Team Collaboration and Productivity: Experiences of agile, hybrid, and traditional teams with remote work during the COVID-19 pandemic

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Team Collaboration and Productivity

Experiences of agile, hybrid, and traditional teams with remote work during the COVID-19 pandemic

Team Collaboration and Productivity

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Abstract

The shift to remote work poses particular challenges for teamwork. It makes spontaneous and informal communication more difficult and may weaken social relations in teams. This study based on an online survey of 1,516 individuals who worked from home during the COVID-19 pandemic examines the functioning of teamwork in remote-work contexts and attempts to answer the following questions: (1) What organizational and technical working conditions influence working from home during the COVID-19 pandemic? (2) How did collaboration in different forms of teamwork evolve under working-from-home conditions during the COVID-19 pandemic? (3) What effects of working from home during the COVID-19 pandemic can be observed in terms of teamwork productivity? Overall, the study reveals quite surprising differences between different forms of team organization. The quality of team collaboration and team productivity slightly increased in agile teams, even in a situation where at least some members of the team were working from home. In contrast, respondents working in traditional teams reported slightly negative effects of working from home on teamwork quality and team productivity.

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1 Introduction

The impact of the expansion of remote working from home during the COVID-19 pandemic is a controversial topic. Much attention has focused on working conditions and work-life balance. Yet, the topic of productivity when working from home has been relatively under-researched to date. Existing studies were primarily conducted in the first phase of the pandemic and focused on individual productivity. The dominant picture is that work-from-home productivity is positive overall, having improved over the course of the pandemic. In a survey conducted by Schröder et al. (2020) at the beginning of the pandemic, only 10% of respondents reported working much more productively at home than in a traditional office, while 40% said they had lower productivity; in this regard, education level was an important moderating factor. A company survey conducted in 2020 by the Fraunhofer Institute for Industrial Engineering (Hofmann et al., 2020) came to similarly negative conclusions on productivity. In particular, the study found that a lack of (technical) equipment such as laptops, monitors, desks, or office chairs, combined with deficiencies in media and communication skills, made working at home more difficult. In addition, it noted challenges with regard to leadership and employee self-management.

Later studies, however, assessed working from home more positively. In a survey of 700 employees conducted by Kunze et al. (2020), 80% reported being satisfied with working from home and 45% even rated their productivity higher than when they worked from the company's offices – according to the authors, this was due to the greater flexibility and improved work-life balance offered by working from home. However, at the same time, respondents reported negative effects – 16% stated that they had experienced a high level of emotional exhaustion and 20% cited loneliness and social isolation (Kunze et al., 2020, p. 4). Regarding the technical setup, 55% reported receiving insufficient support from the IT department and almost 60% said they lacked proper equipment. A survey conducted in 2021 again found positive results. In a study by the Institute for Employment Research (IAB), Frodermann et al. (2021) examined four potential obstacles to successful working from home: i) technical requirements, ii) necessary presence at the workplace, iii) separation of work and private life, iv) more difficult collaboration with colleagues. It found that only the technical obstacles remained consistently important over the course of the pandemic; all other obstacles became substantially less relevant as time went on. Accordingly, some survey data has indicated increases in the perceived efficiency of working from home over the course of the pandemic (see also Ipsen et al., 2021). Yet, other studies have highlighted differences with respect to factors such as gender. For example, Hipp and Konrad (2021) demonstrated that both women's and men's productivity in software development increased during the pandemic. At the same time, trends in women's productivity were more dependent on specific lockdown measures, particularly on whether schools remained open.

The shift to working at home poses particular challenges for teamwork. Work in teams is predicated on exchange and communication. It also presupposes social relations, trust, and a willingness to cooperate. Working from home makes spontaneous and informal communication more difficult and may weaken social relations in teams. The question that hence arises is whether increases in remote work and shifts to digital and virtual forms of communication fundamentally undermine the socializing function of work, leading to reductions in social contacts and the closing of social circles to encounters with other people.

We might thus expect the shift to working from home during the COVID-19 pandemic to have been challenging for many teams – particularly for teams characterized by strong interdependence

among members, a need for frequent interaction, and strong self-organization. This analysis will refer to such interdependent, interaction-intensive, and self-organized teams as "agile" and contrast them with "traditional" teams (with a "hybrid" model in the middle). Agile teams may also draw on experiences in intensive collaboration, which could make them more resilient in the face of sudden changes like the COVID-19 pandemic.

Although teamwork and agility are key topics in contemporary human resource management, there have been few analyses to date that address the functioning of teamwork in remote-work contexts. This study represents an initial attempt to fill this research gap and examines the following questions:

- What organizational and technical working conditions influence working from home during the COVID-19 pandemic?
- How did collaboration in different forms of teamwork evolve under working-from-home conditions during the COVID-19 pandemic?
- What effects of working from home during the COVID-19 pandemic can be observed in terms of teamwork productivity?

This study is based on an online survey of 1,516 individuals who worked from home during the COVID-19 pandemic. The study is structured as follows: After presenting the data in Section 2, it looks at people's general working conditions when working from home in Section 3. Section 4 presents different forms of team organization – agile teams, hybrid teams, and traditional teams – and explains how they relate to the degree of digitalization in companies and the use of digital collaboration tools. Section 5 analyzes how teamwork experiences and team productivity differed according to the form of team organization during the COVID-19 pandemic. Section 6 summarizes the conclusions of the analysis.

Table 1: Composition of the survey (n = 1,516)

Group	Share
Gender	
Men	53.3%
Women	46.6%
Diverse/other/no answer	0.1%
Age	
Below 30 years	15.7%
30–39 years	23.0%
40–49 years	23.1%
50–59 years	29.2%
60 years and older	9.0%
Educational attainment	
Without completed education	0.9%
Vocational education (Berufsausbildung)	34.2%
Professional school diploma (Fachschulabschluss)	21.8%
Bachelor's degree	14.4%
Master's degree or Diplom (master's equivalent)	28.7%
Occupation	
Armed forces occupations	0.8%
Managerial occupations	13.8%
Professional, academic occupations	27.6%
Technical and associated professions	12.7%
Clerical support	9.8%
Service and sales	9.8%
Craft and related trades	1.4%
Plant and machine operators, assembly	0.9%
Elementary occupations	0.2%

2 Data

The survey used an online access panel from the market research company Respondi, with 1,516 respondents taking part. The online access panel consists of around 100,000 people in Germany, it is certified in accordance with the ISO 20252 quality standard, and it is regularly used in research. Within the panel, individuals are selected for the survey according to specific filter variables. In the survey used here, only individuals who were employed at the time of the survey and who had worked at least partially from home during the COVID-19 pandemic were contacted. Care was taken to ensure that the sample matched the composition of the German labor force as closely as possible in terms of gender, age group, and distribution by federal state.

Table 1 presents the composition of the sample. While the distribution by gender and age is largely consistent with the composition of the overall labor force, the sample differs with regard to the level of education and the composition by occupation. Because working at home during the COVID-19 pandemic was a key filter variable in the survey, individuals with higher educational attainment and academic and white-collar occupations made up a higher proportion of the sample than they do in the overall labor force. These are precisely the groups that were able to work from home; by contrast, blue-collar workers made up only 1% of the sample.

Online access panels are typically made up of internet-savvy individuals who have no difficulty in using smartphones and computers. This means that the online access panel captures a subgroup of the working population. This was not a fundamental problem for the survey, as the aim was to interview people who had worked from home and who should therefore be able to use smartphones and computers with ease.

3 General conditions when working from home

The vast majority of respondents (68.3%, n = 1,036) were employed in companies that only introduced the option of working from home during the pandemic, while only just under a third (31.7%, n = 480) already had the option of working from home before the pandemic. There was little difference between women and men.

Accordingly, specific rules for working from home had often only been introduced during the pandemic. Only 23.2% of respondents (n = 353) reported having clear company rules for working from home before the COVID-19 pandemic. For 54.5% of respondents (n = 826), such rules had been implemented during the pandemic. Another 22.2% reported that there were still no clear rules for this type of work in their company. In many cases, these rules had been set by management. Only 45.6% of respondents reported having a company agreement on working from home that had been negotiated between the management and works council. 39.9% of respondents worked in companies with no company agreement; another 14.5% did not know whether they had a company agreement or not.

The duration and intensity of the working-from-home experience varied among respondents. 32.7% (n = 496) had worked from home for a maximum of several weeks to date, while 67.3% (n = 1,020) had worked from home for several months or longer. 41.8% (n = 634) of respondents worked from home for all or most of the week, while 58.2% (n = 882) did so for a few or only one day of the week. Interestingly, there were few gender differences at

this point: Women were only slightly more likely to be fully or mostly working from home (43.1% of women) than men (40.7% of men).

31.5% of respondents (n = 471) had childcare responsibilities. There were no differences between women and men. However, such responsibilities were not related to how much time they spent working from home. Respondents with and without children differed little with respect to whether they worked from home on only one day of the week or for a larger portion of the week.

Respondents were asked to indicate how their working hours had changed when they switched to working from home during the COVID-19 pandemic compared to when they did not work from home. 72% (n = 1,092) reported that their working hours had not changed. For 9.8% (n = 149) there had been de facto decreases in their working hours; for 18.1%, working hours had increased (n = 275). There was little difference between men and women.

Respondents were also asked about their working conditions at home.

- 34.3% (n = 520) reported that they often worked longer than the standard working hours; for another 26.1% (n = 395), this was partly true. Men reported excessive working hours more frequently than women: 37.1% regularly worked longer than the standard working hours (women: 31%).
- 17.1% (n = 259) reported that they often worked late at night or on weekends; this was partly true for another 14.9% (n = 226). Again, men were more affected (18.9% of men compared to 14.9% of women).
- 26.5% (n = 402) reported that their work was frequently interrupted, with another 22.0% (n = 334) agreeing to some extent. There was little difference between genders in this regard.

Finally, the survey asked about whether respondents had the equipment they needed for working from home. 73.9% (n = 1121) of respondents reported that they had (at least mostly) everything they needed to work in terms of technical equipment. 18.1% (n = 275) of respondents had only some of the equipment they needed, and 7.9% (n = 120) did not have it at all. Men were more likely to have the required technical equipment (77.8%) than women (69.7%).

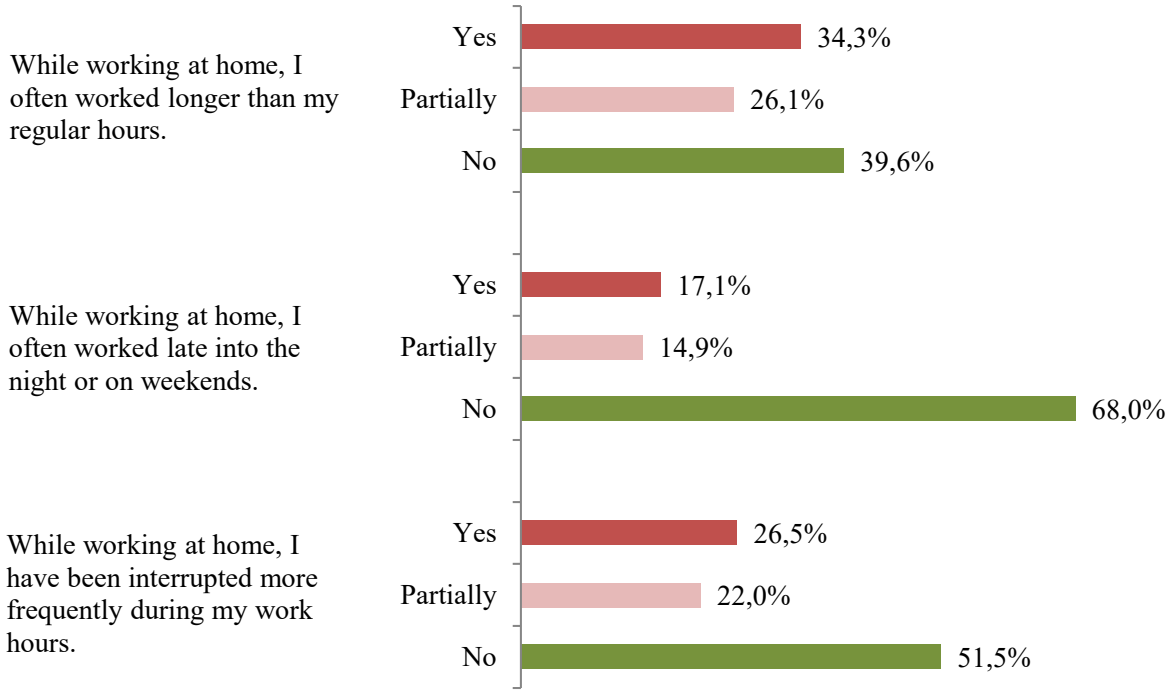
Similar results emerged when respondents were asked about whether they had a suitable place for working from home (e.g., their own room). 75.0% of the respondents had a suitable place (n = 1,137), which works out at 78.1% of men and 71.4% of women. This was also a factor that may have contributed to the observed gender differences regarding productivity (cf. Hipp & Konrad, 2021).

4 Variants of teamwork

The present study was primarily interested in experiences of working from home while being part of a team during the COVID-19 pandemic. 1,039 respondents (68.5% of all respondents) reported working in a team in their company; men (at 71.2%) were slightly more likely to do so than women (65.4%). The following analysis focuses on these individuals.

A central question was how different types of teamwork performed under the conditions of working from home during the pandemic. The research distinguishes between different conceptions of teamwork, focusing particularly on agile teams. The concept of agile teamwork originates from the software industry (cf. Cohen et al., 2004; Krzywdzinski & Greb, 2022). There is no single definition of

Figure 1: Working times of employees working from home during the COVID-19 pandemic

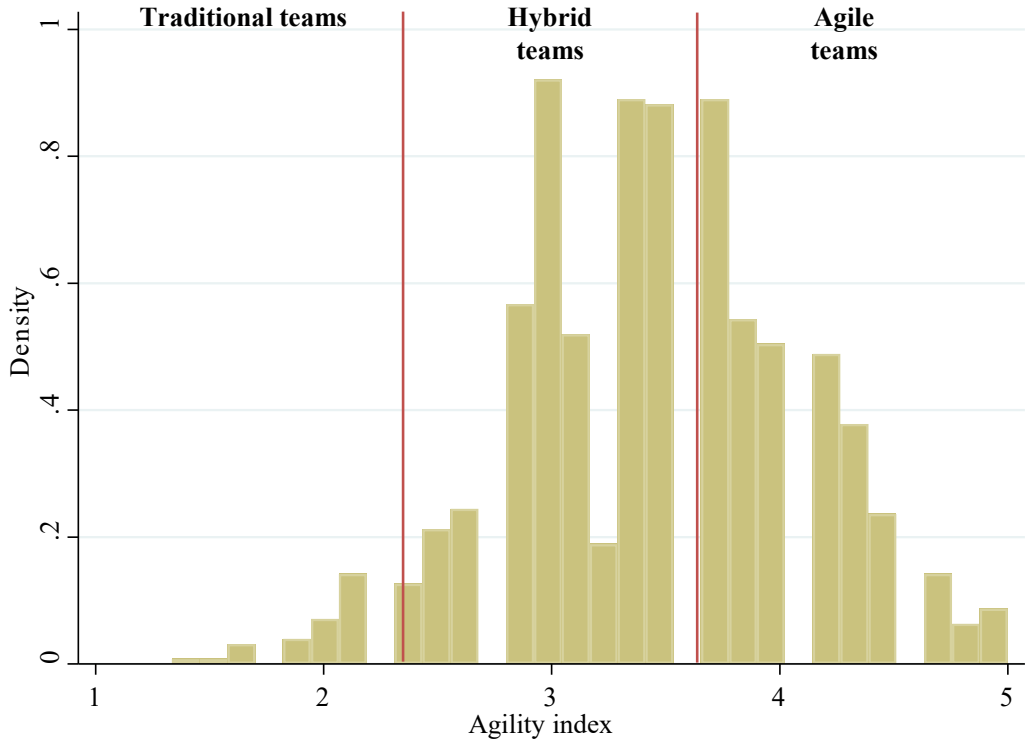


agile teamwork, but there are various different approaches, such as Scrum. However, these different approaches have common features that were integrated in the survey to measure agile teamwork.

1. *A high level of interdependence among team members:* Interdependence is a central element of agile work. Agile teams divide and structure tasks into precisely defined subtasks that are taken on by team members. The progress of the joint work depends on each subtask being completed on time, which is why the teams constantly coordinate their progress. In addition, changes can arise when working on subtasks, which in turn impact further subtasks. Three items representing a short version of the Task Interdependence Scale were used to measure this, each using a five-point scale.[1] To form the interdependence variable, they were summed and divided by 3.
   - \ My team colleagues absolutely need the results of my work in order to perform their respective tasks.
   - \ I myself can only carry out my tasks if I have the contributions of my team colleagues to do so.
   - \ As a team, we have clearly defined common goals and deadlines.
2. *A high degree of self-organization of the team:* In agile teams, work is done with as little hierarchy as possible. The agile organization method Scrum, for example, only anticipates the following roles: team members (who organize themselves), scrum master (who supports the team in organization but has no supervisory function), and product owner (who defines the project goals and requirements for the team). This self-organization construct was also measured with three

[1] The content consistency of the scale was determined on the basis of the research literature. Formally, internal consistency was measured in the first step via the usual Cronbach's alpha indicator, which reached a value of 0.67 and is on the borderline of an acceptable value. However, Cronbach's alpha was developed for long scales with many items and is a less reliable indicator of consistency for short scales.

Figure 2: Distribution of respondents by team type



items (five-point response scale) that were summed and divided by 3:[2]

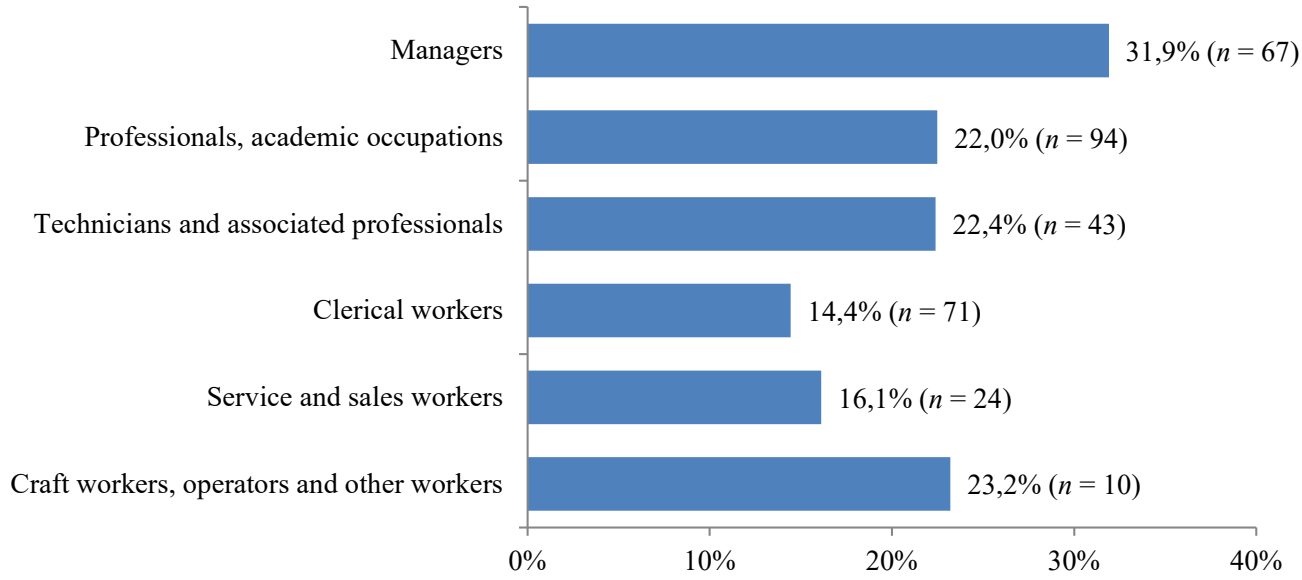
- Decisions about the distribution and organization of tasks are largely made by our team itself (without intervention from the supervisor).
- Monitoring of the achievement of the given goals and deadlines is largely done by our team itself (without intervention of the supervisor).
- Communication with customers and/or other functional areas in the company is largely the responsibility of our team (without intervention from the supervisor).

The common definitions of agile team organization also included other variables, such as team size and the frequency of team meetings. In the case of the Scrum method, for example, teams should ideally have fewer than nine members. Short daily meetings are used so that teams can review the status of their work and update each other. In addition, there are planning and review meetings at the beginning and end of so-called sprints (usually one- to four-week work packages) as well as other meetings for overall project planning. However, the analysis showed no correlation between the dimensions of interdependence and self-organization on the one hand and team size and the frequency of team meetings on the other. Moreover, there was no correlation between team size (and frequency of team meetings) and the dependent variables of team collaboration and team productivity. For this reason, the agility indicator is limited here to the two dimensions of interdependence and self-organization. The two dimensions are statistically significantly correlated ($r = .23$, $p < .05$).

The two indicators of interdependence and self-organization were added to the overall "agile teamwork" indicator and divided by two. The scale of the indicator thus ranges from 5 (maximum agility) to 1 (no agility). As Figure 2 shows, the distribution in the survey used here is right-skewed, i.e., respondents who work in teams with elements of agile work are the dominant group.

2 The short scale has a Cronbach's alpha of 0.75, which is acceptable (especially considering that there are only three items).

Figure 3: Share of respondents working in agile teams by occupational group



The "agile teamwork" indicator represents a continuum. To facilitate the analysis, respondents were grouped into three types: traditional teams, hybrid teams, and agile teams. In traditional teams, people perform their tasks within a team, but team members' tasks are relatively less interdependent and they have relatively low levels of self-organization. Hybrid teams were defined as constellations that exhibited elements of both agile work and traditional teamwork.

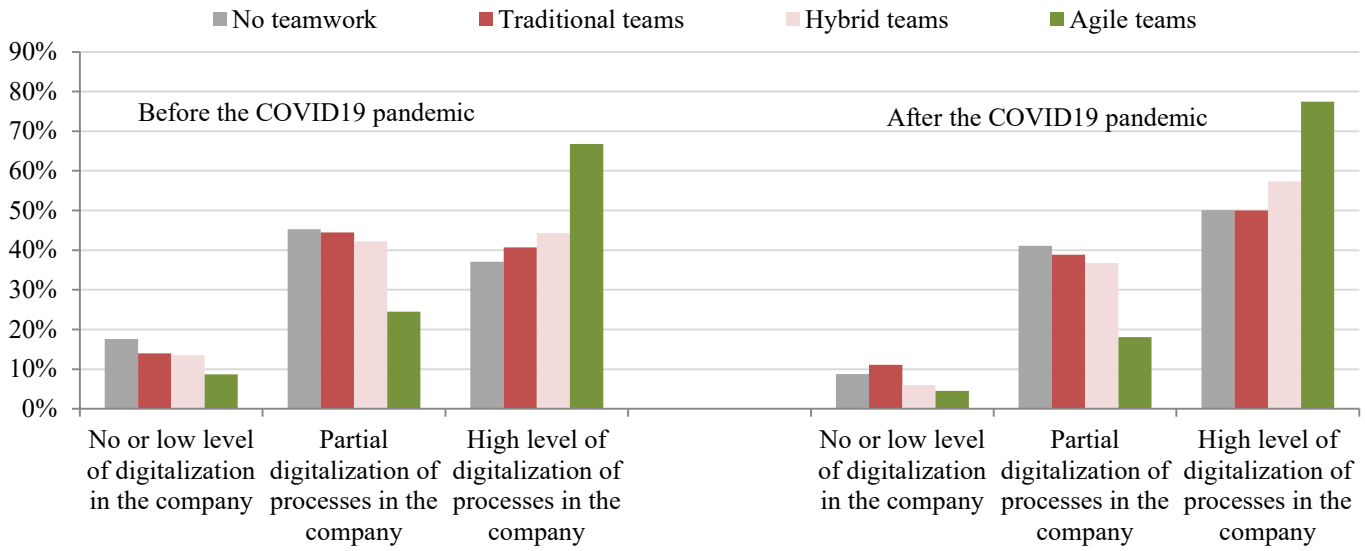
The "agile teamwork" scale was divided into three equally sized areas to assign respondents to the three types. Figure 2 presents the approach and the distribution of respondents according to the three teamwork types.

It is striking that the type of team organization was linked to other organizational characteristics. The occupational group significantly influenced the possibility of implementing agile team organization (Figure 3). Managers seemingly had the most conducive work processes for agile team organization (32% of managers reported working in agile teams). Among professionals and technicians, around 22-23% of respondents worked in agile teams, while this value droped to about 14–16% for clerical and service workers.

The survey asked about the general level of digitalization in the respondents' companies before and since the start of the COVID-19 pandemic (see Figure 4). The findings paint a two-sided picture: On the one hand, they show that regardless of the form of team organization, the level of digitalization in companies increased during the pandemic. On the other hand, the differences between the various forms of team organization remained unchanged. Agile team organization was practiced primarily in companies that had a much higher level of digitalization than companies with hybrid and traditional forms of team organization or even in companies that did not typically organize employees in teams. For example, in the survey, 77% of employees working in agile teams reported that their company had been substantially or completely digitalized since the pandemic. In traditional teams and in companies that did not organize their employees in teams, the figure was only around 50%.

The correlation between work organization and digitalization was also clearly evident in access to collaboration tools (Figure 5). Employees who worked in agile teams reported having better access to all types of collaboration tools than those who worked in other types of teams or who did not work in teams at all. Not surprisingly, communication tools and

Figure 4: Types of team organization and the digitalization level in companies



document sharing and editing software were the most prevalent types of collaboration tools. However, about 50% of employees in agile teams also reported having access to project management software as well as tools for virtual brainstorming, designing, and working on prototypes; these usage levels were twice the levels reported by employees who worked in traditional teams or who did not work in teams at all.

Interestingly, agile teams were slightly more likely to work from home than the other team types. This may be related to the fact that agile teams reported having better access to collaboration tools. At the same time, this raises the question already asked in the introduction, namely how working at home affects team performance, because agile teams work in a highly interdependent manner and require close cooperation.

5 Team productivity when working from home

The survey measured the impact of working from home during the COVID-19 pandemic on productivity using respondents' self-assessments. Such measurement techniques are not without their problems, as respondents may have distorted perceptions. However, it is extremely difficult to measure productivity through objective indicators, which was why self-assessment was selected here.

In general, respondents reported rather limited effects of working from home during the COVID-19 pandemic on productivity. This is consistent with existing studies that reported a relatively quick transition to the new work situation and relatively high satisfaction with working from home (e.g., Frodermann et al. 2021; Ipsen et al. 2021). At the same time, however, there were clear differences between the forms of team organization, which will be addressed in the following.

The agility index that was used to assign respondents to team types was based – as shown above – on two dimensions: interdependence between team members and self-organization within the team. The following section discusses the effects of working from home during the pandemic based on the overall index.

Figure 5: Use of collaboration tools and types of team organization

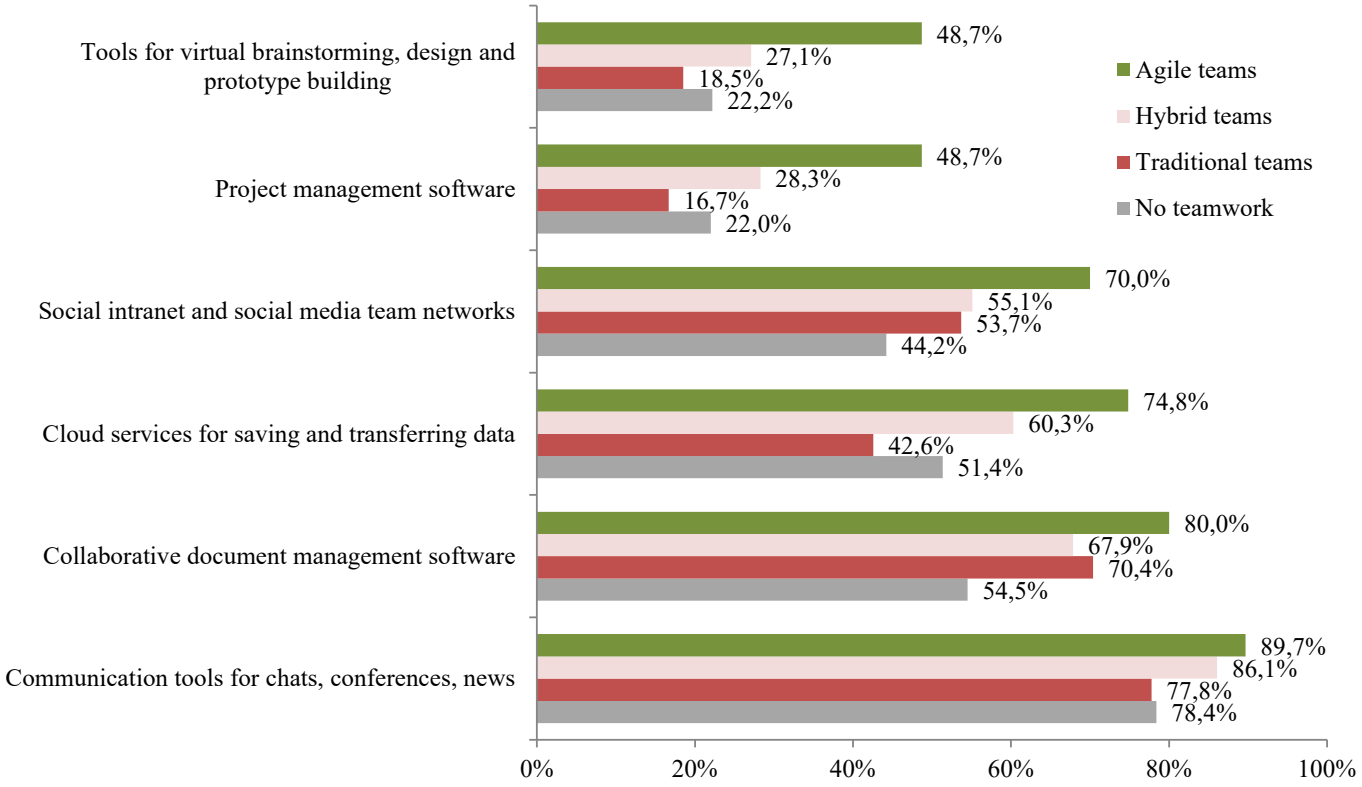
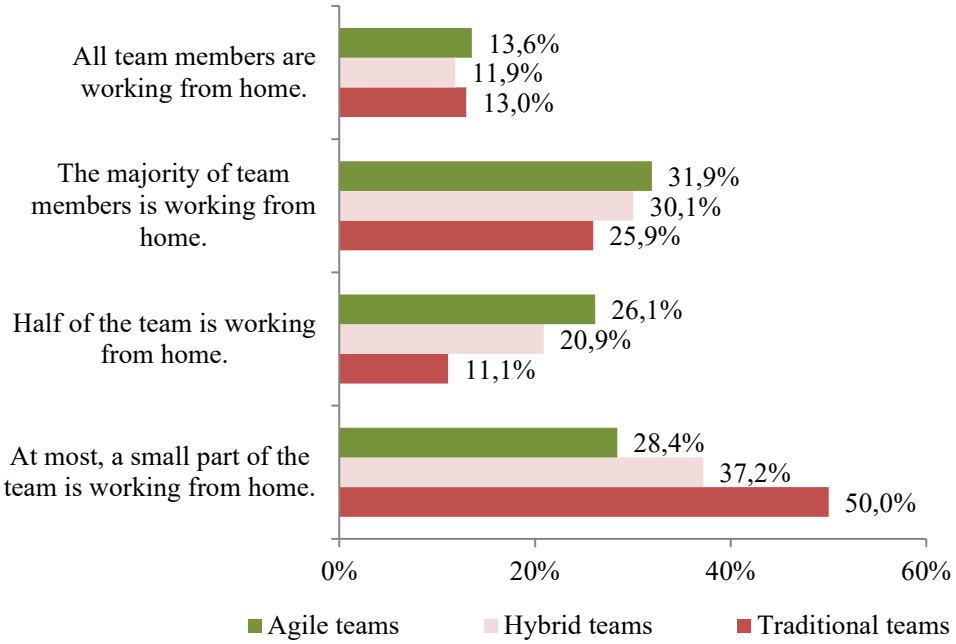


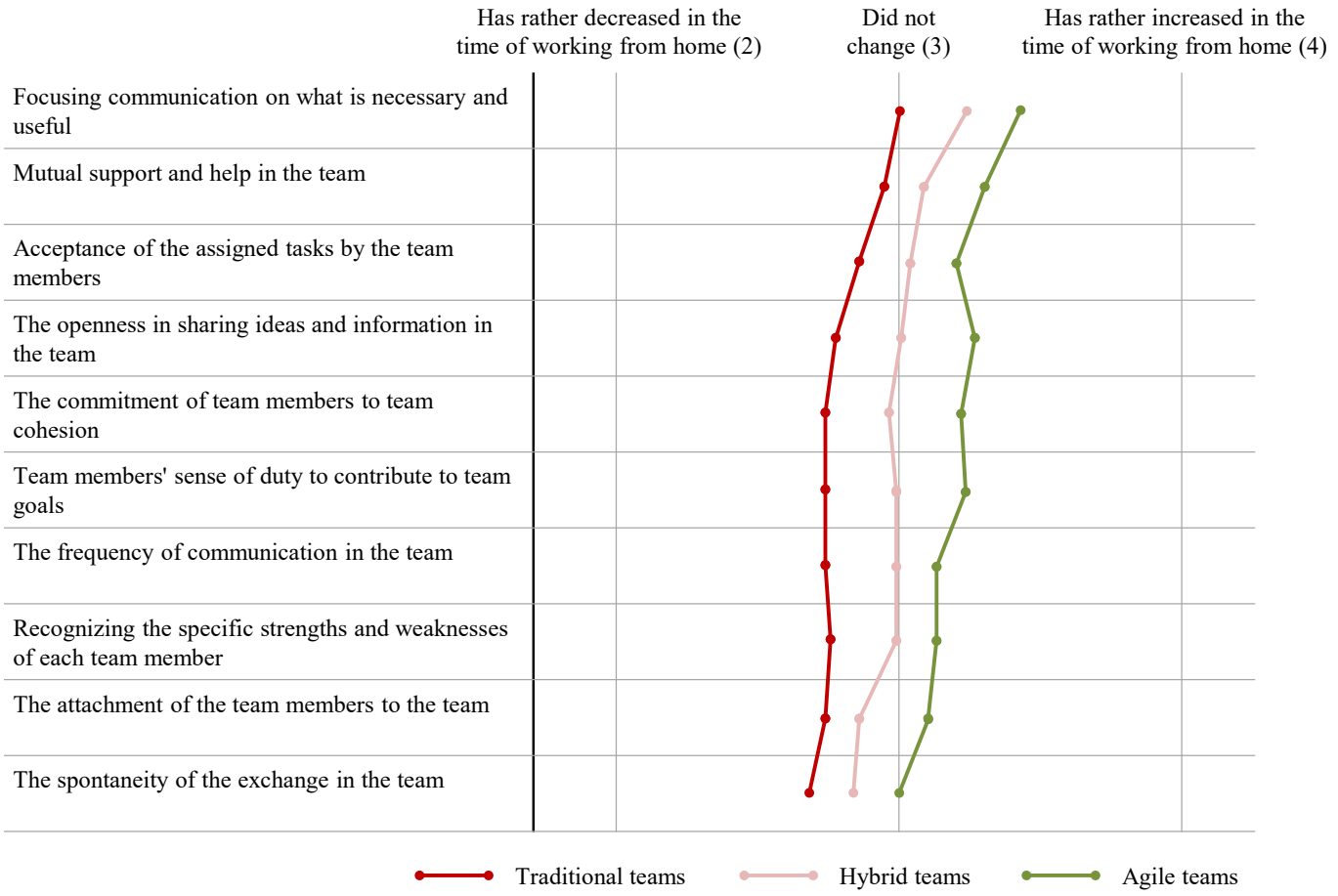
Figure 6: Working from home and types of team organization



However, a similar picture emerged when analyzing each of the two dimensions of the index. The differences between agile, hybrid, and traditional teams are evident with regard to both the dimension of interdependence and the dimension of self-organization.

For the analysis, respondents were presented with a series of items on team collaboration during the COVID-19 pandemic and asked to compare the pandemic period to the pre-pandemic one. These included items that were worded positively (Figure 7) and

Figure 7: Team organization when working from home during the COVID-19 pandemic (positive items)



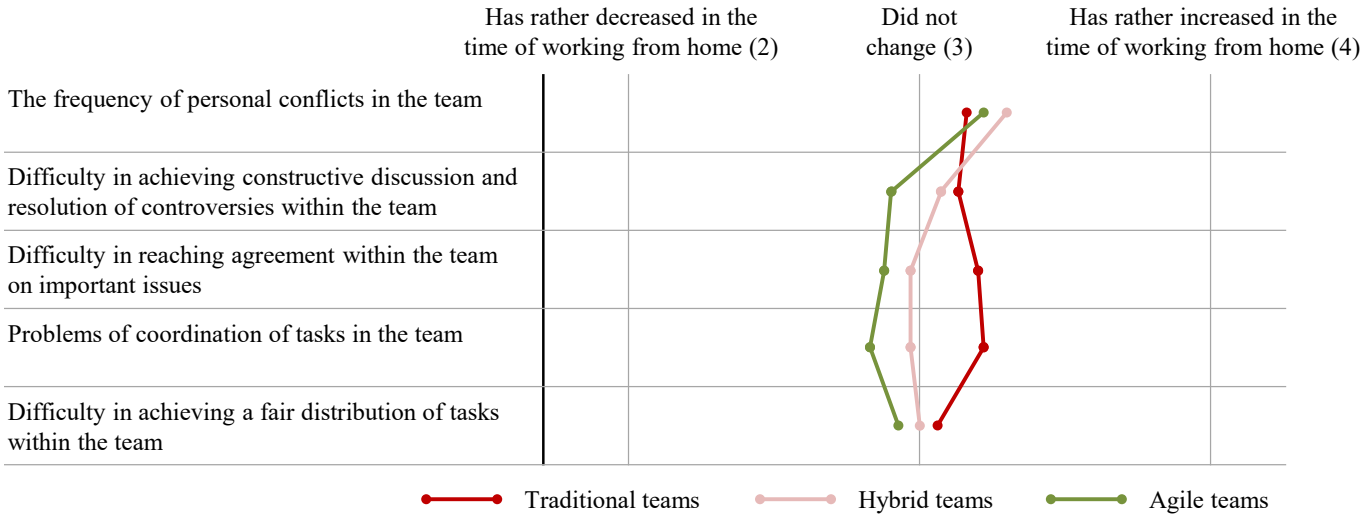
items that were worded negatively (Figure 8). For presentation reasons, these items are shown separately in two figures – in the survey, all items were presented to respondents in a random order.

As Figure 7 shows, the mean values of the assessments were mostly close to 3 ("has remained unchanged") – in the Appendix, the distributions of the answers are presented in tabular form. Quite obviously, the switch to working from home during the pandemic did not disrupt teamwork. Agile teams were better able to cope with this change. These teams reported rather positive experiences when working from home in almost all items: Communication focus and team support increased. A few examples illustrate this (see Table A1 in the Appendix): With regard to communication focus, 43.9% of respondents working in agile teams reported an improvement during the time spent working from home, while only 9.3% reported a deterioration. In terms of team members' commitment to team cohesion, 30.3% of respondents working in agile teams reported an improvement and 12.6% reported a deterioration. Only the spontaneity of exchange remained the same: The share of respondents working in agile teams reporting an improvement or a deterioration in this variable when working from home was 31.6%.

Traditional teams, on the other hand, reported an overall deterioration of teamwork, with the exception of focused communication: They reported less team support and poorer communication. Hybrid teams fell between the agile and traditional teams and reported hardly any change in the quality of teamwork during the pandemic.

Taking a look at the negatively formulated items (Figure 8), one sees a similar picture. Traditional teams consistently reported a deterioration in

Figure 8: Team organization when working from home during the COVID19 pandemic (negative items)



teamwork when working from home: Conflicts and coordination difficulties increased. Hybrid teams reported little change compared to the situation before the COVID-19 pandemic on average. Agile teams, however, reported a slight improvement in team collaboration on average. The only exception concerned personal conflicts in the teams. These also increased in agile and hybrid teams. Apparently, working from home is more likely to foster personal conflicts in teams, regardless of the type of team organization. 31.9% of respondents working in agile teams reported an increase in conflicts, while 15.5% perceived a decrease (see Table A2 in the Appendix).

Based on these findings, we could plausibly expect working-from-home productivity to have developed more positively in agile teams during the COVID-19 pandemic than in other team types. In the first step, let us look at the assessments of individual productivity (Figure 9). Based on this, there are hardly any differences here between agile, hybrid, and traditional teams (even compared to employees who do not work in teams at all). On average, the respondents rated the effects of working from home as positive, particularly with regard to individual goal achievement, speedy completion of personal tasks, and achieved quality. Effects on the ability to quickly correct errors and problems as well as on creativity were rather low.

The picture is somewhat different for team productivity (Figure 10). Agile teams reported a slight improvement in team productivity on average, particularly regarding targets, deadlines, and quality considerations. Traditional teams, on the other hand, reported slightly negative effects, especially with regard to resolving errors and problems in team processes and creatively developing ideas.

Overall assessments of productivity when working from home differed significantly between the forms of teams. Agile and hybrid teams reported a slight increase in both individual and team productivity when working from home. For example, 38.1% of respondents working in agile teams reported an increase in their individual productivity and 29.7% reported an increase in team productivity (see Table A5 in the Appendix). Only 15.1% reported a decrease in individual productivity, and only 14.2% reported a decrease in team productivity. Members of traditional teams, on the other hand, reported an increase in individual productivity but a decrease in team productivity. Respondents who did not work in teams reported an increase in their individual productivity on average.

The differences in reported team productivity corresponded to differences in reported satisfaction with working from home during the COVID-19 pandemic (Figure 12). Overall, these are not large.

Figure 9: Individual productivity when working from home during the COVID-19 pandemic

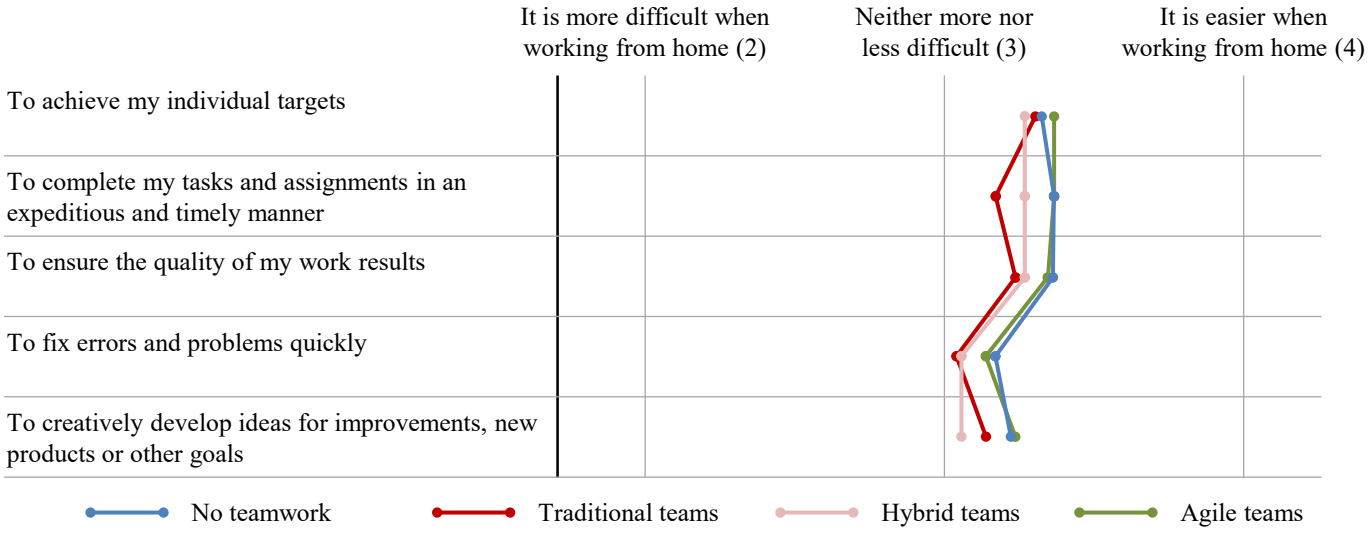
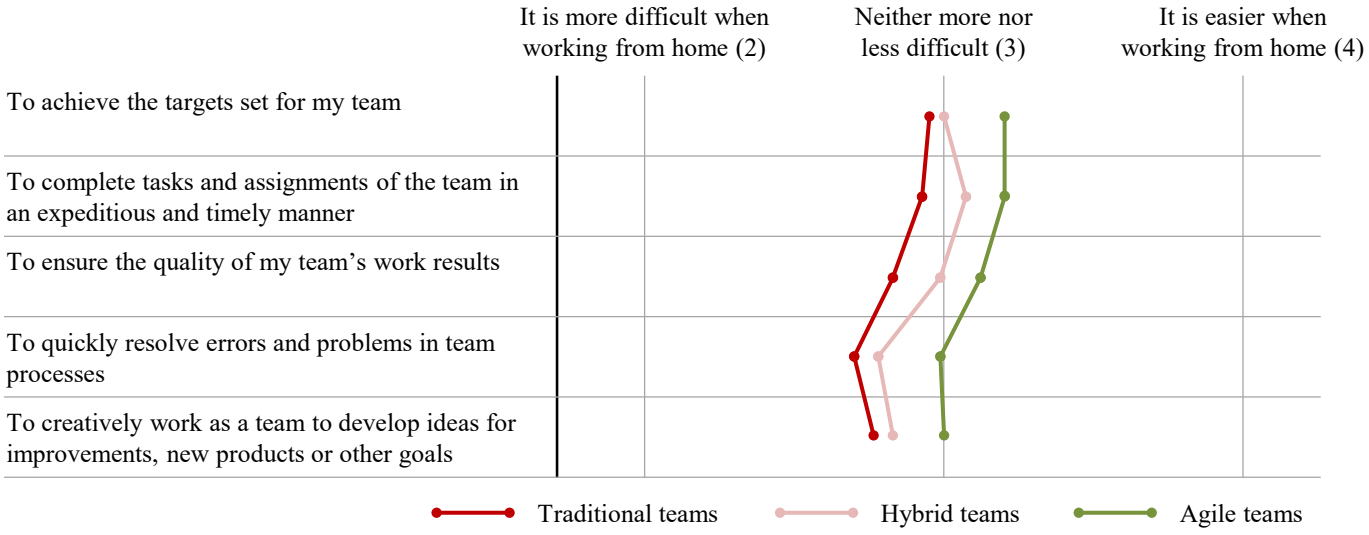


Figure 10: Team productivity when working from home during the COVID-19 pandemic



Nevertheless, individuals in agile teams (and individuals who did not work in teams) had the highest satisfaction with working from home, while individuals in traditional teams had the lowest.

Productivity is, of course, not only related to the type of team organization. Bivariate correlations with other variables were tested to examine the significance of any other factors. The analyses found no correlations between trends in working-from-home productivity (both at the individual and team level) with gender, although individuals without care responsibilities for children (or other dependents) tended to report slightly higher productivity when working from home. The existence of a company agreement defining rules for working from home was also associated with slightly higher reported productivity – apparently, clear, collectively agreed rules are important for productivity. The strongest correlation was between productivity and the availability of a suitable location and technical equipment; this is an unsurprising but nevertheless important finding.

Figure 11: Productivity when working from home compared to working in the office

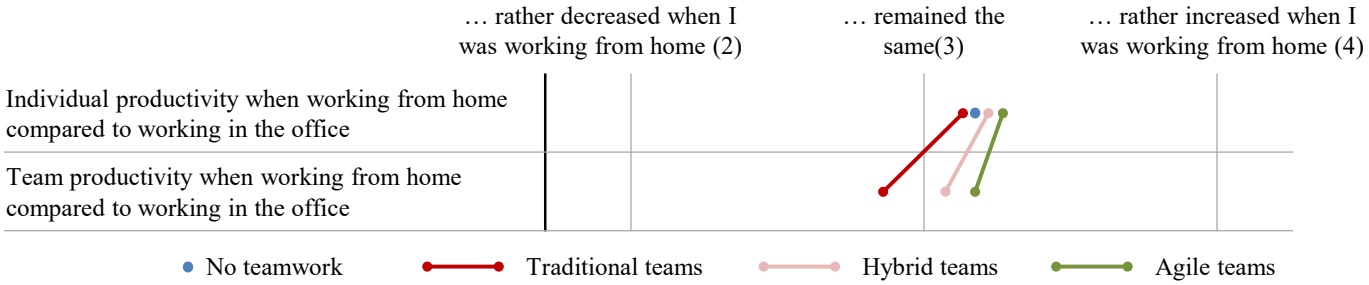
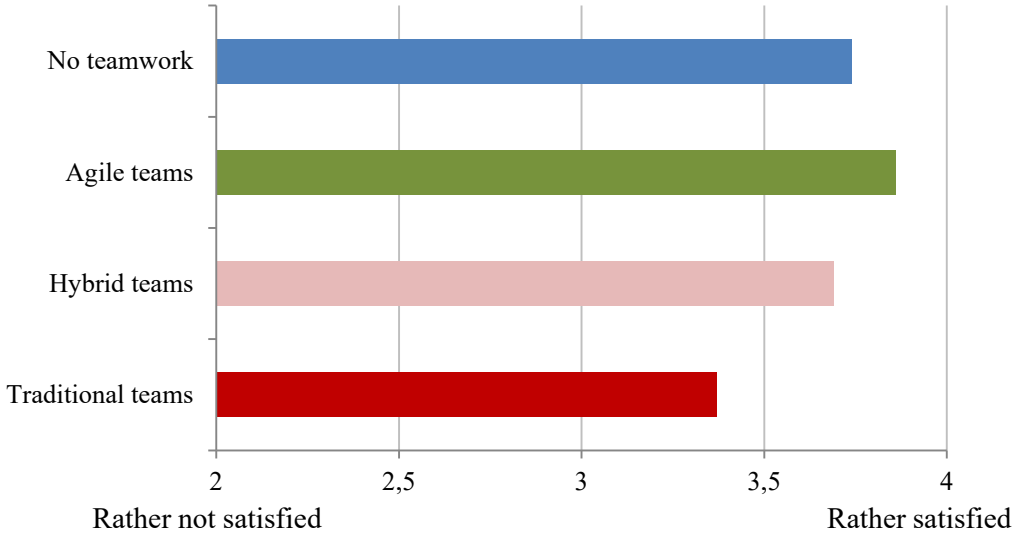


Figure 12: Satisfaction with working from home



6 Conclusions

Working from home during the COVID-19 pandemic changed work processes. More than half of respondents working from home reported longer than standard working hours. For one-third of the respondents this meant working late at night or on weekends. Regulating home-office work therefore remains a challenge. Just under a quarter of respondents complained that their company lacked clear rules on working from home, and only just under half knew about any company agreement in this regard. The findings presented here suggest that clear rules that account for employees' interests increase productivity when people work from home.

A major concern in the present study was the effect of working from home on team productivity. Working from home poses particular challenges for teams: It leads to decreases in social contacts, informal encounters, and communication flows, and because interaction takes place primarily virtually, it requires new communication patterns.

Overall, the survey presented here shows that respondents did not perceive the impact of working from home during the COVID-19 pandemic as disruptive. However, it revealed quite surprising differences between different forms of team organization. The quality of team collaboration and team productivity slightly increased in agile teams, even in a situation where at least some members of the team were working from home. In this study, agile teams were defined as those characterized by a high

degree of self-organization and strong interdependence in terms of team members' tasks. In contrast, respondents working in traditional teams reported slightly negative effects of working from home on teamwork quality and team productivity.

These findings are surprising, because virtual communication when working remotely should particularly challenge agile teams: it makes spontaneous and informal exchanges more difficult and can thus affect the social relationships and trust on which agile teams are particularly dependent. Two different explanations are plausible. The first focuses on the way agile teams work. During the COVID-19 pandemic, these highly integrated agile teams were able to build on their experiences, their routines, their mutual trust, and the bonds between team members. This enabled them to continue working together without the option of coming together in person in the office. Their internal cohesion made it easier for them to collaborate from home and also mobilize team members to continue to maintain the bonds within the team. The second explanation points to technical equipment. Our study shows that, on average, agile teams have significantly better access to digital collaboration tools than other types of teams. This facilitates communication and cooperation when team members work from home.

Both factors – the organizational and the technical characteristics of agile teams – are interrelated. It seems plausible that agile teams are used in work processes that also require particularly intensive communication; they thus likely use digital communication tools – such as tools for software and product development, design, and other tasks – to a greater extent. There is a close connection between organization and technology.

What is remarkable here is that agile teams succeed in combining working from home, the use of digital collaboration tools, and the maintenance (or even strengthening) of social cohesion in the team. This is an important finding with regard to the question of whether the increasing diffusion of working from home undermines the socializing effects of work and leads to a closing and compartmentalization of social circles.

The COVID-19 pandemic has certainly brought movement in the design of organization and technology. As Krzywdzinski et al. (2022) showed, there was a surge in digitalization projects as companies adapted to the conditions in the pandemic. This is confirmed in the present study: Regardless of the type of team organization, respondents reported greater digitalization of processes in firms compared to pre-pandemic levels. It is worth noting, however, the differences between establishments with agile teams and those with traditional teams (or no team organization). Establishments with agile teams remain characterized by a higher degree of digitalization – the gap between the pioneers in terms of organizational and technical innovations and the rest is not closing.

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8 Appendix

Table A1: How did the following aspects of team collaboration develop in the working-from-home phase during the COVID-19 pandemic compared to the time of working in the office? (Positive items)

		Has rather or strongly decreased in the time of working from home	Did not change	Has rather or strongly increased in the time of working from home
Focusing communication on what is necessary and useful	Traditional teams	9.4%	71.7%	18.9%
	Hybrid teams	11.9%	53.7%	34.3%
	Agile teams	10.1%	52.4%	37.5%
Mutual support and help in the team	Traditional teams	20.8%	64.1%	15.1%
	Hybrid teams	16.9%	56.1%	27.0%
	Agile teams	14.6%	56.6%	28.8%
Acceptance of the assigned tasks by the team members	Traditional teams	15.1%	79.2%	5.7%
	Hybrid teams	11.6%	71.9%	16.5%
	Agile teams	6.6%	71.5%	21.9%
Openness to sharing ideas and information in the team	Traditional teams	18.9%	69.8%	11.3%
	Hybrid teams	18.9%	60.1%	21.0%
	Agile teams	13.2%	60.6%	26.2%
The commitment of team members to team cohesion	Traditional teams	24.5%	71.7%	3.8%
	Hybrid teams	19.8%	63.5%	16.7%
	Agile teams	13.2%	60.1%	26.7%
Team members' sense of duty to contribute to team goals	Traditional teams	18.9%	75.4%	5.7%
	Hybrid teams	16.6%	64.4%	19.0%
	Agile teams	10.8%	67.0%	22.2%
The frequency of communication in the team	Traditional teams	33.9%	49.1%	17.0%
	Hybrid teams	29.7%	42.7%	27.6%
	Agile teams	26.4%	41.8%	31.8%
Recognizing the specific strengths and weaknesses of each team member	Traditional teams	24.5%	66.0%	9.5%
	Hybrid teams	15.7%	66.9%	17.4%
	Agile teams	12.7%	68.9%	18.4%
The attachment of the team members to the team	Traditional teams	32.1%	64.1%	3.8%
	Hybrid teams	28.7%	54.1%	17.2%
	Agile teams	21.9%	56.4%	21.7%
The spontaneity of the exchange in the team	Traditional teams	32.1%	56.6%	11.3%
	Hybrid teams	35.8%	39.7%	24.5%
	Agile teams	32.6%	39.6%	27.8%

Table A2: How did the following aspects of team collaboration develop in the working-from-home phase during the COVID-19 pandemic compared to the time of working in the office? (Negative items)

		Has rather or strongly decreased in the time of working from home	Did not change	Has rather or strongly increased in the time of working from home
The frequency of personal conflicts in the team	Traditional teams	11.3%	58.5%	30.2%
	Hybrid teams	14.6%	50.9%	34.5%
	Agile teams	10.6%	55.2%	34.2%
Difficulty in achieving constructive discussion and resolution of controversies within the team	Traditional teams	5.6%	75.5%	18.9%
	Hybrid teams	18.5%	62.8%	18.7%
	Agile teams	20.3%	61.1%	18.6%
Difficulty in reaching agreement within the team on important issues	Traditional teams	9.4%	71.7%	18.9%
	Hybrid teams	19.4%	66.9%	13.7%
	Agile teams	18.2%	67.4%	14.4%
Problems with coordination of tasks in the team	Traditional teams	9.4%	73.6%	17.0%
	Hybrid teams	18.3%	67.3%	14.4%
	Agile teams	25.5%	60.4%	14.1%
Difficulty in achieving a fair distribution of tasks within the team	Traditional teams	11.3%	71.7%	17.0%
	Hybrid teams	15.8%	68.7%	15.5%
	Agile teams	15.8%	73.6%	10.6%

Table A3: How would you rate your individual work results during the time of working from home, if you compare this with the time when you worked in the office?

		It is rather or clearly more difficult when working from home	Neither more nor less difficult	It is rather or clearly easier when working from home
To achieve my individual targets	No teamwork	15.0%	47.5%	37.5%
	Traditional teams	22.6%	45.3%	32.1%
	Hybrid teams	11.2%	52.1%	36.7%
	Agile teams	12.0%	52.8%	35.2%
To complete my tasks and assignments in an expeditious and timely manner	No teamwork	16.2%	41.7%	42.1%
	Traditional teams	20.8%	41.5%	37.7%
	Hybrid teams	15.8%	47.2%	37.0%
	Agile teams	11.3%	50.0%	38.7%
To ensure the quality of my work results	No teamwork	12.6%	50.3%	37.1%
	Traditional teams	13.2%	54.7%	32.1%
	Hybrid teams	12.8%	51.8%	35.4%
	Agile teams	11.3%	54.5%	34.2%
To quickly resolve errors and problems	No teamwork	21.0%	47.4%	31.6%
	Traditional teams	24.5%	49.1%	26.4%
	Hybrid teams	21.7%	52.1%	26.2%
	Agile teams	20.5%	52.1%	27.4%
To creatively develop ideas for improvements, new products or other goals	No teamwork	16.1%	51.8%	32.1%
	Traditional teams	18.9%	52.8%	28.3%
	Hybrid teams	22.1%	51.4%	26.5%
	Agile teams	19.6%	49.8%	30.6%

Table A4: Thinking of the time you work from home during the COVID-19 pandemic, how have the results of working as a team changed compared to when you were working in the office?

		It is rather or clearly more difficult when working from home	Neither more nor less difficult	It is rather or clearly easier when working from home
To achieve the targets set for my team	Traditional teams	18.9%	64.1%	17.0%
	Hybrid teams	16.7%	62.3%	21.0%
	Agile teams	15.1%	64.4%	20.5%
To complete tasks and assignments of the team in an expeditious and timely manner	Traditional teams	17.0%	66.0%	17.0%
	Hybrid teams	18.0%	57.1%	24.9%
	Agile teams	15.8%	57.5%	26.7%
To ensure the quality of my team's work results	Traditional teams	18.9%	75.5%	5.6%
	Hybrid teams	19.6%	61.2%	19.2%
	Agile teams	18.4%	59.9%	21.7%
To quickly resolve errors and problems in team processes	Traditional teams	28.3%	64.1%	7.6%
	Hybrid teams	31.8%	54.8%	13.4%
	Agile teams	30.1%	53.1%	16.8%
To creatively work as a team to develop ideas for improvements, new products or other goals	Traditional teams	22.6%	62.3%	15.1%
	Hybrid teams	30.6%	51.3%	18.1%
	Agile teams	30.2%	49.5%	20.3%

Table A5: Productivity of work from home

		Has rather or strongly decreased in the time of working from home	Did not change	Has rather or strongly increased in the time of working from home
Individual productivity when working from home compared to working in the office	No teamwork	14.9%	56.6%	28.5%
	Traditional teams	26.4%	35.9%	37.7%
	Hybrid teams	15.5%	52.8%	31.7%
	Agile teams	13.4%	51.2%	35.4%
Team productivity when working from home compared to working in the office	Traditional teams	30.2%	54.7%	15.1%
	Hybrid teams	16.4%	59.4%	24.2%
	Agile teams	13.0%	59.4%	27.6%