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Functional team diversity in frontline service delivery: explaining teamwork attitudes among public service professionals

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ABSTRACT

Team diversity is key in public service delivery. Yet, teamwork in functionally diverse teams can be undermined by mutual scepticism among different professionals. This article examines the mechanisms explaining teamwork attitudes with two experiments. We theorize that public service professionals' negativity towards working in functionally diverse teams arises because other team members are perceived as lacking warmth and competence. Our evidence from Danish public schools confirms that teachers prefer co-teacher teams over diverse teams but shows that this reflects a warmth, not competence, deficit. These findings advance research on professional collaboration and inform public managers facilitating teamwork across functional lines.

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Teamwork is a pervasive feature of public organizations. Collaboration among public service professionals is essential to meet the complex and multidimensional demands of contemporary public service delivery. In areas such as healthcare, education, and social services, effective service provision increasingly relies on teamwork that spans functional, professional or organizational boundaries, as diverse competencies and fields of expertise are required for successful outcomes (Comeau-Vallée and Langley 2020; Grillos, Zarychta, and Andersson 2021; Meads et al. 2008; Schot, Tummers, and Noordegraaf 2020; Whitford et al. 2010).

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However, while functional diversity is expected to improve team outcomes in theory (Andersen and Moynihan 2016; Choi and Rainey 2010; Moon and Christensen 2022), it can also undermine them in practice, as teamwork may turn dysfunctional due to psychological biases (Mathieu et al. 2019; Van Knippenberg, De Dreu, and Homan 2004). Although a substantial body of research has explored collaborative processes in public organizations – particularly factors related to structure, institutions, professions, and roles (e.g. Ansell and Gash 2008; Goldman and Foldy 2015; Møller 2021; Schot, Tummers, and Noordegraaf 2020) – there has been limited focus on the psychological, micro-level foundations of professional collaboration. In particular, the motivational factors that shape individuals' attitudes towards teamwork have been overlooked, especially in settings where differences in norms, expertise, and identity generate friction (Freidson 2001; Mathieu et al. 2019).

Against this backdrop, this article aims to explain why teamwork attitudes in functionally diverse teams are sometimes negative, thereby informing public managers about what to target when trying to support collaboration among professionals. Specifically, we ask the following research question: *Through which mechanisms does functional diversity in team composition influence the attitudes of team members in terms of their motivation to participate, commitment to the team's work, and expectations about team outcomes*. Drawing on self-determination theory (Gagné and Deci 2005), we argue that attitudes towards teamwork are shaped by whether team members perceive their basic needs for competence (doing a good job) and relatedness (having enjoyable working relations) as being fulfilled and this, we theorize, is related to whether team members are viewed as belonging to an in-group or an out-group. When a team is formed, its composition informs the spontaneous trait impressions that each member instinctively forms about the other participants. Building on the stereotype content model (Fiske, Cuddy, and Glick 2007), we suggest that these impressions likely revolve around warmth (being honest, selfless, good-hearted) and competence (being capable, determined, efficient). On both dimensions, in-group members – in this context, those who share a similar functional background – tend to be evaluated more positively than out-group members. Hence, functional diversity in a team increases uncertainty about whether an employee's basic psychological (job) needs will be met, creating an instinctive resistance to the team and its activities, and deflating expectations about team outcomes. This may ultimately undermine the envisioned benefits of team diversity.

Our arguments about team composition, trait impressions, and teamwork attitudes are tested with a mediation analysis. Given the biases in traditional statistical mediation analysis (Bullock, Green, and Ha 2010), we opt for an experimental identification strategy

(James, Jilke, and Van Ryzin 2017) using a *moderation-of-process* design in which the mediating variables are experimentally manipulated rather than measured (Acharya, Blackwell, and Sen 2018; Spencer, Zanna, and Fong 2005). The empirical setting is public schools in Denmark, a context where functionally diverse teams are widely used. These teams often include not only teacher colleagues but also external personnel such as consultants, specialists, and professionals with diverse educational profiles (e.g. social workers, psychologists, and pedagogical staff), particularly when addressing complex and non-routine tasks.

We fielded two preregistered survey experiments among Danish schoolteachers. In both experiments, the teachers were presented with a scenario in which they were required to participate in a team tasked with solving a persistent and complex classroom issue.[1] The first study ($N_{study1} = 771$) shows that teachers are more negative about teamwork when the team includes members from outside their school with different professional backgrounds, as opposed to co-teachers from their own school. The second study ($N_{study2} = 795$), which tests the trait impression mediators, shows that when warmth cues (e.g. being honest) about other team members are provided, the negativity towards functionally diverse teams diminish. In contrast, competence cues (e.g. being capable) do not have the same effect. This provides causal evidence that scepticism towards functionally diverse teams is more about mistrust in other team members' good-heartedness than about miscredit of their professional expertise.

Our study makes several contributions. First, it advances the literature on professional collaboration by emphasizing that teamwork issues are not just about institutions, resources, professions, roles, or leadership (Schot, Tummers, and Noordegraaf 2020), but also universal psychological tendencies – especially when public professionals have to work together across functional lines, as is the case with many frontline services (van Osch, Groeneveld, and Kuipers 2024). Second, it contributes to research on team diversity by showing that out-group bias is not unique to socially diverse teams (Sabharwal, Levine, and D'Agostino 2018). This also occurs in functionally diverse teams and may lead to suboptimal team performance due to negative views on teamwork (Campbell 2018). Third, it guides future research on how to support diverse teams, for example, via management strategies (Choi 2013), leadership (Ashikali, Groeneveld, and Kuipers 2021), or organizational culture (Moon and Christensen 2022), in encouraging a focus on trust-building initiatives. Finally, we introduce the moderation-of-process design, demonstrating its utility for studying causal mechanisms in phenomena related to public management, human resources, and frontline service provision.

Theory

Team diversity in public service delivery

Team diversity is important for the successful delivery of many public services including healthcare, education, and social services (Comeau-Vallée and Langley 2020; Schot, Tummers, and Noordegraaf 2020). The underlying reason is that public services reflect a complex production process dependent on multiple factors, including the inputs related to the clients themselves, their social network, and the service provider. Take education as an example. A student's academic achievement is a function of the cumulative inputs from the student's family background, the peer influence of other students and friends, the innate abilities of the student, and, not least, what can be termed a 'vector of school inputs' (Hanushek 1979, 363). Such school inputs – or organizational inputs more generically – describe the impact and interplay of the different professionals that work within the public organization to provide services and ultimately improve performance. While leadership and work routines can help capitalize on different employee competencies in public service delivery, the most prominent way to integrate different competencies in service delivery has been to organize work in teams – not just in a school context (Vangrieken et al. 2015) but for public services in general (Baker, Day, and Salas 2006; D'Amour et al. 2008; Grillos, Zarychta, and Andersson 2021; Møller 2021; van Osch, Groeneveld, and Kuipers 2024). In the public and private sectors alike, 'teams have become the basic building blocks of present day organizational designs' (Mathieu et al. 2019, 18; see also Marvel 2023).

There is a good deal of scholarly optimism about the potentials of bringing together people of different backgrounds in teams to solve problems in service delivery (e.g. Campbell 2016; Schot, Tummers, and Noordegraaf 2020; Whitford et al. 2010). For example, research on the performance effects of team and organizational diversity has long emphasized the upsides (e.g. Hong and Page 2004; Joshi and Roh 2009; Mannix and Neale 2005). As Choi and Rainey (2010, 110) argue, the theoretical idea is 'that diversity can benefit organizations by providing a broad range of ideas, skills, and insights that can improve organizational capabilities to solve problems and make better decisions'. These benefits are thought to be generally applicable (Joshi and Roh 2009) but seem particularly salient for complex services or tasks where the production process dictates a functionally diverse set of employee inputs.

Yet, the literature also points out that well-functioning teamwork is difficult and depends on the subjective perception of the team (e.g. its members, values, activities, autonomy, resources, and capabilities) among those who must collaborate (e.g. Andersen and Moynihan 2016; Choi and Rainey 2010; Joshi and Roh 2009; Mathieu et al. 2019; Moon and Christensen 2020; Park 2020; van Osch, Groeneveld, and Kuipers 2024). This appears

especially relevant for public services where professionals – who are employees characterized by specialized knowledge and a general motivation to follow their own professional norms and a desire to protect their professional discretion (Freidson 2001; Sullivan 2005) – have to share responsibility with other professionals. In these situations, the same diversity that provides heterogenous teams with a potential to perform better than homogenous ones also makes such teams more prone to conflict, misunderstandings, and collective action problems (Horwitz and Horwitz 2007; Van Knippenberg and Schippers 2007). This point is stressed in the similarity-attraction and social identity perspectives of diversity research (Ashforth and Mael 1989; Byrne 1997; Lincoln and Miller 1979; Williams and O'Reilly 1998). As Andersen and Moynihan (2016, 450) explain, people in highly diverse teams may assume other team members 'to be less capable, cooperative, or trustworthy', while homogenous teams enjoy 'smoother working relationships'. This risk of scepticism and dysfunctional teamwork has led studies to describe team diversity as a 'double-edged sword' (Milliken and Martins 1996, 402).

Functional diversity as a source of intergroup bias

Although team diversity and in-group – out-group distinctions can come 'from any attribute people use to tell themselves that another person is different' (Williams and O'Reilly 1998, 81), the literature has typically distinguished between two main dimensions: bio-demographic and functional diversity. By far, most public sector research has focused on bio-demographic diversity, including attributes like gender, race, and age (see Sabharwal, Levine, and D'Agostino 2018). However, a few recent studies have shifted attention to functional diversity (Andersen and Moynihan 2016; Moon and Christensen 2020; Park 2020), which includes attributes that are more directly job-related such as career experience, educational background, current position/tenure, and organizational background (see Pelled 1996 on the private sector). We also focus on functional diversity for two reasons. First, functionally diverse teams seem particularly relevant in the context of complex public services where various competencies are necessary for service delivery. Second, functional diversity may be easier for public managers to change (and more legitimate from a meritocratic perspective).

The distinction between bio-demographic and functional diversity is, however, more than a conceptual discussion. To reconcile the inconsistent findings on the diversity – performance relationship, diversity research has suggested that effects might vary, with functionally diverse teams more likely to realize their potential outcomes than socially diverse teams (Horwitz and Horwitz 2007). The reason for this is that bio-demographic attributes are supposedly more likely to become a basis for social categorization and team conflicts than

other attributes because they are 'observable individual differences' that are 'readily detectable' at the 'surface-level' (Horwitz and Horwitz 2007, 990). While that might be the case in some contexts, we argue that among professionals delivering complex public services (e.g. education, healthcare, public safety, and social work), differences in functional attributes can also become the basis of social categorization, stereotyping, and group conflict.

Although bio-demographics were the 'usual suspects' in seminal work on the social identity and similarity-attraction perspectives (Byrne 1997; Tajfel and Turner 1979), a crucial point in more recent approaches, especially self-categorization theory (Turner et al. 1987), is that social identities are highly contingent. Thus, which attributes become the basis for social identity processes will depend on the specific work situation and organizational context (Ashforth, Harrison, and Corley 2008). Complex public services such as healthcare and education are dominated by doctors and teachers, respectively. These are strong professions with a traditional monopoly on service delivery, who are characterized by holding their own set of professional norms and skills based on specialized theoretical knowledge about the service in question (Sullivan 2005; Tummers, Bekkers, and Steijn 2009). As suggested by the sociology of professions (Freidson 2001; Mosher 1982; Roberts and Dietrich 1999), members of such professions tend to share perceptions of means and ends in service delivery and react similarly when facing citizens and clients. Also, such professions are often distinguished by specific jurisdictions and authorizations that preserve and protect their service monopoly from outside interferences. Hence, having to work together with other professions in a functionally diverse team likely makes professionals acutely aware of their own and other team members' functional background and leads to scepticism towards the 'outsiders' (Schott, van Kleef, and Noordegraaf 2016).

This scepticism most obviously hinges on profession as a social marker – that is, on educational background and training – but may also be activated if team members come from other departments within the organization or another organization entirely. Shared knowledge and norms within professions are established through higher education, but they are further developed and maintained through organizational socialization (Freidson 2001; Van Maanen 1975). Indeed, it is well established that organizations serve as an important source of identity in people's lives (Ashforth and Mael 1989). Hence, while professional identification and norms may be the anchor of intergroup bias in some aspects of public service delivery, in other aspects, organizational identification and 'codes of conduct' may be the main driver (Kjeldsen 2012). As such, educational and organizational background are both key attributes of functional diversity in teams, and we treat them as equally important sources of the teamwork difficulties predicted by the social identity and similarity-attraction perspectives (Byrne 1997; Tajfel and

Turner 1979), not least in the case of public services dominated by strong professions. We thus argue that public professionals – in our case, teachers – will favour working in teams consisting of 'in-group' individuals of the same educational and organizational backgrounds as themselves, even when facing complicated and non-routine tasks where novel perspectives are most useful (Mannix and Neale 2005). This can be summarized as follows:

H1: Public professionals' teamwork attitudes are more positive when collaborating with in-group individuals than when collaborating with out-group individuals.

Motivation and trait impressions in functionally diverse teams

If employees are biased against working in functionally diverse teams, the next question is why? Without a diagnosis of the problem, it is difficult for public managers or policymakers to intervene to support diverse teams. To unpack the mechanisms through which team composition affects teamwork attitudes, we proceed from the perspective of the individual employee and what drives them at work. Although motivational factors are undoubtedly many and varied (Wright 2001), our argument draws on self-determination theory and revolves around two basic needs whose satisfaction is key to employees' work motivation: a need for competence and a need for relatedness (Deci, Olafsen, and Ryan 2017; Fishbach and Woolley 2022; Gagné and Deci 2005). The former refers to employees' need to feel that they can handle their work tasks and help achieve the goals set by the organization. The latter refers to employees' sense of being part of a community and their need for positive interactions with other people at work. Such basic needs are met (or hindered) by the specific work situation that employees face, with consequences for a range of work-related outcomes such as task engagement and performance, job satisfaction, organizational commitment (Gagné and Deci 2005), and, in turn, turnover intentions (Hur and Abner 2023).

We argue that when public employees must collaborate in a new team to deliver a service, the composition of that specific team sends a signal to the individual team member about the degree to which their basic needs are likely to be met or hindered, which then affects their whole outlook on the teamwork activities that lie ahead. Specifically, the team composition feeds into the impression that the employee instinctively forms about the other participants' traits, with in-group members typically being evaluated more positively than out-group members. In other words, knowing who the other team members are informs assumptions about what they are like. Such social stereotyping has long been a theme in research on frontline public services (De Boer 2020; Lipsky 1980).

Yet, to understand the mechanism through which team diversity shapes the attitudes that employees bring to teamwork activities, we need to consider the content of the stereotyping occurring and why those inferences about the other members' traits would matter to teamwork attitudes. The stereotype content model (Fiske et al. 2002, 2007) is the dominant view on stereotyping in social psychology and suggests two universal dimensions along which people judge others based on social group memberships: warmth and competence. As Fiske, Cuddy, and Glick (2007, 77) put it, 'the warmth dimension captures traits that are related to perceived intent, including friendliness, helpfulness, sincerity, trustworthiness and morality, whereas the competence dimension reflects traits that are related to perceived ability, including intelligence, skill, creativity and efficacy'. These two categories of trait impressions speak directly to the basic needs of individual employees discussed above. Thus, if employees' views on the teamwork activities in functionally diverse teams are negatively biased, as hypothesized, that scepticism likely comes from a concern about (a) the working environment and social relations within the team, and (b) the competencies available in the team to achieve its goals. Compared to teams composed of in-group members (e.g. one with just co-teachers), heterogenous teams with members of various functional backgrounds suffer from a warmth and/or competence deficit.

Whether we should expect that warmth and competence impressions matter equally to teamwork attitudes or one trait dimension is more important than the other is not clear on theoretical grounds. Social psychologists generally maintain that warmth has primacy over competence in social judgement because the two work in a logical sequence (Cuddy, Fiske, and Glick 2007; Wojciszke 2005): A person first considers if another individual or group has good or bad intentions, and then that person considers whether the individual or group can act on those intentions. However, more domain-specific research suggests that competence can be most influential in some situations. Provided that public service delivery is characterized by strong professions (e.g. teachers in the case of public schools), who are concerned with preserving their status, credibility, and autonomy (Freidson 2001), it seems plausible that people from out-group functional backgrounds would primarily be stereotyped, not as cold, but as incompetent – that is, their skills and expertise are seen as less relevant in delivering the service in question. In sum, these different takes on the importance of competence and warmth impressions lead us to pose two separate mediation hypotheses.

H2: Warmth impressions mediate the intergroup bias in teamwork attitudes.

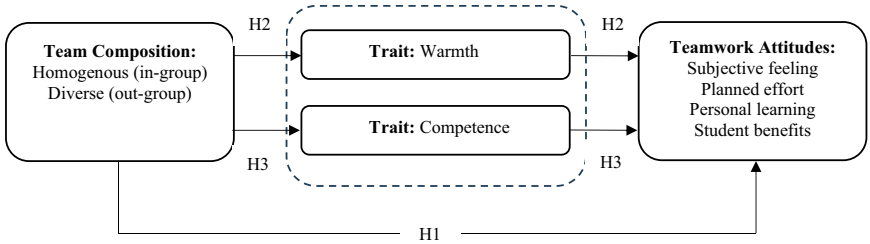


Figure 1. Illustration of the hypothesized theoretical model.

H3: Competence impressions mediate the intergroup bias in teamwork attitudes.

Figure 1 illustrates our theoretical argument regarding the relationships between team composition, trait impressions, and teamwork attitudes. First, this includes the expectation of a negative effect of a functionally diverse (out-group) team composition on public service professionals' teamwork attitudes, operationalized as their engagement in and commitment to the teamwork ahead as well as their expectations of team outcomes (H1). Second, our claim that trait impressions mediate this effect is illustrated by the box in middle, which shows that any observed bias against functionally diverse teams is expected to run through warmth impressions (H2) and competence impressions (H3). Thus, these impressions are key in explaining stereotypical outgroup bias in public service delivery dominated by strong professions.

Primary education in Denmark

The study is situated in Danish public schools, which are hierarchically operated and fully funded by the country's 98 municipalities. Approximately 80% of Danish children are enrolled in public schools covering mandatory primary and lower secondary education from grades 0–9 (ages 5 to 17). Teachers with a BA degree in teaching constitute the majority of employees in Danish public schools. Yet, Danish public schools offer a compelling empirical context for examining public service professionals' teamwork attitudes regarding functionally diverse teams as this setting also involves collaboration between both in-group and out-group occupational groups with distinct professional backgrounds. Teachers commonly work in homogeneous teams with fellow teachers – an occupational in-group – particularly on academic tasks such as curriculum planning and course development. But in recognition of the increasing complexity and multi-dimensionality of educational service provision for example, involving

students with special needs (Vangrieken et al. 2015), Danish schools have also within the past 10 years institutionalized the use of functionally diverse teams.

Two out-group professional categories are especially relevant in this context. First, a key objective of a 2014 Danish school reform was to enhance interprofessional collaboration by integrating childcare workers, who hold a bachelor's degree in social education or pedagogy, into the teaching workforce (Aftaletekst 2013). Second, when schools face complex, non-routine challenges related to students' social, psychological, or familial issues, teachers and school leaders may engage external specialists such as 'teaching consultants' or municipal task forces composed of child psychologists and social workers into their educational teamwork. These professionals provide targeted support and expert advice and occasionally participate directly in classroom activities.

Despite policy support for interprofessional teamwork collaboration, the introduction of functional diversity has not been universally embraced by teachers. Resistance has emerged due to concerns that such collaboration may undermine teachers' professional autonomy, challenge their established competencies, and conflict with their core professional values and norms. From the perspective of self-determination theory (Gagné and Deci 2005; Ryan and Deci 2000), these concerns reflect fundamental psychological needs – particularly the needs for competence and autonomy – which are essential for sustaining professional motivation. Consequently, some teachers have opposed or sought to limit collaboration with certain out-group professionals, particularly the childcare workers (Harrits and Møller 2014). This tension is exacerbated by the fact that, despite differing educational backgrounds, teachers and childcare workers are now expected to perform overlapping roles, including classroom teaching and responsibility for afterschool programmes. This contested context therefore presents a most-likely case for testing particularly our hypothesis H1 (Flyvbjerg 2006; Yin 2014).

In sum, the Danish context thus provides an interesting case for examining functional team diversity in public service delivery and illustrates a wider trend in public education in Europe where teachers increasingly collaborate with professionals with other educational backgrounds from outside the school (Stoll, Mcmahon, and Thomas 2006; Vescio, Ross, and Adams 2008). The presence of initial scepticism towards functional diversity, particularly among teachers, also makes it possible to investigate the mechanisms through which team composition influences attitudes towards engagement in and commitment to teamwork and the expected benefits from it. As such, the Danish public school case can advance our understanding of how interprofessional collaboration in functionally diverse teams unfolds at the micro-level.

Study design

Data and sampling

Our study design consists of two experiments that were preregistered at OSF (see footnote 1). Study 1 was designed to test H1, and Study 2 was designed to test H2 and H3 as well as replicate the findings in Study 1. The experiments were embedded in a larger two-round survey about professional collaboration, leadership behaviour, and employee attitudes fielded in Danish public schools during 2021. Sampling occurred at the municipal level since they run public schools and could provide us with email addresses on the managers and employees working at their schools. While all 98 Danish municipalities were invited to participate in the survey, recruitment was split in two stages. For the first round (September/October), which included Study 1, we randomly selected 35 municipalities to invite and 7 agreed to participate.[2] For the second round (November/December), which included Study 2, the remaining 65 municipalities were invited to participate. To accommodate local wishes and practical concerns, we allowed a few municipalities contacted for the first round, who were unable to participate during that fielding period, to instead participate in the second round of the survey (9 municipalities agreed to participate). Hence, there is some degree of selection at the municipal level. The response rates were around 20% in both survey rounds (including teachers, managers, and pedagogues). Restricting the samples to teachers, who were the ones exposed to our two experiments, gives us effective sample sizes of $N_{study1} = 771$ and $N_{study2} = 795$.

Experiments: the moderation-of-process design

Our experimental studies use a moderation-of-process design previously employed in psychology (Spencer, Zanna, and Fong 2005) but also in political science (Acharya, Blackwell, and Sen 2018), organizational research (Lount et al. 2015), and leadership studies (Bor 2020). The main idea in this design is to manipulate both the independent (team composition) and mediating (trait impressions) variables of interest to minimize the confounding that arises in mediation analyses based on measured variables (Bullock, Green, and Ha 2010). We use text-based vignettes to make these manipulations and define the context in which the teamwork takes place (see SM, sections A and B for full vignettes). Focusing on non-routine and complicated service provision issues (as opposed to simple, routine tasks), we presented teacher respondents with a fictitious scenario which asked them to imagine that they faced a long-term problem with a group of academically challenged and socially misbehaving students and that they had to participate in a working group dedicated to deal with this problem. We further specified some key conditions for the working group – e.g. time commitment, meeting

style, resource allocation, and management and parent expectations – to fix these across treatment groups and provide respondents with sufficient information to form meaningful opinions. During the development of the vignettes, we consulted a handful of schoolteachers and principals to ensure realistic descriptions of the school context, classroom issue, and composition of the working group. The experiments were then pilot tested among a small teacher sample before preregistration and launch.

While the context description was consistent across all experimental groups, the vignettes varied in how the working group was comprised and how the other team members were described. Thus, we experimentally manipulated (a) how similar the respondent was to the team in terms of functional background and (b) how warm and competent the other team members were likely to be. Table C1 in the supplementary materials (SM) illustrates our overall design, while the details of each study are discussed below. Sample characteristics and balance tests are found in SM, section C.

Study 1

Study 1 uses a between-subjects design with three randomized conditions that vary the team composition. Condition A is the in-group treatment which describe the working group as functionally homogenous and highlights the similarities in members backgrounds (see SM, section A). For example, the vignette says about the working group that *'you are all teachers'* and that although *'there is not much information about the teamwork yet'*, you know that *'the others are employed at the school and have a teaching background like you'*. Going beyond objective team composition, the vignette also manipulates respondents' perception of similarity with the team by saying that team members *'do not know each other personally, but your similar backgrounds will probably create some common ground'*. We chose to maximize variation on team diversity this way to avoid risking not being able to detect intergroup bias due to weak treatment intensity. While this admittedly results in a softer test of H1 (i.e. a 'most-likely case' in which to observe bias), it enables proper tests of H2 and H3. Without having detected a main effect, it makes little sense to examine mediation effects.

Condition B is the out-group treatment which, in contrast to the in-group treatment, stresses that '*you are the only teacher*' in the working group; that *"most of the others are employed at other schools or in the administration and that they have pedagogical, social science, or other backgrounds*; and that '*your backgrounds will probably create some differences'*. Finally, in condition C, we leave the team composition unspecified (but still provide the context description). While the difference between conditions A and B in teachers' teamwork attitudes shows the degree of intergroup bias (H1), condition C pinpoints teachers' baseline attitudes towards the specific teamwork

scenario in our experiment, thus revealing whether the (potential) intergroup bias found is driven by the in-group treatment, the out-group treatment, or both.

Study 2

Study 2 uses a factorial between-subjects design randomly assigning respondents to one of six conditions. All six conditions include the same context description as Study 1 (academic and social challenges in the classroom). Two of the conditions were identical to the in-group and out-group conditions in Study 1. These can be labelled the 'natural process' arm of the experiment and establish the baseline degree of intergroup bias in the second-round sample (and replicate the first-round findings).

In addition to the information about the context and team composition, the four remaining treatment groups received further information regarding the traits of the other team members (see SM, section B). In this 'interrupted process' arm of the experiment, we added either warmth or competence cues regarding the other participants in the working group, drawing on tested and validated ways to experimentally manipulate trait impressions (e.g. Bor 2020). For example, the vignettes manipulating warmth impressions stated that *'you get the sense that they are kind and positive people'*; that a colleague said that *'they are sympathetic people, and you are all passionate about the same thing. Your common wish is to solve these problems'*; and that, previously, '*you have experienced collaboration situations as trustful. People have been helpful, and your feeling is that you can count on each other in the workgroup'*. The vignettes manipulating competence impressions have the same structure but describes how the other team members seem like '*skilled and determined people'*; how a colleague says that *'they are competent people, and each one can do something special. Your task is to solve these problems*'; and how previous experiences with *'effective'* teamwork situations give the feeling *'that it is a capable workgroup'*.

Importantly, the trait impression vignettes used an off-setting technique at the end. When providing trait impression cues that are basically all positive, there is a risk that the mediation effects of warmth and competence, respectively, get conflated and indistinguishable. Thus, to minimize any unintended spillover of positive warmth cues (or competence cues) to respondents' competence impressions (or warmth impressions), we explicitly provided a set of off-setting competence cues (or warmth cues). For example, the competence impression vignettes end as follows: *'However, cooperation can be both good and bad. You cannot know how kind and trustful the others are, even if they are competent and qualified for the job'*.

This 2 (in-group, out-group) × 3 (no cues, warmth cues, competence cues) between-subjects design allows us to isolate mediation effects. To the extent

that trait impressions drive the intergroup bias in teamwork attitudes, as we hypothesize, the in-group vs. out-group difference found without any trait cues provided (conditions A, B) should be reduced when warmth (conditions D, E) and competence (conditions F, G) cues are provided because these cues 'control' for the mediators by overwriting the mental process (i.e. stereotyping) that leads to the bias observed in the natural process baseline. In contrast, if trait impressions are not important mediators, the group bias effect should be largely unchanged across the traits variable (no cues, warmth cues, competence cues).

Outcome measures and model specification

We measured teachers' attitudes towards collaboration in various ways. Inspired by prior research on team performance (e.g. Jackson 2003), we used two indicators related to the affective aspect of participating in teamwork activities, and two other indicators related to expectations about team outcomes. This approach allows us to check for discrepancies between feelings towards engaging in teamwork and assessments of team outcomes. For example, teachers might feel hesitant about participating in a functionally diverse team but see a potential learning opportunity anyhow.

Specifically, teachers' affective attitudes towards participating in the working group described above are measured with two questions. First, 'how do you feel about participating in the working group?' (1 'very bad' to 10 'very good'), and, second, 'how much time and energy will you put into the working group?' (1 'as little as possible' to 10 'as much as possible'). The expected team outcomes were also measured with two variables. One was about learning outcomes: 'how much do you expect to learn personally from the working group?' (1 'nothing' to 10 'very much'). The other was about the team's ability to achieve its task: 'how beneficial do you think that this working group is to the pupils it concerns?' (1 'not beneficial at all' to 10 'extremely beneficial'). In line with our pre-analysis plan, we analyse these four variables separately. For convenience, they are rescaled to range from 0–100 in the analysis so that marginal effects are expressed in percentage points (see SM, Table C2 for descriptive statistics).

Our primary estimation strategy is an intention to treat estimation for each of the four dependent variables. In Study 1, H1 is tested by comparing the 'In-group/homogenous team' condition to the out-group condition. We further compare with the control condition, which provides a baseline in teamwork attitudes that allows us to explore whether the observed effect is driven mainly by the functionally diverse or homogenous team. In Study 2, H2 and H3 about perceived warmth and competence traits as mediators are tested by interacting the team composition variable (0 in-group, 1 out-group) with two trait cues indicators – one for warmth (0 no cues, 1 warmth

cues) and the other for competence (0 no cues, 1 competence cues). The interaction terms then express the mediation effect by showing how intergroup bias with no trait cues given (natural process arm) changes as warmth and competence cues are provided (interrupted process arm). Our main preregistered models are OLS regressions run without co-variates, but the overall results are similar if covariates (sex, age, seniority, grade level) are included and when using a random effects model with clustered standard errors at the municipality level, or a municipality fixed effects model (see below).

Results

Study 1: intergroup bias in teachers' teamwork attitudes?

We hypothesized that teachers would be more positive about teamwork in an in-group/homogenous team context compared to an out-group/heterogeneous team context (H1). Before testing this, however, we note that teachers are relatively positive towards collaboration regardless of team composition. For example, in the control condition, where the other participants in the working group are left unspecified, the mean score on how respondents feel about having to participate in the working group is 68 on a 0–100 scale. The mean scores on the other outcomes are similar.

Yet, when it is specified that participants are either in-group or out-group, we also see clear differences emerge. Table 1 shows the marginal effect of team composition on teachers' view about the team and its activities. While teachers' attitudes about participating in the homogenous team consisting of in-group members is at 71, they are only at 61 in the out-group condition, that is, a 10% points difference ($p < 0.001$). We find similar differences in several of the other outcomes. When it comes to the time and effort that teachers will put into the teamwork, the in-group – out-group difference is around 9% points ($p < 0.001$). For expected

Table 1. The effect of team composition on teamwork attitudes, Study 1.

Model Dependent variable	1 Feeling	2 Effort	3 Personal learning	4 Student benefits
Team composition				
In-group	Ref.	Ref.	Ref.	Ref.
Out-group	−10.44***	−8.73***	−4.56*	−8.90***
	(2.36)	(1.91)	(1.90)	(2.04)
Team unspecified	−3.62	0.05	−0.81	−0.89
	(2.39)	(1.94)	(1.92)	(2.07)
Constant	71.33***	67.97***	63.31***	65.37***
	(1.70)	(1.38)	(1.37)	(1.47)
Observations	773	772	772	771

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$. Estimates are from OLS models.

student benefits, the difference is also around 9% points ($p < 0.001$), while it is somewhat lower but significant for expected personal learning (5% points, $p = 0.02$). These results strongly support the intergroup bias hypothesis (H1) and are robust to alternative model specifications (Tables C5 and C6).

Comparing the control condition to the in-group and out-group conditions, respectively, the homogenous and unspecified teams are quite similar and certainly closer to each other than the heterogenous and unspecified teams. This is interesting because it tells us whether the observed intergroup bias is an in-group favouritism or out-group scepticism. In the teamwork scenario presented in this experiment, it appears that intergroup bias is based more on out-group scepticism than in-group favouritism.

Study 2: warmth deficit, competence deficit, or both?

Our two trait deficit hypotheses suggest that the bias against functional diversity in employees' teamwork attitudes comes about through trait impressions about the warmth and competence of the other team members. Before evaluating these predictions, however, we can use the team composition conditions without any trait cues (i.e. the natural process treatment arm) to test if the out-group bias found in Study 1 can be replicated with a different teacher sample.

Figure 2 shows how the marginal effect of team composition on each of the four outcomes changes according to the traits variable (see Table C7 for full results, including the formal tests of the interaction terms). As shown by the 'no trait cues' condition, we see that on all outcomes the statistically significant out-group bias is replicated.

To evaluate the mediation hypotheses, we then test whether this bias is reduced when warmth and competence cues about the other team members are introduced. As Figure 2 shows, warmth impressions clearly play a role in how teachers approach teamwork in functionally diverse teams. Specifically, when teachers are told that the other team members are genuine, sympathetic, and helpful, they no longer significantly differentiate between the in-group and out-group conditions: The team composition effect turns insignificant on all outcomes. This tendency is most evident regarding how teachers feel about participating, where the provision of warmth cues removes the entire out-group bias found in the 'no trait cues' baseline (panel A), but the change is equally pronounced for the expected student benefits, with a 10% point reduction in the baseline bias (panel D).

The formal statistical tests of the interaction between the out-group and warmth indicators are positive and significant (as expected) regarding how teachers feel about participating in the working group, how much they expect students to benefit, and whether they expect any personal learning

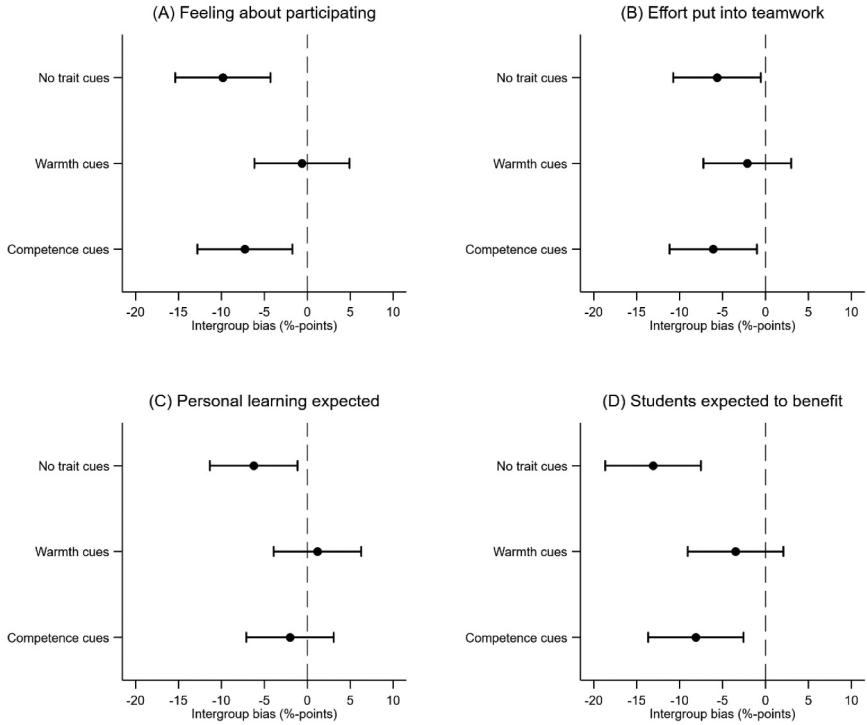


Figure 2. Out-group bias in teamwork attitudes by traits impressions of the other team members, Study 2. Dots are marginal effects of the out-group condition regarding team composition (compared to the in-group condition), and bands are 95% confidence intervals. The differences across trait treatments (no cues, warmth cues, competence cues) show percentage point changes in out-group bias. The estimates are based on Table C7.

(Table C7). Our robustness tests support these findings, except for personal learning where the interaction effect falls short of significance at the 0.05-level (Tables C8 and C9).

From Figure 2, it is also clear that competence impressions are not the main mechanism at work. As panels A, B, and D show, the bias against functionally diverse teams remains significant on both the affective outcomes and on expected student benefits, even when teachers are told that the other team members are competent, determined, and effective. Further, none of the interactions between team composition and the competence cue are statistically significant at the 0.05-level. Thus, in educational service delivery, it appears that functional team diversity is met with a non-trivial degree of out-group scepticism from teachers and that this bias comes about largely through a warmth deficit whereby team members with other educational backgrounds and from other organizations are assumed to lack some of the

sincerity, friendliness, and good intentions that in-group colleagues (teachers) are automatically ascribed. In sum, H1 and H2 find support, while H3 does not.

Discussion

Our analyses provide two main findings, which we discuss in turn. First, teachers are more positive about collaborating with teachers like themselves compared to employees from other professions and organizations. This 'outgroup' scepticism is not only evident in teachers' affective feelings about participating in the teamwork and the effort they would be willing to invest, but also in their expectations about personal learning opportunities and the team's ability to deliver on its task (in this case, helping the struggling students).

Although this bias against diverse teams is in line with social identity theory and the sociology of professions (Byrne 1997; Freidson 2001; Tajfel and Turner 1979; Turner et al. 1987), it has been underappreciated in research on team diversity. Indeed, phenomena like mistrust, miscommunication, and dysfunctional teamwork are usually highlighted as risks in socially diverse teams (Horwitz and Horwitz 2007; Sabharwal, Levine, and D'Agostino 2018), while functional diversity is praised for its performance enhancing effects (Andersen and Moynihan 2016). Our findings demonstrate that functional diversity in teams is not necessarily easily implemented, even in contexts where different professions are used to working together. This is an important point of awareness in a time where interdisciplinary collaboration and networked governance are highlighted as prerequisites in modern public service delivery (Wang and Ran 2023).

Meanwhile, research on professional collaboration has long been attentive to functional backgrounds and the factors that may challenge working relations between different professionals (Ansell and Gash 2008; Campbell 2016; Comeau-Vallée and Langley 2020; Goldman and Foldy 2015; Møller 2021). On one hand, our findings encourage that this scholarly focus on functional backgrounds is sustained. On the other, they suggest that teamwork dynamics are not only related to existing concepts such as turf and autonomy, practices and roles, or resources and formal structures (see Schot, Tummers, and Noordegraaf 2020). To understand teamwork among public service professionals, we also need to account for the psychological factors related to people's basic motivations and ways of perceiving their social environment. Although these are universal features of employee psychology, they are likely particularly salient for strong and distinct professions, and our findings are therefore highly relevant to frontline service provision and street-level bureaucracy (e.g. van Osch, Groeneveld, and Kuipers 2024).

Our second main finding is about the mechanisms that produce biased views on team diversity. We find that bias against functionally diverse teams is attributable to other team members being seen as less warm, while their perceived competence is not decisive. The mediating role of warmth impressions (e.g. being honest, friendly, or helpful) is particularly strong in relation to teachers' affective feelings towards engaging in teamwork and their expectations about the team's ability to solve its main task.

This heeds a longstanding but unanswered call in team diversity research to *assess* rather than *assume* mediation (Van Knippenberg and Schippers 2007) and does so in a way that minimizes the endogeneity issues known from statistical mediation analysis of observational data (Acharya, Blackwell, and Sen 2018; Bullock, Green, and Ha 2010; Spencer, Zanna, and Fong 2005). Causal evidence on the mechanisms that produce hesitancy when public professionals must work together across functional lines is crucial because there is currently no consensus on how functionally diverse teams can best be supported. Thus, studies have considered everything from leadership (Ashikali, Groeneveld, and Kuipers 2021; Hackman and Wageman 2012; van Osch, Groeneveld, and Kuipers 2024) and management strategies (Choi and Rainey 2010; D. Pitts 2009) to team training (Salas et al. 2008), workplace culture (Moon and Christensen 2020), and large-scale institutional reforms (Molina-Garzón et al. 2022). This partly reflects the complexity of the issue – e.g. that different types of initiatives could be relevant for different types of diversity, professions, or sectors – but it may also reflect a lack of insights about what produces biased teamwork attitudes in the first place. Our findings suggest that an important aim in supportive initiatives should be to build trust and genuine empathy among members in functionally diverse teams.

Although a focus on mutual trust, sincerity, and sympathy in teamwork situations is not neglected in the literature on professional collaboration, there is often stronger emphasis on the tendency of professionals to favour and defend their own unique competences and knowledge and how this leads to lacking recognition of the expertise of other professions (Comeau-Vallée and Langley 2020; Freidson 2001; Noordegraaf and Steijn 2013). Recommendations for public managers have therefore often revolved around how they can build respect and appreciation of the unique skill-sets that various professions bring to the table. However, our study suggests that scepticism towards functionally diverse teams is primarily about mistrust in the good-heartedness of the other team members (at least in newly formed teams). Thus, in the same way that street-level management research has recently begun highlighting the importance of fostering supportive, psychologically safe, and trusting communities for professionals (Bentzen 2022; Møller and Grøn 2024), we suggest that public managers invest in building mutual trust in functionally diverse teams in addition to, or even

before, focusing on the expertise and skills that each member contributes to the team.

Our study is, however, not without limitations. First, it varies between jurisdictions and sectors how much public service professionals are required to work with people from different functional backgrounds. In Denmark, interdisciplinary collaboration is common, not just in public schools but in areas like health care, social services, and crime prevention. Further, countries vary in cultural characteristics that may influence teamwork behaviour such as generalized trust. In other cultural and institutional contexts, teamwork dynamics may play out different than in our study. Yet, given that Danes are one of the most trusting and high social capital people in the world (Sønderskov and Dinesen 2014), and that teachers are quite used to working across functional lines, the significance of the warmth mediator is particularly interesting. Finding that out-group scepticism is rooted in a warmth deficit in this context suggests that warmth could be more important in contexts with lower trust and less experience with functionally diverse teamwork.

Second, our results cannot automatically be generalized to public sector contexts dominated by other professionals than teachers. Although our argument about motivations, trait impressions, and biased teamwork attitudes are not theoretically bound to public schools, employee groups that are not distinct professions with strong collective identities may respond differently to cues about other team members' traits. Moreover, certain traits may become more important under specific circumstances – for example, competence may be more important situations where an organization experiences poor performance. Future studies testing our arguments in different countries, policy areas, and organizational contexts are therefore encouraged.

There are also some restrictions to our experimental design. First, while our argument builds on established insights from self-determination theory and the stereotype content model, we fully acknowledge that there are other important factors that affect employees' willingness to collaborate and expectations about team outcomes. For example, teachers may be reluctant to collaborate with other professionals outside their school due to practical concerns (e.g. the planning or transportation involved) or due to a general uncertainty of the unknown (i.e. teacher-to-teacher collaboration is still most familiar to teachers). Neither are effectively picked up by our experimental design since the strength of the moderation-of-process design is to test the manipulated mediators against each other, rather rule out other potential mediators.

Second, the vignettes used in the experiments reflect a maximum variation strategy where the out-group condition is operationalized as all other team members having another education profile and being from another organization, while the in-group condition is a team of teacher colleagues.

Further, we relied on high-intensity treatments which manipulated not only the objective team composition but also a more subjective sense of similarity in terms of functional backgrounds. This allowed us to investigate the extreme (but still realistic) contrast between functionally diverse and homogenous teams, but we cannot isolate the respective impacts of educational and organizational backgrounds, and the out-group scepticism found could be somewhat overstated in size.

Finally, we studied the first encounter with a team, explicitly stating in our vignettes that participants do not know each other personally. These are the situations where stereotyping appears especially relevant. However, teamwork often unfolds as repeated interactions, and different team dynamics likely emerge over time. Neither the bias against functionally diverse teams nor the mediating effect of warmth impressions can necessarily be extrapolated to teams where members know each other and can form opinions based on actual experience. Future studies should thus seek to account for differences not only in functional diversity sources and treatment intensity but also team history.

Conclusion

This article set out to examine how public service professionals – specifically schoolteachers – perceive and evaluate functionally diverse teams, and to identify the psychological mechanisms that underpin these attitudes. Motivated by the increasing reliance on collaboration across professional and organizational lines in public service delivery, we investigated how teamwork attitudes are shaped by social identity dynamics, trait perceptions, and basic psychological needs. Using an innovative mediation experiment, we generated causal insights into the motivational and perceptual underpinnings of teamwork attitudes, with a particular emphasis on warmth and competence as evaluative dimensions.

Our study shows that teachers prefer to collaborate with professional peers over people from other functional backgrounds. This preference not only has an affective side but also extends to expectations about the team's performance and personal learning outcomes. These findings indicate that out-group scepticism persists even in highly collaborative professional environments like Danish public schools, where team diversity is both familiar and institutionally encouraged. This suggests that simply placing different professionals together in teams is unlikely to guarantee effective teamwork: functional diversity brings cognitive and professional differences but also psychological boundaries that may inhibit trust and work motivation, at least in the early stages of team formation.

Moreover, our study identified a key psychological mechanism that underlies such scepticism: perceptions of warmth. While the competence

of other team members did not explain teachers' favouring of co-teachers, perceived warmth – being seen as sincere, honest, or helpful – mediated much of the observed reluctance to engage in functionally diverse teams. This highlights an important nuance often overlooked in the literature. Functional diversity is typically discussed in terms of knowledge sharing, skill-set complementarity, or conflicting institutional logics, but our study points to the more basic social perceptions that professionals hold about one another, particularly when limited interpersonal history exists.

These insights provide practical guidance for public managers working to support professionals collaborating across functional lines. First, efforts to foster teamwork should not necessarily begin with recognition of outsiders' skills and competences, but rather with the development of trust and interpersonal relations. Before professionals can appreciate each other's expertise, they need to feel secure in each other's intentions. Hence, interventions such as setting aside time for introductions, developing shared goals, or informal team-building activities may help build this foundation by fostering familiarity and empathy in newly formed teams.

Second, public organizations should treat relational dynamics as a core part of team design. Team chemistry and working relations not only matters for down-stream outcomes like job satisfaction but shapes public service professionals' outlook on a specific team, its activities, and potential outcomes. Where teams are frequently reconstituted or where professionals from different fields must collaborate quickly, public organizations should be alert to the risk that diverse team compositions can unintentionally undermine collaborative processes, unless accompanied by trust-building strategies. Fostering a culture of openness, empathy, and psychological safety may be just as critical as recruiting distinct talents and expertise to achieve the optimal mix of competencies.

In conclusion, this article underscores that the barriers to effective teamwork in public service delivery are not solely about institutions, sectors, resources, or professions – they are also psychological. Functionally diverse teams pool together knowledge, skills, and experiences, but unless professionals trust one another, that diversity may not be mobilized. Understanding and addressing the micro-foundations of collaboration is thus essential to realize the promise of interprofessional teamwork in front-line services and public organizations more generally.

Notes

1. See preregistrations at https://doi.org/10.17605/OSF.IO/NRX9P (Study 1) and https://doi.org/10.17605/OSF.IO/BTXM6 (Study 2).

2. Note that the preregistration says six municipalities, but we have included an additional municipality that agreed to participate after registration but during the collection period. Our results are robust to the exclusion of these data.

Disclosure statement

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