t(62) = 3.38$ ,  $p < .01$ , less controlling comments ( $M_{cf} = 2.52$ ,

Table 6.5  
*Feedback Aspects per Student*

Feedback aspect		$M^a$	$SD$
Object	Layout	0.81	0.77
	Language	3.58	2.28
	Structure	2.92	1.78
	Content	12.98	5.36
	Documentation	1.72	1.12
	Other	0.45	0.64
Explanation		7.30	3.60
Specific		15.72	6.54
Strategy		0.13	0.42
Control	Reflective	0.44	1.01
	Interactive	3.16	3.71
	Evaluative	17.31	5.45
	Controlling	1.56	2.42
Sign	Mean	2.54 <sup>b</sup>	0.32
	Positive	4.78	2.46
	Neutral	2.66	2.28
	Negative	15.03	6.12
Total length (words)		407.19	90.99
Number of comments		22.47	5.46

*Note.* Scores on “explanation”, “specific” and “strategy” concern comments that respectively contain an explanation, are specific, and contain a strategy. Comments that do not contain an explanation, are not specific and do not provide a strategy are not indicated, but can be calculated from the total number of comments (22.47).

<sup>a</sup>Means concern the sum of fragment scores per student, summed over students and then divided by the number of students, except for the mean sign. <sup>b</sup>The mean sign of fragments is calculated within students, this mean fragment score is summed over students, and subsequently divided by the number of students.

$SD_{cF} = 3.02$ ;  $M_{eF} = 0.77$ ,  $SD_{eF} = 1.40$ ,  $t(37.81) = 2.87$ ,  $p = .01$ , more interactive comments ( $M_{cF} = 0.10$ ,  $SD_{cF} = 0.31$ ;  $M_{eF} = 5.69$ ,  $SD_{eF} = 3.30$ ),  $t(34.72) = -9.96$ ,  $p < .01$ , less negative comments ( $M_{cF} = 16.93$ ,  $SD_{cF} = 6.31$ ;  $M_{eF} = 13.46$ ,  $SD_{eF} = 5.57$ ),  $t(62) = 2.34$ ,  $p = .02$ , and more neutral comments ( $M_{cF} = 1.28$ ,  $SD_{cF} = 1.31$ ;  $M_{eF} = 3.80$ ,  $SD_{eF} = 2.30$ ),  $t(55.45) = -5.51$ ,  $p < .01$ . All but one of these differences can be attributed to the number of questions. When controlled for the number of

Table 6.6

*Correlations of Feedback Aspects with Final Draft Motivation, Writing Process, and Performance*

Feedback aspect		Selfeff-2	Mgoal-2	Pgoal-2	PlanRev-2	Effort-2	Help-2	TextQual-2
Object	Language	-.09	-.08	.01	.13	.15	.10	.09
	Structure	-.14	-.08	.06	.06	.14	.27*	-.16
	Content	-.11	-.19	.03	-.24	-.14	.07	-.08
	Documentation	.17	.25*	.12	.08	.04	.01	.22
Explanation		-.30*	.06	.10	-.02	-.01	.30*	-.22
Specific		-.16	-.18	.08	-.19	-.10	.12	-.14
Control	Interactive	.01	.02	-.11	-.08	-.05	-.30*	.08
	Evaluative	-.12	-.05	.10	.06	.14	.45**	.00
	Controlling	-.01	-.26*	.07	-.27*	-.24	-.06	-.10
Sign	Mean	.36**	.02	.01	-.02	.03	-.06	.28*
	Positive	.42**	-.00	.13	-.01	.12	.15	.45**
	Neutral	-.04	.05	-.02	-.11	-.12	.27*	.09
	Negative	-.29*	-.18	.01	-.09	-.04	.22	-.26*
Total length (words)		-.39**	-.10	-.04	-.02	-.01	.20	-.21
Number of comments		-.15	-.19	.06	-.15	-.04	.20	-.05

*Note.* Only aspects with a mean frequency of at least 1 (see Table 6.5) are included in this table. Selfeff = self-efficacy; Mgoal = mastery goal; Pgoal = performance goal; PlanRev = planning and revising; Effort = effort; Help = help-seeking; TextQual = text quality; 2 = final draft.

\*  $p < .05$ . \*\*  $p < .01$ .

questions, no differences appear between feedback conditions on these particular aspects, except for the number of negative comments. Therefore, the difference in the number of negative comments cannot be attributed to the difference in the number of questions.

Table 6.6 shows the correlations of the feedback aspects with the final draft motivation, writing process, and performance. The feedback aspects referring to questions are not included in this table as only the experimental feedback condition received questions. Feedback aspects that correlate significantly with final draft motivation, writing process, or performance will be included in the respective analyses of covariance and regression analyses.

***Reflection assignment***

Students were somewhat negative about the instructiveness of the reflection assignment ( $M = 3.77$ ,  $SD = 1.40$ ) (no significant differences between the two

reflection conditions). Students' reflection assignments were inspected for comments on the questions posed in the feedback. Of 35 students in the experimental feedback condition (i.e., those who actually received questions) 15 students commented on the questions. Of these 15 students, 12 were in the control reflection condition. One out of the 29 students in the control feedback condition (i.e., those who did not receive questions) referred to the lack of questions in the feedback. This student was also in the control reflection condition.

Of the 15 students in the experimental feedback condition who referred to the questions, ten indicated the questions made them think about their paper (e.g., "Many reflective questions that make you think critically about your paper"). Two students did not appreciate (some) of the questions, because they did not know what to do with it (questions were too general or uninformative). The student in the control feedback condition indicated that when she would have given the feedback, she would probably have asked more questions to make the student think and reflect.

Within the experimental feedback condition, the total number of questions posed in the feedback did not differ significantly between students who did and those who did not comment on the questions. Nor did the numbers of question types (the cognitions asked for, real/unreal questions) differ between those two groups.

#### ***Feedback and reflection condition effects on motivation, writing process, and performance***

*Planning/revision.* ANCOVA showed no significant main effects of feedback condition,  $F(1,57) = 1.17$ , *ns*, and reflection condition,  $F(1,57) = 0.00$ , *ns*, but did show a significant effect of the interaction of feedback condition and reflection condition,  $F(1,57) = 5.03$ ,  $p = .03$ , partial  $\eta^2 = .08$ , on students' planning/revision. Within the experimental feedback condition, students who received the control reflection assignment reported more planning/revision (Estimated  $M = 5.63$ ,  $SE = 0.14$ ) than students who received the experimental reflection assignment (Estimated  $M = 5.29$ ,  $SE = 0.14$ ), while within the control feedback condition students who received the experimental reflection assignment reported more planning/revision (Estimated  $M = 5.80$ ,  $SE = 0.16$ ) compared to students who received the control reflection assignment (Estimated  $M = 5.47$ ,  $SE = 0.15$ ) (see Figure 6.2).

*Other measures.* For none of the other writing process measures, nor for motivation and performance measures, there was a significant effect of feedback

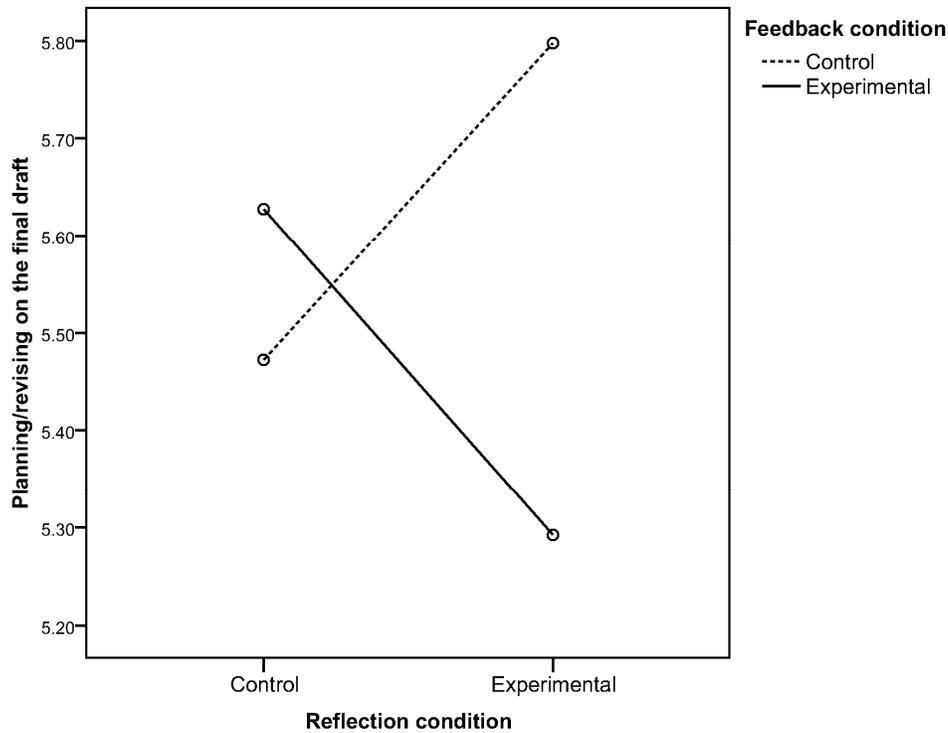


Figure 6.2. Planning/revising on the final draft in the four conditions (Estimated marginal means).

condition, reflection condition, or the interaction of feedback condition and reflection condition.

***Number of questions: prediction of motivation, writing process, and performance***

*Mastery goal.* Regression analysis showed that the number of questions did predict students' mastery goal (see Table 6.7). More questions predicted a weaker mastery goal. The interaction term of the number of questions and mastery goal for the first draft did not contribute significantly to the prediction of mastery goal for the second draft.

*Other measures.* Regression analyses showed that the number of strategies was not predictive for the other motivation and writing process measures and performance, nor was the interaction term of the number of improvement strategies and the first draft measure.

Table 6.7

*Questions: Prediction of Students' Mastery Goal (Regression Analysis)*

Model	Variables	$\beta$	$t$	$p$	$R^2$	$\Delta R^2$	$\Delta F$	$df$	$p$
1	Mgoal-1	0.74	5.08	.00	.48	.48	6.94	4,30	.00
	TextQual-1	0.19	1.42	.17					
	F - ObjDocumentation	0.18	1.32	.20					
	F - Controlling	-0.16	-1.13	.27					
2	Mgoal-1	0.72	5.26	.00	.55	.07	4.58	1,29	.04
	TextQual-1	0.25	1.93	.06					
	F - ObjDocumentation	0.13	0.98	.34					
	F - Controlling	-0.15	-1.11	.27					
	F - Question	-0.28	-2.14	.04					

Note. Mgoal-1 = mastery goal for first draft; TextQual-1 = first draft text quality; F - ObjDocumentation = number of comments on documentation; F - Controlling = number of controlling comments; F - Question = number of questions.

### **Question type: correlation with mastery goal**

For students in the experimental feedback condition, the number of questions negatively predicted students' mastery goal. For the question types with a mean frequency of more than one (i.e., the number of questions aimed at remembering, at understanding, and at evaluating; the number of unreal questions and the number of real questions) the partial correlation with mastery goal on the final draft was inspected (controlled for mastery goal on the first draft). None of these correlations was significant. Subsequently, the numbers of questions per feedback object (e.g., the number of questions relating to content) were inspected and correlated with students' mastery goal (partial correlations). None of the partial correlations with final draft mastery goal was significant.

### **Discussion**

The aim of the present study was to investigate the effect of posing questions and of a reflection assignment on students' writing motivation, writing process, and writing performance. In terms of FIT, feedback posing questions was hypothesized to direct students' attention to their task motivation as well as to the task process, and, as a result, to affect their performance. As feedback posing questions is aimed at engaging students with the task, it was expected to enhance students' writing mastery goal, especially when the posed questions are real questions. We expected that feedback posing questions, especially more complex

questions, would enhance students' planning and revising. Also, it was expected that the questions would contribute to students' effort and would enhance their performance. We expected that feedback posing questions would not affect students' self-efficacy beliefs, performance goal, and help-seeking. A reflection assignment focussing on intentions to use the feedback and the intended approach to writing the final draft was expected to enhance students' planning and revising as well as their performance.

In line with FIT, the number of questions was related to students' task motivation. However, contrary to our expectations, the number of questions posed in the feedback negatively predicted students' mastery goal. An explanation for this result may be that the questions did not connect to the students' interest but rather communicated the teachers' focus or engagement with the text, and therefore made students less focused on their learning. For example, a teacher may ask questions on a particular viewpoint, while the student is more interested in developing another line of reasoning. Also, as questions require the students to find an answer or a solution themselves, it may be that students did not feel helped and did not see how they could learn from these questions. Another explanation for the fact that the number of questions negatively predicted students' mastery goal may be found in the kind of questions that were posed. Although the questions were mostly real questions (which we supposed to contribute to students' mastery goal), more than two third of the questions asked for understanding and remembering, which are relatively simple cognitions. These questions (e.g., "What is the viewpoint expressed in article X?") may be less engaging than questions that ask for more complex cognition (e.g., "Do you agree with the authors' viewpoint? Why?"). These questions could have come across as superficial, and so have diminished students' focus on learning. However, the reflection assignment showed that students recognized that the feedback posed questions. Students indicated that the questions posed in the feedback made them think about their paper. This does not indicate that the students experienced the questions posed in the feedback as superficial. Besides, the fact that mostly students who were in the control reflection condition commented on the questions posed in the feedback is due to the reflection assignment: this assignment asked what in the feedback did and did not appeal to students. In the experimental reflection condition these questions were not asked.

Contrary to our expectations, the number of questions posed in the feedback did not predict students' planning and revising, effort, and performance. Possibly the questions, although not superficial, were not especially challenging.

In accordance with our expectations, feedback posing questions did not relate to students' self-efficacy beliefs, performance goal, and help-seeking.

Contrary to our expectations, the reflection assignment that asked for students' intentions did not contribute to students' planning and revising and performance. This reflection assignment was even harmful to students' planning and revising when the feedback posed questions. One explanation may be that the reflection assignment, asking for students' intentions, came too early. Students indicated that the questions posed in the feedback elicited thoughts on their paper. Likely, students needed time to answer these questions and did not yet have a plan what to do with the feedback at the moment they filled in the reflection assignment. The reflection assignment forced them to formulate a plan, probably interrupting their thoughts on the questions posed in the feedback.

The interaction effect of feedback condition and reflection condition on planning and revising resembles the interaction effect on performance found in the study described in chapter 5. Like in the present study, the reflection assignment asking for intentions was harmful – compared to the reflection assignment asking for perceptions – when students received the experimental feedback. Also in that study the interaction effect could be interpreted as the reflection assignment interfering with the thoughts elicited by the feedback. So, it seems important to consider the interference of the reflective questions with the kind of feedback. This study and the previous study suggest that a reflection assignment asking for intentions can interfere with both feedback providing strategies and feedback posing questions.

Based on the results and limitations of this study, several recommendations can be made for future research. In the present study we provided teachers with a general instruction on posing questions in the feedback. The teachers could formulate questions they thought were most appropriate. This led to questions asking for relatively simple cognitions. Future research may standardize the questions in order to unravel effects of more complex questions on students writing motivation, process, and performance. For example, teachers may be instructed to pose a particular number of questions that ask to evaluate, to analyze, or to create. A drawback of standardization of the questions may be that there is less fit with the particular problems in the students' texts.

With regard to the design, it was not possible to include a condition in which students did not make a reflection assignment because of the same reasons as in the previous study. Future research should unravel under which circumstances the reflection assignment asking for intentions is beneficial (e.g.,

the timing of the assignment), or which combinations of feedback and reflection assignment are most advantageous.

With regard to measurement a limitation of the present study is that we did not ask for students' thoughts while they read the questions posed in the feedback and while they made the reflection assignment, nor analyzed how they treated the questions posed in the feedback. Future research including such process measures may indicate which thoughts are elicited by the questions posed in the feedback and how these thoughts are affected by the subsequent reflection assignment.

Regarding FIT, it can be concluded that feedback posing questions does indeed affect students' task motivation and task process. The effects are however negative, and depend on the accompanying reflection assignment. This study thus shows that the positive effects assumed in literature are no certainty. The effects of feedback posing questions seem delicate and further research should figure out whether certain numbers of particular kinds of questions may bring about the expected positive effects.

Finally, based on the present results, should educators provide students with interrogative feedback and a reflection assignment? The results do not press for posing questions. It may be that when teachers would explain to students the goal of their particular questions, these questions would contribute to students' mastery goal. Teachers may explain that their questions are intended to contribute to students' thinking on the text content and on their writing process, rather than aim at focusing them on the teacher's interests. We are however unsure how students would interpret such an explanation; perhaps they will experience it as patronizing, like in the previous study the teacher's provision of strategies came across as an underestimation of the student's capacities. If teachers provide students with non-interrogative feedback, a reflection assignment on the use of the feedback and the approach of the revision can be helpful to enhance students' planning and revising.

## 7. General discussion and conclusion

The goal of this thesis was to examine the effects of feedback, provided in response to students' texts, on students' writing motivation, writing process, and writing performance. In three studies three feedback interventions were tested, and in two of these studies also the effects of a reflection assignment were examined.

Feedback Intervention Theory (FIT; Kluger & DeNisi, 1996) was used as the frame of reference. According to FIT, feedback characteristics that direct students' attention to their task-learning or task-motivation processes generally enhance performance, whereas feedback characteristics that direct students' attention to meta-task processes generally harm performance. Three feedback characteristics supposed to link to task-learning and task-motivation processes were the central focus of the studies. The first study dealt with progress feedback, which was hypothesized to contribute to students' writing motivation and performance. The second study examined feedback providing improvement strategies, which was hypothesized to enhance students' writing motivation, process, and performance. The third study dealt with feedback posing questions, which was also hypothesized to enhance students' writing motivation, process, and performance. In the second and third study, additionally the effects of a reflection assignment dealing with students' intention to use the feedback and their intended approach to writing the final draft were considered. This was hypothesized to direct students' attention to the task (cf. Anseel, Lievens, & Schollaert, 2009) and to contribute to their writing process and performance. As several feedback characteristics (e.g., explanation, specificity) can be linked to the three levels of FIT (see p. 18) and thus may influence students' writing motivation, process, and performance, these characteristics were controlled for in all studies.

We will discuss the main findings, provide suggestions for the refinement of FIT, and discuss methodological issues and suggestions for future research. In addition we will consider the practical implications of the studies.

### **Main findings**

The first study expectedly showed that progress feedback contributed to the prediction of students' self-efficacy beliefs, but unexpectedly showed a negative effect of progress feedback condition on students' self-efficacy beliefs. It turned out that there was a threshold number of progress comments: from three progress comments on, self-efficacy beliefs increased. Below that number, self-efficacy beliefs decreased. Rather than the absolute number of progress comments, it plausibly was the balance between progressed aspects and not progressed aspects that caused the effect on students' self-efficacy beliefs. Unexpectedly, progress feedback did not enhance students' mastery goal and performance.

The second study had a 2 x 2 factorial design. Half of the students were given feedback that provided improvement strategies, while the other half of the students did receive feedback but no improvement strategies. In both conditions, half of the students made a reflection assignment that asked for their intentions to use the feedback and their intended approach to writing the final draft, while the other half of the students made a reflection assignment that did not deal with feedback use and the approach to writing the final draft. Contrary to our expectations, the number of improvement strategies negatively predicted students' self-efficacy beliefs: the more improvement strategies were provided, the lower students' reported self-efficacy was. This negative relation existed especially for students whose self-efficacy beliefs were moderate or low before they received improvement strategies (i.e., their self-efficacy for writing the first draft). In accordance with our expectations, the number of improvement strategies positively predicted students' planning and revising: the more strategies were provided, the higher their reported planning and revising was. Consistent with our expectations, within the experimental feedback condition the number of improvement strategies correlated with effort in terms of time investment (controlled for first draft text quality). The more strategies were provided, the more time students spent on their final draft. A significant interaction effect of feedback condition and reflection condition was found for performance. Students' performance gained from the reflection assignment when they were in the feedback control condition (i.e., did not receive strategies). When they were in the experimental feedback condition (i.e., did receive strategies), this reflection assignment was harmful to performance. No effects of feedback providing improvement strategies and the reflection assignment were found for mastery goal, performance goal, effort, and help-seeking.

The third study also had a 2 x 2 factorial design. Half of the students received feedback that posed questions, while the other half of the students

received non-interrogative feedback. Like in the previous study, in both conditions half of the students made a reflection assignment dealing with intentions to use the feedback and the approach to writing the final draft, while the other half of the students made a reflection assignment that did not deal with feedback use and the approach to writing the final draft. Contrary to our expectations, the number of questions posed in the feedback negatively predicted students' mastery goal: the more questions were posed, the lower students' reported mastery goal was. Contrary to our expectations, the reflection assignment did not contribute to students' planning and revising; it was even harmful to students' planning and revising when the feedback posed questions. No effects of feedback posing questions and the reflection assignment were found for self-efficacy beliefs, performance goal, effort, help-seeking, and performance.

### **Feedback Intervention Theory: suggestions for refinement**

With the investigation of feedback effects on students' writing motivation, process, and performance, we pushed the frontiers of knowledge: to date, research on these effects is scarce (Bruning & Horn, 2000; Graham & Perin, 2007; see also Kluger & DeNisi, 1996). Our studies show what is in contrast to commonly held beliefs, but also what agrees with Kluger and DeNisi's (1996) meta-analysis (including over 600 effect sizes, covering other tasks than writing tasks). Their analysis showed that on average feedback interventions contribute to performance, but in more than one-third of the cases feedback interventions decrease performance. Also our results show that the expected positive effects of particular kinds of feedback on writing performance are not assured. The same holds for effects on students' writing motivation and writing process, which are supposed to mediate feedback effects on performance.

FIT has been developed to reconcile inconsistent findings regarding feedback effects on performance. Its value is in the processes it suggests through which feedback affects performance. Kluger and DeNisi (1996) stated that FIT lacks very detailed and specific predictions (p. 276) and that future research should investigate the effects of feedback on the indicated mediating processes. Their meta-analysis confirmed the major propositions of FIT, but did not show detailed evidence at the single-variable level. So, based on the results of our studies, what can be concluded about the validity of FIT and what recommendations can be made for the refinement of this theoretical framework?

First, FIT uses task-motivation processes and task-learning processes as general terms. It suggests that feedback that directs the student's attention to his or her task motivation will affect subsequent effort, and that feedback that directs

attention to the task-learning process leads to alternative attempts to perform the task. In our studies, we did not treat task motivation as a process, that is, a process of changing effort, but examined two components of motivation that are found to predict effort: self-efficacy beliefs (Bandura, 1986) and achievement goals (Elliot, McGregor, & Gable, 1999). Commonly, motivation literature does not deal with motivation in its general meaning, but with specific “components” of motivation (e.g., self-efficacy beliefs, achievement goals; see for example Murphy & Alexander, 2000). As our results show, feedback effects on students’ task motivation depend on the motivation construct examined. Therefore, FIT should be specified with regard to task motivation. Our results suggest that feedback is more likely to affect students’ self-efficacy beliefs than to affect their achievement goal. Likewise, the results show that also task-learning processes should be specified, as the results differed between writing process measures. The results suggest that the link between the kind of feedback and the writing process is highly specific. A relation was shown when there was a tight correspondence between the kind of feedback and the examined writing process. Only when feedback provided improvement strategies, it predicted students’ planning and revising. Less direct connections, such as between feedback posing questions and the amount of effort, were not found. Furthermore, apart from the specification of task-learning processes, we argue that rather than the term “task-learning process” in fact the term “task execution”, or simply “task process”, may be more appropriate: its core is that the person focuses on the components of the activity or the task details, which does not guarantee that something is learned.

Second, the propositions of FIT are formulated as “feedback effects on performance are augmented by cues that direct attention to task-motivation processes and cues that direct attention to task-learning processes” (Kluger & DeNisi, 1996, p. 268), and “feedback effects on performance are attenuated by cues that direct attention to meta-task processes” (p. 267). These propositions suggest exclusive unidirectional effects. They however contrast with Kluger and DeNisi’s explanation of the three process levels, which suggests that on each level processes may occur that lead to either negative or positive effects on performance. So, questions to be answered are: which cues relate to which of the three levels of FIT, and what is the direction of their effects?

With regard to feedback cues, Kluger and DeNisi provided suggestions on which cues relate to which processes. Likewise, in chapter 2 we related feedback characteristics to the three levels of FIT (see p. 18). The studies show that progress feedback, feedback providing strategies, and feedback posing questions relate to students’ task motivation. Feedback providing improvement strategies also

relates to students' writing process. So, in accordance with FIT these particular kinds of feedback relate to students' task-motivation and task-process. Apart from these three feedback features, the results of the first study show that also the design of the feedback form is an important feedback cue that might get easily overlooked. Simply through the design the feedback may communicate a message that is opposed to the teacher's intention. In our study this was the message that the student did not progress on many aspects, while the intention was to communicate progress on several of the aspects. Furthermore, the first study showed that it cannot be simply stated that the more of a particular kind of feedback is provided, the stronger the student's motivation will be, but that there are threshold numbers: only from a certain number of particular comments effects may arise. This may especially be true when other feedback characteristics contradict the intended message (such as the feedback form). This shows that is important to examine the feedback as a whole, that is, in all its different aspects, to unravel the effects of one particular feedback characteristic. Furthermore, studies 2 and 3 suggest that it important to consider possibly interfering influences such as an additional reflection assignment.

With regard to the direction of the link between feedback cues and students' motivation and writing process, the second study showed that effects on motivation and writing process may contradict each other. While the number of strategies negatively predicted self-efficacy beliefs, they positively predicted planning and revising. The number of strategies also correlated positively with the time spent. This is in agreement with FIT, which states that processes at all levels may coexist and even modulate each other.

The results of both the second and the third study indicate that opposed to expectations, the relationship of feedback providing improvement strategies and feedback posing questions with students' task motivation may be negative rather than positive. An important factor explaining this negative relation seems to be students' interpretation of the feedback. In the second study, we found that there was incongruence between the objective and the subjective feedback features. Students indicated that they felt the strategies did not match, and in fact underestimated, their capacities. As such, it may be argued that subjectively they did not receive strategies that helped them to improve their text, while objectively (according to the feedback scoring protocol) they did receive improvement strategies. Obviously, apart from the objective features, students' interpretation of the feedback is an important factor that affects the direction of feedback effects. For some features (e.g., the fact that the feedback is in written format, or in verbal format) the objective and the subjective will match. However, many other features

(e.g., praising comments, discouraging comments, improvement strategies) may be subject to interpretation. So, FIT should specify whether the assumed effects relate to objective or to subjective feedback features. It seems that FIT refers to objective features. Although FIT does indicate that situational and personality variables may moderate feedback effects (e.g., people with low self-esteem are more likely to direct attention to the self as a result of negative feedback than people with high self-esteem) and that the informational value of the feedback depends on the receiver's knowledge, it does not explicate that feedback characteristics are subject to interpretation. It is however important to note that the objective features (or the intended features) do not necessarily match with the subjective features (i.e., the receiver's interpretation).

Third, the second study showed that students' initial self-efficacy beliefs moderate the effects of feedback providing improvement strategies on subsequent self-efficacy beliefs. Students with low initial self-efficacy beliefs were more prone to a decrease of their beliefs. FIT indicates self-efficacy beliefs as a moderator of feedback effects on *performance*. It states that students with low self-efficacy beliefs are more likely than students with high self-efficacy beliefs to quit a task in the face of failure. Our results suggest that this differential prediction can be extended to self-efficacy beliefs resulting from the feedback: students with low self-efficacy beliefs are more likely to lower their beliefs as a result of feedback than students with high self-efficacy beliefs. We suppose that this is especially true for negative feedback (cf. Nickerson, 1998).

Fourth, with regard to feedback effects on performance, an interaction effect of feedback condition and reflection condition on performance was found in the second study. This interaction indicated that when students are asked for their intentions to use the feedback and their intended approach to writing the subsequent draft, feedback providing improvement strategies negatively affects performance. As we did not find an effect of the quantitative feedback measures on performance, we could not find evidence for the mediating role of students' task motivation and task process. Positive main effects of the particular kinds of feedback on performance could have been expected, because some feedback effects on students' task motivation and task process occurred. Several explanations for these results can be brought to bear. It may be stated that the motivation and process constructs that were predicted by the feedback (self-efficacy beliefs, mastery goal, planning/revising), are generally not mediators of feedback effects on performance. This is however not very likely, as all three have been shown to predict performance (e.g., Fitzgerald, 1987; Harackiewicz, Barron, Pintrich, Elliot, & Thrash, 2002; McCarthy, Meier, & Rinderer, 1985; Torrance,

Thomas, & Robinson, 2000; Utman, 1997). Another explanation, dealing with task difficulty and novelty, is proposed by FIT. FIT states that for difficult and new tasks feedback effects on motivation do not per definition translate into better performance, as performance on these tasks is highly dependent on cognitive resources. Kluger and DeNisi's meta-analysis, covering tasks that appear far less complex than the writing tasks students in our studies engaged in, found some evidence for this proposition. Our studies dealt with complex tasks, and also academic writing was a new task to the first-year psychology students participating in the first study. In the first study progress feedback contributed to students' self-efficacy beliefs but not to their performance. These results thus align with FIT's proposition on task difficulty and novelty. Remarkably, the negative feedback effects on self-efficacy and mastery goal in the second and third study also did not translate in a deterioration of performance. Furthermore, an explanation for the fact that no feedback effects on performance were found may be that various effects cancelled each other out. For example, in the second study the positive results for planning and revising might be cancelled out by the negative results for self-efficacy beliefs. However, then we would have expected that a decrease of self-efficacy beliefs would result in a decrease of effort (cf. Bandura, 1986), subsequently resulting in the lack of positive results for performance. Yet, a decrease of effort was not found. Of course, also several feedback characteristics might interact in their effect on performance. Although we controlled for absolute numbers of feedback aspects that correlated with the dependent variable, we did not examine interactions of feedback aspects: possible combinations are numerous and we had no specific hypotheses on this. Finally, the fact that the results did not show an effect of feedback on performance may be attributed to the quality of the performance measure. Possibly, this measure was not sufficiently adequate and was not susceptible to the investigated feedback characteristics. The performance measure will be discussed below, in the paragraph on methodological issues.

To sum up, we argue that FIT provides an elegant and valuable framework for understanding feedback effects on performance. The results of our studies support its claim that feedback affects students' task motivation and task process, and that effects on both may occur simultaneously. Also, the results agree with its statement that feedback effects on performance are less likely when tasks are novel or difficult. Furthermore, the results point out that FIT can extend its differential prediction regarding the feedback receiver's self-efficacy beliefs: FIT assumes these beliefs moderate effects on performance; our results indicate that these beliefs moderate feedback effects on subsequent self-efficacy beliefs. In

addition, our studies indicate that FIT should be refined. It should specify task-motivation and task-learning constructs, and subsequently relate specific feedback aspects to these specific constructs. In this, positive and negative effects should be explicitly distinguished. Moreover FIT should highlight the combined effects of different feedback aspects as well as the feedback receiver's interpretation of feedback aspects.

### **Methodological issues**

The studies in this thesis were quasi-experimental: they took place in a natural educational setting. We used the already existing writing assignments and feedback forms, and students received genuine feedback on their texts (rather than bogus feedback, e.g., Brunot, Huguet, & Monteil, 2000) and had to use this feedback for the improvement of their own texts (rather than others' texts, e.g., Strijbos, Narciss, & Segers, 2009). As a positive result, the studies have high ecological validity. To overcome some of the problems related to quasi-experimental research, tutorial groups (study 1) and students (studies 2 and 3) were randomly assigned to conditions and teachers, and each teacher provided feedback to an equal number of students in each condition. In the first study tutorial groups rather than students were randomly assigned to conditions: as the feedback was provided during tutorial group meetings and the feedback form differed between conditions, assigning students in one tutorial group to different conditions would certainly inform them about the feedback intervention. Effects on group level (tutorial group and teacher effects) might have occurred. These effects can be analysed by multilevel analysis, but this requires far more tutorial groups and teachers than we had in our studies (see Hox, 2002). Another problem is that teachers were not blind to condition: as they had to implement the feedback intervention, they were informed about it. We urged teachers not to tell students about the feedback intervention. Teachers were not informed about our specific hypotheses. Finally, the feedback depended on the quality of the student's text. As a result, the feedback differed between students on more aspects than intended. Therefore, in the analyses we controlled for text quality and feedback aspects other than the manipulated aspect (progress, strategies, questions).

The feedback aspects examined were features of its content (e.g., specificity) and formulation (e.g., tone). We did not examine feedback quality aspects (e.g., its appropriateness, informational value, or clarity). In controlling for the feedback aspects other than the manipulated aspect, we used frequencies of feedback aspects (e.g., the number of specific comments, the total number of comments) and means (e.g., the mean sign). Actually, these analyses were quite

straightforward. As already mentioned, we did not examine interaction effects of feedback aspects. Perhaps some feedback features only bring about effects in the presence of other features (e.g., improvement strategies combined with an overall positive mean sign). In fact, feedback research is in its infancy with regard to knowledge on the effects of combinations of feedback aspects. Also, we do not know whether some aspects have more weight than others in influencing students. In the future, more complex models should be tested.

Because of the educational setting, the designs of studies 2 and 3 did not include a condition in which students did not make a reflection assignment. As a result, we could not contrast the effects of a reflection assignment asking for intentions to use the feedback and the intended approach to writing the final draft with results when no reflection assignment is provided. Therefore, these studies do not inform us whether a reflection assignment is more beneficial to students' writing motivation, process, and performance, than providing no reflection assignment.

An important comment on the analyses is that in all studies the regression analyses comprised a large number of variables and pertained to a relatively small sample. Therefore, the results of these analyses should be taken with some caution. The small sample reduces chances of reaching significance and diminishes the generalizability of results (Tabachnick & Fidell, 2007). Further research must show whether the results are robust and hold for other samples. Another qualification relating to the regression analyses is that prediction does not imply causation. Because of the theoretical notions we argue that it is permissible to interpret the results of the regression analyses in causal terms, the more so because the regression analyses focused on the feedback aspect that was manipulated in the particular study, and controlled for other feedback aspects, as well as for text quality and motivation or writing process level before intervention.

With regard to operationalisation, several remarks can be made. Questionnaires were used to measure students' writing motivation and writing process. In motivation research, paper-and-pencil self-report measures are common use. Motivation questionnaires usually are highly general (Fulmer & Frijters, 2009), while motivation depends on the task (Pajares, 1996; Pintrich, 2000; Murphy & Alexander, 2000). In our studies motivation items, as well as writing process items, were formulated on task-level, and also the questionnaire instruction made clear to which task the items referred. As a result, we are confident that the questionnaires were an effective measure for students' task motivation. For the measurement of students' writing process, questionnaires

have limitations. The questionnaires asked for a retrospective report, and students may not have been able to remember what they actually did. Also, students may not have known how they approached the task (Van Hout-Wolters, 2000). These problems can be assumed to be present to the same extent for all students. As we did not use absolute scores but used the questionnaire scores to compare students, we think this method was adequate (cf. Kieft, 2006). Nevertheless, it is important to note that where we discuss “students’ writing process”, this should be read as “students’ self-reported writing process”. We do not know whether the self-reported writing process equals the actual writing process. Therefore, future research might use concurrent methods, such as think aloud procedures and log files, which also enable the inspection of the timing of activities (e.g., Van den Bergh & Rijlaarsdam, 2001).

We primarily expected feedback effects on students’ writing motivation and writing process. As students’ writing motivation and writing process were supposed to mediate feedback effects on performance, we also expected feedback effects on performance. The teachers’ evaluation of text quality was used as a performance measure. Some critical remarks have been made on the quality of teachers’ assessment of writing (Stern & Solomon, 2006) and of other comparably complex assignments (i.e., research assignments; Stokking, Van der Schaaf, Jaspers, & Erkens, 2004). These remarks relate, among others, to the selective use of criteria, the use of criteria other than those specified in advance, and the lack of differentiation between products. Because of these remarks, the author and a co-researcher scored students’ texts in studies 1 and 2, to obtain an independent evaluation of text quality. We do not believe that we are less than teachers prone to unintentional distortions such as order effects and shifting of norms. However, as opposed to teachers we did not know the students and did not have to communicate our evaluations to them, and so we were less likely to rely on illegitimate criteria such as an overall impression of the student or to adapt our evaluation because of communicative purposes (see Stokking et al., 2004). The author and the co-researcher scored students’ texts on content, structure, language, and overall quality. As we intended to have comparable judgements between studies, we did not use exactly the same criteria as the teachers did. We calculated a composite score; intra-rater reliability and inter-rater reliability of researchers’ scores were sufficient ( $\alpha > .74$ ). Correlations between the teachers’ evaluation and the researchers’ evaluation were significant and ranged from .32 to .64. These moderate correlations show that there was overlap in researchers’ and teachers’ judgments, but also that they did not measure exactly the same (as could be expected because of the difference in criteria). The teachers’ evaluation

correlated with more motivation and writing process measures than the researchers' evaluation did. Results of the hypotheses tests did not differ considerably between both performance measures. Based on these results and for reasons of ecological validity, we chose to use the teachers' grade as a performance measure. Nonetheless, the doubts cast on the quality of teachers' evaluation remain. Probably, the quality of teachers' judgments can increase when they make standards explicit (through exemplars and verbal descriptions) and when they discuss their evaluations of several texts in order to calibrate their judgments (Saunders & Davis, 1998).

### **Future research**

Based on the results and limitations of this study, several recommendations for future research can be made. Larger samples than ours will maintain power while controlling for several feedback characteristics, and permit more advanced analyses (e.g., path analysis, multilevel analysis). With regard to measurement, future research may use concurrent writing process measures, to examine the actual writing process. Also, the quality of writing performance measures should be focus of attention. Perhaps, in the future automated essay scoring may add to a solution (Kellogg & Whiteford, 2009).

With respect to progress feedback, in future research feedback should be formulated in a way that prevents unimproved aspects to be as salient as progressed aspects, for example through stating progress only in words and not by ticking aspects. In a study not reported in this thesis, we replicated study 1 except that we asked teachers to formulate progress in words rather than by ticking aspects. In that study, teachers hardly provided progress feedback. So, while the feedback form used in the first study negatively affected students' motivation, it did support teachers in providing progress feedback. This indicates that it is important to provide teachers with aids for providing progress feedback, to ensure that the intended manipulation succeeds. Furthermore, in future research qualitative methods may be used to explore students' interpretation of progress feedback, particularly with respect to the number of progress messages and the ratio of progressed and not progressed aspects, and to inquire about the actual message they derive from progress information (i.e., do they perceive it as positive or negative).

Regarding feedback providing improvement strategies, future research may find ways to provide students with strategies that closely match their capacities, so that they can fulfill the intended scaffolding function (Applebee, 1986). This may require a feedback dialogue (Askew & Lodge, 2000; Prins &

Mainhard, 2009) in which the teacher can ask for the student's current strategies and suggest ways to refine the strategy or suggest alternative strategies. In such a dialogue the student can as well indicate for what kind of problems he or she needs strategies. Also, future investigations may explore whether providing students with explanations on the reasons for suggesting strategies protects against negative effects on their self-efficacy beliefs. Possibly, when students know that teachers have general instructional reasons for providing strategies, they do not interpret the strategies as indications of low efficacy. Research may also point out whether the improvement strategies provided in our study are helpful to less experienced writers, such as first-year students. Since they are less likely to have the strategies available, the feedback may be more informative to them, and as a result have positive effects on their writing motivation, process, and performance. Moreover, it is valuable to measure students' use of the provided strategies and their actual writing behaviour or thoughts while writing. These measures may indicate whether it is the particular content of the strategies or rather the perceived match between the strategies and the student's writing ability that brings about effects. Also, these measures may highlight whether strategy contents can be classified in terms of usefulness. Lastly, to examine the effects of particular kinds of strategies (e.g., for the revision of text structure) future research may standardize the provision of strategies. A drawback of standardization may be a lack of fit with the particular problems in the student's text.

With regard to feedback posing questions, we suggest to focus research on relatively complex cognitions, so to pose questions that ask for analyzing, evaluating and creating. This may require standardization of questions, at the expense of fit with the particular problems in the students' texts. Inquiry of students' thoughts while they read the questions and their treatment of the questions during their writing process may inform us whether questions can have the supposed effects on students' writing motivation and process.

Irrespective of the particular feedback feature under study, future research should inquire upon students' interpretation of the feedback. These interpretations will contribute to understanding the effects of objective feedback features. Furthermore, future research should take account of feedback quality features (e.g., appropriateness, informational value).

Concerning reflection on the feedback, future investigations should include a condition in which students do not make a reflection assignment. This will shed light on the quality of our reflection assignment in the control condition and allow a more strict test of the effect of reflection on the feedback use and the approach of

the revision. Future research should also unravel under which circumstances the reflection assignment is beneficial (e.g., the timing of the reflection assignment), and which combinations of feedback and reflection assignment are advantageous. Lastly, it could be explored whether a reflection assignment is more beneficial to less experienced writers such as first-year students, as the graduate students in our studies indicated that the assignment asked for reflective thought they would also have without the assignment.

### **Practical implications**

Despite firm statements in literature on the value of feedback for educational purposes, our studies do not show exclusively favourable effects of feedback. So, what advice can we give to educators?

Teachers who intend to raise students' self-efficacy beliefs may provide them with progress feedback. Teachers should be aware to indicate a substantial number of aspects that progressed and prevent that mainly not progressed aspects become salient. This may require that teachers use a form on which they tick all progressed aspects. However, for the communication to students it may be better to put progress information in words rather than in a list of ticked aspects. Apart from that, the provision of progress feedback probably also requires some arrangements on course level. At least three drafts or assignments are required: a first and second draft to determine progress, and a third draft on which effects of progress feedback can emerge. From the organization of the first study, it turned out there are hardly any courses that involve writing three drafts. Also, it appeared from studies 2 and 3 that teachers generally do not indicate the progress students made since assignments in other courses. This is probably because teachers differ between courses and do not have previous assignments available, which is necessary to determine progress.

Teachers who intend to increase students' planning and revising may provide them with improvement strategies. They should be cautious providing strategies to students' with low self-efficacy beliefs. We suggest that teachers have a feedback dialogue with their students, so that they can fine-tune their strategies to the particular student, and if necessary demonstrate strategies. Students could be asked to indicate the strategies they have used, and for what kind of problems they would like to receive strategies. This may prevent that the teacher's provision of strategies comes across as an underestimation of the student's capacities. Another suggestion to enhance students' planning and revising is to give students a reflection assignment in which they specify how they will deal with the feedback and how they will approach writing the subsequent draft. This

assignment should not be used in combination with interrogative feedback. The assignment can also be used to contribute to students' performance, but not in combination with feedback providing strategies.

Teachers who are used to asking questions in their feedback should be aware that this can reduce students' mastery goal. It may be that when teachers explain the instructional goals of their particular questions, these questions can contribute to students' mastery goal. However, a drawback might be that students experience such explanations as patronizing.

Finally, based on our experiences with the organization of the studies, we would like to make some general remarks on writing education. We intended to organize studies at several departments at several faculties. It appeared that because of their design only few courses were suitable to our research purposes: if a writing assignment was part of the course, often no feedback was provided (only a grade) or students did not have to use the feedback (they handed in their paper only once). As a matter of fact, if students write texts for formative purposes (as generally seems the case), feedback should be provided and should have to be used. Providing students with feedback they do not have to use is a waste of teachers' effort (cf. Kellogg & Whiteford, 2009; Sadler, 1989). Also remarkable was the general lack of explicit standards. Because of the complex products and fuzzy criteria entailed in writing, numerical cut-offs indicating specific achievements can not be distinguished. However, standards can be specified by descriptive statements combined with exemplars (see p. 13) (Sadler, 1987). When no explicit standards are specified, "you have to look at the feedback that other students received, to get an idea on how well you did yourself" as one student put it. This is a norm-referenced comparison, which is cautioned against in literature (Sadler, 1987, 2005). Lastly, it appeared to us that writing instruction was often limited (e.g., a short written explanation in the course manual) and not attuned between courses. Sometimes students needed the feedback to understand the writing assignment. Therefore, we would recommend that if students are assigned a writing task aimed at developing writing skills, they receive clear instruction that is attuned with other courses, are provided with descriptions and exemplars that indicate the standards, and receive feedback that must be used for revision. We suppose these measures make writing education more effective and efficient.

### **Conclusion**

This thesis addressed the question: Do feedback interventions exist that, through their content and/or formulation, contribute to students' writing motivation,

process, and performance? Feedback providing progress information was found to contribute to students' motivation. Feedback providing improvement strategies was found to negatively affect students' motivation, but to positively contribute to their writing process. Feedback posing questions was found to decrease students' motivation. None of the feedback interventions was found to be related to performance. The framework used in this thesis, FIT, proved a valuable framework, but should be specified with regard to the task-motivation and task-learning constructs, the direction of effects of feedback cues, as well as the role of students' interpretation of the feedback. The latter is crucial for understanding feedback effects on students' writing motivation, process, and performance.



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## Samenvatting

Docenten aan de universiteit uiten regelmatig hun zorgen over de schrijfvaardigheden van studenten. Zij hebben de indruk dat studenten moeite hebben met het schrijven van academische teksten en maar beperkt gemotiveerd zijn om aan schrijfp opdrachten te werken. Dit is problematisch, omdat het voor zowel de academische als de professionele carrière van belang is om goed te kunnen schrijven.

Aangezien het ontwikkelen van schrijfvaardigheid een expliciet geformuleerd onderwijsdoel is, krijgen studenten regelmatig schrijfp opdrachten. Docenten besteden doorgaans veel tijd aan het geven van feedback op de schrijfproducten van studenten. Zij proberen studenten te motiveren en bij te dragen aan het schrijfproces, bijvoorbeeld door goede aspecten van de tekst te benoemen of door suggesties te doen ten aanzien van de inhoud. Ondanks deze inspanningen van docenten doen zich echter de genoemde problemen voor, en daarom vragen docenten zich af op welke manier zij meer zouden kunnen bijdragen aan de schrijfmotivatie en –prestatie van studenten.

Deze ervaringen in het onderwijs worden bevestigd door wetenschappelijk onderzoek. In de literatuur wordt gesteld dat het schrijfonderwijs vatbaar is voor verbeteringen, aangezien de schrijfvaardigheid van studenten in opeenvolgende fasen van de studie onvoldoende is (Kellogg & Whiteford, 2009). Verschillende maatregelen ter verbetering worden gesuggereerd: maatregelen die zich direct richten op het schrijfproces (bijvoorbeeld strategie-instructie) (Graham & Perin, 2007), maar ook maatregelen die zich richten op de motivatie van studenten (bijvoorbeeld het aanbieden van keuzes ten aanzien van het onderwerp) (Bruning & Horn, 2000). Motivatie wordt aangeduid als een belangrijke factor bij schrijfproblemen omdat studenten het belang van schrijven wel onderkennen (Shell, Colvin, & Bruning, 1995) maar worden beperkt door een gevoel van incompetentie en gebrek aan enthousiasme voor schrijven (Cleary, 1991).

Een middel dat zowel aan het schrijfproces als aan de motivatie voor schrijven zou kunnen bijdragen, is feedback (Brown, 2004; Bruning & Horn, 2000;

Crooks, 1988; Kellogg & Whiteford, 2009; Kluger & DeNisi, 1996). Ondanks het feit dat docenten veel tijd besteden aan het geven van feedback (Stern & Solomon, 2006), is onderzoek naar het effect van feedback die wordt gegeven op de kwaliteit van schrijfproducten schaars (Graham & Perin, 2007). Voor zowel praktische als wetenschappelijke doeleinden is het belangrijk dat deze leemte wordt aangevuld.

De centrale vraag in dit proefschrift is daarom: Bestaan er feedbackinterventies die, door hun inhoud en/of formulering, bijdragen aan de schrijfmotivatie, het schrijfproces en de schrijfprestatie van studenten? Deze vraag wordt behandeld in drie empirische studies, die elk gericht zijn op een andere soort feedback. Deze drie soorten zijn (a) progressiefeedback, dat is feedback die studenten informeert over de vooruitgang in het schrijven sinds de vorige opdracht; (b) feedback die verbeterstrategieën aanreikt, dat is feedback die acties suggereert ter verhoging van de tekstkwaliteit; en (c) feedback die vragen stelt, dat is feedback die in vragende vorm is geformuleerd. Deze drie soorten feedback zijn niet eerder systematisch onderzocht, maar worden in de literatuur aangeduid als potentieel effectieve middelen ter verbetering van de taakmotivatie, het taakproces en de taakprestatie van studenten.

Het theoretisch raamwerk voor de empirische studies is uiteengezet in hoofdstuk 2 en hoofdstuk 3. In deze hoofdstukken is beschreven dat studenten aan de universiteit hun schrijfvaardigheid al in grote mate hebben ontwikkeld, maar het academisch discours nog moeten leren (Grabe & Kaplan, 1996). De combinatie van het inhoudelijk probleem (wat te zeggen) en het retorisch probleem (hoe het te zeggen) vormt een grote cognitieve uitdaging voor studenten. Oefening, feedback en motivatie zijn nodig om schrijfbekwaamheid te ontwikkelen (Kellogg & Whiteford, 2009). Oefening wordt tijdens de opleiding geboden in de vorm van schrijfopdrachten. De teksten die studenten schrijven worden veelal door docenten beoordeeld. Indien deze beoordeling formatief is, dat wil zeggen bedoeld is bij te dragen aan verbetering van de prestatie, zal de docent zijn of haar beoordeling aan de student communiceren in de vorm van feedback.

Feedback wordt in de literatuur op verschillende manieren gedefinieerd. In dit proefschrift is de volgende feedbackdefinitie gehanteerd: informatie over een of meer aspecten van de prestatie van een lerende, gegeven door een andere persoon, met als doel de cognitie, de motivatie en/of het gedrag van de lerende te beïnvloeden, teneinde zijn of haar prestatie te verbeteren.

De Feedback Interventie Theorie (FIT; Kluger & DeNisi, 1996) vervult in dit proefschrift een centrale rol. Deze theorie stelt dat het effect van feedback op

prestatie afhankelijk is van de processen waarop de feedback de aandacht richt. FIT onderscheidt drie processen: meta-taakprocessen, taak-motivatieprocessen en taak-leerprocessen. Deze processen worden hiërarchisch weergegeven. Meta-taakprocessen staan boven in de hiërarchie en betreffen het zelf. Taak-motivatieprocessen staan in het midden en betreffen de taak waaraan wordt gewerkt. Taak-leerprocessen bevinden zich onder in de hiërarchie en betreffen taakdetails, oftewel componenten van de taakuitvoering. Meta-taakprocessen kunnen doelen van hogere orde (bijvoorbeeld het investeren in de eigen carrière) verbinden aan de taak (bijvoorbeeld het maken van een schrijfpdracht voor deze cursus). Taak-motivatieprocessen zullen taak-leerprocessen activeren (bijvoorbeeld het controleren en herformuleren van zinnen) als de prestatie onvoldoende is, extra moeite geen soelaas biedt en de gewenste strategie een andere aanpak betreft (in plaats van het veranderen van het doel, bijvoorbeeld het afzien van de cursus).

Volgens FIT zal bij een onvoldoende prestatie in eerste instantie de aandacht op het taak-motivatieniveau worden gericht, resulterend in een toename van de inspanning. Indien dit geen oplossing biedt, zal de aandacht zich verplaatsen naar taak-leerprocessen, resulterend in een alternatieve aanpak, of zal de aandacht zich verplaatsen naar het meta-taakniveau, zoals het zelfvertrouwen en impressie management. Globaal genomen veronderstelt FIT dat feedbackkenmerken die de aandacht richten op taak-motivatieprocessen of taak-leerprocessen bijdragen aan de prestatie, terwijl feedbackkenmerken die de aandacht richten op meta-taakprocessen afbreuk doen aan de prestatie, omdat ze de aandacht van de taak wegleiden.

In de literatuur worden verschillende feedbackkenmerken genoemd die, op basis van onderzoek of op basis van argumentatie, worden verondersteld een positieve dan wel een negatieve invloed uit te oefenen op prestaties in het algemeen of schrijfpstaties in het bijzonder. In hoofdstuk 2 zijn deze kenmerken verbonden aan de drie niveaus van FIT. Voorbeelden van deze kenmerken zijn de toon waarop de feedback is geformuleerd, de specificiteit van de feedback en de lengte van de feedback.

Drie feedbackkenmerken staan centraal in de drie empirische studies: progressiefeedback, feedback die strategieën suggereert, respectievelijk feedback in de vorm van vragen. Deze drie kenmerken zijn in de betreffende studies systematisch gevarieerd. Progressiefeedback wordt verondersteld de aandacht te richten op de taak-motivatie. Feedback die strategieën suggereert, wordt verondersteld de aandacht te richten op zowel de taak-motivatie als het taak-leerproces. Feedback in de vorm van vragen wordt eveneens verondersteld de

aandacht te richten op zowel de taak-motivatie als het taak-leerproces. In elke studie is niet alleen gekeken naar het betreffende gevarieerde kenmerk, maar ook gecontroleerd voor eventuele effecten van andere, niet experimenteel gevarieerde feedbackkenmerken.

FIT stelt dat feedback een gunstige invloed uitoefent op de prestatie via taak-motivatieprocessen en taak-leerprocessen. Wat betreft taakmotivatie zijn in dit proefschrift de self-efficacy beliefs (verder: "self-efficacy") en de doelen van studenten onderzocht. Beide zijn voorspellers van prestatie (o.a. Harackiewicz, Barron, Pintrich, Elliot, & Thrash, 2002; Shell, Murphy, & Bruning, 1989; Utman, 1997; Zimmerman & Bandura, 1994). Self-efficacy betreft het vertrouwen dat iemand heeft in zijn of haar eigen mogelijkheden om acties uit te voeren die tot een bepaalde prestatie leiden (Bandura, 1986). Ten aanzien van een schrijfpodracht geeft de self-efficacy dus het vertrouwen aan dat iemand heeft in zijn of haar mogelijkheden om acties uit te voeren die leiden tot de vereiste tekst (Schunk & Swartz, 1993a). Ten aanzien van de doelen die mensen nastreven in een prestatiecontext (Ames, 1992) worden twee typen onderscheiden: leerdoelen en prestatiedoelen. Een leerdoel (verder: "mastery goal") betreft het streven naar de ontwikkeling van de eigen competentie. Een prestatiedoel (verder: "performance goal") betreft het streven naar het verkrijgen van een positief oordeel over de eigen competentie ten opzichte van anderen (Elliot & Dweck, 1988; Elliot & Thrash, 2001). Iemand met een mastery goal ten aanzien van een schrijftaak is gericht op het boeken van vooruitgang in de schrijfvaardigheid, terwijl iemand met een performance goal tot doel heeft om in vergelijking met anderen goed te presteren op een schrijfpodracht. Overigens kunnen mensen beide doelen tegelijkertijd in kleinere of grotere mate nastreven (Hidi & Harackiewicz, 2000).

Het taak-leerniveau van FIT is gericht op de componenten van de taakuitvoering. Bij schrijven kunnen volgens het schrijfprocesmodel van Hayes en Flower (1980) drie hoofdprocessen worden onderscheiden. Tijdens het *plannen* wordt informatie uit het geheugen en de taakomgeving gehaald om een schrijfplan te maken. Dit schrijfplan geeft richting aan het omzetten van informatie in tekst, dus het *produceren* van tekst. Tijdens het *reviseren* wordt de geproduceerde tekst gelezen en herzien. In een latere aanpassing van het schrijfprocesmodel is de rol van het werkgeheugen benadrukt (Hayes, 1996). De aandacht die beschikbaar is voor plannen, produceren en reviseren is beperkt, en is groter naarmate de schrijver bijvoorbeeld in het langetermijn-geheugen kennis beschikbaar heeft die een schrijfroutine vormt. Andere schrijfmodellen benoemen niet alleen cognitieve aspecten van schrijven, maar ook de sociale en

motivationale context (Galbraith & Rijlaarsdam, 1999). Zo kan bijvoorbeeld interactie met medestudenten bijdragen aan het genereren van overtuigende tekstinhoud (Harris, Graham, & Mason, 2006) en blijken studenten die vertrouwen hebben in hun eigen capaciteiten meer volhardend te zijn wanneer zich problemen voordoen dan studenten die over minder vertrouwen beschikken (Bandura, 1986; Bouffard-Bouchard, Parent, & Larivée, 1991; Schunk, 1984; Zimmerman, 1995). Voor wat betreft het taak-leerniveau zijn in dit proefschrift het plannen en reviseren, de inspanning en het hulp zoeken onderzocht.

Feedback kan alleen een effect op de prestatie bewerkstelligen als de ontvanger zijn gedachten over de feedback laat gaan (Bangert-Drowns, Kulik, Kulik, & Morgan, 1991). Reflectie op de feedback wordt verondersteld het effect van feedback op prestatie te ondersteunen, omdat deze de aandacht naar de taak leidt (cf. Anseel, Lievens, & Schollaert, 2009). Het stellen van vragen is een instructieprocedure die kan aanzetten tot reflectie. Vragen die passen bij hetgeen van de student wordt verlangd zijn optimale vragen. Indien de student een tekst moet aanpassen op basis van feedback, kan dus worden verwacht dat vragen die informeren naar de intenties van de student om de feedback te gebruiken en de intenties ten aanzien van de aanpak van het schrijven van een volgende versie, optimale vragen zijn.

In hoofdstuk 4 is de eerste empirische studie beschreven. Deze studie vond plaats in een eerstejaars psychologiecursus waarin studenten drie schrijfofdrachten maakten. Deze schrijfofdrachten bestonden uit het in essayvorm beantwoorden van vragen met betrekking tot de inhoud van het cursusboek. Docenten gaven op deze schrijfofdrachten feedback middels een feedbackformulier. Daarop stonden veertien criteria, die werden gescoord als “-”, “+/-” of “+”. Docenten konden daarnaast opmerkingen evenals een cijfer voor de totale tekst noteren. Op de tweede opdracht kreeg de helft van de studenten progressiefeedback. Voor deze groep was in het feedbackformulier bij elk criterium ruimte om aan te kruisen dat het betreffende schrijfaspect was verbeterd sinds de eerste schrijfofdracht. De verwachting was dat progressiefeedback zou bijdragen aan de self-efficacy, de mastery goal en de prestatie van studenten. Ten aanzien van de mastery goal en de prestatie werden geen effecten van progressiefeedback gevonden. Ten aanzien van de self-efficacy bleek een negatief effect van feedbackconditie: studenten in de conditie die progressiefeedback kreeg rapporteerden een lagere self-efficacy dan studenten in de conditie die geen progressiefeedback kreeg. Binnen de eerste groep werd echter gevonden dat naarmate meer opmerkingen over progressie werden gemaakt, de self-efficacy hoger was. Het negatieve effect van conditie contrasteerde dus met het positieve

effect van het aantal progressieopmerkingen. Er bleek sprake te zijn van een drempelwaarde: vanaf drie progressieopmerkingen nam de self-efficacy toe, daaronder nam de self-efficacy af. Deze resultaten kunnen worden verklaard door het feedbackformulier. Dit formulier maakte niet alleen duidelijk dat bepaalde aspecten waren verbeterd, maar ook dat op andere aspecten geen vooruitgang was geboekt. Dit laatste heeft vermoedelijk de positieve effecten van de progressie-informatie tenietgedaan. Het gaat in de communicatie naar studenten klaarblijkelijk om de balans tussen de aspecten waarop wel en de aspecten waarop geen vooruitgang is geboekt.

De empirische studie die is beschreven in hoofdstuk 5 richtte zich op feedback die de student verbeterstrategieën aanreikt, en op een reflectieopdracht met betrekking tot het gebruik van de feedback en de aanpak van de volgende versie. De studie vond plaats in een onderwijskundige mastercursus. In deze cursus schreven studenten een paper waarin een casus werd geanalyseerd en geëvalueerd. Studenten kregen feedback op de eerste versie van hun paper middels een feedbackformulier. De helft van de studenten kreeg als onderdeel van de feedback verbeterstrategieën aangereikt (bijvoorbeeld: "Je kunt elke alinea samenvatten in een paar woorden. Deze woorden kunnen je helpen de alinea's te ordenen op een manier die je redenering ondersteunt. Je kunt daarbij proberen voor jezelf te verklaren waarom het logisch is dat een bepaalde alinea volgt op een andere alinea"); de andere helft van de studenten kreeg wel feedback, maar geen verbeterstrategieën. Binnen elk van deze twee condities kreeg de helft van de studenten vervolgens een reflectieopdracht gericht op de intenties ten aanzien van het gebruik van de feedback en de aanpak van de volgende versie (o.a. "Welke feedback wil je gebruiken bij het werken aan het definitief paper? Waarom?" "Hoe ga je het schrijven van het definitief paper aanpakken?"). De andere helft van de studenten kreeg een reflectieopdracht die niet gericht was op intenties ten aanzien van feedbackgebruik en schrijfaanpak, maar die informeerde naar feedbackpercepties (o.a. "Wat vind je van de manier waarop de feedback is geformuleerd?"). De verwachting was dat verbeterstrategieën zouden bijdragen aan de self-efficacy en de mastery goal van studenten, evenals aan het plannen en reviseren, de inspanning en de prestatie. Indien de strategieën zouden aansturen op het vragen van hulp veronderstelden we een effect op hulp zoeken. De verwachting was verder dat de reflectieopdracht die gericht was op intenties zou bijdragen aan het plannen en reviseren en aan de prestatie. De resultaten lieten zien dat naarmate studenten meer verbeterstrategieën kregen aangereikt, zij een lagere self-efficacy rapporteerden. Dit negatieve effect bleek afhankelijk van de self-efficacy die de student had voorafgaand aan de feedback: de

verbeterstrategieën hadden met name een negatief effect op de self-efficacy indien studenten bij aanvang een lage self-efficacy hadden. Verder werd gevonden dat naarmate meer verbeterstrategieën werden aangereikt studenten meer plannen en reviseren rapporteerden. Uit interviews met een aantal studenten bleek dat studenten de verbeterstrategieën ervoeren als een onderschatting van hun capaciteiten. Zij interpreteerden de strategieën echter wel als aanwijzing dat zij hun paper moesten verbeteren. Dit verklaart waarom de verbeterstrategieën afbreuk deden aan de self-efficacy van studenten, maar het plannen en reviseren vergrootten. Tenslotte bleek de reflectieopdracht alleen gunstig voor de prestatie indien de feedback geen verbeterstrategieën bevatte. Indien de feedback strategieën suggereerde was de reflectieopdracht ongunstig voor de prestatie. Aangezien de verbeterstrategieën en de reflectieopdracht beide gericht waren op de aanpak van het schrijven van de volgende versie, was vermoedelijk sprake van een overdaad. Door de aangeboden verbeterstrategieën dachten studenten reeds na over de aanpak van de volgende versie. Dit denkproces werd waarschijnlijk doorbroken door de reflectieopdracht.

De empirische studie beschreven in hoofdstuk 6 richtte zich op feedback die voor een belangrijk deel uit vragen bestond. Tevens werd, net als in de vorige studie, gekeken naar het effect van een reflectieopdracht. De cursus en de opdracht waren dezelfde als in de vorige studie (de cursus vond plaats in een ander studiejaar). De studenten kregen feedback op de eerste versie van hun paper middels een feedbackformulier. Er waren twee feedbackcondities. De helft van de studenten kreeg feedback die vragen bevatte (bijvoorbeeld: "Ik ben benieuwd wat je van deze SBL-competenties vindt, hoe bruikbaar zijn ze?"), terwijl de andere helft van de studenten feedback kreeg die uitsluitend in stellende vorm was geformuleerd (bijvoorbeeld: "Je zou de bruikbaarheid van deze competentieomschrijvingen kunnen toelichten"). Binnen elk van deze twee condities kreeg de helft van de studenten vervolgens een reflectieopdracht gericht op de intenties ten aanzien van het gebruik van de feedback en de aanpak van de volgende versie. De andere helft van de studenten kreeg een reflectieopdracht die niet gericht was op intenties ten aanzien van gebruik en aanpak, maar die vroeg naar feedbackpercepties. De verwachting was dat feedback met vragen zou bijdragen aan de sterkte van de mastery goal van studenten, evenals aan het plannen en reviseren, de inspanning en de prestatie. De resultaten lieten zien dat, in tegenstelling tot de verwachting, het aantal vragen een negatieve voorspeller was van de sterkte van de mastery goal: naarmate meer vragen werden gesteld, rapporteerden studenten een minder sterke mastery goal. Mogelijk richtten de vragen de aandacht van de student meer naar de betrokkenheid of interesse van

de docent dan naar de eigen mastery goal. Op de overige afhankelijke variabelen werd geen effect van de feedback met vragen gevonden. De reflectieopdracht bleek alleen gunstig voor de mate van plannen en reviseren indien de feedback geen vragen bevatte. Vergelijkbaar met de bevindingen in de vorige studie, vermoeden we dat de reflectieopdracht interfereerde met het proces dat werd ingezet door de feedback. Waarschijnlijk waren studenten nog bezig met het nadenken over de vragen in de feedback toen zij al in de reflectieopdracht moesten aangeven hoe zij deze feedback zouden gaan gebruiken en hoe zij de revisie zouden aanpakken.

In hoofdstuk 7 zijn de studies en de implicaties van de resultaten bediscussieerd. Ten aanzien van FIT zijn suggesties voor verfijning gedaan. Deze hebben onder andere betrekking op het specificeren van de taak-motivatieprocessen en taak-leerprocessen, het duidelijk onderscheiden van positieve en negatieve effecten van feedbackkenmerken op elk van de drie genoemde niveaus, en het expliciteren van de rol van de interpretatie die plaatsvindt door de feedbackontvanger. Verder zijn methodologische kanttekeningen geplaatst bij de studies en zijn suggesties gedaan voor vervolgonderzoek. Tot slot zijn de praktische implicaties van de resultaten besproken. Aangegeven is dat progressiefeedback kan worden ingezet voor het vergroten van de self-efficacy van studenten, op voorwaarde dat een substantiële hoeveelheid vooruitgang kan worden aangeduid. Verbeterstrategieën kunnen worden aangewend voor het bevorderen van het plannen en reviseren. Een feedbackdialoog waarin de strategieën worden afgestemd op de betreffende student optimaliseert waarschijnlijk het effect van verbeterstrategieën op het plannen en reviseren, en voorkomt vermoedelijk een negatief effect op de self-efficacy. Docenten die feedback geven in de vorm van vragen zouden zich moeten realiseren dat deze feedback een negatief effect kan hebben op de mastery goal van studenten. Naast de implicaties met betrekking tot de drie soorten feedback is in bredere zin het belang van schrijfinstructie, de explicitering van standaarden, en de mogelijkheid en noodzaak om feedback te gebruiken voor revisie onderstreept.

## Dankwoord

Een proefschrift schrijven lukt alleen met de feedback en inbreng van anderen. Ook het effect van anderen op de motivatie van de schrijver valt niet te onderschatten. Op deze plek wil ik graag een aantal mensen bedanken die belangrijk zijn geweest bij het ontstaan van dit proefschrift.

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Hendrien Duijnhouwer  
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## Curriculum Vitae

Hendrien Duijnhouwer was born on the 1<sup>st</sup> of November, 1977, in Hoorn, the Netherlands. She completed secondary education in 1996 at S.G. Werenfridus in Hoorn, and then moved to Amsterdam to study psychology at the University of Amsterdam. As part of this study, she was schooled as a social skills trainer. In 2001 Hendrien earned her master's degree in social psychology (cum laude). The topic of her master thesis was self-presentation in personal relationships. After her graduation, Hendrien worked as a teacher and a research assistant at the University of Amsterdam for two years. From 2002 to 2003 she was also a tutor at the Psychology Department of the Erasmus University Rotterdam. In 2003 Hendrien returned to the study of psychology. She received a degree in clinical psychology in 2004. Her thesis for this major focussed on psychotherapists' self-disclosure. In January 2005 Hendrien started her PhD research at Utrecht University. This thesis is the result of that research project.