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ORIGINAL ARTICLE

Interprofessional teamwork in primary care: the effect of functional heterogeneity on performance and the role of leadership

Alissa Lysanne van Zijl, Brenda Vermeeren, Ferry Koster, and Bram Steijn

Department of Public Administration and Sociology, Erasmus University Rotterdam, Rotterdam, Netherlands

ABSTRACT

This study aimed to unravel the complexity of interprofessional teamwork in primary care teams by testing the relationship between functional heterogeneity and team performance through the mediating role of information elaboration, and the moderating roles of directive leadership and participative leadership. The moderated mediation model was validated using survey data from 1105 professionals and 97 supervisors in 143 Dutch primary care teams. The results confirmed the model and showed a significant negative effect of functional heterogeneity on information elaboration, which in turn had a positive effect on team performance. Both directive and participative leadership moderated the negative effect of functional heterogeneity on information elaboration to the extent that the indirect negative effect of functional heterogeneity on team performance became insignificant under high levels of either directive or participative leadership. The theoretical implications of these findings for the literature on healthcare, team diversity, and leadership, as well as the practical implications for policy makers, educationalists and managers of primary care teams, are discussed.

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Functional heterogeneity; team performance; information elaboration; leadership; interprofessional teamwork; primary care teams

Introduction

Recent health and social care reforms emphasize the fundamental role of integrated care (Best & Williams, 2018). Primary care teams therefore increasingly depend on the contribution of multiple professionals (Brown et al., 2011). As a result, the team composition embodies a variety of job roles, which is also described as 'functional heterogeneity' (Somech, 2006). Based on the premise that the broader range of knowledge and skills enhances problem solving and work efficiency, functional heterogeneity is expected to improve team performance (van Knippenberg, de Dreu, & Homan, 2004). Although this link is widely assumed among researchers and practitioners, empirical studies testing this relationship between functional heterogeneity and team performance show inconclusive findings.

Diversity scholars argue that these inconclusive findings reflect the complex dynamics between the opportunity and the difficulty in combining a wide range of perspectives and information resources (van Knippenberg et al., 2004). Following this rationale, functional heterogeneity will only benefit team performance if the different perspectives and information resources within the team are exchanged, discussed, and amalgamated, a process known as 'information elaboration' (van Knippenberg et al., 2004).

However, in functionally heterogeneous teams, this process of information elaboration is unlikely to occur spontaneously. Team members first need to know how to utilize and complement their different information, perspectives, and skills (West, 2002). Several scholars have therefore emphasized the importance of leadership in stimulating team performance in functionally heterogeneous teams, including in the context of primary care (Somech, 2006). Despite the potentially critical role of leadership in functionally heterogeneous teams, there remains a lack of a clear mediating process to explain how leadership influences team performance. These observations come together in the following research question: To what extent does the relationship between functional heterogeneity and team performance evolve through the process of information elaboration, and how does leadership influence this relationship in primary care teams?

By answering this research question, this research aimed to contribute to the healthcare literature, the diversity literature and the leadership literature. These contributions are discussed in more detail at the end of this study, but first the theoretical framework, methods and results are described below.

Theoretical framework and hypotheses

Functional heterogeneity in primary care teams

Interprofessional teamwork is becoming increasingly commonplace in health and social care (Hofhuis et al., 2018). The majority of primary care teams in high-income countries in Europe, North America, and Australasia rely on a mix of professionals to provide community-based primary health and social care services (Harris et al., 2016). Health and social care scholars have consequently shown growing interest in the dynamics related to interprofessional teamwork. From these

CONTACT Alissa Lysanne van Zijl vanzijl@essb.eur.nl Department of Public Administration and Sociology, Erasmus University Rotterdam, Burg. Oudlaan 50, Rotterdam 3062PA, The Netherlands

studies, a picture emerges that team processes and performance related to a team's interprofessional character are more complex than frequently assumed, and that firm conclusions have yet to be drawn.

Interestingly, this image also emerges from earlier studies on functional heterogeneity. Diversity scholars have described that although the wider range of available information sources in functionally heterogeneous teams can improve team performance, the differences in information initially cause communication difficulties, resulting in less information being exchanged, discussed and integrated (van Knippenberg et al., 2004). This process of information elaboration therefore plays a crucial role for the performance of functionally heterogeneous teams.

Specifically in the context of primary care teams, information processing is expected to be more complex because a large variety of skills and knowledge is needed to deal with the complex and diverse problems between "cradle to grave" (Brown et al., 2011). Moreover, primary care teams have multiple goals such as preventing problems and improving the quality of care and health outcomes at affordable costs (Fiscella & Mcdaniel, 2018). These complexities point toward the various skills, tasks, and job roles required for successful team performance. The various professionals that together cover this wide area of skills, tasks, and job roles also reflect different professional educational backgrounds and socializations, diverse vocabularies, and dissimilar values (Reeves, Macmillan, & van Soeren, 2010).

According to Reeves et al. (2010), the economic and political dynamics have increased the division between the education and the socialization of the various professionals in health and social care. Functional heterogeneity in primary care teams could make the professional identities more salient, thereby stimulating professionals to protect their individual professional identities (Mitchell & Boyle, 2015). Professionals' expectations about roles and role outcomes can also conflict, hampering the performance of functional heterogeneous teams (Johnson, Nguyen, Groth, & White, 2018). It has been found, as a result of this, that interprofessional teamwork in primary care teams tends to reflect sequential interdependent tasks rather than integrated and interdependent work (Fiscella & Mcdaniel, 2018). This leads to the paradoxical conclusion that, specifically in primary care teams, a context that preeminently requires interprofessional teamwork, functional heterogeneity hinders the exchange, discussion, and integration of knowledge and skills among professionals with different expertise. As such, the specific context of primary care teams differs from what has predominantly been suggested, and the first hypothesis is therefore:

H1: Functional heterogeneity has a negative effect, through information elaboration, on team performance in primary care teams.

The role of leadership in primary care teams

This paradox of functional heterogeneity in primary care teams emphasizes the need for substantial guidance in interprofessional teamwork (Reeves et al., 2010). In this regard, several diversity scholars have emphasized the central role of leadership in the performance of heterogeneous teams (e.g. Homan & Greer, 2013). Leadership covers a wide range of leadership styles and behaviors whose effectiveness depends on the context (Van Wart, 2017). In the context of primary care teams, previous research has shown an effect of *directive* and *participative* leadership on the relationship between functional heterogeneity and team performance (Somech, 2006). Current research into primary care teams therefore also focuses on directive and participative leadership, in order to further investigate the earlier shown influence of leadership on the relationship between functional heterogeneity and team performance.

Directive leadership

A directive supervisor is recognizable by the clear communication of decision-making frameworks that align with the leader's vision (Van Wart, 2017). In particular, in functionally heterogeneous teams, this decision-making framework should communicate that all job roles are equally essential for team performance (Kahai, Sosik, & Avolio, 1997). By focusing on the shared and common mission, a directive leader reduces biases and supports team members in overcoming their initial tendency to avoid communication with team members who they perceive as others (Benoliel & Somech, 2015). Furthermore, a directive supervisor regularly poses questions, communicates otherwise unshared information, and motivates members to apply this unshared information (Larson, Christensen, Franz, & Abbott, 1998), which all facilitates the complex communications between different job roles (D'Amour, Ferrada-Videla, San Martin Rodriguez, & Beaulieu, 2005). Directive supervisors in primary care teams moreover explicitly tap into the needs for a shared language and purpose among the various professionals (Reeves et al., 2010). To summarize, directive leadership buffers the negative effect of functional heterogeneity on information elaboration in primary care teams, which helps professionals to integrate their efforts effectively to deliver team performance. This leads to the following hypothesis:

H2: Directive leadership moderates the indirect relationship between functional heterogeneity and team performance in primary care teams through information elaboration, such that this relationship becomes less negative when directive leadership increases.

Participative leadership

Participative leadership is commonly characterized by open communication processes and shared decision-making (Van Wart, 2017). In the context of functionally heterogeneous teams, it is especially relevant that these open communication processes reduce social risks and communication barriers between team members with different job roles (Somech, 2005) and stimulate team members with different job roles to exchange and elaborate on the information they have

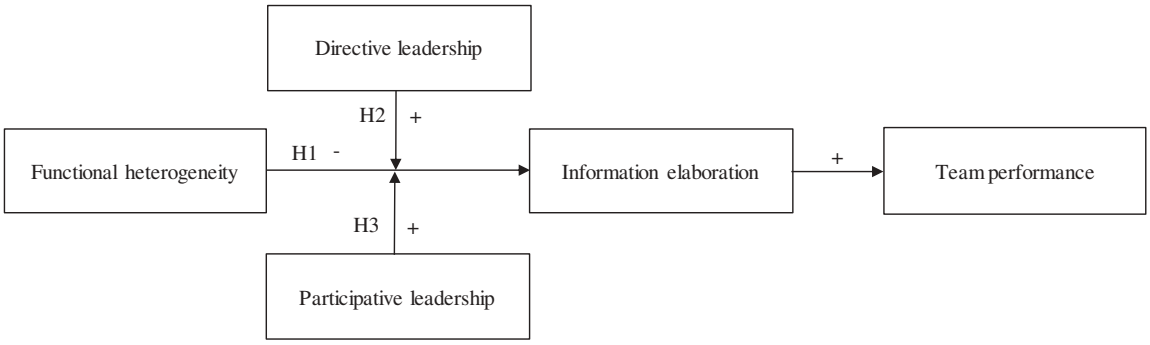

Figure 1. The hypotheses as a conceptual model.

available (Somech, 2006). Moreover, shared decision-making is particularly relevant in functionally heterogeneous teams since the shared responsibility should motivate team members to share, discuss, and integrate their different information resources for optimal decision-making (Kirkman & Rosen, 1999). In addition, in primary care teams, participative leadership will explicitly tap into the need for mutual respect among the different professional identities (Reeves et al., 2010). Overall, participative leadership thus buffers the initial negative effects of functional heterogeneity on information elaboration in primary care teams, thereby enabling professionals to integrate their efforts more effectively in team performance. This results in the following hypothesis:

H3: Participative leadership moderates the indirect relationship between functional heterogeneity and team performance in primary care teams through information elaboration, such that this relationship becomes less negative when participative leadership increases.

The three hypotheses are combined in a moderated mediation model as shown in Figure 1.

Method

Sampling

Between May 2016 and January 2017, two online surveys were conducted among supervisors and professionals working in Dutch primary care teams in 13 municipalities, including the four Dutch municipalities with the largest number of inhabitants. The supervisors and professionals of these teams received a unique online survey, adapted to the terminology of each municipality in accordance with the organizational differences. In the invitation e-mail, all respondents were informed about the purpose of the study and guaranteed anonymity. At least two reminders were sent to increase the response rate. This resulted in responses from 1401 professionals (a response rate of 50%) and 122 supervisors (a response rate of 92%) who completed the online survey. Primary care teams were included in the final sample if their supervisor and at least 30% of the team members had completed the survey. This criterion was adopted to increase the representativeness of the measures calculated for the teams. As a result, 143 primary care teams (an 84% inclusion rate), including 1105 professionals and 97 supervisors, were examined in this study. The respondents' characteristics are reported in Table A1 in the appendix.

Measures

To reduce common method bias, measures were obtained from administrative data, from the supervisor, and from the professionals. This section describes how the different variables were measured. All the items used from the supervisor and professional surveys are listed in the appendix (Appendix B).

Functional heterogeneity was calculated using Blau's (1977, p. 9) index of heterogeneity, $1- \Sigma (P_i)^2$, where P_i is the proportion of team members in the i^{th} category (e.g., Wiersema & Bantel, 1992). In the present study, this i^{th} category refers to the job titles of the professionals. To develop an objective measure of functional heterogeneity similar to that used by Somech (2006), the job titles were obtained from the municipalities' administrations. Seemingly similar job descriptions were evaluated based on corresponding vacancy adverts and, if the job descriptions in the adverts appeared to describe the same job, the different job titles were assigned to the same category, otherwise new categories were added. Following this process, 39 job titles were identified in the various municipality administrations. If fewer than 85% of a team's job titles were available in the administrative data, the functional heterogeneity was labeled as missing (n = 6). The functional heterogeneity index theoretically ranges between 0 and 1 (Blau, 1977). A higher score on the index indicates a higher degree of functional heterogeneity, while a lower score on the index stands for less variation in functions (Smith et al., 1994). In the current sample the index ranged from 0 to .92 with an average of .47.

Participative and directive leadership were measured in the supervisor survey through 16 items based on the measurement scale of Deci, Connell, and Ryan (1989). The measurement includes four vignettes, each describing a problem that a supervisor of a primary care team could typically encounter during their daily routines. An example vignette is "One of the external stakeholders has let you know that they are not very satisfied with the attitude of a member of your team". Each vignette was followed by four descriptions of behavioral responses to the problem, indicating more participative or more directive leadership. An example item of the directive leadership item scale is "Tell her to see that the stakeholder is more satisfied and let her know you will be

checking up on her". An example item on participative leadership is "Raise the matter with your subordinate to see what has been going on in her dealings with that stakeholder". The responses were given on a five-point Likert-type scale ranging from 1 being a *very unsuitable solution* to 5 being a *very suitable solution*.

A factor analysis with principal axis factors extraction and direct oblimin rotation was conducted to explore the underlying construct of the 16 leadership items. The scree test revealed a structure with two factors as expected, in which one factor describes clear communication of decision making and expectations, and the other factor describes open communication processes and shared decision making. The factor loadings of the two factors were acceptable above .30 and there were no cross-loadings above .32 (Costello & Osborne, 2005). The Kaiser-Meyer-Olkin score of .94 and the significant Bartlett's test of Sphericity supported the sampling adequacy. This leads to the conclusion that the construct validity of the leadership measure is sufficient.

The Cronbach's alpha of the directive leadership scale was .95 and did not increase further if any item was deleted. The reliability analysis of the participative leadership scale indicated that Cronbach's alpha would increase if the second item "Explain the situation and wait if they have suggestions about how they could meet the current demands" was deleted. On reflection, the Dutch translation of this item seemed to better reflect laissez-fair leadership than participative leadership, and so it was deleted. This resulted in a Cronbach's alpha of .97 for the participative leadership scale.

Information elaboration was measured in the professional survey with a scale of six items based on the information elaboration scale of van Dick, van Knippenberg, Hägele, Guillaume, and Brodbeck (2008). A sample item is "In my primary care team, we discuss the content of our work a lot". The responses were given on a five-point Likert-type scale ranging from 1: *fully disagree* to 5: *fully agree*. The scale reliability test indicated that a higher Cronbach's alpha would be achieved if the sixth item was deleted. On the basis that the sixth item emphasized individual behavior, whereas the other five items emphasized collective behavior, this sixth item was deleted. This resulted in a Cronbach's alpha of .87.

Team performance was also measured by means of a six-item scale in the survey for the professionals. The items were based on the "employee judgment of effectiveness" scale of Campion, Papper, and Medsker (1996). Respondents were asked to grade their team on six effectiveness indicators. A sample indicator being "the quality of care provided by our team". The responses were given on a ten-point Likert-type scale with the highest score of 10 corresponding to *excellent*, which reflects the Dutch ten-point grading system. The Cronbach's alpha is .83.

Control variables considered in the study were team size and team tenure. Team size influences team processes in the way that an increase in team size leads to coordination problems and reduced participation. For example, as a team grows, this leads to more distance between team members, thereby hindering mutual interaction (Smith et al., 1994). Team sizes were obtained from the municipalities' administrations and ranged from 5 to 43 team members. Team tenure can influence team processes because "team composition–outcome relationships are likely to be variable over time and need to be considered" (Mathieu, Tannenbaum, Donsbach, & Alliger, 2014, p. 146). Team tenure was calculated as an objective measure based on the number of months between the moment the team was established and was included in the study. The teams' tenures ranged between 17 and 27 months.

Team-level variance

The unit of analysis in the present study is on the team level. This means that the concepts of information elaboration and team performance, which were measured on the individual professional level, had to be aggregated. To examine whether data aggregation was justified, the intra-class correlations (ICC) were calculated to evaluate to what extent the answers of the professionals were influenced by their team membership (ICC1), and how reliably the average score of the professionals distinguishes the teams (ICC2; LeBreton & Senter, 2008). Prior to this, the "average" number of members per group (N_g) was estimated to take into account the relatively wide range of team sizes (between 5 and 43; Bliese & Halverson, 1998, p. 168) using the following formula:

$$\begin{aligned} N_g &= (1/(\text{Number of teams} - 1)) \\ &\quad \times \left(\sum \text{Team sizes} - \left(\sum \text{Team sizes}^2 / \sum \text{Team sizes}\right)\right) \\ &= (1/(143 - 1)) \times (2,163 - (39,527/2,163)) = 15.10 \end{aligned}$$

The ICC values in Table 1 show that team membership has a small to medium (.06) association with the professionals' ratings of information elaboration, and a small association (.03) with the professionals' ratings of team performance. The ICC2 values furthermore indicate that 47% of the variance in information elaboration and 33% of the variance in team performance is explained at the team level.

The R_{wg} values were additionally calculated to assess the interrater agreement. The R_{wg} values range from 0 to 1 and respectively represent absence of agreement and complete agreement, the value of .7 being the traditional separation point for sufficient agreement (LeBreton & Senter, 2008). As seen in Table 1, the R_{wg} values score above the cutoff value. Because both concepts have also been operationalized as team constructions, it can now be concluded that aggregation of individual scores at team level is justified.

Measurement model

Confirmatory factor analyzes (CFA) were conducted to test whether the theoretical model, including the four factors of directive leadership, participative leadership, information elaboration, and team performance, fitted better than the

Table 1. Intra-class correlations (n = 1,105).

	R_{wg}	ICC1[a]	ICC2[b]	F[c]
Information elaboration	.79	.06	.47	1.901***
Team performance	.73	.03	.33	1.502***

[a]ICC1 = (MSB-MSW)/MSB + [(k-1) x MSW] where MSB = mean square between teams; MSW = mean square within teams; k = estimated team size
[b]ICC2 = (MSB-MSW)/MSB.
[c]F = MSB/MSW
*** p < .01.

alternative one-factor model. The results in Table A2 show a significantly better fit for the theoretical four-factor model than the alternative model ($\chi^{2diff}_{(6)} = 188$, $p < .001$). This suggests that the theoretical constructs are reflected in the empirical data. However, the theoretical model's fit indices fail to meet all the thresholds for a satisfactory fit ($\chi^2_{(293)} = 510$, $p < .01$, SRMR = .08, RMSEA = .08 (90% CI = .067 to .090), TLI = .851, CFI = .834). As a way to improve the model's fit, modification indices (MIs) of 3.84 or higher and expected parameter change (EPC) values above .2 were evaluated (Brown, 2015). After theoretical consideration of the suggested model improvements (Arbuckle, 2016, p. 108), seven error term correlations were added to the theoretical model. The revised model showed an adequate fit: $\chi^2_{(287)} = 412$, $p < .01$, SRMR = .08, RMSEA = .06 (90% CI = .046 to .072), TLI = .917, CFI = .906 (Table A2), and fitted the data significantly better than the theoretical model ($\chi^{2diff}_{(6)} = 42$, $p < .001$). This adequate model fit supports discriminant validity between the constructs and validates the use of the constructs as intended (Brown, 2015).

Assessing common method bias

The results are at risk of being influenced by common method bias, which is the inflation of observed relationships that can occur when the independent and dependent variables are based on ratings measured simultaneously in a single survey (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). To minimize this risk, functional heterogeneity was measured using data from administration departments and leadership through the supervisors' survey. To test whether common method bias was nevertheless present, due to the common source of the professionals measures, the Satorra-Bentler scaled difference in χ^2 between the structural parameters with and without the latent common method variance factor in the model was calculated. This test was carried out using the robust maximum-likelihood estimation in Rstudio® version 1.0.136 and the Lavaan package (Rosseel, 2014). The results (Table A2) revealed an insignificant change ($\chi^{2diff}_{(2)} = 3$, $p > .05$), which suggests that the relationships detected in the current data are unlikely to be affected by common method bias (Podsakoff et al., 2003).

Statistical analysis

The hypotheses were tested with the bootstrapping-based moderated mediation analysis approach using the PROCESS macro 2.16.3 included in SPSS statistics 24. Before the analyzes were conducted, the independent variables were standardized. The results are interpreted following the two-step approach suggested by Hayes (2013, p. 372–373) to investigate moderated mediation. The first step divides the indirect effect into two components. One component involves the effect of the independent variable on the mediating variable that is dependent on the moderating variable (i.e., moderation). The other component is the effect of the independent variable on the dependent variable having controlled for the effect of the mediating variable (i.e., mediation). In the second step, the conditional indirect effect is examined based on the point estimation and the 95 per cent bias-corrected bootstrap confidence intervals (CIs) for different conditions of the moderator (i.e., moderated mediation).

Ethical considerations

Ethical approval was not required by the research institute nor by the Dutch law on medical research, and the data was managed in accordance with the Dutch Personal Data Protection Act.

Results

Table 2 presents the descriptive statistics and correlations of the central variables in the current study. The correlations show that functional heterogeneity relates positively to directive leadership ($r = .33$, $p < .01$) and to participative leadership ($r = .35$, $p < .01$). This suggests that an increase in functional heterogeneity is associated with an increase in both directive and participative leadership. Indeed, the correlation between participative and directive leaderships is positive ($r = .18$, $p < .05$), suggesting that supervisors combine both. The correlation table also shows that functional heterogeneity relates negatively to information elaboration ($r = -.26$, $p < .01$) and to team performance ($r = -.33$, $p < .01$), and that information elaboration and team performance correlate positively ($r = .51$, $p < .01$). These correlations are in line with the hypotheses, suggesting that more functional heterogeneity is associated with less information elaboration and team performance. In line with the literature, the correlations also show that an increase in team size is associated with decreases in information elaboration ($r = -.29$, $p < .01$) and in team performance ($r = -.24$, $p < .01$). As suggested by Dormann et al. (2013), the VIF scores were additionally calculated to test for multicollinearity. Table 2 shows VIF scores of 1.761 or

Table 2. Descriptive statistics and correlations (n = 143).

	Variable	Mean	SD	VIF	1	2	3	4	5	6
1	Team size[1]	15	6.92	1.125						
2	Team tenure in months[1]	20.22	3.71	1.477	−.09					
3	Functional heterogeneity[1]	0.47	0.32	1.761	.19*	−.55**				
4	Directive leadership[2]	2.21	0.62	1.137	.02	−.18*	.33**			
5	Participative leadership[2]	4.39	0.72	1.171	.16	−.27***	.35**	.18*		
6	Information elaboration[3]	3.78	0.34	1.175	−.29**	.03	−.26**	−.12	−.07	
7	Team performance[3]	7.57	0.37		−.24**	.10	−.33**	−.07	−.07	.51**

Note. SD = standard deviation; [1] based on administrative data. [2] measured in the supervisors' survey.
[3]measured in the professionals' survey.
* $p < .05$; ** $p < .01$; *** $p < .001$

lower, which is sufficiently below the threshold of 10. The correlations and VIF scores therefore give no cause for concern.

Ordinary least square regression analyzes

To assess the hypothesized moderated mediation following the two-step approach as suggested by Hayes (2013), first ordinary least square (OLS) regression analyzes were performed to test the effect of functional heterogeneity on information elaboration moderated by leadership. The results are shown in Table 3.

The results of Model 1 indicate a negative relationship between functional heterogeneity and information elaboration (β = −.28, $p < .05$) that is positively moderated by directive leadership (β = .14, $p < .05$). Figure 2 visualizes this interaction effect of directive leadership and shows a significant negative relationship between functional heterogeneity and information elaboration when directive leadership is low (β = −.42, $p < .001$ at −1 SD), but an insignificant negative relationship when directive leadership is high (β = −.14, $p > .05$ at +1 SD).

The results from Model 2 support a negative relationship between functional heterogeneity and information elaboration (β = −.32, $p < .001$) that is positively moderated by participative leadership (β = .25, $p < .01$). Figure 3 visualizes the interaction effect between functional heterogeneity and participative leadership on information elaboration. This plot shows a significant negative relationship between functional heterogeneity and information elaboration when participative leadership is low (β = −.56, $p < .001$ at −1 SD), and an insignificant negative relationship when participative leadership is high (β = −.12, $p > .05$ at +1 SD).

In line with the suggestion by Hayes (2013), the first step of the analysis concludes by testing the effect of information elaboration, while controlling for functional heterogeneity, on team performance. The findings (Model 3 in Table 3) suggest that information elaboration is positively related to team performance (β = .38, $p < .001$) when controlling for the effect of functional heterogeneity (β = −.21, $p < .05$). This supports our first hypothesis (H1). Moreover, the results of the first step provide sufficient evidence to warrant examining the conditional indirect effect, through information elaboration, of functional heterogeneity on team performance for different levels of directive and participative leadership.

Table 3. Results of ordinary least square regression analyzes for predicting team performance (n = 143).

	Information elaboration				Team performance	
	Model 1		Model 2		Model 3	
Variables	B	*SE*	B	*SE*	B	*SE*
Constant	−.02	.08	−.06	.09	.06	.06
Control variables						
Team size	−.25**	.09	−.26**	.09	−.06	.06
Team tenure	−.18	.10	−.17	.10	−.05	.10
Main predictors						
Functional heterogeneity	−.28*	.09	−.32***	.09	−.21*	.09
Information elaboration					.38***	.07
Directive leadership	.00	.09				
Participative leadership			.20*	.09		
Interactions						
Directive leadership x Information elaboration	.14*	09				
Participative leadership x Information elaboration			.25**	.09		
R^2	.17		.20		.31	

Note. B = unstandardized regression coefficient; *SE* = standard error
* $p < .05$; ** $p < .01$; *** $p < .001$

Moderated mediation with bootstrap sampling

In the second step, the conditional indirect effect of functional heterogeneity through information elaboration on team performance is examined by extracting 5000 bootstrap samples. The point estimation and the 95 per cent bias-corrected bootstrap confidence intervals (CIs) for the conditional effects of directive leadership are presented in Table 4. This analysis shows that the indirect relationship, through information elaboration, between functional heterogeneity and team performance is only significant at average (*indirect* effect = −.11, 95% bias-corrected CI = [−.22, −.04] at $\bar{x}$) or below average (*indirect* effect = −.16, 95% bias-corrected CI = [−.31, −.07] at −1 SD) levels of directive leadership. This indirect relationship is insignificant if the level of directive leadership is high (*indirect* effect = −.05, 95% bias-corrected CI = [−.16, .03] at +1 SD). These findings support the argument that the negative indirect effect of functional heterogeneity, which evolves through information elaboration, on team performance is less

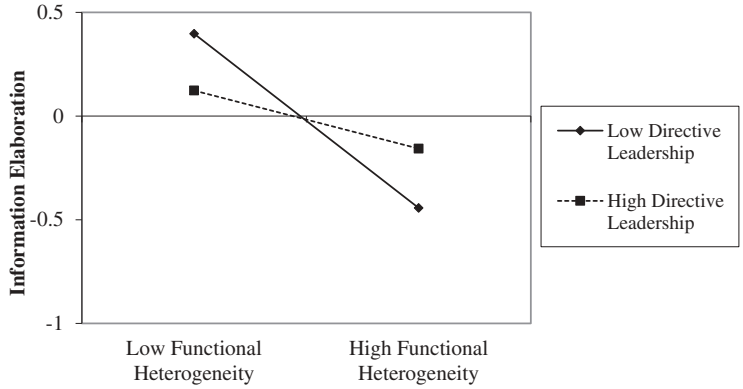

Figure 2. Interactive effect of directive leadership and functional heterogeneity on information elaboration.

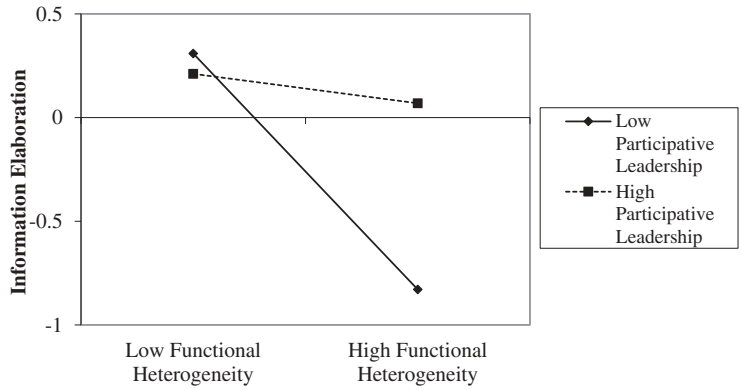

Figure 3. Interactive effect of participative leadership and functional heterogeneity on information elaboration.

Table 4. Indirect effect of functional heterogeneity on team performance through information elaboration for different conditions of directive leadership.

Directive leadership	B	*SE*	95% bias-corrected bootstrap CI
− 1 SD	−.16	.06	(−.31, −.07)
Mean	−.11	.04	(−.22, −.04)
+ 1 SD	−.05	.05	(−.16, .03)

Note. 95% bias-corrected bootstrap confidence intervals are derived from 5000 replications.
SD = standard deviation; B = unstandardized regression coefficient; *SE* = standard error

Table 5. Indirect effect of functional heterogeneity on team performance through information elaboration for different conditions of participative leadership.

Participative leadership	B	*SE*	95% bias-corrected bootstrap CI
− 1 SD	−.21	.06	(−.34, −.12)
Mean	−.12	.04	(−.22, −.05)
+ 1 SD	−.05	.04	(−.14, .03)

Note. 95% bias-corrected bootstrap confidence intervals (CI) are derived from 5000 replications.
SD = standard deviation; B = unstandardized regression coefficient; *SE* = standard error

negative if the supervisor is more directive. This supports Hypothesis 2.

The point estimation and the 95 per cent bias-corrected bootstrap confidence intervals for the conditional effects of participative leadership are presented in Table 5. These results suggest that the indirect relationship, through information elaboration, between functional heterogeneity and team performance is significant and negative when the level of participative leadership is average (*indirect* effect = −.12, 95% bias-corrected CI = [−.22, −.05] at $\bar{x}$) or below average (*indirect* effect = −.21, 95% bias-corrected CI = [−.34, −.12] at −1 SD), but insignificant for high levels of participative leadership (*indirect* effect = −.05, 95% bias-corrected CI = [−.14, .03] at +1 SD). This implies that the indirect relationship between functional heterogeneity and team performance through information elaboration becomes less negative under increasing levels of participative leadership, thereby supporting Hypothesis 3.

Discussion

This study findings revealed a negative relationship between functional heterogeneity and team performance, mediated by information elaboration. Moreover, it was shown that directive leadership or participatory leadership mitigates the negative effect of functional heterogeneity on information elaboration, meaning that functionally heterogeneous teams benefit from strong leadership. These findings have three important implications for research and theory. First, the present study contributes to the healthcare literature by responding to the call for more empirical research on interprofessional teamwork and leadership. This study reveals that directive or participative leadership both effectively buffer the potential reduction in information elaboration in functionally heterogeneous primary care teams.

Second, this study contributes to the team diversity literature by unraveling the complex relationship between functional heterogeneity and team performance through the mediating role of information elaboration in the specific context of primary care teams. Scholars have suggested that the so-called "black-box" between functional heterogeneity and team performance could only be understood in terms of a mediating mechanism, such as information elaboration (van Knippenberg et al., 2004). Further, scholars have been encouraged to consider the specific context in coming to an understanding of the direction of the effect of functional heterogeneity (van Knippenberg et al., 2004). Taking this into account, the current study shows that functional heterogeneity in the complex context of primary care hampers information elaboration, which in turn lowers team performance.

Third, this study contributes to the leadership literature by showing that leadership moderates the relationship between functional heterogeneity and information elaboration. Directive leadership and participative leadership were expected in particular to influence performance in functional heterogenous primary care teams (Somech, 2006). The current study supports this assumption and explains how this influence develops (i.e. through information elaboration), thereby further refining the existing theory.

This study has at least two practical implications. First, given our finding that functional heterogeneity has a negative effect on team performance, policymakers and management are advised to carefully consider the range of job roles actually needed within a primary care team, and to seek innovative solutions to the downsides of interprofessional teamwork in primary care teams. Second, based on the finding that leadership can buffer the initial negative effect of functional heterogeneity on information elaboration, policymakers and

management are encouraged to train and develop the leadership capacity of the supervisors of primary care teams who currently tend to receive little education or support (Reeves et al., 2010).

Future research might address some of the limitations of the current study. Firstly, current research is limited because no attention has been paid to the power and hierarchy issues that arise in interprofessional contexts (Cohen Konrad, Fletcher, Hood, & Patel, 2019). Future researchers could gain additional insight by taking into account the influence of functional heterogeneity and leadership on power relations, and the subsequent implications for information elaboration and team performance.

A second limitation of this research is its generalizability. Professional functions are in the Netherlands closely linked to the legislation and professionals therefore tend to form categories around the Social Support Act, the Youth law and the Participation Law. To bring the different professional categories together, leadership skills have become highly relevant in the Dutch primary care. Future researchers are therefore recommended to take into account the fact that the professional roles and the role of leadership can differ per country.

A third limitation is in the focus on directive and participative leadership. Future studies could usefully examine other forms of leadership that are suggested to be effective for interprofessional teamwork, such as "authentic" or "servant leadership" (Brewer, Flavell, Trede, & Smith, 2016), or adopt a combined leadership model to better understand how leadership is influenced by the context and situation (Van Wart, 2017).

Lastly, the use of cross-sectional data to test a mediation process is an important limitation of this study. Cross-sectional analyzes risk to over- or underestimate indirect effects, giving rise to concerns about the causal inferences (Maxwell, Cole, & Mitchell, 2011). Future researchers are therefore advised to collect longitudinal data, so that the time aspect inherent in a mediation process can be taken into account.

Conclusion

More generally, this study's findings suggest that integrated teamwork is insufficiently addressed in professional education and socialization. Educationalists and policymakers are therefore encouraged to look for ways to help professionals combine their disciplinary expertise with the ability to translate their own skills and knowledge to other disciplines, while also using and absorbing skills and knowledge from those other disciplines (Bierema, 2018)

Notes on contributors

Alissa Lysanne van Zijl is a PhD student at the department of Public Administration and Sociology at Erasmus University Rotterdam, the Netherlands.

Brenda Vermeeren is an assistant professor at the department of Public Administration and Sociology at Erasmus University Rotterdam, and an advisor at ICTU-InternetSpiegel (a program of the Ministry of Interior and Kingdom Relations, The Netherlands).

Ferry Koster is associate professor of Labor, Organization, and Management at the department of Public Administration and Sociology at Erasmus University Rotterdam, the Netherlands.

Bram Steijn is a full professor of Public Administration at the department of Public Administration and Sociology at the Erasmus University Rotterdam. He is also vice dean and director of education at the Erasmus School of Social and Behavioral Sciences (ESSB), Erasmus University Rotterdam, the Netherlands.

ORCID

Alissa Lysanne van Zijl http://orcid.org/0000-0003-4569-1514
Brenda Vermeeren http://orcid.org/0000-0002-2380-1703
Ferry Koster http://orcid.org/0000-0002-4814-6741
Bram Steijn http://orcid.org/0000-0001-7437-7503

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Appendix A

Table A1. Respondent characteristics.

	Variable	N	Mean	SD	Minimum	Maximum
1	Female (dummy: yes) [a]	1105	0.85		0	1
2	Age in years[a]	1100	41.48	10.97	20	65
3	Professional tenure in years[a]	1091	14.43	9.79	0	45
4	Education level[a]	1105	5.14	0.57	1	7
5	Female (dummy: yes) [b]	96	0.72		0	1
6	Age in years[b]	97	45.55	8.67	29	61
7	Professional experience (dummy: yes)[b]	97	0.82	0.38	0.00	1.00

Note. SD = standard deviation.
[a]measured in the professionals' survey. [b] measured in the supervisors' survey.

Table A2. Goodness-of-fit test results for each model.

	χ^2 (df)	χ^2/df	RMSEA	SRMR	CFI	TLI	AIC	BIC	χ^2diff
Measurement model									
Baseline model	1676 (325)	5.16							
One-factor model	1141 (293)	3.82	.157	.186	.389	.336	7008	7162	
Four-factor model	510 (293)	1.74	.078	.083	.851	.834	6195	6367	188(6)***
Revised theoretical model	412 (287)	1.44	.059	.079	.917	.906	6073	6263	42(6)***
Common method model	410 (285)	1.44	.059	.080	.917	.906	6075	6270	3(2)
Criteria for good fit		≤2.00	<0.08	<0.08	>0.9	>0.9			

Note. Smaller AIC and BIC values indicate a better model.
*** $p < .001$

Appendix B: items

Note: Primary healthcare teams in the Netherlands are called 'neighborhood teams' because of their responsibility for the citizens in a specific neighborhood (Dijkhoff, 2014).

Information elaboration

(1) My team members exchange a lot of information about the work.
(2) My team members often say things that lead me to learn something new about the work.
(3) In my neighborhood team, we discuss the content of our work a lot.
(4) In my neighborhood team, we often talk about our ideas about the work.
(5) My team members often say things that lead me to new ideas.

Team performance

(1) Quality of work done by our team
(2) Satisfaction of clients of our team
(3) Productivity of our team
(4) The degree work is completed on time by our team
(5) The speed at which care is delivered by our team
(6) Overall performance of our team

Leadership

The following questions are about what you, as a manager, think is a suitable approach in certain situations. Four possible approaches are described for each situation. For each of these approaches, can you please indicate to what extent you think it is suitable? ('1' stands for a *very unsuitable approach*. '5' stands for a *very suitable approach*)

Please note, there are no right or wrong answers in these possible situations. After all, people lead in different ways. The point is to what extent you think a certain approach is appropriate.

Case 1. Recent changes in your organization have resulted in a heavier workload for all professionals. You had hoped the situation would be temporary, but it turned out that your team has to deal with the heavier workload for an indefinite period. The best thing for you to do is:

(1) Point out to the team members that they will keep their jobs only if they can remain productive at the current rate; and then watch their output carefully.
(2) Explain the situation to the team members and wait if they have suggestions about how they could meet the current demands. *
(3) Tell all employees that they should keep trying because it is to their advantage to do so.
(4) Encourage employees to keep up with the workload by pointing out that teams are doing it adequately in other neighborhoods.

Case 2. One of the external stakeholders has let you know that they are not very satisfied with the attitude of a team member of your neighborhood team. The best thing for you to do is:

(5) Raise the matter with your subordinate to see what has been going on for her in dealing with that stakeholder.
(6) Point out that stakeholder satisfaction is important and that she should work on relating better to the stakeholder.
(7) Show her some ways that others relate to their stakeholder so she can compare the own style to others.
(8) Tell her to see to it that the stakeholder is more satisfied and let her know you will be checking up on her.

Case 3. Part of your neighborhood team has been doing more poorly than the other part of the neighborhood team. The appropriate way for you to handle the situation would be to:

(9) Tell them that performance has to improve and offer them tangible incentives when they have improved.
(10) Let them know how the other teams are performing so they will be motivated to do as well.
(11) Have some discussions with the team members and facilitate their devising some solutions for improving output.
(12) Keep a record of each individual's productivity and emphasize that it is an important performance index.

Case 4. For some time, a team member's performance has been at a steady, average level. You suspect however that this team member could do better. The best thing for you to do is:

(13) Encourage the team member to talk about his/her performance and whether there are ways to improve.
(14) Stress to the team member that he/she should do better, and that he/she won't get ahead if he/she continues at his current level.
(15) Go over your evaluation with the team member and point out his/her relative standing with others.
(16) Watch the team member more closely; praise him/her for increased output and point out whenever he/she falls behind.

* This question has been removed from the dataset to improve the reliability.