The Influence of Feedback Environment and Task Interdependence on the Relationship between Organizational Citizenship Behaviour and Group Performance

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Abstract

Previous research indicates a positive link between organizational citizenship behaviour and group performance. Possible factors that influence this relationship, however, have been little researched. Neither has this link been shown in a Dutch context. By investigating the influence of feedback environment and task interdependence on the relationship between OCB and group performance, this study hopes to contribute to academic discussion as well as provide companies with applicable strategies to improve group performance. OCB was expected to positively influence group performance. An increase in feedback environment and task interdependence was expected to strengthen the relationship between OCB and group performance through moderation. Self-reported survey data were analysed from participants ($N=195$) that are employed in The Netherlands and form part of a work team. The results suggest that OCB positively relates to group performance, confirming previous findings for the working population in The Netherlands. Feedback environment and task interdependence did not moderate the relationship between OCB and group performance. However, additional analyses show that feedback environment does mediate the relationship between OCB and group performance. These results demonstrate the importance of OCB and feedback environment for group performance.

Keywords: organizational citizenship behaviour (OCB), group performance, task interdependence, feedback environment,

The Influence of Feedback Environment and Task Interdependence on the Relationship between Organizational Citizenship Behaviour and Group Performance

In general, competitive organizations wish to hire and retain employees who are capable and motivated to reach their formal goals, but who also display behaviours beyond formal role requirements (Katz, 1964). In fact, extra-role behaviours are a necessity for effective organizations; "An organization which depends solely on its blueprints of prescribed behaviour, is a very fragile social system" (Katz, 1964, p.132). This 'extra-role behaviour' was first introduced as Organizational Citizenship Behaviour (OCB) by Bateman and Organ (1983), who defined OCB as 'supra-role behaviours' (p.588), and by Smith et al. (1983), who defined OCB as 'altruistic' and 'cooperation' behaviour (p. 653-654). Nowadays, most research adheres to Organ's (1988) definition of OCB as "individual behaviour that is discretionary, not directly or explicitly recognized by the formal reward system, and in the aggregate promotes the efficient and effective functioning of the organization" (Organ et al., 2006, p.95).

In recent years, OCB has received increased scholarly attention (Hoffman et al., 2007; Podsakoff et al., 2000), which has mainly focused on the relationship between OCB and organizational performance. The importance of OCB for organizational group performance has previously been emphasized by various studies (e.g., Podsakoff et al., 2009; Sun et al., 2007; Podsakoff et al., 1997). As such, OCB has developed into a major construct in both the field of psychology and the management field (Mohammad et al., 2011). In particular due to OCB's important contribution to the survival of an organisation (Organ, 1988) and its positive influence on overall organisational effectiveness (Walz & Niehoff, 1996). This makes it relevant for both for-profit and non-profit companies to investigate how they can shape their work environments in such a way that the beneficial effect of OCB on group performance increases. Indeed, many researchers including Podsakoff et al. (2000) have called for clarification of the OCB-performance link through researching possible influential environmental factors. However, most factors of the work environment likely to influence this relationship remain to be explored.

Two of these factors, which likely influence the productivity of work environments, are feedback environment and task interdependence. This study aims to investigate the effect of these potential influential environmental factors on the relationship between OCB and group performance (Figure 1). More specifically:

How do Feedback Environment and Task Interdependence influence the relationship between OCB and group performance?

The following sections will first argue why this study expects a positive relationship between OCB and group performance. The sections thereafter will elaborate why feedback environment and task interdependence are expected to enhance the positive relationship between OCB and group performance.

The Relationship between OCB and Group Performance

Meta-analysis based on 206 samples has shown an overall positive relationship between OCB and performance both at the individual level and at group level (Podsakoff et al., 2009). In addition, Podsakoff and colleagues (1997) have found that OCB may affect both group performance quantity and quality. Prior research has identified several mechanisms through which OCB may benefit group performance. These mechanisms may be separated into those directly increasing group performance and those firstly increasing performance of individual members, which will accumulate and benefit the group performance.

Figure 1

Proposed Theoretical Model: relationship between OCB, task interdependence, feedback environment and group performance
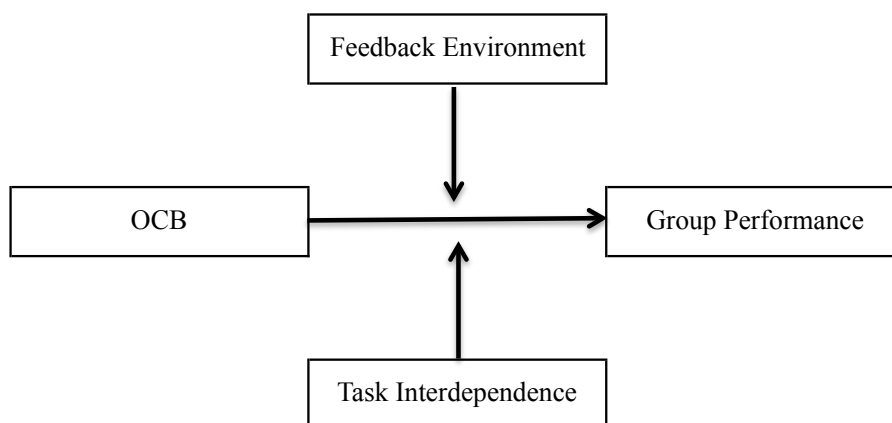
Group Performance through increased Individual Performance

The theoretical basis for the proposition that OCB influences individual performance lies with the Social Exchange Theory and the Principle of Reciprocity: Social Exchange Theory proposes that social behaviour, for example helping behaviour, generates the expectation of reciprocity (Konovskyy & Pughs, 1994; Gouldner, 1960). For example, if colleague A helps out colleague B to meet a deadline for a group project, colleague B will likely reciprocate this help. As a result, the whole group performance for the project improves. Moreover, OCB can help to reduce social friction and enhance the general productive atmosphere, or team spirit (Organ, 1988). This enables individuals to focus more on their tasks and less on team-maintenance (Nielsen et al., 2012). Thus, OCB can enhance group performance by enhancing individual performance, due to continuation of extra-role behaviours as maintained by the principle of reciprocity, and an increased focus on tasks due to reduced social friction.

Group Performance

OCB also directly facilitates group performance. Firstly, as OCB eases social interaction, it also enhances coordination between team members (Smith et al., 1983). For example, if senior employees help new employees to settle in, employees' work methods get synchronised, which eases coordination of tasks. Secondly, OCB helps to make the performance of team members predictable, which reduces process variability and leaves time to spend on productive activities, which enhances group performance and (Nielsen et al., 2012). Group OCB may also serve as a 'substitute for leadership' (Nielsen et al., 2012, p.671). For instance, teams may advise their leader on ways to improve productivity or take it upon themselves to train new members. This reduces the team leaders' workload and frees their time to spend on productive activities (Podsakoff & MacKenzie, 1995). Thus apart from increasing individual performance, OCB can also directly enhance group performance through enhanced coordination, predictability of behaviour and by reducing team leaders' workload.

Based upon this previous body of work, and in line with general professional consensus, this study similarly expects to find a positive relationship between OCB and group performance among working adults in The Netherlands.

Hypothesis 1: *Organizational Citizenship Behaviour positively influences group*
Performance.

Relating Feedback Environment to OCB and Group Performance

Both organizational psychology and more specifically performance appraisal research have emphasized the importance of formal feedback for individual and group performance (e.g. Vigoda-Gadot & Angert, 2007; Whitaker et al., 2007; Rosen et al., 2006; Steelman et al., 2004; Kluger & Denisi, 1996). However, the role that feedback plays in an organization stretches further than just formal performance feedback. The effect of feedback depends on various factors, such as the accuracy of the message, the manner in which the message is delivered, credibility of the person delivering the feedback and the perceived fairness of the message (Shute 2008; Earley 1986). Nonetheless, few studies have reached beyond formal performance feedback to study the impact of the wide-ranging feedback environment on group performance. 'Feedback environment' refers to a dynamic system of daily feedback interactions between supervisors and subordinates and co-workers amongst themselves rather than formal appraisal feedback sessions (Steelman et al., 2004, p.166). Peterson (2009) offered suggestions for three key elements necessary for developing a supportive feedback environment: providing feedback of high quality that is trusted, tactful delivery and time for informal feedback sharing.

Although very little research has been conducted on the relationship between feedback environment and group performance, there has been some exploration on the link between feedback culture and OCB. Research shows that employees who work in a supportive feedback environment are more likely to engage in OCB (Norris-Watts & Levy, 2004; Whitaker et al., 2007). Furthermore, employees perceive higher leader-member exchanges (Anseel et al., 2007), show better morale and job satisfaction (Rosen et al., 2006), report higher affective commitment to their organizations (Peng & Chiu, 2010; Norris-Watts & Levy, 2004) and experience a better person-organization fit (Peng & Chiu, 2010). These are all factors that indirectly contribute both to OCB and to group performance. Similarly, feedback environment might be influential to the relationship between OCB and group performance. There are two ways in which feedback environment likely impacts this relationship: firstly by clarifying behavioural expectations and secondly by decreasing uncertainty and ambiguity at the work floor.

Feedback environment influences employees' beliefs and behaviours on a daily basis (Rosen et al., 2006; London, 2003). According to the Social Information Processing Model, employees use information they obtain from their work environment to develop suitable attitudes (Salancik & Pfeffer, 1978). Expectancy Theory suggests that feedback clarifies what

behaviours are expected and rewarded in a company or team (Rosen et al., 2006). Feedback environment thus helps employees to clarify what task performance behaviours are expected of them. OCB are voluntary behaviours, thus not formally requested. However, feedback environment can also implicitly clarify what the behavioural standards are concerning OCB within the company (e.g. noticing colleagues pro-actively contribute ideas to management). In a well-functioning feedback environment where behavioural standards concerning OCB are clear to all, OCB is likely to be interpreted positively by employees. As a result it will be made good use of and increase group performance. When there is little feedback environment and expectations are unclear, OCB such as helping behaviours may be interpreted as a negative comment on one's abilities, or criticism (Bachrach et al., 2006). This mechanism will not be helpful to group performance.

Feedback environment also decreases uncertainty and ambiguity, and builds trust (Bandura, 1997). As a result, a good communicative and safe atmosphere at the work floor occurs, where employees are likely to feel appreciated, heard and feel like a team. Such an atmosphere likely improves job satisfaction, which has been positively liked to OCB (Fassina et al., 2008). In these situations, OCB is also more likely to be applicable, well timed and consequently appreciated and effective. Thus, the communicative atmosphere that feedback environment creates likely improves job satisfaction and the quality of OCB and therefore strengthens the linkage between OCB and group performance.

In conclusion, feedback environment contributes to a communicative work environment where behaviour expectancies (including OCB) are clear, and there is no ambiguity with regards to performance standards, which facilitates a stronger relationship between OCB and group performance. Based on the above-mentioned studies, this research expects the positive relationship between OCB and group performance to be stronger in companies with better feedback environment. To the knowledge of this researcher this is the first study to investigate the relationship between feedback environment, OCB and group performance.

Hypothesis 2: *Feedback environment moderates the relationship between OCB and group performance, such that the stronger the feedback environment is, the stronger the relationship between OCB and group performance becomes.*

Relating Task Interdependence to OCB and group Performance

Task interdependence refers to the extent to which an employee depends on other team members to carry out their work effectively (Van der Vegt & Janssen, 2003). The level of task interdependence varies on a continuum (Bachrach et al. 2006). High task interdependence occurs when performance demands cooperation among group members to fulfil their tasks, whereas low task interdependence occurs when each member contributes individually, with little teamwork necessary to accomplish tasks (task independence) (Podsakoff et al., 2000). Although Organ already argued in 1988 that task interdependence should affect the relationship between OCB and group performance, this contextual moderation has so far received little attention in OCB literature (Bachrach et al., 2006). Two studies form the exception: Bachrach and colleagues (2006) found in their experimental study that task interdependence positively moderates the relationship between helping behaviour (a form of OCB) and group performance. Nielsen and colleagues (2012) found in a longitudinal study that OCB corresponded positively with group performance of task-interdependent groups, whereas it had a neutral to negative effect on group performance of task independent groups.

Researchers have argued that the influence of task interdependence on the relationship between OCB and group performance is the result of the conditions that task interdependence imposes on the work environment (Nielsen et al, 2012). Firstly, teams with high task interdependence demand cooperation among group members to fulfil their tasks whilst in teams with low task interdependence little cooperation is required to accomplish personal tasks (Podsakoff et al., 2000). OCB is often more important for interdependent teams that need to coordinate activities, than when employees contribute individually (Organ, 2006). The more team members rely on each other to finish work, the more integrated OCB becomes in the full work process (Organ, 1988). In these cases, OCB facilitates group performance by improving cooperation (Cho, 2013; Smith et al., 1983). In task independent teams, OCB might just be a distraction from task work, or even be interpreted as offensive 'feedback indicative of poor performance' (Bachrach et al., 2006, p.1397).

Secondly, task interdependent work, which requires interaction with colleagues and division of work, is more ambiguous and less predictable than task independent work, where individual job expectations are more explicit (Bergeron, 2007). Rosen et al. (2006) argue that OCB facilitates social interaction and the understanding of role requirements. In the ambiguous context of task interdependence, the positive effect OCB has on role expectations

and social interactions is helpful for task distribution and collaboration. On the contrary, for task independent teams task distribution is less necessary and some forms of OCB may take up time that could better be invested in task performance. Thus, in interdependent OCB may facilitate group outcomes, whereas in independent teams, these behaviours may even impede group outcomes (Bachrach et al., 2006). OCB thus likely brings more benefits, the more task interdependent a team is. This study expects that the more task interdependent a team is, the more positive the relationship between OCB and group performance becomes.

Hypothesis 3: *Task interdependence moderates the relationship between OCB and group performance, such that for teams that score higher on task interdependence, the positive relationship between OCB and group performance is stronger than for teams that score lower on task interdependence (that are more task independent).*

Methods

Participants

Analyses were conducted on a sample of 195 adults employed in The Netherlands (52,9% female, 44,6% male), between the age of 20 and 67 years old ($M = 39.44$, $SD = 14.69$). Most participants were of Dutch nationality (95,2%) and 42.6% held a masters or post-graduate degree. Participants worked between 24 and 40 hours a week ($M=35.68$, $SD=5.15$) in a team on a common project, assignment or goal, which was a prerequisite to participate in the study. They held both managerial (30,3%) and non-managerial positions (69,7%). Participants were employed at a variety of organizations in various sectors (e.g. healthcare, ICT), in line with Organ's (1988) argument that benefits of OCB are universal and can be measured across sectors (see table 1 for elaborate demographic statistics).

Procedure

Data collection took place between March and April 2020. Participants were recruited via email, telephone and social media platforms (e.g. LinkedIn) to complete an online self-report questionnaire. Using the snowballing method, participants were asked to forward the questionnaire to their colleagues. IP addresses were recognized (but not saved to guarantee anonymity) to ensure that participants only participated once. First, participants were

provided with information concerning the procedures and an informed consent form. After agreeing to the informed consent, participants indicated their preferred language (English or Dutch) and completed a questionnaire that assessed their perceptions of the feedback environment at work, their OCB, the degree of task interdependence within their team and group performance. The questionnaire took between 15 and 20 minutes to complete. Participants were asked to honestly rate how thoughtfully they filled in the questionnaire, 95,2% rated their accuracy with a seven or higher out of ten. Then participants were thanked for their participation and informed of the purpose of the study. Contact details were provided for further questions or complaints.

Measures

The questions used in the questionnaire were originally developed in English. In order to ensure cross-linguistic equivalence, the researcher translated all items into Dutch and an independent bilingual translator back-translated them into English. All measures of the questionnaire used a 7-point Likert-type response scale with anchors ranging from 1 (*strongly agree*) to 7 (*strongly disagree*). For each variable aggregated scores were computed using means (see Appendix A for complete questionnaire). Table 2 displays construct reliability evaluated using Cronbach's alpha. Reliabilities ranged between .751 and .926, which are well above the minimum standard of .7. These results showed evidence of discriminant validity of the study construct.

Demographics

Participants indicated their gender, age, first nationality, highest education level, the amount of years they work at their current job, the number of hours they work per week, in which branch they were active, their seniority and the number of people in their team.

Group performance

The 8-item group potency scale by Guzzo et al. (1993) was used to assess group performance. Group potency is "the collective belief in a group that it can be effective" (Guzzo et al., 1993, p. 87) and can serve as an alternative to traditional cognitive variables to predict group performance (Jung & Sosik, 2003; Cohen & Bailey, 1997). Prior research has suggested a positive relationship between group members' collective confidence and group performance (Campion et al., 1993; Guzzo et al. 1993). Already in 1958 Sayles reported that groups with a strong sense of potency were effective at their work. Sample items are "Our

team has confidence in performing the job requirements" and "No task is too tough for our team". Reliability was good (α= .887).

Organizational Citizenship Behaviour

OCB is evaluated using Lee and Allen's (2002) 16-item OCB scale. The questions from Lee and Allen's (2002) scale were rephrased so they could be answered on a self-report scale. Sample items are "I help others who have been absent", and "I offer ideas to improve the functioning of the organization". Reliability was sufficient (α= .751).

Feedback Environment

Feedback environment was assessed by five constructs with 47 items of Steelman et al.'s (2004) Feedback Environment Scale (FES). These constructs measure all three key elements of a positive feedback environment suggested by Peterson (2009). The five constructs included in this study were: (1) Source Credibility, e.g. "I have confidence in the feedback my supervisor gives me" (2) Feedback Quality, e.g. "My supervisor/ co-workers give me useful feedback about my job performance" (measuring trustworthy feedback quality) (3) Feedback Delivery, e.g. "My supervisor/co-workers are tactful when giving me performance feedback" (measuring tactful delivery) (4) Feedback Availability e.g. "My supervisor/co-workers are usually available when I want performance information, and (5) Promotes Feedback Seeking, e.g. "My supervisor/co-workers encourage me to ask for feedback whenever I am uncertain about my job performance" (measuring time availability). The validity and reliability of each of these facets of the FES are supported by construct validation studies (see Steelman et al., 2004). In total 15 items were reverse coded.

The FES composes of two source dimensions: supervisor and co-worker. Although some previous researches have chosen to limit themselves to the supervisor dimension (e.g. Norris-Watts & Levy, 2004), this study used the complete scale, since research has suggested that these are both practical and relevant feedback sources that measure the feedback environment (Ashford, 1989). Reliability was good (α= .926).

Task interdependence

The 7-item scale from Kiggundu (1983) was used to measure task interdependence. This scale captures both the degree to which a team member is affected by the work of other team members ('perceived task interdependence') and the degree to which team success depends on coordination among members ('critical task interdependence') (Langfred, 2005, p.518). Sample items are "Most of my work activities are affected by the activities of other people on my team" and " My work cannot be done unless other people do their work". By

example of Han and Bai (2014) task interdependence was measured on a continuum from low to high. Reliability was sufficient (α= .787).

Control Variables

Age, gender and seniority were included as control variables, either in line with, or suggested by previous research to positively influence internal validity of the study (Vigoda-Gadot & Angert, 2007). In this study, these variables correlated with one or more of the independent or dependent variables, which supports the importance of controlling for them. Age was measured in years, as a continuous variable. Older employees are like to have more work experience, relevant knowledge and skills, which could lead to better group performance (Sturman, 2003). According to Miller and Karrakowsky (2005), gender (1 = women, 2 = men) influences feedback-seeking behaviour, which could affect the feedback environment score. As recommended by Vigoda-Gadot & Angert, 2007, seniority was included as a third control variable. Seniority and group performance likely influence each other.

Data Analysis

Data preparation

A response analysis found that out of 370 responses, 182 participants did not answer enough questions to measure a full construct of the independent variable OCB. Their questionnaires were excluded from the analysis, leaving 195 questionnaires for further analysis.

Design and Statistical Procedure

This study has a cross-sectional design in which OCB is the independent variable and group performance is the dependent variable. Task interdependence and feedback environment are included as moderators (Figure 1). Moderated multiple regression analyses were conducted to test the expected positive relationship between OCB and group performance and the expected moderations. The study used Model 1 of the Process Macro 3.4.1 by Hayes (2013) to perform the moderation analyses. Model 4 was used for an additional mediation analysis. The models generated bias corrected 95% bootstrap confidence intervals for indirect effects using 5000 bootstrap samples.

Results

Descriptive statistics

The descriptive statistics and correlations among predictors and control variables were inspected. Table 3 displays descriptive statistics: mean, standard deviation and inter correlations. When looking at the predictor variable, some significant correlations were observed in the expected direction. Feedback environment correlated with group performance ($r= .388$, $p<.001$) and OCB ($r=.219$, $p = .002$). OCB significantly correlated with group performance ($r= .249$, $p = .001$).

Assumptions

The assumption analysis showed that there was independence of residuals, as assessed by a Durbin-Watson statistic of 2.171. The assumption of an existing linear relationship between group performance (DV) and OCB, feedback environment and task interdependence (IVs) both collectively and separately was met, as assessed by partial regression plots and a plot of studentized residuals against the predicted values. Visual inspection of a plot of studentized residuals versus unstandardized predicted values, confirms homoscedasticity. To test for multicollinearity, variance inflation factor (VIF) scores were calculated. There was no indication of multicollinearity, since all VIF scores are below 2, and tolerance values were much greater than 0.1. No outliers were deleted.[i]

Table 1

Socio-demographic Characteristics of Participants

Characteristics	Full Sample				
	n	%	*M*	*SD*	Range
Age (years)	-	-	39.44	14.69	20- 67
Contract (working hours per week)	-	-	35.68	5.15	24- 40
Tenure (years)	-	-	8.34	9.78	1- 41
Team size (members)	-	-	10.65	7.89	2- 30
Carefulness (grade)	-	-	8.34	1.12	5- 10
Gender					
Female	99	52.9	-	-	-
Male	99	44.6	-	-	-
Other	99	0.5	-	-	-
Highest education level					
No qualifications	1	0.5	-	-	-
High school	8	4.3	-	-	-
Associate degree (MBO in Dutch)	11	5.6	-	-	-
Bachelor's degree (HBO and WO in Dutch)	70	35.2	-	-	-
Masters or post-graduate degree	94	42.6	-	-	-
Other	4	2.1	-	-	-
Unknown	7	3.6	-	-	-
Seniority					
Managing board	12	6.2	-	-	-
Supervisor/team leader	45	23.1	-	-	-
Employee	131	67.2	-	-	-
Unknown	7	3.6	-	-	-
Branch					
Healthcare and Welfare	39	20	-	-	-
Trade and Services	29	14.9	-	-	-
ICT	15	7.7	-	-	-
Justice, Security and Public administration	9	4.6	-	-	-
Agriculture, nature and fishery	2	1	-	-	-
Media and Communication	8	4.1	-	-	-
Education, Culture and Science	32	16.4	-	-	-
Technology, Production and Construction	16	8.2	-	-	-
Tourism, Recreation and Hospitality	7	3.6	-	-	-
Transport and Logistics	3	1.5	-	-	-
Other	25	12.8	-	-	-
Unknown	8	4.1	-	-	-
Nationality					
Netherlands	177	90.8	-	-	-
Other*	9	4.6	-	-	-
Unknown	9	4.6	-	-	-

Note: N =195.

*Czech Republic, Denmark, Ecuador, Egypt, Finland, guatemala, Malaysia, Slovakia, South Africa

Table 2

Reliability Analysis

	Cronbach's alpl	N of items
Group Performance	.887	8
OCB	.751	16
Feedback Environment	.926	47
Task Interdependence	.787	7

Note: OCB= Organizational Citizenship Behaviour.

Table 3

Descriptive Statistics and Pearson Correlation Analysis

Variable	M	SD	1	2	3	4	5	6	7
1. Group Performance	2.48	.86							
2. OCB	2.45	.52	.249**						
3. Feedback Environment	2.62	.62	.388***	.219**					
4. Task Interdependence	2.69	.87	.042	.119	.022				
5. Age	39.44	14.69	.093	-.135	.151*	-.166*			
6. Gender (0=male, 1=female)	-	-	-.144*	.066	.147*	-.100	.144*		
7. Supervisor (0 = employee, 1= supervisor)	-	-	-.099	-.220**	.151*	-.142	.114	.057	
8. Managing board (0= employee, 1 = managing board)	-	-	-.224**	-.213**	-.130	-.161*	-.005	.149*	-.140

Note: Seniority is dummy coded. N= 187-190 as a result of missing values. OCB= Organizational Citizenship Behaviour.
*p<.05, **p<.01, ***p<.001,

Hypothesis Testing

OCB and Group Performance

To test for hypothesis 1, the expected positive main effect of OCB on group performance, multiple linear regression was conducted. As shown in table 4 the beta weight for the relationship between OCB and group performance was significant and in the expected direction (b= .376, t (181) = 3.127, p = .002). Results showed a positive relationship between OCB and group performance, which provides support for hypothesis 1. As shown in table 4,

13.6% of the variance within group performance is explained by OCB. As shown in model 2 and 3 in table 4, OCB no longer significantly predicted group performance when feedback environment was included in the moderated multiple analyses ($b = .620$, $t(179) = 1.587$, $p = .114$) nor when task interdependence was included ($b = .202$, $t(178) = .527$, $p = .599$).

OCB, Feedback and Performance

Hypothesis 2 predicted that feedback environment as a moderator positively influences the relationship between OCB and group performance. As shown in model 2 table 4, 25.1% of the variance in group performance was explained by OCB and feedback environment together, more than the 13.6% predicted by OCB alone. Still, the addition of the interaction brought no significant change to the model, $F(1,179) = 8.558$, $p = .277$, $R^2 = .251$, Notably, the confidence intervals surrounding the indirect effect of feedback environment did span 0 CI [-.439, .127]. The results showed no evidence of an indirect effect of feedback environment, which is different from 0 with a 95% confidence interval. Therefore, the association between OCB and group performance did not significantly increase when an increase in feedback environment occurred. Consequently, hypothesis 2 was not supported. However, a significant, positive main effect of feedback environment on group performance was found, $b = .884$, $t(179) = 2.375$, $p = .019$.

OCB, Task Interdependence and Performance

Hypothesis 3 predicted that task interdependence as a moderator positively influences the relationship between OCB and group performance. As shown in model 3 in table 4, 13.3% of the variance in group performance was explained by OCB and feedback environment together. The addition of the interaction brought no significant change to the model, $F(1,179) = 3.883$, $p = .630$, $R^2 = .133$, and the confidence intervals surrounding the indirect effect of task interdependence spanned 0 CI [-.201, .331]. The results showed no evidence of an indirect effect of task interdependence, which is different from 0 with a 95% confidence interval. Therefore, the association between OCB and group performance did not significantly increase when task interdependence increased and hypothesis 3 was not supported. No main effect was found of task interdependence on group performance ($b = -.151$ $t(178) = -.452$, $p = .652$).

Table 4

Regression Results

Independent Variables	Group Performance								
	Model 1			Model 2			Model 3		
	b	SE	p	b	SE	p	b	SE	p
Independent Variable									
OCB	.376**	.120	.002	.620	.391	.114	.202	.384	.599
Feedback Environment				.884*	.372	.019			
Task Interdependence							-.151	.334	.652
Interactions									
OCB x Feedback Environment				-.156	.144	.277			
OCB x Task Interdependence							.065	.135	.630
Control Variables									
Age	.008*	.004	.046	.005	.004	.173	.008	.004	.050
Gender (1= female)	-.254*	.120	.035	-.323*	.113	.005	-.253*	.121	.038
Managing board	-.558*	.256	.030	-.478*	.240	.048	-.562*	.262	.034
Supervisor	-.145	.145	.319	-.289*	.139	.038	-.149	.149	.316
F	5.681			8.558			3.883		
R^2	.136***			.251***			.133***		
df	5, 181			7, 179			7, 178		

Note: Seniority (supervisor and managing board) is dummy coded. OCB= Organizational Citizenship Behaviour.
Model 1: OCB, Group performance.
Model 2: OCB, Group performance, Feedback Environment.
Model 3: OCB, Group performance, Task Interdependence.
Model 4: OCB, Group performance, Feedback Environment, Task Interdependence.
*p<.05, **p<.01, ***p<.001.

Additional Mediation Analysis

Although not hypothesized, due to interesting findings an additional mediation analysis was performed. When no moderators were included in the regression analysis a significant positive relationship between OCB and group performance was found (model 1 table 4). This relationship was no longer significant when either of the moderators were included in the analysis. Furthermore, the analysis found a significant main effect of feedback environment on group performance (model 2 table 4). This suggests that the relationship between feedback environment and group performance takes away variance from the main effect of OCB on group performance, which could be indicative of mediation. Moreover, the variation within group performance almost doubled when feedback environment was added to the regression (R^2 = .136, to R^2 = .251). Therefore, a mediated multiple regression analysis was conducted (table 5). OCB was included as the IV, group performance as the DV and feedback environment as the mediator.

The mediation analysis showed a significant, positive relationship between OCB and feedback environment, b = .329, t (181) = 3.778, p < .001 (a-path). Furthermore, a significant positive relationship between feedback environment and group performance was found, b = .492, t (180) = 5.127, p < .001 (b-path). OCB significantly predicted group performance, b = .376, t (181) =3.127, p = .002 (c-path). This relationship was no longer significant when feedback environment was added as a mediator (c'-path), b = .214, t (180) = 1.828, p = .069. To confirm mediation, indirect effects were analysed. A mediation effect was found. Indirect effect of OCB on group performance was .162 and significant since the confidence intervals did not include 0 (*SE* = .056, 95%, CI [.059, .282]). The Sobel test confirmed this mediation (*z*=2.07, p = .04). In line with expectations, the additional mediation analysis showed that feedback environment mediated the effect of OCB on group performance and 24,6% of the variance within group performance was predicted by the mediation (Figure 2).

Table 5

Mediation Analysis: Total, Direct and Indirect Effects of OCB on Group Performance

	b	SE	t	p	95% CI	
					LL	UL
Total effect						
OCB predicting FB (a-path)*a*	.329***	.087	3.778	.000	.158	.502
FB predicting GP (b-path)*b*	.492***	.096	5.127	.000	.303	.682
OCB predicting GP (c-path)*a*	.376**	.120	3.127	.002	.139	.613
Direct effect						
OCB predicting GP (c'-path)*b*	.214	.117	1.828	.069	-.017	.445
Control Variables						
Age	.006	.004	1.406	.162	-.002	.013
Gender	-.317**	.113	-2.815	.005	-.539	-.095
Supervisor	-.286*	.139	-2.055	.041	-.559	-.011
Managing board	-.488*	.239	-.2.036	.043	-.962	-.015
Indirect effect	*Effect*	*BootSE*			*BootLL*	*BootUL*
OCB on GP when FB is added	.162	.057	-	-	.061	.282

Note: Seniority (supervisor and managing board) is dummy coded. The effect of control variables represent the model where feedback environment is included.
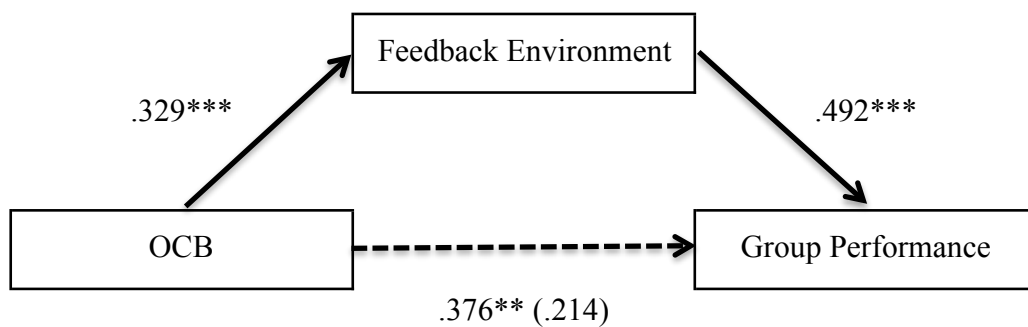
OCB= Organizational Citizenship Behaviour, FB= Feedback Environment, GP= Group Performance.

N: a= 181, *b*= 180

*p<.05, **p<.01, ***p<.001,

Figure 2

The relation between OCB and Group Performance Mediated by Feedback Environment

Discussion

In both the domain of psychology and the management field, there is great consensus that OCB contributes to group effectiveness. As a result, researchers have called for the investigation of environmental factors possibly influential to the OCB-performance link. The purpose of this study was to gain a better understanding of the influence of feedback environment and task interdependence, two factors of the work environment, on the relationship between OCB and group performance. As expected, OCB and group performance show a positive association when no other variables are included in the analysis. Contrary to expectations, neither feedback environment nor task interdependence moderates this relationship. Due to this surprising result, an additional mediation analysis was conducted. Interestingly enough, this additional analysis shows that feedback environment mediates the relationship between OCB and group performance.

Hypothesis 1

Building on previous research by Podsakoff et al. (2009) and arguments from Organ (1988) and Gouldner (1960), this study hypothesized a positive relationship between OCB and group performance. In the current study this relationship is found when no other variables are included in the analysis, which confirms the positively relationship between OCB and group performance for the adult working population in The Netherlands.

Hypothesis 2

Although no moderating effect of feedback environment was found, interestingly enough, the data shows a significant direct relationship between feedback environment and group performance. One way to interpret this result is that feedback environment directly increases group performance. Indeed, previous experimental research has found that formal performance feedback positively affects group performance by enhancing collective efficacy (Jung and Sosik, 2003). The findings of the current study suggest that not only formal performance feedback directly and positively affects group performance, but that the broader feedback environment does so as well. Additionally, the results show that the relationship between OCB and group performance is no longer significant when feedback environment is included in the analysis. This suggests that the relationship between feedback environment and group performance is so strong that it marginalizes the relationship between OCB and group performance. These findings imply that feedback environment might be more

important to group performance than was originally expected and could be indicative of mediation.

Additional Mediation Analysis

The initial results were a clear indication that this study would benefit from an additional mediation analysis to investigate whether feedback environment truly mediates the relationship between OCB and group performance. Additionally, this analysis serves the broader purpose of this study: investigating possible effects of environmental conditions of the work floor that might strengthen the relationship between OCB and group performance. Previous research has shown the importance of feedback on the work floor (Matsui et al., 1987), and the way this feedback is provided (DeShon et al., 2004; Kluger & DeNisi, 1996), for work performance. According to Bandura (1997), feedback helps employees to form ideas about what kind of future performance is expected of them and will be rewarded. According to the Social learning theory, constructive feedback can thus take away uncertainty and increase the collective confidence of a group. In line with this reasoning, it can be argued that a feedback environment provides security and collective confidence, which will increase group performance. Regarding the linkage between feedback environment and OCB, previous research has demonstrated that supervisors' provision of an advantageous feedback environment enhances employees' OCB through the intermediary mechanisms of positive affective cognition and positive attitude (Norris-Watts & levy, 2004; Rosen et al., 2006; Whitaker et al., 2007). The mediation effect of feedback environment that was found suggests that feedback environment might be crucial for the positive effect of OCB on group performance to occur.

One explanation for this mediation is that OCB indirectly influenced group performance by positively influencing feedback environment, which in turn positively influences group performance. OCB, by improving social interaction (Organ, 1988) and decreasing uncertainty and ambiguity (Bandura, 1997), contributes to a pleasant, communicative atmosphere at the work floor where employees feel safe. As a result, employees are not only more likely to feel comfortable to provide feedback, they are also more likely to be eager to help colleagues by providing them with constructive feedback. Possibly, the safe and communicative work atmosphere that OCB creates strengthens the feedback environment. A strong feedback environment implies that colleagues are available to provide feedback, feedback seeking is promoted and the provided feedback is respected, of good quality and thoughtfully delivered. Thus, in organizations with a feedback environment

colleagues regularly provide each other with constructive feedback on each other's work performance, which will increase group performance. Indeed the atmosphere of the work environment (Imran et al., 2012) and the provided feedback (London, 2003) influence performance.

Another possible explanation for the mediating effect of feedback environment is more technical. Some of the measured components of OCB are closely related to provision of feedback, e.g. "I offer ideas to improve the functioning of the organization" and "I willingly give my time to help others who have work-related problems". Helping a colleague with their work tasks usually involves providing suggestions (feedback). In other words, certain aspects of OCB and feedback environment overlap. It is very possible that those aspects of OCB that overlap with feedback environment account for the significant positive relationship between OCB and group performance found in this study. This explains why, when feedback environment is included in the analysis either as a moderator or as a mediator, the main effect between OCB and group performance is no longer significant, although still positive. This would mean that it is actually the effect of the feedback environment embedded in the measurement of OCB that positively influences group performance.

These findings contribute to our understanding of the role feedback environment plays in the relationship between OCB and group performance and highlights the fact that there is much more to learn about the influences of work contexts affecting OCB and group performance.

Hypothesis 3

Contrary to expectations and previous research by Nielsen et al. (2012) and Bachrach et al. (2006), no moderating effect of task interdependence was found in this study. The discrepancy in results between the current study and previous studies might be attributed to differences in design and measurement of the variables.

The study of Bachrach et al. (2006) was of experimental design where task interdependence was manipulated and as a result very prominent at the moment of testing. In the study of Nielsen et al. (2012) group members from entire teams participated, instead of individual participants that are also part of a work team. As a result here too, the group and the interdependence of group members was possibly more at the forefront of their minds. Furthermore, Nielsen et al. conducted a longitudinal study, whereas this study has a cross-sectional design that relies on survey data. The added value of the interaction may become apparent only when participants are followed over an extended time period.

Another dissimilarity of design concerns the measurement of OCB. In some researches OCB is subdivided into five components, among them the two studies that found a moderating effect of task interdependence. Bachrach et al. (2006) only focused on one component of OCB (helping behaviour) whereas Nielsen et al. (2012) also found the effect for two other components (sportsmanship, civic virtue). In the current study OCB was researched as an inclusive, broad concept encompassing all five components of OCB. Previous studies possibly only found a moderation of task interdependence because they measured such specific behaviours, not encompassing all the aspects important to OCB such as 'I offer ideas to improve the functioning of the organization' or 'I show genuine concern and courtesy toward co-workers, even under the most trying business or personal situations.' Potentially, task interdependence is more important for those components of OCB measured by previous studies. For example, how dependent you are of a colleague to finish your work more likely affects whether you help this colleague than that it affects your conscientious behaviour. The results of this study provide valuable information on the relationship between OCB, group performance and task interdependence when OCB is researched in all of its richness. To make more thorough conclusions about the moderating effect of task interdependence, future investigations could consider exploring the moderation effect for the separate subdivisions of OCB.

Practical implications

The results of this study have important practical implications. Firstly, this study contributes to the academic debate on factors influential to the OCB-performance link. The results clearly demonstrate the important role that feedback environment plays in the linkage between OCB and group performance. To increase group performance, organizations may employ several strategies to create a well-functioning feedback environment to favour the positive effect of OCB on group performance.

Firstly, organizations may encourage a high-quality feedback environment by providing coaching and training for supervisors and employees. The five subscales used to measure feedback environment provide guidelines for developing targeted training. For example, organizations may train employees how to formulate constructive feedback (increase feedback quality and delivery), how to show their willingness to provide feedback (availability) and how to request feedback (feedback seeking).

Secondly, policies may be developed that cultivate a feedback-oriented culture. For

example, organizations may (1) make more time available for providing on-going feedback (2) promote supervisors and co-workers to acquire knowledge about employee's performance (3) encourage engagement of supervisors and co-workers in the work of others (4) promote feedback-seeking behaviours.

Limitations

Certain limitations of this study could be addressed in future research. Firstly, this study relied on cross-sectional data, which means no causal relationships between the studied variables can be established, only speculated. For example, a bi-directional relationship between feedback environment and group performance might exist, where better group performance also increases feedback environment. With a longitudinal study the direction and causality of this relationship could be investigated further. Future studies could start from time-series designs to collect longitudinal data to further clarify causal relationships between the studied variables.

A second limitation relates to the sample profile. In general the demographics of the participants were satisfactory: there was a good distribution of age, gender, employment branch and tenure. Nevertheless, the demographics posed some limitations. Team sizes range from 2 to 30 people. This is quite a wide range and it is possible that some of the variables included in the research, such as task interdependence, have different implications depending on team size. Moreover, many participants are highly educated (87,8% bachelor or masters degree). When education level and team size are included as control variables, the pattern of results did not change. Nevertheless, highly educated people are more likely to have certain types of jobs (white collar jobs), which could make the results more applicable to a certain kind of feedback environment (e.g. office spaces). Since data were collected through snowballing method and convenience sampling, a sampling bias might be present. The sample was also culturally homogenous (90,8% Dutch) and measured the effects for employees employed in The Netherlands, which is known for its non-hierarchical work culture (Expatica, 2020). In the past decade there has been an increase in self-managed teams and flat organizations in The Netherlands, without hierarchy and supervisors at all. Therefor, the results of the current study are not necessarily generalizable to countries with more hierarchical work cultures.

A third limitation refers to the data collection process. In this study all variables were measured on a self-report scale. There are advantages to self-report measure, such as better

insight in one's own behaviours enacted at work (Carpenter et al., 2014). However, self-report measures also leave room for a social desirability effect (McDonald, 2008) and "minor changes in question wording, format or context can result in major changes of the obtained results, potentially leading to issues with credibility of responses" (Schwartz, 1999, p.93). However, participants tended to score themselves below average on both group performance and OCB, which does not seem to point towards a desirability effect.

A fourth limitation relates to the timing of the study. When interpreting results it is important to take into account environmental factors of the study. The data collection of the current study took place in March and April 2020, just when the COVID-19 outbreak interrupted normal work routines. Starting from the 11th of March, all employees in The Netherland in non-vital professions had to work from home (World Health Organization, 2020). Due to this drastic change of work environment participants might appreciate their usual feedback environment differently, be it more positive because of missing social interaction, or more negative because of complicated online communication. Similarly, participants' definition of 'task interdependence' might be different in a home office. Possibly the changed work environments due to COVID-19 played a part in the non-significance of the expected moderation effects. Of course, participants could also have filled in their responses keeping their usual work environment in mind. As a result, it is difficult to gauge the actual effect the pandemic might have had on the dataset. In terms of future research it would be useful to extend current findings by further research into the relationship between OCB and group performance under normal work circumstances. This research has made a start at studying the influence of the work environment on the relationship between OCB and group performance. Future research may explore other potential moderators and mediators such as leadership styles and physical conditions.

Conclusion

This study was one of the first to look at work environment factors potentially influential to the relationship between OCB and group performance. By doing so, it has contributed to the growing body of literature on the relationship between work processes and group performance and will hopefully reinvigorate academic debate on this important matter. Despite some limitations, the present study has contributed to the understanding of the relationship between OCB and group performance, in which feedback environment seems to

play a big part. This study shows that feedback environment mediates the positive

relationship between OCB and group performance. Additionally, it has confirmed the

previously found positive relationship between OCB and group performance for the working

population in The Netherlands. These findings provide useful insight for how companies may

implement targeted coaching to increase their group performance.

[i] One participant had a standardized residual of 4.34, a predicted value of 2.1 compared to an observed value of 5.5, which is an error of prediction (residual) of 3.41. Inspection of the histogram showed a visualisation of this outlier. However, upon further inspection this participant showed a LEV of .0203, which is only slightly above the rule of thumb for being a safe value (0.2) (Huber, 1981). Therefore the answers to the reversed coded questions were inspected for this individual. Data inspection did not show an unusual pattern of results for the recoded questions. Thus, in other to keep the data as inclusive as possible no outliers were deleted.

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Appendix A
Operationalization table

Group Performance	
Source	Potency scale by Guzzo, Yost, Campbell & Shea (1993).
Calculation of scores	Group performance is measured through "the collective belief in a group that it can be effective (Guzze et al., 1993, p. 87).
Indicators	1. Our team has confidence in performing the job requirements. 2. Our team expects to be known as a high-performing team. 3. Our team feels it can solve any problem it encounters. 4. Our team believes it can be very productive. 5. Our team can get a lot done when it works hard. 6. No task is too tough for our team. 7. Our team believes it can become unusually good at producing high quality work. 8. This team expects to have a lot of influence around here.

Organizational Citizenship Behaviour	
Source	OCB scale by Lee and Allen's (2002).
Calculation of scores	"Individual behaviour that is discretionary, not directly or explicitly recognized by the formal reward system, and in the aggregate promotes the efficient and effective functioning of the organization" (Organ, Podsakoff & MacKenzie, 2006, p.95).
Indicators	1. I help others who have been absent. 2. I willingly give my time to help others who have work-related problems. 3. I adjust my work schedule to accommodate other employees' requests for time off. 4. I go out of my way to make newer employees feel welcome in the work group. 5. I show genuine concern and courtesy toward coworkers, even under the most trying business or personal situations. 6. I give up time to help others who have work or non-work problems.

	7. I assist others with their duties. 8. I share personal property with others to help their work. 9. I attend functions that are not required but that help the organizational image. 10. I keep up with developments in the organization. 11. I defend the organization when other employees criticize it. 12. I show pride when representing the organization in public. 13. I offer ideas to improve the functioning of the organization. 14. I express loyalty toward the organization. 15. I take action to protect the organization from potential problems. 16. I demonstrate concern about the image of the organization.

Feedback Environment	
Source	Feedback Environment Scale (FES) by Steelman, Levy and Snell (2004).
Calculation of scores	"The feedback environment refers to the contextual aspects of day-to-day supervisor-subordinate and coworker-coworker feedback processes rather than to the formal performance appraisal feedback session" (Steelman, Levy and Snell, 2004, p.166).
Indicators	*Source Credibility* 1. My supervisor is generally familiar with my performance on the job. 2. My co-workers are generally familiar with my performance on the job. 3. In general, I respect my supervisor opinions about my job performance. 4. In general, I respect my co-workers' opinions about my job performance. 5. With respect to job performance feedback, I usually do not trust my supervisors. 6. With respect to job performance feedback, I usually do not trust my co-workers. 7. My supervisor is fair when evaluating my job performance. 8. My co-workers are fair when evaluating my job performance. 9. I have confidence in the feedback my supervisor gives me. 10. I have confidence in the feedback my co-workers give me. *Feedback Quality* 1. My supervisor gives me useful feedback about my job performance. 2. My co-workers give me useful feedback about my job performance. 3. The performance feedback I receive from my supervisor is helpful. 4. The performance feedback I receive from my co-workers is helpful. 5. I value the feedback I receive from my supervisor.

6. I value the feedback I receive from my co-workers.
7. The feedback I receive from my supervisor helps me do my job.
8. The feedback I receive from my co-workers helps me do my job.
9. The performance information I receive from my supervisor is generally not very meaningful.*
10. The performance information I receive from my co-workers is generally not very meaningful.*

Delivery
1. My supervisor is supportive when giving me feedback about my job performance.
2. My co-workers are supportive when giving me feedback about my job performance.
3. When my supervisor gives me performance feedback, he/she is considerate of my feelings.
4. When my co-workers give me performance feedback, they are usually considerate of my feelings.
5. My supervisor generally provides feedback in a thoughtless manner.*
6. My co-workers generally provide feedback in a thoughtless manner.*
7. My supervisor does not treat people very well when providing performance feedback.*
8. In general, my co-workers do not treat people very well when providing performance feedback.*
9. My supervisor is tactful when giving me performance feedback.
10. In general, my co-workers are tactful when giving me performance feedback.

Source availability
1. My supervisor is usually available when I want performance information.
2. My co-workers are usually available when I want performance information.
3. My supervisor is too busy to give me feedback.*
4. My co-workers are too busy to give me feedback.*
5. I have little contact with my supervisor.*
6. I have little contact with my co-workers.*
7. I interact with my supervisor on a daily basis.
8. I interact with my co-workers on a daily basis.
9. The only time I receive performance feedback from my supervisor is during my performance review.*

Promotes Feedback Seeking
1. My supervisor is often annoyed when I directly ask for performance feedback.*
2. My co-workers are often annoyed when I directly ask them for performance feedback.*
3. When I ask for performance feedback, my supervisor generally does not give me the information right away.*
4. When I ask for performance feedback, my co-workers generally do not give me the information right away.*

	5. I feel comfortable asking my supervisor for feedback about my work performance. 6. I feel comfortable asking my co-workers for feedback about my work performance. 7. My supervisor encourages me to ask for feedback whenever I am uncertain about my job performance. 8. My co-workers encourage me to ask for feedback whenever I am uncertain about my job performance. * Reversed coded.

Task Interdependence	
Source	Task Interdependence Scale by Kiggundu (1983).
Calculation of scores	Task interdependence refers to the extent to which an employee depends on other members of their team to carry out their work effectively (Van der Vegt & Janssen, 2003).
Indicators	1. The team works best when we coordinate our work closely. 2. Team members have to work together to get group tasks done. 3. The way individual members perform their jobs has a significant impact on others in the team. 4. My work cannot be done unless other people do their work. 5. Most of my work activities are affected by the activities of other people on the team. 6. Team members frequently have to coordinate their efforts with each other. 7. We cannot complete a project unless everyone contributes.