The Impact of the Feedback Valence and the Receiver's Beliefs about Feedback on the Perception of Feedback

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Abstract

Feedback valence and feedback receivers' characteristics have an impact on feedback processing. Thus, this study investigated to what extent are the receiver's perceived adequacy of feedback (PAF), emotional response (affect: AF), and willingness to improve (WI) their performance in response to feedback valence (positive vs. negative) influenced by this receiver's beliefs (utility, sensitivity, confidentiality, retention) about feedback. Bachelors' and master's students from different countries and universities ($N = 85$) filled an online survey, where they completed the IFOS questionnaire regarding their beliefs about feedback in terms of utility, sensitivity, confidentiality, and retention; and received two fictional scenarios containing different hypothetical feedback situations, where the feedback valence was manipulated. After each scenario, participants filled out the FPQ questionnaire and rated their perceptions as if they received the feedback themselves. According to the results, students perceived the given feedback as more adequate, it led to a more positive affect and they were more willing to improve their performances in response to the vignette with positive valence than the vignette with negative valence. Utility and sensitivity influence PAF, AF, and WI; confidentiality influenced WI, and retention influenced PAF and WI.

Keywords: feedback, beliefs about feedback, feedback perceptions, feedback valence, feedback processing

The Impact of the Feedback Valence and the Receiver's Beliefs about Feedback on the Perception of Feedback

The importance of feedback in education is indisputable. Feedback is one of the most used and researched methods in education due to its powerful influence on learning and behavioral change in the last century (Strijbos & Müller, 2014). It provides information that allows students to verify the correctness of their actual answer or solution and evaluate the level of performance achieved (Narciss, 2004). It can help students reach their desired learning goals because students are limited in their capacity to make judgments without feedback regarding their learning process and what they need to know and do to enhance their future outcomes (Ryan & Handerson, 2018). For example, without feedback, students might not fully comprehend their mistakes and/or why they did them and will not know what to do to increase their achievement. That means that feedback should be evaluative about students' performance and inform them what and how they can further improve as well.

Students enhance their performance when presented with effective feedback (Hattie & Timperley, 2007). According to Hattie and Timperley (2007), feedback, which is clear, purposeful, meaningful, compatible with students' prior knowledge, and provides logical connections, is more likely to be effective. Moreover, Gibbs and Simpson (2005) detailed several conditions in which feedback supports student learning. Two of those conditions were that feedback should be received, attended to, and acted upon by students. This statement aligns with what Hattie and Timperley (2007) reported, that is, the information (i.e., feedback message from a sender to a receiver) by itself may not have the power to initiate further action. Therefore, it is essential that students should be open to accepting the comments they receive (Ryan & Handerson, 2018), be conscious of their responsibility for their own learning and improvement (Kasch et al., 2021), and use the given feedback (Strijbos & Müller, 2014). Students' use of feedback can be evaluated as feedback that is being acknowledged,

modified, or refused (Hattie & Timperley, 2007). According to Ryan and Henderson (2018), negative emotional responses towards the given feedback can negatively impact students' motivation, decrease their willingness to use the feedback to improve, and, as a result, students can reject the feedback. That means that the senders' (e.g., teachers) encoded feedback message could be decoded differently by the receivers (e.g., students) (Strijbos & Müller, 2014). For example, a corrective feedback message from a teacher to inform the student regarding their progress in a specif topic can be understood as a depreciation of their personality by that student (Strijbos & Müller, 2014). This example demonstrates that individuals, especially the feedback receivers, significantly impact the feedback process. Indeed, in the last decade, a greater emphasis has been placed on the receivers' agentic engagement with the feedback process (Winstone et al., 2017).

Feedback Receivers' Role in the Feedback Process

Personal Characteristics

Many studies have revealed that the personal characteristics of the feedback receiver play a significant role in the feedback process (Strijbos et al., 2010, 2021; Strijbos & Müller, 2014; Winstone et al., 2017). For example, Winstone et al. (2017) proposed a model in their review on how feedback receivers' agentic engagement can be promoted with pedagogical approaches. Reeve and Tseng (2011) defined 'agentic engagement' as receivers' constructive contribution to the given feedback with feedback processes. Likewise, Strijbos and Müller (2014) presented a framework that described the composition and processing of feedback as an interactive process and presented evidence from former studies on the role of personal characteristics of both the feedback receiver and sender in the feedback process.

Personal characteristics can be defined as (a) interpersonal factors such as the relationship between the feedback receiver (e.g., student) and the feedback sender (e.g., teacher) and (b) intrapersonal factors such as emotional response, perceptions, beliefs, and

intentions (Aben et al., 2019). In particular, “A person's motivation and self-perception potentially play a role while providing or processing feedback” (Aben et al., 2019, p. 107). For example, the receivers’ interpretation and evaluation of the feedback message can be impacted by several elements such as trait anxiety (Derryberry & Reed, 2002), self-compassion (Leary, Tate, Adams, Allen, & Hancock, 2007), and self-esteem (Sweeney & Wells, 1990). In other words, although the sender controls the feedback message to some degree, the message likely has different effects on learners due to the intrapersonal factors (King et al., 2009). This indicates the need to examine feedback perceptions of the receiver on the feedback processing in feedback studies.

Feedback Perceptions and Their Effect on Feedback Processing

In line with this information, recent research points to the importance of feedback perceptions for feedback processing (Strijbos et al., 2010, 2021). Strijbos et al. (2021) refer to feedback perceptions as the outcomes of the receiver’s spontaneous feedback message experience in cognitive, metacognitive, motivational, and/or affective reactions. In other words, the receiver’s feedback perceptions are influenced by several factors such as the feedback content (e.g., feedback valance, evaluative and/or informative remarks), characteristics of the feedback sender, and the frame of reference of the feedback (e.g., beliefs and values). For example, students who have a high sense of responsibility can feel compelled to use the feedback, seek further feedback, engage more in development programs, and show behavioral changes intended by the feedback (Strijbos & Müller, 2014). One of the instruments that were developed to measure feedback perceptions was the Feedback Perceptions Questionnaire (FPQ) by Strijbos et al. (2010). The FPQ measures feedback receivers’ perceptions in terms of perceived adequacy of feedback (PAF), affect (AF), and willingness to improve (WI). Strijbos et al. (2010) and Raemdonck & Strijbos (2013) used perceived *adequacy of feedback (PAF)* as a combination of the fairness (e.g., "I would

consider this feedback fair"), usefulness (e.g., "I would consider this feedback useful"), and acceptance (e.g., I would reject this feedback") subscales due to their moderate to high correlations in their studies. Furthermore, FPQ has been used to measure specific perceptions of feedback in a particular situation and feedback perceptions from teachers (Agricola et al., 2020).

Beliefs and Their Effect on Feedback Processing

One essential factor influencing receivers' feedback perception is their beliefs about feedback. According to Griswold (1993), *beliefs* are opinions (information, knowledge, or thoughts) about some person, object, or issue. Most definitions of beliefs highlight that beliefs guide attitudes, perceptions, and behaviors because belief systems help people explain and understand the world and one's place within that world (Huisman et al., 2019). Furthermore, Alqassab et al. (2018) stated that the feedback receivers' beliefs influence the processing of the feedback message. For example, if a student believes that feedback from teachers is intimidating, they might get stressed about receiving the feedback message and reject that message before acting upon it.

As feedback studies investigated feedback beliefs, several intrapersonal factors were associated with individuals' reactions to the received feedback, such as self-concept, self-efficacy, and motivational beliefs (Alqassab et al., 2018). In other words, students' beliefs are likely to affect their perceptions and behavior during learning (Huisman et al., 2019). For example, students' beliefs regarding the utility of a task may relate to their effort and performance (Huisman et al., 2019), or students might avoid seeking help because they have perceived threats to self-esteem or social embarrassment (Hattie & Timperley, 2007). Similarly, students with high self-efficacy, who believe in their abilities to achieve specific skills, experience negative feedback as less threatening and burdening, and they seek solutions to reach a goal and increase effort if necessary (Strijbos & Müller, 2014).

According to Han (2017), students most likely will be engaged with the feedback when they believe it could help improve their performance. Likewise, Storch and Wigglesworth (2010) demonstrated that students are unlikely to engage with feedback when they believe that the given feedback was not a better expression of their work.

Furthermore, in 2002, London and Smither proposed the term feedback orientation, which means a person's receptivity to feedback. For example, if a person has a strong feedback orientation, they are more likely to value feedback, be more attuned to feedback in their environment, and be more apt to act on the feedback they receive. In line with this approach, several instruments were developed to measure the receivers' beliefs about feedback since they are considered essential in feedback processing. Out of these instruments, King et al.'s Instructional Feedback Orientation Scale (IFOS) measures students' beliefs about corrective feedback by a teacher in terms of subscales: feedback utility (e.g., “I think feedback from teachers is vitally important in improving my performance”), sensitivity (e.g., “My feelings can be easily hurt by corrective feedback from a teacher”), confidentiality (e.g., “I do not like to receive corrective feedback in front of other people”), and retention (e.g., “I cannot remember what teachers want me to do when they provide feedback”).

Feedback Valence and its Effect on Feedback Processing

Another feature that influences the receivers’ feedback perception is the ‘feedback valence’, which is defined as the content of feedback in terms of positive and negative remarks. Positive feedback includes comments that a student's response to the activity was correct, while negative feedback has a more corrective nature, such as feedback to a student regarding how to write an essay by correcting their errors (Ellis, 2009). However, both types of remarks are conceptually different; negative feedback presents evidence of a far more complex model of factors and thus needs more controlled cognitive processing and contributes to behavioral accommodations than positive feedback (Geddes & Linnehan,

1996). Consequently, students' response to negative feedback is more complex than to positive feedback, whereas positive feedback is more likely to be ignored and/or forgotten (Geddes & Linnehan, 1996).

Different characteristics of receivers can also influence how they perceive feedback valence and act upon it. For example, as Hattie and Timperley (2007) stated, receiving positive feedback about their initial success could lead low self-efficacious students to think they have deficiencies that need to be remedied, which may cause them to give a variety of reactions. For example, in order to protect themselves against failure, they may try to reach a certain level of performance, which could remedy their 'deficiencies,' or they may avoid further tasks because they do not want to risk their success being disconfirming by having further feedback about it.

The Current Study

Given the impact of intrapersonal factors, receivers' beliefs are likely to influence their feedback perceptions. These beliefs, for example, may affect students' feedback retention and whether they accept or reject the feedback (Storch & Wigglesworth, 2010). In addition, feedback perceptions were likely influenced by feedback valence as well. For example, students might pay more attention to negative feedback due to its corrective content than positive feedback (Geddes & Linnehan, 1996). In the light of this information, this study focuses on feedback valence and feedback receivers' beliefs about feedback because they are likely to influence the receiver's perceived adequacy of feedback, emotional reaction, and willingness to improve their performance. Thus, this study addresses the following main research question and subquestions:

Research Question:

To what extent are the feedback receiver's perceived adequacy of feedback, emotional response, and willingness to improve their performance in response to feedback valence (positive vs. negative) influenced by this receiver's beliefs (utility, sensitivity, confidentiality, retention) about feedback?

Subquestions:

1. To what extent is the feedback receiver's perceptions (i.e., perceived adequacy of feedback) influenced by the valence of feedback and this receiver's beliefs about feedback (utility, sensitivity, confidentiality, retention)?
2. To what extent is the feedback receiver's emotional response (i.e., positive and negative affect) influenced by the valence of feedback and this receiver's beliefs about feedback (utility, sensitivity, confidentiality, retention)?
3. To what extent is the feedback receiver's willingness to improve their performance (i.e., willingness to improve) influenced by the valence of feedback and this receiver's beliefs about feedback (utility, sensitivity, confidentiality, retention)?

The Instructional Feedback Orientation Scale (IFOS) from King et al. (2009) was used to measure participants' beliefs in this study because of content similarities, that is, measuring different students' beliefs regarding the teachers' corrective feedback in higher education. In addition to that, feedback valence was manipulated in two scenarios (vignettes) to elaborate on the participants' responses to two feedback situations (positive vs. negative) in terms of their feedback perceptions (perceived adequacy of feedback), emotional responses, and willingness to improve their performance, which were measured by Feedback Perception Questionnaire (FPQ) from Strijbos et al. (2021).

Method

Participants

Ninety-one students started the survey, but six of them did not complete it, including one student who did not provide consent and two students who did not answer any questions, including the consent form. Therefore, the final data set consisted of 85 bachelor's and master's. There were 69 female and 16 male students, and their ages ranged from 18 to 41 years (M = 25.05, SD = 4.19). The survey was presented on several online platforms, which led students from different countries' universities (e.g., University of Barcelona, Bocconi University) to participate in the study. Since the study's focus was not particularly on Dutch higher education students, those students (12,2%) have been included. The majority of participants were international (52.9%) and masters' students (69.4%). Table 1 presents the distribution of participants in terms of their nationality and their current level of education. Participation was voluntary.

Design and Procedure

A quasi-experimental design was used in this study and a within-subject design was conducted via an online survey using Qualtrics. In this survey, participants first read the research information (see Appendix A), provided active, informed consent (see Appendix B), and were asked to provide some demographic characteristics. Then they filled out a questionnaire about their beliefs regarding feedback; that way beliefs were measured as the potential covariate that moderates the relationship between the independent and dependent variables. Next, the participants were asked to respond to two vignettes labeled A and B, describing a hypothetical feedback situation yet had different content in terms of feedback valance (vignette A represented positive valence whereas vignette B represented negative valence). Through these two vignettes, feedback valence (i.e., independent variable) was manipulated to investigate the effect of the given feedback valence (positive and negative) on feedback receivers' feedback perception (perceived adequacy of feedback), emotional

response and willingness to improve (i.e., the dependent variables). After each vignette, participants filled out the Feedback Perception Questionnaire (FPQ) by Strijbos et. al (2021),

Table 1

The Distribution of Participants' Nationality and Current Level of Education

		Current level of education		
		Bachelor's degree	Master's degree	Total
Nationality	Dutch students	10	30	40
	International students	16	29	45
Total		26	59	85

which measured their perceived adequacy of feedback, emotional responses, and willingness to improve their performance regarding the given feedback. The survey was offered in both English and Dutch and took approximately 15 minutes to complete.

Privacy and Data Storage

The results of the study were treated confidentially and pseudonymized. No participants' names were mentioned in the thesis. IP addresses were removed from the database immediately after downloading the data from Qualtrics. The data was stored in a secure environment within the University of Groningen, in accordance with the guidelines of the General Data Protection Regulation (GDPR) and the GMW Data Management Protocol.

Materials

Demographics

The participants were asked to give information about their background characteristics (i.e., their age, gender, nationality, the current level of education; the name of the university or university of applied sciences (HBO), and faculty, institute, or academy they attended).

Instructional Feedback Orientation Scale (IFOS)

The Instructional Feedback Orientation Scale (IFOS) by King et al. (2009) measures students' perception of teachers' instructional feedback in four subscales: 'utility,' 'sensitivity,' 'confidentiality,' 'and retention' (King et al., 2009). The utility subscale reflects students' perceptions regarding the value and usefulness of feedback for enhancing academic performance (e.g., "I think feedback from teachers is vitally important in improving my performance"). The sensitivity subscale reflects whether students feel intimidated or threatened by corrective feedback (e.g., "My feelings can be easily hurt by corrective feedback from a teacher"). Finally, the confidentiality subscale reflects worries about the public/private context in which feedback is provided (e.g., "I do not like to receive corrective feedback in front of other people"). Finally, the retention subscale reflects whether students retain (or fail to retain) feedback (e.g., "I cannot remember what teachers want me to do when they provide feedback").

The IFOS has 27 items in total. Two items – one from the utility subscale and one from the sensitivity subscale – were excluded because they were negatively phrased. However, two negatively phrased items from the confidentiality subscale ("I like others to hear the feedback I am receiving from my teacher", and "I do not mind being singled out by feedback from a teacher"), were retained to ensure that there were five items in that subscale (King et al., 2009). In addition, two items, one from the retention and one from the confidentiality subscale, were modified in terms of grammar (i.e., "do not" was used instead of "don't" and "can not" was used instead of "can't"). The IFOS items as used in this study are

available in Appendix C. An acceptable Cronbach's alpha was obtained for each subscale: 0.84 for utility, 0.93 for sensitivity, 0.73 for confidentiality and 0.76 for retention.

Vignettes

A vignette is a description, which is carefully constructed, of a situation, object, or person, representing a mixture of characteristics (Atzmüller & Steiner, 2010). Due to its nature of eliciting participants' judgments regarding a situation (i.e., scenarios), 'paper people'vignette studies that are in which participants make judgments, decisions, or indicate behavioral preferences according to Aguinis and Bradley's (2014), were used to investigate the participants feedback perceptions regarding the positive and negative feedback valence. Therefore, two vignettes (vignette A and vignette B) were created with positive and negative feedback content (Vignette A reflects the positive valence and vignette B reflects the negative valence (see Appendix D).

In line with Arguinis and Bradeley (2014), the vignettes were created as realistic as possible by presenting two scenarios containing a situation in which a fictional student had to write an essay about being a student in covid times (i.e., vignette A was about being university student, whereas vignette B was about being primary school student) and the feedback that this student received on the essay. This topic was chosen to make it easier for the participants to relate to their own experiences of being a student in corona times. The vignettes in this study contained sufficient detail, yet at the same time, care was taken not to overload the participants. In addition, the vignettes adopted a third-person perspective because it lowered the chance of participants giving socially desirable answers since they placed themselves into another person's situation. Although the vignettes contained some alternative wording, care was taken that it would not change the core information in the scenarios (Bateman et al., 2001). Finally, in the vignettes, the feedback was provided in a context of a summative assessment, which assesses how instructional objectives have been

achieved at the end of a unit or course (Morrison et al., 2019). According to Atzmüller and Steiner (2010), this type of design is called 'within-subject design', that is, each participant received the same set of vignettes in the survey, and the participant's answers to the vignettes were compared.

Feedback Perceptions Questionnaire (FPQ)

The 18-item Feedback Perceptions Questionnaire (FPQ) was used (Strijbos et al., 2021) to measure the participants' perceived adequacy of feedback, emotional responses, and willingness to improve their performance in response to each of the two vignettes. Each item was answered on a visual analog scale ranging from 0 (fully disagree) to 100 (fully agree) without visible scores answering the questions. The FPQ has three subscales with several items per subscale (i.e., Perceived Adequecy of Feedback (PAF, nine items), Affect (AF, six items – three items measuring positive affect and three measurings negative affect) and Willingness to Improve (WI, three items). Three items that are measuring negative affect from the affect subscale (i.e., "I would feel offended if I had received this feedback on my essay.", "I would feel angry if I had received this feedback on my essay.", "I would feel frusturated if I had received this feedback on my essay.") were reverse coded and not analyse separately in terms of positive and negative affect, so the subscale measured positive affect. In order to measure the participants' responses to two different vignettes (positive vs. negative feedback valence), the FPQ was administered after each vignettes. Thus, three subscales' (PAF, AF and WI) Cronbach Alpha's were computed seperately for the vignette representing positive valence and for the one representing negative valence. Perceived adequacy of feedback subscale (e.g., "This feedback would provide me with a lot of support"), which was used in line with Strijbos et al. (2010) and Raemdonck & Strijbos (2013), was used in order to measure the feedback perceptions whereas the affect subscale

Table 2

FPQ Subscales and Their Cronbach's Alpha for Positive and Negative Feedback Valence

	Feedback Valence	
Scale	Positive feedback valence Cronbach's α	Negative feedback valence Cronbach's α
Perceived adequacy of feedback	.81	.91
Affect	.83	.82
Willingness to improve	.84	.88

(e.g., "I would feel angry if I had received this feedback on my essay") was measured the emotional response and willingness to improve subscale (e.g., "I would be willing to improve my performance") was measured the willingness to improve. Since the scenarios focused on 'essay' assignments, the three items for willingness to improve were contextualized. Appendix E displays all items of the FPQ as used in this study. Furthermore, the questionnaire subscales generated acceptable Cronbach's alpha coefficients. Table 2 presents FPQ subscales and their Cronbach's Alpha's for positive and negative feedback valence.

Analyses

The questionnaire was developed by using the program Qualtrics and data analysis was performed with SPSS Statistics Version 26. First, descriptive statistics and frequency tables were computed for the demographics. Second, a paired sample t-test was performed to investigate the difference in perceived adequacy of feedback (PAF), affect (AF) and willingness to improve (WI), and in response to the vignette with positive valence and

negative valence where Cohen's *d* was used to express the effect sizes (small = .2, medium = .5, large = .8) (Cohen, 1988). Third, to investigate the correlation between the subscales, correlation analyses was computed and the effect size was expressed according to Cohen (1992) by *r,* where .1 = small, .3 = medium, and .5 = large. Finally, a repeated measures ANCOVA (analyses of covariance) was conducted to determine whether the beliefs influenced the receivers' feedback perception, emotional response and willingness to improve and η^2_p (partial eta squared) was used to express effect size as suggested by Cohen (1988) where small =.01, medium = .06 and large =.14. Furthermore, .05 was used as the threshold for *p* value ($p < .05$).

Results

Data-inspection

First, all variables were examined for data accuracy and missing values. Out of the 85 participants, five participants completed consent form and demographics only. Out of 80 participants, the missing data was between 5.9% and 10.6% of the data set. No imputation was made because according to Hair et al. (2006) missing data for an individual case or observation is under 10% can generally be ignored. Therefore 76 participants' data, which are completed, were used to conduct further analysis (see Table 3). Second, the distribution assumptions were checked and the standardized skewness and kurtosis were within the -3 to +3 (Tabachnick & Fidell, 2007) range for all the variables except utility (standardized skewness: 3.892; standardied kurtosis: 3.998), perceived adequacy of feedback in the positive vignette (standardized skewness:-3.424) and willingness to improve in the positive vignette (standardized skewness: -5.767; standardized kurtosis: 8.785). For utility and perceived adequacy of feedback in the positive vignette, no adaptation was made because their standardized skewness and kurtosis scores were not excessive. Furthermore, no adaptation was made for willingness to improve in the positive vignette neither, although it did not

Table 3

Missing Value Analysis for Study Variables

				Missing		No. of Extremes[a]	
	N	Mean	Std. Deviation	Count	Percent	Low	High
Utility	80	78.46	12.46	5	5.9	2	0
Sensitivity	80	31.90	20.33	5	5.9	0	1
Confidentiality	80	59.63	19.40	5	5.9	0	0
Retention	80	21.98	17.90	5	5.9	0	0
Willingness to improve_positive	79	79.45	14.42	6	7.1	4	0
Affect_positive	79	79.76	13.70	6	7.1	1	0
Perceived adequecy of feedback_positive	79	78.96	11.71	6	7.1	1	0
Perceived adequecy of feedback_negative	76	56.23	18.82	9	10.6	0	0
Affect_negative	76	40.53	18.94	9	10.6	0	0
Willingness to improve_negative	76	63.36	23.10	9	10.6	2	0

a. Number of cases outside the range (Q1- 1.5*IQR, Q3 + 1.5*IQR).

Note. '_positive' and '_negative' refer to positive and negative feedback scenarios.

normally distributed. Finally, examining all variables revealed 11 outliers for several variables and one extreme value for willingness to improve in the positive vignette. No changes were made regarding those values because a) outliers were considered as

representatives of any observation in the population (Hair et al., 2006), and b) one extreme value was considered not influential for the analyses.

The effect of feedback valence on perceived adequacy of feedback, affect and willingness to improve

A paired-samples t-test was performed to investigate the difference in perceived adequacy of feedback, willingness to improve and affect in response to the vignette with positive valence and negative valence. The t-test was significant for perceived adequecy of feedback, $t(75) = 10.94$, $p = .000$, $d = 1.26$, meaning that students perceived the given feedback as more adequate in response to the vignette with positive valence ($M = 78.92$, $SD = 11.73$) compared to the vignette with negative valence ($M = 56.23$, $SD = 18.82$). Furthermore, the t-test was significant for affect as well , $t(75) = 14.76$, $p = .000$, $d = 1.69$, meaning that the given feedback led more positive affect on students in response to the vignette with positive valence ($M = 79.77$, $SD = 13.88$) compared to the vignette with negative valence ($M = 40.53$, $SD = 18.94$). Finally, the t-test was significant for willingness to improve, $t(75) = 7.03$, $p = .000$, $d = 0.81$, meaning that students were more willing to improve in response to the vignette with positive valence ($M = 79.18$, $SD = 14.43$) compared to the vignette with negative valence ($M = 63.36$, $SD = 23.10$).

First, correlational analyses were conducted to evaluate the influence of feedback receiver's beliefs about feedback on the relationship between the feedback valence and the receiver's feedback perceptions, emotional response, and willingness to improve their performance. Table 4 presents the correlations between the four belief scales and three perception scales for each scenario. According to the results, utility had correlated with five subscales except for affect in the vignette with negative valence whereas sensitivity did not correlate with any of the subscales of FPQ; confidentiality correlated with affect in the vignette with negative valence only whereas retention correlated with four subscales except

for affect in the vignette with negative valence and willingness to improve in the vignette with negative valence.

Second, seperate repeated measures ANCOVA's were performed to investigate the effect of utility, sensitivity, confidentiality, and retention on perceived adequacy of feedback, affect and willingness to improve. There were no differences between the vignettes with positive and negative values for perceived adequecy of feedback whilst adjusting for utility beliefs, F(1,74) = 0.01, p = .913, η2p = .000; sensitivity beliefs F(1,74) = 0.00, p = .957, η2p = .003 and retention beliefs, F(1,74) = 0.23, p = .635, η2p = .003 whereas there were differences between the vignettes with positive and negative values for perceived adequecy of feedback whilst adjusting for confidentiality, F(1,74) = 11.04, p = .001, η2p=. 130. In response to the positive vignette (*M* = 78.92, *SD* = 11.73), students reported higher perceived feedback adequacy compared to the negative vignette (*M* = 56.23, *SD* = 18.82) whilst adjusting for confidentiality beliefs. There were no differences between the vignettes with positive and negative values for affect whilst adjusting for utility beliefs, *F*(1,74) = 0.87, *p* = .354, η^2_p= .012 and sensitivity beliefs, *F*(1,74) = 0.49, *p* = .489, η^2_p= .007 whereas there were differences between the vignettes with positive and negative values for affect whilst adjusting for confidentiality beliefs, *F*(1,74) = 6.98, *p* = .010, η^2_p= .086 and retention beliefs, *F*(1,74) = 6.61, *p* = .012, η^2_p= .082. In response to the positive vignette (*M* = 79.77, *SD* = 13.88), students reported higher affect compared to the negative vignette (*M* = 40.53, *SD* = 18.94) whilst adjusting for confidentiality and retention beliefs. There were no differences between the vignettes with positive and negative values for willingness to improve whilst adjusting for utility beliefs, *F*(1, 74) = 0.02, *p* = .891, η^2_p = .00, sensitivity beliefs, *F*(1,74) = 0.17, *p* = .684, η^2_p= .002, confidentiality beliefs *F*(1,74) = 2.02, *p* = .159, η^2_p= .027 and retention beliefs, *F*(1,74) = 2.22, *p* = .141, η^2_p= .029.

Table 4

Correlations For Study Variables

Variable	1	2	3	4	5	6	7	8	9	10
1. Utility	-									
2. Sensitivity	-.10	-								
3. Confidentiality	.06	.33**	-							
4. Retention	-.23*	.54**	-.02	-						
5. PAF_positive	.56**	-.19	.21	-.46**	-					
6. PAF_negative	.36**	-.12	-.21	-.24*	.37**	-				
7. AF_positive	.30**	-.11	.17	-.50**	.68**	.35**	-			
8. AF_negative	.08	-.20	-.24	-.03	.06	.61**	.03	-		
9. WI_positive	.70**	-.06	.00	-.28*	.78**	.45**	.51**	.12	-	
10. WI_negative	.43**	.00	-.14	-.03	.35**	.80**	.36**	.42**	.54**	-

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

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

Note. 'PAF' refers to perceived adequacy of feedback, 'AF' refers to affect and 'WI' refers to willingness to improve whereas '_positive' and '_negative' refer to positive feedback valence and negative feedback valence.

Discussion

The role of the feedback receiver in the feedback process is essential because whether the feedback would be accepted and acted upon is influenced by the receivers' feedback

perceptions. Therefore, this study focused two factors that might impact on the receiver's feedback perceptions: a) feedback valence and b) receivers' beliefs about feedback. To investigate this influence, the present study examined to what extent the feedback receiver's perceived adequacy of feedback, their emotional response, and willingness to improve their performance in response to feedback valence (positive vs. negative) are influenced by this receiver's beliefs about feedback in terms of utility, sensitivity, confidentiality, and retention.

Summary and the interpretation of the main findings

The paired sample t-test results demonstrated significant differences between the receivers' perceived adequacy of feedback, emotional response, and willingness to improve in terms of positive and negative feedback valence. These results are consistent with Geddes and Linnehan's (1996) claim that different structures of pos

itive and negative feedback messages may help explain variations in cognitive processing and behavioral responses of feedback receivers',which means feedback valence has an impact on receivers' feedback perceptions. The vignette with a negative feedback message had a corrective structure in this study compared to the vignette with a positive message. On the one hand, this structure might have led some participants to pay more attention to the negative feedback than positive (Geddes & Linnehan, 1996). On the other hand, it might have led to negative emotional responses for some participants that they can become demotivated and even reject feedback (Ryan & Henderson, 2018). In this study, results showed that students perceived the given feedback as more adequate, it led to more positive affect, and they were more willing to improve their performances in response to the vignette with positive valence compared to the vignette with negative valence.

All in all, despite having different reactions to the different feedback valence from receivers, these results were in line with feedback valence (positive vs. negative), had an influence on the feedback receivers' feedback perceptions in terms of perceived adequacy of

feedback, emotional responses, and willingness to improve their performances (Geddes & Linnehan, 1996; King et al. (2009); Strijbos & Müller, 2014). After that, a repeated measures ANCOVA was conducted to examine the receivers' beliefs' (utility, sensitivity, confidentiality, and retention) covariate effect on these results. The findings were explained in detail according to the study's subquestions below.

The first subquestion was to what extent are the feedback receiver's perceptions (i.e., perceived adequacy of feedback) influenced by the valence of feedback and this receiver's beliefs about feedback (utility, sensitivity, confidentiality, retention)? According to the results, feedback receivers' perceived adequacy of feedback is influenced by the feedback valence and receivers' utility, sensitivity, and retention beliefs. These beliefs had influenced receivers' feedback perceptions in terms of perceiving the given feedback more adequate in a vignette with positive valence and compared to a vignette with negative valence. This demonstrates that students' perceptions regarding the value and usefulness of feedback (utility), their attributional sensitivity towards feedback (sensitivity), and their ability to recall and remember feedback (retention) influenced their perception of perceiving the positive feedback message was more adequate. This is in line with Huisman et al.'s (2019) indication that beliefs guide people's attitudes, perceptions, and behaviors, because in the study, one can see that participants' utility, sensitivity and retention beliefs had an impact on their feedback perception as they were perceived the positive feedback message more adequate than the negative one. According to Strijbos et al., 2010, students do not distinguish between the three factors of perceived adequacy of feedback: ' fairness,' 'usefulness,' and 'acceptance' of feedback. This could be related to this result regarding the effect of utility and retention beliefs. When students perceived positive valence as more adequate, they also perceived the feedback as 'useful', 'fair', and 'accepted' compared to a negative one. Therefore, one can see the relationship between the receivers' beliefs regarding utility and retention and the

perceived adequacy of feedback. This is in line with King et al. (2009) study regarding students perceiving feedback useful and tend to place value on such feedback.

Furthermore, results demonstrated that sensitivity beliefs also influenced the perceived adequacy of feedback. This could be because students might be sensitive to the positive feedback message in terms of being intimidated or threatened. However, sensitivity beliefs influenced students founding the positive feedback message more adequate. In contrast, receivers' confidentiality beliefs about feedback had no influence on receivers' feedback perceptions in terms of feedback valence (positive vs. negative). This demonstrates that students being worried about the public/private context in which feedback is provided does not affect their feedback perception regarding the positive valence. This could be because the study's participants filled the survey online and most probably alone.

The second subquestion was: To what extent is the feedback receiver's emotional response (i.e., positive and negative affect) influenced by the valence of feedback and this receiver's beliefs about feedback (utility, sensitivity, confidentiality, retention)? The results showed no significant differences in students' affect in response to the vignette with positive valence compared to negative valence while adjusting for utility and sensitivity. That means the feedback receivers' beliefs (i.e., utility, sensitivity) influence receivers' emotional response (affect) more to a vignette with positive valence than a vignette with negative valence. This demonstrates that students' perceptions of the value and usefulness of feedback (utility) and their attributional sensitivity towards feedback (sensitivity) influenced their emotional response to a more positive affect than positive feedback valence. This could be because positive feedback provides affective support to the students and encourage motivation to continue learning (Ellis, 2009).

King et al. (2009) stated that the utility and retention beliefs are positively associated with affect, whereas sensitivity and confidentiality beliefs are negatively associated. The

results partially align with this statement because positive feedback led to more positive affect for students, and their belief that feedback is useful has an impact on their positive feelings, yet feeling intimated, uncomfortable, or having negative feelings towards getting feedback has an impact on affect as well. The results also highlight that when students are open to getting feedback, they tend to have a more positive feeling. However, this positive emotional response could be due to the positive feedback valence. Furthermore, positive feedback message could have affected their positive affect even though they tend to be sensitive regarding corrective feedback message (e.g., "Corrective feedback hurts my feeling").

According to the results, there was a significant difference in students' affect in response to the vignette with positive valence compared to negative valence, whilst adjusting for confidentiality and retention. That means receivers' confidentiality and retention beliefs about feedback has no influence on these receivers' affect in terms of feedback valence (positive vs. negative). This highlights that students' worries regarding the public/private context in which feedback is provided (confidentiality) and their ability to recall and remember feedback (retention) have no impact on their emotional response towards the positive feedback valence. This is in line with what Hattie & Timperley (2007) stated regarding when students have perceived threats to self-esteem or social embarrassment; they might avoid seeking help (feedback).

The third subquestion was: To what extent is the feedback receiver's willingness to improve their performance (i.e., willingness to improve) influenced by the valence of feedback and this receiver's beliefs about feedback (utility, sensitivity, confidentiality, retention)? The results showed no significant differences in students' willingness to improve in response to the vignette with positive valence compared to negative valence while adjusting for utility, sensitivity, confidentiality, and retention. That means feedback receiver's

utility, sensitivity, confidentiality, and retention beliefs influence this receiver's willingness to improve more to a vignette with positive valence than a vignette with negative valence. This result highlights that positive feedback valence influences students' willingness to improve their performances, and all beliefs measured in the study had an impact on it. That means students' perceptions regarding the value and usefulness of feedback (utility), their attributional sensitivity towards feedback (sensitivity), their worries regarding the public/private context in which feedback is provided (confidentiality), and their ability to recall and remember feedback (retention) has an impact on their willingness to improve their performances to the positive feedback valence. This aligns with what Ellis (2009) stated regarding positive feedback providing affective support and encouraging motivation to continue learning. Students are positively affected by positive feedback, which might have increased their willingness to improve their performances. However, according to King et al. (2009), a high level of sensitivity and confidentiality beliefs could restrict students' performance improvement. Students, for example, might feel insecure regarding feedback and uncomfortable in terms of getting feedback in front of others, which could lead to negative feelings and rejection of the feedback message. However, according to the results, four beliefs impacted willingness to improve. One reason for this could be that although students are sensitive and worry about confidentiality, they might still want to improve their performances due to their perception that feedback is valuable.

According to King et al. (2009), utility and sensitivity beliefs were more likely to contribute unique variance to each variable than confidentiality and retention. This could be the reason why utility and sensitivity had influenced all three receivers' perception (PAF, AF and WI). This is in line with this study's results that students' perception regarding the value and usefulness of feedback and their sensitivity regarding the feedback had an impact to all three feedback perceptions of receivers. All in all, these results demonstrated that feedback

valence and intrapersonal characteristics influence feedback receivers' feedback perceptions. This aligns with what Alqassab et al. (2018) stated regarding the feedback receivers' beliefs influence the processing of the feedback message.

Future research could focus on investigating the receivers' feedback perceptions in terms of PAF, AF, and WI to examine their combined effect on the feedback process. Furthermore, different aspects of beliefs such as accountability and self-efficacy in the teacher-student feedback process could be added to the belief subscales. Moreover, examining the demographics to see to what extent they influence the intrapersonal characteristics of the feedback receiver could have an added value to the feedback studies.

Limitations

One of the limitations of this study is that both feedback scenarios were presented to all participants. By doing so, there might have been an order effect, which defines as a phenomenon that may impact participants' answers in a more or less systematic way due to different orders in which the questions (or response alternatives) are presented (Strack, 1992). Therefore, participants' answers could have been biased due to this effect. Another limitation was the willingness to improve for the vignette with positive valence had more than +3 skewness and kurtosis, and its extreme value was used without any adaptation. These high values indicate that the data were not normally distributed; therefore, any results related to that variable might be treated with caution. Finally, another limitation is that it could have been adequate to elaborate on the definition of 'corrective feedback' used in the IFOS before the participants answered the questionnaire because the correct understanding of the term would affect their answers.

Practical implications and conclusion

The present study has enhanced the understanding of the feedback receivers' beliefs about feedback on the processing of feedback while giving information regarding the effect

of the feedback valence in this process. The findings, which highlight the importance of feedback valence and feedback receivers' beliefs (intrapersonal characteristics) on feedback processing, shed light on a small part of the feedback process that has a complex construct with different actors, such as the characteristics of the feedback sender (Strijbos & Müller, 2014), the timing of the feedback (Hattie & Timperley, 2007), feedback channel (Wisniewski et al., 2020), and feedback type (Kasch et al., 2021). Still, these findings could be a valuable source for educators to better understand students regarding their characteristics and how they respond to the different feedback valence in terms of positive and negative. Thus, educators can arrange the feedback process according to their students' needs in terms of feedback message and consequently in ways that avoid negative emotional responses (Ryan & Henderson, 2018). Therefore, this study's findings can contribute to a growing body of evidence regarding the influence of feedback receivers' beliefs about feedback and the feedback valence.

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Appendix A: Information Letter

Dear student,

During your studies so-called "feedback" plays an important role. These are comments that a lecturer gives on a student's work, for example on a written text. The teacher says, for example, what has been done well and what could be improved. There are signs that student characteristics influence feedback processing, but we do not yet know exactly how this works.

In order to find out more about how students process feedback from lecturers and whether the characteristics of the student play a role, this study surveys students at Dutch higher education institutions. This is a broad survey among students of different institutions and fields of study.

What does participating in the study mean for you?

By means of a questionnaire, we examine how students from different faculties process feedback from a lecturer. We use fictitious situation sketches and ask students to put themselves in that situation and indicate how they would experience the feedback. Completing the questionnaire takes about 20 minutes.

Consent

Prior to the study, we will ask you to indicate that you would like to participate in the study. Participation in the study is completely voluntary and you can stop at any time. So if you do not want to continue while filling in the questionnaire, you can stop. Of course, we hope that you will participate.

Use and storage of data

All answers given while filling in the questionnaire will be treated confidentially. This means that the questionnaires and answers are kept secure and that only the researchers can see the completed questionnaires. The Qualtrics programme automatically collects the IP address of the person completing the questionnaire, but this information will be deleted immediately at the start of data processing. This means that the research results can never be traced back to you.

Your rights

If you no longer wish to participate in the study, you can indicate this to the researchers by contacting the project leader. Your data will then be removed from the data files. This is possible until the data are analyzed (from 30 March 2022). If you have any questions about privacy, you can also contact the researchers. If the researchers cannot answer your question, you can submit it to the Data Protection Officer of the University of Groningen (via privacy@rug.nl).

In need of more information?

If you would like to know more about the study, please contact the undersigned.

With kind regards, on behalf of the research team,

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Appendix B: Informed Consent

Dear student,

Via this form, you can indicate whether you want to participate in the questionnaire on the processing of feedback by a lecturer.

I have read the information letter and explanation of the questionnaire carefully. I understand what participation in the study entails. I understand that participation in the questionnaire is voluntary. I choose to participate. I can stop participating at any time. If I decide to stop participating, I do not have to give a reason.

I indicate below whether I want to participate in the questionnaire or not.

I, a student at a higher educational institution in the Netherlands, consent to the participation in the questionnaire on the processing of feedback by a lecturer.

-Yes, I consent to participate in the study; this permission runs until December 2022

-No, I do not consent to participate in this study.

Appendix C: The Instructional Feedback Orientation Scale

Please answer the following statements based on how much they apply to you, from strongly disagree (0) to strongly agree (100).

1. I pay careful attention to instructional feedback.
2. I do not like for others to hear what feedback I am receiving.
3. I feel relieved when I receive positive feedback.
4. Corrective feedback hurts my feelings.
5. I am extremely encouraged by positive feedback from teachers.
6. I like others to hear the feedback I am receiving from my teacher.
7. It is difficult to ‘‘get over’’ corrective feedback.
8. I think feedback from teachers is vitally important in improving my performance.
9. Corrective feedback is embarrassing.
10. I prefer to receive feedback from a teacher in private.
11. Feedback from my teachers can be a valuable form of praise.
12. I do not mind being singled out by feedback from a teacher.
13. I will usually reflect on a teacher’s feedback.
14. Corrective feedback from a teacher increases the stress I feel about future performance.
15. I listen carefully when a teacher provides feedback.
16. Corrective feedback is intimidating.
17. I typically do not make note of the teacher’s corrective comments.
18. I think that feedback provides clear direction on how to improve my performance.
19. I tend to miss out on the details of what instructors want when they provide me with feedback.
20. My feelings can be easily hurt by corrective feedback from a teacher.
21. Feedback from my teachers motivates me to improve my performance.
22. I feel threatened by corrective feedback.
23. I tend to dwell on the negative feelings that result from corrective feedback.
24. I do not like to receive corrective feedback in front of other people.
25. I cannot remember what teachers want me to do when they provide feedback.

Appendix D: Vignettes

Vignette A (positive feedback valence)

Taylor is an educational sciences master's student. As part of a course on "Learning Environments," Taylor wrote an essay titled "The Impact of Online Learning Environments on University Students During the Covid-19 Pandemic", because the majority of students indicated that they feel lonely, overwhelmed, stressed, and find it difficult to concentrate. The essay covered suggestions about coping strategies for students (e.g., taking regular study breaks) and teachers (e.g., creating more group assignments to enhance students' interactions). Taylor concluded that with technological developments, more classes could be online in the future. Therefore, schools and teachers must develop ways to enhance students' well-being in the online learning environment.

One week after submitting the essay, the teacher gave the following written feedback to Taylor:

"In the essay, the discussion of relevant theories was clear (e.g., the effect of the learning environment on the students). Also, you supported your critical reflection with the literature covered in this course. Your claim about the emotional impact of online learning (like feeling lonely, overwhelmed, etc.) was correct, and your suggestions made the essay stronger. However, you could have added other impacts, such as the negative effect on learning processes and/or the lacking of human interaction. I like the conclusion because it had a clear take-home message relevant to your chosen topic. Finally, your essay comply with the rules of academic writing."

Vignette B (negative feedback valence)

Jamie is a psychology master's student. As part of a course on "Students' Well-being" Jamie wrote an essay called "Primary School Students' Well-being in the Online Learning Environment" because online learning makes many primary school students feel overwhelmed, and stressed and they find it difficult to concentrate. Jamie also added that the lack of physical human interaction could have been one of the core reasons for students to feel this way and presented some suggestions to teachers and families on how to reduce these feelings and enhance students' wellbeing (e.g., for families to arrange routine outdoor activities for their kids, etc.) Jamie concluded that families and teachers should work together on solutions in order to enhance students' well-being and primary schools can adjust their policies according to that.

One week after submitting the essay, the course instructor gave the following written feedback to Jamie:

"In your essay, the emotional impact part was insufficiently covered. Is this the only impact on students? You should have discussed more issues related to the online learning process. Some of your arguments were not linked to the theories that were covered in this course, and, as a result, there was hardly any justification for the arguments you presented (e.g., on which theory were they based?). As for the suggestions, you could have presented more ideas for the teachers such as revising their lesson plans in the line with the features offered by the online learning environment. The conclusion was sufficient, yet very broad. As for the format, overall, there was an acceptable academic tone in your writing style."

Appendix E: The Feedback Perception Questionnaire

Please answer the following statements based on how much they apply to you, from strongly disagree (0) to strongly agree (100).

1. I would accept this feedback.
2. I would be willing to invest a lot of effort in my essay.
3. I would consider this feedback useful.
4. I would feel offended if I had received this feedback on my essay.
5. I would feel satisfied if I had received this feedback on my essay.
6. I would feel angry if I had received this feedback on my essay
7. I would feel confident if I had received this feedback on my essay.
8. I would feel frusturated if I had received this feedback on my essay.
9. I would feel succesful if I had received this feedback on my essay.
10. I would consider this feedback fair.
11. I would be willing to improve my performance.
12. I would consider this feedback helpful.
13. I would reject this feedback.
14. I would consider this feedback justified
15. I would be satisfied with this feedback
16. I would dispute this feedback
17. This feedback would provide me with a lot of support
18. I would be willing to work on further essay assignments