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Comparing virtual and in-person Feedback for improving Team Performance. An
experimental Study

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Abstract

Virtual collaboration has become more widespread in recent years, making virtual feedback an essential means for individual and team success. Nevertheless, the disembodied nature of online environments introduces several challenges related to interpreting and using virtually communicated feedback. This study examines whether perception of feedback and acceptance of feedback mediate the relationship between the receipt of virtual feedback and the team's performance. By conducting an experimental study, Ilgen et al.'s (1979) feedback process model serves as a sound theoretical basis to examine team members' perception and acceptance of virtual feedback. As the data analysis is not finalized yet, the study's expected contribution is three-fold: First, this work is a first investigation that examines the extent to which virtually communicated feedback is less effective than personally communicated feedback for improving team performance. Second, this study shows whether perception of feedback and acceptance of feedback mediate the relationship between the receipt of virtual feedback and the team's performance. Third, this study extends recent research in the educational and management context by proposing whether students and teams should receive virtually or personally communicated feedback to increase feedback acceptance and improve their performance.

Keywords

Computer-Mediated Communication, Virtual Collaboration, Virtual Team, Feedback, Feedback Process Model, Future of Work

Introduction

Fueled by ongoing globalization, advances in information and communication technologies (ICT), and external events such as the COVID-19 pandemic, organizations need to continuously adapt their management practices (Bartsch et al., 2021). Virtual collaboration has become more widespread in recent years, making virtual feedback an indispensable means for individual and team success. Feedback comprises the transmission of evaluative or corrective information to individual team members or the team about actions, processes, or behaviors (London, 2003). Thus, it can, e.g., affect team functioning, shape team development, steer ongoing team efforts and improve performance (Breuer, 2020; Gabelica, 2020). Virtual feedback is provided through ICTs such as e.g., email, videoconferencing, and instant messaging and differs in types of feedback, e.g., process feedback and performance feedback (Geister et al., 2006; Golden et al., 2009; Wang et al., 2014).

Nevertheless, providing feedback can only lead to increased levels of individual and organizational performance if employees are willing to accept and respond to feedback (Anseel & Lievens, 2006; Ilgen et al. 1979; Kinicki et al., 2004). The disembodied nature of online environments introduces several challenges related to interpreting and using virtual feedback. Because nonverbal behaviors, such as gestures, facial expressions, head nods, and tone of voice are reduced in electronic communication, the feedback which individuals receive is limited (Weisband, 1999). Consequently, virtual feedback might be perceived differently and, thus, it may be less accepted than in-person feedback (Driskell, 2003) which leads to the following research question: Whether and to what extent is virtual feedback less effective than in-person feedback for improving team performance?

Although virtual feedback has been widely addressed, its effects on feedback perception, feedback acceptance and team performance have not been thoroughly investigated or well understood in extant literature. Thus, it is still open to scientific investigations whether virtual feedback is less accepted than in-person feedback. For understanding and managing team performance, it is necessary to know the cognitive processes of how teams incorporate this virtual feedback to adapt and improve their performance, rather than continuing to perform poorly (Geister et al., 2006). Thus, this study fills this gap by investigating whether the perception of feedback and acceptance of feedback mediate the relationship between the receipt of virtual feedback and team's

performance. I intend to close this gap with this research project, set in actual classes implementing a rigorous experimental setting with a between-subjects design.

More specifically, the study addresses two research issues. First, I investigate the effects of virtual performance feedback on an individual's feedback perception. Perception of feedback relates to how accurately the recipient perceives the virtual feedback from any given source. Feedback originates from various sources, which can be categorized into three distinct sets. The first set includes individuals who have observed the recipient's behavior and can evaluate it, e.g., supervisors, co-workers, and subordinates, who are commonly considered in work settings. The second set involves feedback provided through performance appraisal systems. Third, individuals can assess their own performance and act as their own source of feedback (Ilgen et al., 1979). In this study, individuals will receive virtual feedback from individuals who have observed the recipient's behavior. In an experimental study, Dennis & Kinney (1998) found that team members perceive differences in richness of virtual feedback due to varying levels of immediacy and cues of feedback, e.g., immediate and delayed feedback in computer-mediated communication. Information cues encompass various ways of communicating information, including textual cues (e.g., the spoken or written words), verbal cues (e.g., tone of voice), and nonverbal cues (e.g., physical gestures) (Daft & Lengel, 1986).

Second, I investigate the effects of virtual feedback on an individual's acceptance of feedback. Research reveals that an individual's acceptance of feedback might be related to the source of feedback because feedback is more likely to be accepted from sources that are psychologically closer to the source than from those who are more distant (Ilgen et al., 1979).

This work makes several contributions regarding the educational context and management practices. This study investigates the effects and variations of virtual and in-person feedback. Thus, this study helps to extend recent research in the educational context by proposing whether students should receive virtual or in-person feedback to increase feedback acceptance and improve their performance. Results of the study can be transferred to the organizational context. As organizations need to adapt their management practices to the new work conditions, I offer first hints on whether feedback should be communicated best virtually or in-person for improving team performance. I also find distinctions for teams given their members' differences in personality and preferences for receiving feedback, allowing for implications that help manage diverse teams.

Research Model and Hypothesis Development

To achieve our study's goals, I draw on Ilgen et al.'s (1979) feedback process model, because this model serves as a foundation for subsequent research on feedback. This model is characterized by a set of cognitive variables that mediate the relationship between an individual's receipt of feedback and one's response to the feedback. Thus, the feedback process model identifies factors that explain the recipient's perception and acceptance of feedback (Wang et al., 2014).

Figure 1 presents the research model. Based on the feedback process model (Ilgen et al., 1979), I hypothesize the effect of virtual and in-person feedback on team performance (H1). Thus, the feedback is communicated to teams either virtually by ICT or in-person. In turn, I hypothesize that two cognitive variables in terms of perception of feedback (H4) (i.e., how accurately the recipient perceives the feedback from any given source) and acceptance of feedback (H2; H3) (i.e., the extent to which an individual perceives that the feedback is an accurate representation of one's performance) would mediate the relationship between the receipt of virtual and in-person feedback and the team's response to the received feedback.

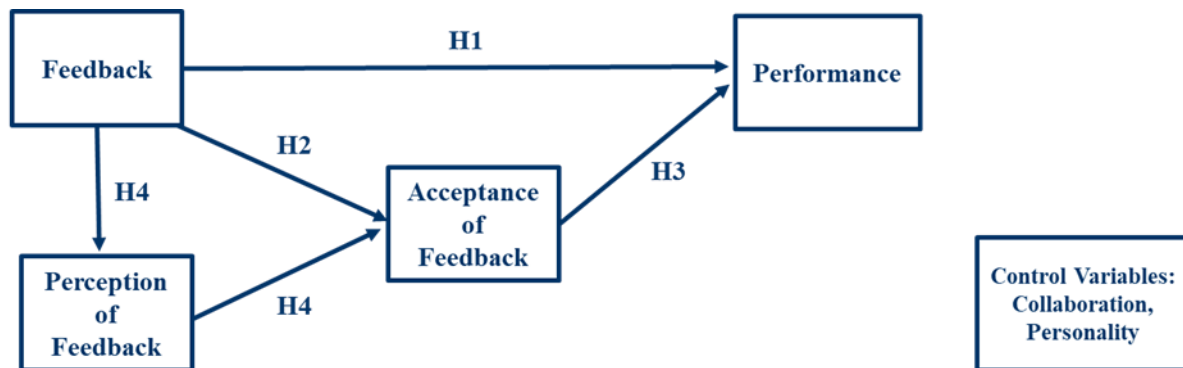


Figure 1. Theoretical model derived from Ilgen et al. (1979). H = hypothesis

Acceptance of Feedback as a mediating Effect of Feedback on Performance

Research shows empirical support for the positive effect of feedback on individual and team performance (Geister, 2006). Nevertheless, teams using computer-mediated communication may show lower performance levels in terms of group decision effectiveness regarding the time needed

to reach decisions compared to in-presence teams (Driskell et al., 2003). Media Richness Theory suggests that an individual's and team's task performance will be improved when task needs are matched to one's ability to transmit information. Face-to-face interaction is considered a richer communication medium than information given by ICT (Weisband, 1999). Accordingly, reduced face-to-face interactions in computer-mediated communication may negatively affect message understanding and increase difficulty establishing the meaning of information (Weisband, 1999).

Hence, I predicted the following:

Hypothesis 1: Performance improvement of teams that received virtual feedback is lower than those of teams that received in-person feedback.

For managing team performance, it is necessary to understand the cognitive processes of how teams incorporate this feedback to adapt and improve their performance, rather than continuing to perform poorly (Geister et al., 2006). Thus, Ilgen et al. (1979) show that acceptance of feedback is an essential element in individuals' response to feedback which they describe as "the recipient's belief that the feedback is an accurate portrayal of his or her performance" (Ilgen et al., 1979, p. 356).

Accepting feedback might be even more difficult for individuals when the feedback is delivered through computer-mediated communication, e.g., videoconferencing and emails (Wang et al., 2014). Hence, feedback is more likely to be accepted from sources that are psychologically closer to the source than from those who are more distant (Ilgen et al., 1979). For this reason, feedback might be accepted less readily from those sources in a virtual team environment who are seen as more remote or distant (Driskell et al., 2003).

Bearing in mind the above discussion, I predict the following:

Hypothesis 2. a): Acceptance of feedback is higher when communicated in-person than virtually.

Hypothesis 2. b): Teams that received in-person feedback show higher levels in feedback acceptance than teams that received virtually communicated feedback.

As individuals do not simply absorb feedback but evaluate the extent to which feedback accurately reflects their performance (Dellarocas, 2003), I predict that acceptance of feedback mediates the effect of feedback on performance:

Hypothesis 3: Teams' acceptance of feedback mediates the negative effect of virtual feedback on performance improvement.

Perceived Feedback as a mediating Effect of Feedback on Acceptance of Feedback

Ilgen et al. (1979) show that the recipient's perceptions of feedback accuracy mediate the effect of a feedback message on the feedback recipient's response. While outcome feedback is delivered to improve task performance, it may indicate the recipient's inadequate performance and, hence, such feedback is often perceived as unfavorable by the recipient (Kluger & DeNisi 1996). Consequently, the recipient may be reluctant to accept feedback, which is perceived negatively, and behave defensively, e.g., as the individual's desired self-image is threatened by the received feedback (Wang et al., 2014).

Accordingly, I predict the following:

Hypothesis 4. a): The perception of the feedback explains the negative correlation between virtual feedback and the acceptance of feedback on an individual level.

Hypothesis 4. b): The perception of the feedback explains the negative correlation between virtual feedback and the acceptance of feedback on the team level.

Method

Research Design

I conducted an experimental research study with a between-subjects design to test the effects of virtual and in-person feedback on team performance and the mediating effects of perception of feedback and acceptance of feedback. The aim was to examine the extent to which virtual feedback is less effective than in-person feedback for improving team performance. Due to the between-

subjects design, I randomly assigned participants to a group receiving in-person feedback or receiving virtual feedback.

Experimental Task, Participants, and Procedures

The experiment was conducted in Bachelor and Master courses at the Catholic University of Eichstätt-Ingolstadt, Germany. I recruited 153 students to participate in the experiment voluntarily. The sample size for this experiment composes 43 group-level observations with 3-4 team members per group. Participants worked in teams to solve a case study and presented their results in a mid-term and a final presentation. After each presentation, the teams received virtual feedback communicated by videoconferencing via Zoom, or the teams received in-person feedback. A blind-to-treatment process was applied.

The procedure of the experiment is depicted in Table 1.

Milestones in classes	Measured variable	Questionnaire
Kick-off	• Personality of participant • Preference of feedback	Questionnaire 1
Submission of mid-term presentation	Collaboration t1	Questionnaire 2
Mid-term presentation	Performance t1	
Feedback t1 (virtual/in-person)	• Perceived performance t1 • Perception of feedback t1 • Acceptance of feedback t1a	Questionnaire 3
	Acceptance of feedback t1b	Questionnaire 4
Submission of final presentation	Collaboration t2	Questionnaire 5
Final presentation	Performance t2	
Feedback t2 (virtual/in-person)	• Perceived performance t2 • Perception of feedback t2 • Acceptance of feedback t2a	Questionnaire 6
	Acceptance of feedback t2b	Questionnaire 7

Table 1. Visualization of the Research Process

Measures

I adapted the measures of the two key constructs (perception of feedback and acceptance of feedback) and those of the two control variables (personality and collaboration) from previous research considering this study's particular context. I measured perception of feedback with three items in terms of feedback delivery, favorability of feedback, and feedback quality adapted from Steelman et al.'s (2004) Feedback Environment Scale. Further, I added two items adapted from Colquitt (2001) in terms of perceived informational justice and perceived interpersonal justice to

measure perceived feedback on a 5-point scale. I measured acceptance of feedback with Nease et al. (1999) scale and adapted the items for collaboration from Hoegl & Gemuenden (2001). Collaboration describes individuals engaging in teamwork efforts towards a shared objective (Hoegl & Gemuenden, 2001). Additionally, I used an evaluation sheet developed by the Catholic University of Eichstätt-Ingolstadt, Germany, to measure performance in group projects. Finally, I used the Hexaco-60 of Ashton & Lee (2009) to measure the personality dimensions of participants.

Intended Results

As I am currently evaluating the data, only intended results are demonstrated in the following.

First, I expect that acceptance of feedback mediates the relationship between the receipt of feedback and the team's response to the received feedback. Further, I expect, that perception of feedback mediates the relationship between the receipt of feedback and acceptance of feedback. When communicating feedback virtually, teams might have a lower acceptance of feedback according to distractions in computer-mediated communication. Accordingly, I expect, that the effect of feedback on teams' performance might be lower when communicated virtually as the feedback may be perceived as inaccurate and lead to lower performance improvements than in-person feedback.

Conclusion

This study advances our understanding of the effects of outcome feedback on feedback response when communicating in-person and virtually, using computer-mediated communication. As research lacks an understanding about the relations of the feedback process when feedback is communicated virtually, this work is a first investigation that examines the extent to which virtual feedback is less effective than in-person feedback for improving team performance. This work makes several contributions regarding the educational context and management practices. Thus, this study helps to extend recent research in the educational context by proposing whether students should receive virtual or in-person feedback to increase feedback acceptance and improve their performance. Results of the study can be transferred to the organizational context. As organizations

need to adapt their management practices to the new work conditions, I offer first hints on whether feedback should be communicated best virtually or in-person for improving team performance. I also find distinctions for teams given their members' differences in personality and preferences for receiving feedback, allowing for implications that help manage diverse teams.

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