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### Rectifying Errors

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# INTERO.

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**General Introduction**

# DUCTION



There is a considerable amount of research showing that students' writing skills may be improved by the provision and processing of peer-feedback (e.g., Double et al., 2020; Gielen et al., 2010a; Hoogeveen & Van Gelderen, 2013; Huisman et al., 2018; Huisman et al., 2019). Peer-feedback exchange is a complex process (1) that takes place in varying interpersonal constellations between feedback providers and feedback recipients (in terms of, e.g., perceived language skills, perceived effort, and friendship), and (2) in which students are (repeatedly) confronted with errors made by one of their peers—during feedback provision—and with errors made by oneself—during feedback processing.

Not only the importance of the interpersonal relationship between a feedback provider and a recipient is increasingly acknowledged in the feedback literature (e.g., Esterhazy & Damşa, 2019; Strijbos & Müller, 2014), but also the centrality of the role of errors in feedback provision and processing has repeatedly been stressed (e.g., Metcalfe, 2017; Narciss, 2008, 2013; Timms et al., 2016). However, research investigating how intrapersonal factors (i.e., factors describing one's personal characteristics) and interpersonal factors (i.e., factors describing the relationship between people) may relate to the process of dealing with errors during feedback provision and processing is still scarce. This dissertation aims to fill these gaps.

## **Feedback as a Process of Reciprocal Turn-Taking**

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A frequently cited definition of feedback is the one by Hattie and Timperley (2007, p. 81): “information provided by an agent (e.g., teacher, peer, self, experience) regarding aspects of one's performance or understanding”. The element of ‘information’ in the definition is typically thought of as information for a learner in order to close the gap between a current performance level and a desired performance level (e.g., Ramaprasad, 1983; Narciss, 2008). This definition of

feedback often (implicitly) occurs in combination with a unidirectional perspective on feedback processing. According to this perspective, feedback processing can be perceived as an instrumental mechanism for corrections in which, subsequently, a student produces a product or shows a skill, an actor (e.g., teacher, peer, practitioner) provides feedback on the product or skill, after which the student processes the feedback, and, in the end, the student tries to adapt or improve the product or skill (e.g., Narciss, 2008; Shute, 2008; Winstone et al., 2017).

In line with this perspective on feedback processing, a substantial body of research aims to explain feedback effectiveness as dependent on feedback content characteristics and contextual factors (e.g., Bangert-Drowns et al., 1991; Kluger & DeNisi, 1996; Narciss, 2008; Shute, 2008; Winstone et al., 2017). Examples of feedback content characteristics are the presence of evaluative components such as confirmations or denials and the presence of informative components such as justifications, explanations, or suggestions for change. Investigated contextual factors are, for example, feedback timing (Bangert-Drowns et al., 1991; Kluger & DeNisi, 1996) and intrapersonal factors of students involved in feedback exchange, such as prior knowledge and motivation (Narciss, 2013).

However, over the past ten years, alternate perspectives on feedback exchange emerged, as reflected in two trends. Those two trends have in common that both shift the focus from feedback content characteristics to the interaction between actors that participate in the feedback exchange process. The first trend is characterized by an emphasis on dialogue as a crucial factor for increasing the task engagement of actors involved in feedback exchange (e.g., Mahoney et al., 2019; Winstone & Boud, in press; Winstone & Carless, 2019). Dialogue in the context of feedback exchange does not only refer to a conversation between two persons, but may also more broadly refer to “all forms of interactions of different kinds with different actors (...) with a view to eliciting perceptions and judgements, and [potentially also] discerning what is needed for improved action” (Boud & Molloy, 2013, p. 709). As such, feedback exchange is not perceived as a unidirectional mechanism for correction, but as a process of reciprocal turn-taking, implying that the distinction between the role of feedback provider and feedback recipient fades.

The second trend consists of an increased attention to *who* are involved in feedback exchange (e.g., Esterhazy, 2019; Heron et al., in press; Lewis, 2020). Feedback exchange may take place between actors whose interpersonal relationship may vary, both in terms of hierarchy

(e.g., teacher-student, student-student, teacher-director) as well as in their affective connection (e.g., friends, classmates, parent-child) (Esterhazy, 2019; Strijbos & Müller, 2014). Researchers are increasingly aware of the importance of the interpersonal relationship between the feedback provider and recipient for an accurate prediction of and explanation for feedback effects (Chong, 2018; Fong et al., 2018; Strijbos & Müller, 2014).

Both trends are well visible in the development of and attention to the construct *feedback literacy* (e.g., Carless & Winstone, 2020; Han & Xu, 2020; Molloy et al., 2020). Feedback-literate students are students that know how to efficiently deal with feedback, and hence also recognize that feedback comes in different forms and from different sources (Carless & Boud, 2018). Instead of a sole focus on the (quality of) content characteristics of the provided feedback, research on feedback literacy is also characterized by a focus on the relationship and interaction between actors that are involved in feedback exchange.

As a consequence of these trends, the field of assessment—and within that, processes of grading and feedback—have increasingly shifted its attention to the role peers play in such processes. This has given rise to concepts such as peer-feedback, peer-grading, and the umbrella term that connects them, peer-assessment (e.g., Han & Xu, 2020; Huisman et al., 2018; Zhu & Carless, 2018). The core interest of this dissertation is peer-feedback, which has recently been defined as a “dialogic process whereby students share knowledge and understandings with the intention of informing ongoing learning” (Zhu & Carless, 2018, p. 883). As a result of the shift from perceiving feedback as a mechanism for correction, often provided by a knowledgeable person (e.g., teacher) to a less knowledgeable person (e.g., student), to perceiving feedback as a process embedded in a dialogical and interpersonal constellation, the focus moved away from the theoretical necessity of a vertical constellation (e.g., teacher feedback) for feedback to be effective. Consequently, more space arose for feedback exchange, and hence feedback research, in a horizontal constellation (i.e., peer-feedback) (Strijbos & Müller, 2014).



## Dealing with Errors and Feedback

Regardless of the constellation in which feedback takes place, both the provision and processing of feedback demands the actors involved to deal with errors. Errors are often defined as deviations from a norm (e.g., Gloy, 1987; Oser & Spychiger, 2005; Rach et al., 2012; Spychiger et al., 2006), and play a substantial role in (peer-)feedback provision and processing (Fong et al., 2018; Narciss, 2008; Timms et al., 2016). Dealing with errors during the provision of feedback requires a set of sub-skills such as error decoding—i.e., assigning meaning to the error in order to interpret it (Akin et al., 1970)—and error evaluation—i.e., making decisions about the extent to which performance elements are perceived as deviating from a norm (Tai et al., 2018). During the processing of feedback, dealing with errors requires sub-skills such as decoding error-related feedback—i.e., assigning meaning to feedback on an error—and evaluating error-related feedback—i.e., making decisions about feedback related to performance elements that are perceived as deviating from a norm.

The perception of what constitutes an error can be called into question when feedback exchange is viewed as a dialogic process of reciprocal turn-taking. That is, people may have different opinions regarding the extent to which a performance, or parts thereof, deviate from norms and should therefore be considered erroneous or improvable (Zwicky, 1980). Hence, it is likely that differences may exist between the extent to which a feedback recipient perceives elements of an own performance as erroneous (i.e., internal feedback), and the extent to which a feedback provider perceives the same elements of that performance as erroneous (i.e., external feedback) (Narciss, 2013). Therefore, the interpersonal relationship between the feedback provider and the feedback recipient may relate to the extent to which particular performance elements are perceived as erroneous by actors that participate in the feedback exchange.

Given the central role of errors in feedback exchange, the intrapersonal factors *error tolerance* and *feedback tolerance* may likely be important in the process of dealing with errors while learning in general (Kapur, 2016) and specifically in relation to feedback (Metcalf, 2017; Narciss, 2008, 2013; Timms et al., 2016). In the context of this dissertation, error tolerance is defined as one's resilience towards the experience of having performed in a way that is perceived as deviating from a norm, and feedback tolerance is construed as one's resilience

towards performance-relevant information provided to promote one's learning. As such, error tolerance and feedback tolerance are constructs that may be relevant for explaining and predicting learners' responses to feedback (e.g., King et al., 2009; Rybowski et al., 2009). Learners with a high error and feedback tolerance may be more able to deal efficiently with their emotions during the feedback process, which is expected to help them to efficiently deal with feedback (Molloy et al., 2019). By contrast, individuals with a low error and feedback tolerance may develop negative attributions due to error-oriented feedback, and may, as a result, be less likely to take action upon the feedback (Smith & King, 2004).

## Aims of the Dissertation

In summary, peer-feedback provision and processing are increasingly perceived as processes of reciprocal turn-taking, which may have consequences for the way errors are perceived by actors involved in these processes. Hence, it becomes important to investigate the extent to which the interpersonal relationship between students may affect their peer-feedback provision and processing, and in particular the process of dealing with errors during those processes. In order to contribute to a better understanding of those relationships and processes, this dissertation addresses two aims.

The first aim is to explore how peer-feedback provision and processing behavior may relate to (1) intrapersonal factors describing personal characteristics of the feedback provider and feedback recipient, and (2) interpersonal factors describing the relationship between the feedback provider and the feedback recipient. Regarding intrapersonal factors, we focus mainly on error tolerance and feedback tolerance, because of the central role of errors in feedback exchange. Additionally, we pay attention to self-efficacy, because previous research has shown that this is an important intrapersonal factor in the domain of writing (e.g., Ekholm et al., 2015; Zheng et al., 2018; Ruegg, 2018). With respect to interpersonal factors, we primarily focus on the feedback recipient's language skills as perceived by the feedback provider, and on the feedback provider's language skills as perceived by the feedback recipient, because these factors can be construed as the domain-specific variants of perceived expertise, which has been

repeatedly shown to play a crucial role in predicting feedback provision and feedback processing behavior (e.g., Boud & Molloy, 2013; Ilgen et al., 1979; Winstone et al., 2017). Additionally, we pay attention to the perceived effort invested in the writing and/or feedback provision task, and on friendship, because the role of those factors in relation to the process of dealing with errors remains mainly unclear.

The second aim is to contribute to a better understanding of what role errors play in feedback provision and processing, and the extent to which the process of dealing with errors during those processes relates to intrapersonal and interpersonal factors. More specifically, we aim to study the extent to which students provide peer-feedback on errors, the extent to which they revise errors while processing peer-feedback, and the extent to which these behaviors relate to error tolerance and feedback tolerance (i.e., intrapersonal factors), and perceived language skills, perceived effort, and friendship (i.e., interpersonal factors).

## **Outline of the Dissertation**

This dissertation consists of four chapters, each of them contributing to different degrees to achieving the two main aims of this dissertation. Chapter 2 provides a conceptual model visualizing the hypothesized relationships between intrapersonal factors, interpersonal factors, and dealing with errors during feedback provision and feedback processing. As such, it is a theoretical contribution that, from a birds-eye perspective, connects the different areas of interest of this dissertation, and hence the two main aims. The starting point of this model is a performance that takes a performance containing elements potentially to be identified as errors as a starting point, and describes the sub-skills (e.g., error decoding, error evaluation) that may occur in the process of dealing with errors. Simultaneously, it embraces and emphasizes the concurrent impact of both intrapersonal and interpersonal factors on feedback processes, and describes the role of error tolerance and feedback tolerance. The chapter concludes with an illustration of the model in a hypothetical peer-feedback situation.

In the subsequent three chapters, we empirically tested different parts of this conceptual model among 10th and 11th grade students in the academic track of Dutch secondary education (age range = 15-18) providing and processing peer-feedback in the context of argumentative

essay writing. This domain was chosen, as peer-feedback is a frequently used method to enhance students' skills (i.e., writing) and performance (i.e., text quality) within this domain (e.g., Double et al., 2020; Hoogeveen & Van Gelderen, 2013; Huisman et al., 2019).

More specifically, Chapter 3 focused on the peer-feedback provision phase. The aim of the chapter was to investigate the extent to which 10th grade students' perceptions of their peers' language skills (i.e., interpersonal factor) affected the length, amount, function, and focus of feedback and provided grades on peers' written argumentative texts. We manipulated the feedback recipient's language skills as perceived by the feedback provider. Dutch 10th grade students ( $N = 176$ ; age range = 15-16) provided peer-feedback on two texts, while being under the illusion that the texts had been written by two classmates whom the feedback providers perceived as either a peer with stronger or weaker language skills than their own. In reality, students provided feedback on manipulated texts of the same quality. Differences in the feedback provided on these two texts were investigated. This study contributes primarily to the first main aim of this dissertation, as it examines the role of interpersonal factors in the process of peer-feedback provision. To a lesser degree, it sheds light on the second main aim, as it informs about what feedback students provide on diverse types of errors.

Subsequently, Chapter 4 addressed the peer-feedback processing phase based on data of a part of the students (Dutch 10th grade students,  $N = 160$ , age range = 15-16) that also participated in the experiment as described in Chapter 3. The aim of the chapter was to experimentally investigate the relationships between error tolerance and feedback tolerance (intrapersonal factors), perceived language skills (interpersonal factor), and revision behavior based on peer-feedback (in terms of percentage of revisions in line with received feedback). As part of the experiment, the students received feedback on their own writing performance, provided by trained research-assistants. Therefore the quality of the feedback was considered similar for all students. Similar to the study described in Chapter 3, we manipulated the feedback provider's language skills as perceived by the feedback recipient. Half the students was led to believe that the feedback they received was provided by a peer perceived to have stronger language skills than their own, whereas the other half was led to believe that the feedback was provided by a peer perceived to have weaker language skills than their own. Differences in the revision behavior between the two groups were investigated. This study contributes primarily to the first main aim of

this dissertation, as it examines the role of intrapersonal factors and interpersonal factors in the process of peer-feedback processing. To a lesser degree, it sheds light on the second main aim, as it informs about the way students process feedback on diverse types of errors.

Chapter 5 focused on both the peer-feedback provision and processing phase. The aim was to investigate the process of dealing with errors while providing and processing peer-feedback with a mixed-methods approach, in order to obtain a rich and detailed overview of what the process looked like. Additionally, we studied potential associations between the process of dealing with errors and interpersonal factors. Six dyads of Dutch 11th grade students (age range: 16-18) were asked to provide and process peer-feedback on an argumentative text while thinking-aloud, and they were also asked to reflect on the process during an interview afterwards. The think-aloud utterances and interviews were transcribed, and analyzed with an exploratory sequential mixed-methods design, applying a quantitative content analysis and a qualitative thematic analysis. This study contributes to the first main aim of this dissertation, since it informs about the relationships between interpersonal factors and feedback provision and processing, as well as to the second main aim of this dissertation, since it informs about potential sub-skills required in the process of dealing with errors.

Chapter 6 concludes with an integrative reflection on the chapters in the form of a general discussion. The chapter contains a critical reflection on the conceptual model as proposed in Chapter 2 in light of the empirical evidence as obtained in the Chapters 3, 4, and 5.