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Assessing together : Peer assessment from an interpersonal perspective

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CHAPTER 6

Summary, general conclusion and discussion

During the past two decades, there has been a lot of debate on the powerful role of assessment to support student learning. Former research has indicated that for assessment to support student learning, various conditions have to be met (e.g., Assessment Reform Group, 2002; Black & Wiliam, 1998; James & Pedder, 2006). These conditions have in common the explicit attention for the active role of students. When students are involved in the various steps of the assessment cycle, significant increases in learning gains are reached. In this respect, the value of peer assessment has been argued. However, years after its implementation in educational practices, there still remain a lot of unanswered questions with respect to the nature of peer assessment as well as the processes that support strong peer assessment environments. With respect to the former, descriptions in literature of peer assessment arrangements show that there are large differences in the structural features of peer assessment. Peer assessment arrangements vary in the organization of the assessment, the interactions within the peer assessment, and the composition of the feedback group (Van Gennip, Segers, & Tillema, 2009). As an example of differences in interactions, peer assessment can differ as to level of privacy (anonymous, confidential, public) and contact between assessor and assessee (from a distance or face to face). With respect to the latter - the processes that support strong peer assessment environments - the inconclusive results of peer assessment effect studies indicate that, in order for peer assessment to enhance students' learning gains, attention has to be paid to the social and interpersonal aspects of peer assessment, inasmuch as they can influence under what conditions students accept each other as assessors of their learning, and trust the appraisal outcomes of peer assessment.

The research presented here focused on how the social context in which peer assessment takes place is related to the learning effects of peer assessment. We

wanted to identify interpersonal beliefs in peer assessment settings that influence the peer assessment process on the one hand, but could also be seen as predictors of the effect of peer assessment interventions. In order to operationalise the interpersonal context of peer assessment, and herein inspired by research on team learning, we addressed different beliefs that have been proved to influence the extent to which team members learn from and with each other: psychological safety, trust, value congruency, and interdependence.

This dissertation presents four studies that question parts of the interpersonal context of peer assessment: one systematic literature study on interpersonal beliefs in and structural features of peer assessment and three empirical studies. In the systematic literature study of this dissertation (chapter 2), we presented a structural model of analysis indicating different interpersonal beliefs, as well as structural features of peer assessment that might affect outcome measures of peer assessment (achievement, perceptions of learning benefits and conceptions of assessment). This review is followed by three experimental studies. Study 1 (chapter 3) is a first exploration of the effects of interpersonal beliefs and focuses on the differences in interpersonal beliefs between two peer assessment settings and a teacher assessment setting. Furthermore, the use and effect of an intervention on interpersonal beliefs is studied. Study 2 (chapter 4) examines interpersonal beliefs more in depth and studies which interpersonal beliefs lead to perceived learning from peer assessment. Finally, study 3 (chapter 5) adds a new peer assessment setting to this dissertation, and attempted to find out whether the same interpersonal processes play a role in a peer assessment setting implemented in a professional environment as do in an educational one.

1 An overview of the results

1.1 A review on the literature addressing peer assessment

The literature review (chapter 2) aimed to present an overview of empirical studies evidencing the effect of peer assessment on student learning and the role of the social context of peer assessment to realize this effect. With respect to the latter, in line with a large body of research on the social context of team learning, we focused on the structural features of the peer assessment arrangements as well as the interpersonal beliefs of the students involved in the peer assessment. The systematic literature search resulted in 15 studies conducted since 1990 dealing with effects (performance or perceived learning gains) of peer assessment. Our analysis reveals that, although peer assessment is inherently a social process, only four out of fifteen studies addressed interpersonal beliefs, more precisely, psychological

safety and trust. However, no evidence was presented on their role in enhancing learning gains.

Further, comparing the studies with respect to structural features of peer assessment arrangement reveals that, although the differences between the studies are significant, there seems to be no relation with the occurrence (or non-occurrence) of learning benefits. Moreover, there is a lack of research explicitly relating features of the peer assessment setting to learning gains.

The results of this review seem to indicate that research on peer assessment from an interpersonal perspective is still in its infancy and deserves more attention, which strengthened us in our conviction of the urgency of our empirical studies. Further, the structural features of peer assessment formats are already a recognized subject of research, but these have not been related to the learning effects of peer assessment. Therefore, research designs should be clear and well-grounded if any conclusions are to be drawn on the basis of these structural features.

1.2 The role of interpersonal beliefs in peer assessment

Both empirical study 1 and 2 (chapters 3 and 4) focused on the role of interpersonal beliefs in peer assessment: we wanted to examine our hypothesis that interpersonal beliefs change in a peer assessment setting. Team learning research already evidenced that interpersonal beliefs are a precondition for group learning outcomes (e.g., Edmondson, 1999; Van den Bossche, Gijsselaers, Segers, & Kirschner, 2006). Given an increase in learning gains is a primary goal of peer assessment as well, studying the role of students' interpersonal beliefs is highly relevant.

The first question in the exploration of the role of interpersonal beliefs was whether participation in a peer assessment intervention results in a change in perceptions of interpersonal beliefs (psychological safety, value congruency) during the peer assessment practice. In order to find out whether this increase in interpersonal beliefs is indeed an effect of the peer assessment intervention itself, we compared two peer assessment settings with a teacher assessment setting (as a baseline condition). Results of study 1 (chapter 3) show that beliefs of value congruency and psychological safety are higher at the end of the project in a peer assessment condition than in the teacher assessment condition.

Given the indication of the role of interpersonal beliefs in peer assessment in study 1 (chapter 3), based on findings of team learning research, two variables were added to study 2 (chapter 4): trust and interdependence. Comparing peer assessment students' scores on the interpersonal beliefs at the end of the project with those from the teacher assessment students revealed, comparable to study 1, that psychological safety and value congruency were higher in the experimental group: students in a peer assessment setting feel significantly safer and perceive more unanimity in goals than students in a teacher assessment setting. Trust and

interdependence, however, were not perceived differently by students from the experimental group compared to the teacher-assessed students.

Recognizing the result that beliefs of psychological safety and value congruency are higher in a peer assessment setting compared to a teacher assessment setting, we wanted to check whether an intervention aimed at stimulating these interpersonal beliefs would lead to an even higher increase in those beliefs. Therefore, we compared a peer assessment⁺ arrangement (including an intervention) with a regular peer assessment arrangement. Results showed that there are no differences between peer assessment and peer assessment⁺ condition for psychological safety as well as value congruency. Further, results show that differences in perception of value congruency in the peer assessment⁺ condition appear before the reflection session has taken place. Given this result as well as the observed differences in interpersonal beliefs between the peer assessment conditions and the teacher-based condition, it seems that implementing peer assessment in itself leads to more positive interpersonal beliefs (psychological safety and value congruency). For value congruency, involving students in the first stage of the peer assessment process (goals and purposes formulation) seems to be beneficial and, adding a reflection session after this first stage, seems to have no value added.

Finally, as a next step in understanding the role of interpersonal beliefs in peer assessment, we intended to explore how interpersonal beliefs are related to students' conceptions of peer assessment and to students' learning gains (as perceived by the students themselves and expressed by their performance). Results of study 2 (chapter 4) showed that some interpersonal beliefs indeed play a significant role in peer assessment settings and are of influence when we consider the perceived learning of students: Students' perception of learning effects are directly influenced by two interpersonal beliefs, namely the belief of value congruency and conceptions of peer assessment, which play an important role. Conceptions students hold who have no prior experiences with peer assessment predict the learning effects they experience. Moreover, their conceptions of assessment are influenced by the belief of psychological safety and trust in themselves and the other as well as by their belief of value congruency. Moreover, the results indicated a full mediation effect of conceptions of peer assessment regarding trust in the self as an assessor.

1.3 Changing the setting: Reactions to 360 degree feedback

In the last empirical study of this dissertation, we chose to examine the role of interpersonal beliefs in a peer assessment setting where peer assessors have prior experiences with peer assessment and where feedback is the core purpose. Peer assessment was part of the 360 degree feedback system. The aim of this study is to provide insight into the interpersonal beliefs that contribute to the employees'

reactions to 360 degree feedback in terms of learning effects: trust, psychological safety, value congruency, and interdependence. Furthermore, conceptions of assessment were included as predictor, given the participants in this study have prior experiences with peer assessment as part of the 360 degree feedback system they regularly participate in. Moreover, given prior research on 360 degree feedback systems stress the importance of transparency, this variable was also taken into account as predictor.

Results reveal that trust in the other as assessor partly mediates the relation between value congruency and reactions to 360 degree feedback. Conceptions and transparency are predictors of trust in the self, which does not predict reactions to 360 degree feedback. Finally, the interpersonal beliefs of psychological safety and interdependence have an indirect effect on reactions to 360 degree feedback: they are predictors of trust in the other, which in turn predicts reactions to 360 degree feedback.

An important finding in this study is that trust is clearly a divided variable: trust in the self and trust in the other are predicted by separate and different independent beliefs. Conceptions and transparency predict trust in the self, while the interpersonal beliefs of psychological safety, value congruency, and interdependence in turn are predictors of trust in the other.

2 Implications for practice

2.1 Implementing peer assessment as a tool for learning

The present research provides some insights that have implications for practice. Since the dissertation is based on samples in educational as well as professional practice, we will recall implications for teachers in education as well as managers in the workplace. All three empirical studies examined the role of interpersonal beliefs in a peer assessment setting. The results of the empirical studies deliver content for the empirical discussion of peer assessment: peer assessment as such seems to stimulate the beliefs in some interpersonal variables.

Our findings suggest that peer assessment is a powerful learning environment if certain conditions are taken into account. The classroom peer assessment setting used in the studies in this dissertation, involves students from the first steps in the assessment cycle. This means they are involved in collaboratively formulating the goals and the criteria of the peer assessment instead of only involving them at the rating stage of the assessment cycle. In the setting of our studies, the results indicate in classroom settings where students have no prior experiences with peer assessment, implementing a peer assessment arrangement where students are involved from the first stage of the assessment cycle, influences their beliefs of psy-

chological safety as well as value congruency. In addition, both beliefs influence the conceptions students hold at the end of a peer assessment intervention. In turn, these conceptions are significant predictors of the extent to which students experience learning effects by participating in peer assessment.

The latter is important as, when students do not experience peer assessment as a learning tool, the probability that they accept the feedback given and act upon, is high. This in turn will negatively influence actual learning gains.

For organizations where employees have already experienced with peer assessment, our findings suggest that given the relation between trust and reactions to 360 degree feedback, organizations should encourage employees to develop trust in the other as assessor. However, recognizing that interventions are not needed to strengthen interpersonal beliefs, the key to success of 360 degree feedback is to involve employees in the different steps of the assessment cycle. Moreover, making the 360 degree process as transparent as possible is a fruitful approach: the results of study 3 indicate the importance of transparency of the process of assessment as well. This can be achieved more easily when involving employees in the process of designing and carrying out the assessment.

2.2 Interpersonal beliefs and the quality of peer assessment

The confirmation of the role of interpersonal beliefs in peer assessment settings leads to the issue of *quality* of peer assessment. As we stated at the start of our dissertation - and this is confirmed by the results of our studies - peer assessment is a social activity, which implies an important role for interpersonal beliefs. Given this role, what does this say about the quality of assessment? The rethinking of the nature of assessment and the shift to assessment for learning made the use of the traditional criteria of validity and reliability no longer suitable for appraisal of quality of assessment (e.g., Linn, Baker, & Dunbar, 1991). We suggest that when teachers want to preserve quality of peer assessment as a tool for learning, interpersonal beliefs as studied in this dissertation should be recognized and considered as an aspect of quality. This is in accordance with earlier research of Tillema et al. (2010), who formulated three indicators to gauge quality assurance in assessment tasks, based on previous reviews. These indicators are authenticity ('what' criteria), transparency ('how' criteria) and generalisability (warranty criteria). They examined how often these criteria were taken into account in the different steps of the construction, delivery and decision-making of assessment tasks. When we relate these criteria to the interpersonal beliefs that we describe in this dissertation, authenticity and transparency especially are strongly related to the social environment of peer assessment: authenticity relates to student involvement and self-directedness, while transparency includes among other things the concept of fairness, which in turn is linked to psychological safety.

The results of this study show that most quality criteria were taken into account in the step of scoring (Tillema et al., 2010). Additionally, they observed that in the construction and administration of assessment for learning, transparency (i.e. fairness) and meaningfulness are important factors. These factors are closely related to the interpersonal environment of the specific situation of peer assessment: individual transparency for example does not automatically imply value congruency among students. This means that quality of peer assessment is not only determined by the involvement of individual students, but by adapting between students as well. Tillema et al. (2010) suggest a further development of quality criteria towards a more robust framework; we would like to add the involvement of interpersonal beliefs to this suggestion as a necessary addition to the discussion on quality criteria in assessment for learning.

3 Limitations and next steps in research

The results of the studies presented in this dissertation contribute to the understanding of the role of interpersonal beliefs in peer assessment. However, we see this dissertation as a starting point for research on the social context of peer assessment, and here take the liberty to suggest study ideas for future research.

The studies in this dissertation were carried out in a specific vocational educational setting. All students were male and worked together in project teams in which they gave each other feedback. Students in the studies had little to no experience with peer assessment. Given the growing implementation of peer assessment in educational and professional settings, and the fact that there are some indications that prior experience with peer assessment has a positive impact on its effect, we have to ask the question whether prior experience with peer assessment influences the role of interpersonal beliefs. This includes prior training, making the students confident with the objectives of peer assessment, general organization and procedures, developing and using criteria and the process of giving and receiving feedback to and from peers. Topping (1998) as well as Falchikov and Goldfinch (2000) conclude that a systematic investigation of the effects of repeated experience of peer assessment is an important topic for future research.

However, the positive effects of prior experience are all formulated in a conditional way: more experience with or knowledge of certain processes in peer assessment make peer assessment more successful. In the light of this dissertation, we do not expect prior experience to influence interpersonal beliefs as such, and the results of our studies in particular. Because every assessment situation is different, with different peers, the interpersonal environment will be unknown as well. The process of creating psychological safety and value congruency has to be repeated in every new peer assessment situation. Therefore, we expect interper-

sonal beliefs to play a significant role in every new peer assessment setting. However, prior experiences might help run these processes more smoothly: when students are more confident with the objectives of peer assessment, general organisation and procedures of peer assessment and developing and using criteria because they have prior experience, psychological safety and value congruency might be established sooner. This would make a nice object of future research, for example longitudinal research with individual as well as group or team measures.

Further suggestions for future research include, given the fact that results from our studies are all based on self-reports of students, a repetition of our research with data from teachers, for example. Second, in order to be able to explore our quantitative results more in depth, further, more qualitative research is needed. We would be especially interested to know *in which way* interpersonal beliefs influence the way students use and accept peer assessment, therefore influence learning gains. As stated before, more sensitive performance measures are necessary to fulfil that last goal. Third, the qualitative research can be supported by quantitative research examining the mediator factors which are responsible for learning gains more extensively. Research on team effectiveness, where most interpersonal beliefs of this dissertation are adopted from, for example examine the role of knowledge sharing and co-constructural knowledge in this respect (e.g., van den Bossche, 2006). Nevertheless, this dissertation embodies the idea that peer assessment is indeed an interpersonal process, which is a direction future research should explore more fully.

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