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HAUPTBEITRÄGE – THEMENTEIL

Agile work practices: opportunities and risks for occupational well-being

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Abstract
This article in the journal "Group. Interaction. Organization. (GIO)" presents the results of a study on the opportunities and risks of agile work practices (AWP) for occupational well-being. AWP have become an integral part of project work today, and they significantly change processes of collaboration and work design. However, findings on the relationships between AWP and occupational well-being are inconsistent. Based on job demands-resources theory, this study investigates concrete relationships between specific AWP, job demands and resources, and occupational well-being. Data were collected using qualitative interviews with 14 individuals working in agile teams in different organizations. Opportunities and risks were reported for almost all AWP, except for incrementation practice. Results confirm our propositions that the relationships are heterogeneous and should be investigated in a more differentiated way. In addition, various personal and organizational resources impacting these relationships are explored. The results serve as an important theoretical body and a basis for further research in this field. Furthermore, they raise awareness of opportunities and risks of agile teamwork and provide practical suggestions for its implementation.

Keywords Job demands · Job resources · Occupational well-being · Agile work practices

Agile Arbeitspraktiken: Chancen und Risiken für das berufliche Wohlbefinden

Zusammenfassung
Dieser Beitrag in der Zeitschrift „Gruppe. Interaktion. Organisation. (GIO)" stellt die Ergebnisse einer Studie zu den Chancen und Risiken agiler Arbeitspraktiken für das berufliche Wohlbefinden dar. Agile Arbeitspraktiken sind aus der gegenwärtigen Projektarbeit nicht mehr wegzudenken und verändern Prozesse der Zusammenarbeit und Arbeitsgestaltung wesentlich. Bisherige Ergebnisse zu den Zusammenhängen agiler Arbeitspraktiken und beruflichem Wohlbefinden sind jedoch inkonsistent. In Anlehnung an die Job Demands-Resources Theorie werden in der Studie konkrete Zusammenhänge zwischen agilen Arbeitspraktiken, Arbeitsanforderungen und -ressourcen, und beruflichem Wohlbefinden untersucht. Die Daten wurden mittels einer qualitativen Interviewstudie erhoben, für welche 14 Personen aus agilen Teams unterschiedlicher Organisationen befragt wurden. Mit Ausnahme der Inkrementation-Praxis wurden für alle untersuchten agilen Arbeitspraktiken sowohl Chancen als auch Risiken bezogen auf berufliches Wohlbefinden berichtet. Die Ergebnisse bestätigen die Annahme, dass die Beziehungen sehr heterogen sind und differenziert untersucht werden sollten. Darüber hinaus werden verschiedene persönliche und organisatorische Ressourcen exploriert, die diese Beziehungen beeinflussen. Die Ergebnisse dienen als wichtiges theoretisches Gerüst und Grundlage für weitere Forschung in diesem Bereich. Darüber hinaus hat die Studie eine hohe Praxisrelevanz: Die Ergebnisse schärfen das Bewusstsein für die Chancen und Risiken agiler Teamarbeit und liefern konkrete Gestaltungsmaßnahmen für deren Umsetzung.

Schlüsselwörter Arbeitsanforderungen · Arbeitsressourcen · Berufliches Wohlbefinden · Agile Arbeitspraktiken

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There is hardly a company today that does not work at least partially with agile work practices (AWP) (digital.ai 2022). These include, for example, self-managed teams, regular customer feedback, iterative process, and continuously releasing product increments (Petermann and Zacher 2021). In terms of effective teamwork, AWP offer three promises that are supported by a recent meta-analysis: AWP are positively related to affective outcomes, such as job satisfaction and motivation (well-being promise), to behavioral outcomes, such as innovation and result orientation (performance promise), and to cognitive outcomes, such as psychological empowerment and self-determination (empowerment promise) (diGAP 2021; Koch et al. 2023).

In psychological research, AWP are increasingly discussed in terms of their relationships with occupational well-being. It was shown that AWP have an indirect relationship with occupational well-being via lower job demands and higher job resources, thus, being experienced as an opportunity for well-being (Rietze and Zacher 2022). However, these effects are not always consistent and positive associations between AWP, job demands, and strain were also described, indicating potential risks of AWP (Koch and Schermuly 2021a; Meier et al. 2018). AWP can therefore have both stress-reducing and stress-increasing effects. For example, self-organized teamwork can lead to self-exploitation even in protection-oriented Scrum teams (Pfeiffer et al. 2019), and high levels of transparency in daily stand-up meetings can lead to feelings of being controlled and put under pressure (Stray et al. 2016).

Previous research lacks a differentiation in multiple ways. AWP are often measured as a multidimensional construct (Koch and Schermuly 2021b; Petermann and Zacher 2022). However, samples for validating proposed measurement models are typically collected from homogeneous samples from one organization. Other studies based on heterogenous, cross-organizational samples include only a selection of AWP (Junker et al. 2022a; Rietze and Zacher 2022). Furthermore, in practice, AWP are often not introduced as an all-in solution, but in hybrid forms as a supplement to classic approaches or as single methods depending on the task of the project (Gemino et al. 2021).

The main purpose of this paper is to take a step back and adopt a more nuanced approach. Based on semi-structured interviews with agile practitioners, we investigated how specific AWP, such as iterative planning or retrospective meetings, are related to occupational well-being and whether these are perceived more as opportunities or risks for well-being.

Consistent with prior research we discuss AWP as a work design feature (Rietze and Zacher 2022). Based on job demands-resources theory (JD-R theory, Demerouti et al. 2001) we investigate the following research questions:

1. What are positive and negative relationships between specific AWP within agile teams and perceptions of job demands, job resources, and occupational well-being?
2. How do organizational and personal resources further influence these relationships?

Our study contributes to the literature on AWP in three ways: First, we identify differential relationships between specific AWP (e.g., retrospective meetings, or iterative planning), job demands and resources, and occupational well-being by systematically analyzing data of individual experiences as a foundation for more comprehensive and refined research within the field. Second, we identify potential moderators at the organizational and individual level as additional signposts for future research. Third, practitioners can use our findings to apply AWP as targeted interventions to positively shape specific problems and tasks in agile teams.

1 Theoretical background

1.1 Agile work practices

AWP include project management approaches based on a universal agile value system outlined in the Agile Manifesto (Beck et al. 2001). The purpose of those practices is to directly tackle the challenges posed by rapid change, allowing teams to respond efficiently by simplifying information flow and decision-making processes (Conboy 2009). Scrum (Schwaber and Sutherland 2020), among several other agile approaches, has been identified as the most widely utilized agile method (digital.ai 2022).

AWP can be understood as a "set of activities that can be used by almost any type of team to structure taskwork and teamwork in an agile way" (Junker et al. 2022b, p. 2190). AWP can be distinguished between agile taskwork (all practices that relate to task and goal accomplishment) and agile teamwork (all practices that involve interaction, relationship, and working in roles within the team). The present study incorporates the most applied AWP including agile taskwork and agile teamwork as proposed in large-scale surveys with agile practitioners (digital.ai 2022), and previous studies in the research field (Junker et al. 2022a; Tripp et al. 2016; Tuomivaara et al. 2017). Those are: self-organized decision-making, daily stand-up meetings, retrospective meetings, incrementation practice, iterative planning, customer relation, and visualization of work progress. Specific technical practices from agile software development (e.g., pair programming, continuous integration) were not considered. All AWP in focus of the study are presented and defined in Table 1.

Table 1 Overview of the agile work practices included in the study

Agile work practices	Definition of the practice
Self-organized decision-making	The team operates in a self-organized manner, implying that team members collaborate autonomously to plan and coordinate their work, to accomplish common goals, and to establish their own boundaries. Team members share leadership and decision-making authority. (Stettina and Heijstek 2011)
Daily stand-up meeting	Team members convene daily for a brief 15-minute standing meeting aimed at fostering efficiency. During this meeting, they address three key questions: What tasks did I complete yesterday? What tasks will I tackle today? What obstacles are hindering my progress? (Tripp et al. 2016)
Retrospective meeting	At the end of each iteration, agile teams conduct a retrospective meeting where they engage in a constructive reflection and evaluation of the previous iteration, examining their collaborative efforts and identifying areas for continuous improvement. (Tripp et al. 2016)
Incrementation practice	The agile development process follows an incremental approach, where planning and progress are conducted in small increments. At the conclusion of each iteration, a small portion of the product is delivered to either external or internal customers, enabling prompt feedback to be received. (Tuomivaara et al. 2017)
Iterative planning	The team works in short recurrent iterations or working cycles called sprints in Scrum theory. At the beginning of each iteration, team members and business owners agree on what will be delivered during the upcoming iteration, and team members estimate and plan the respective work. (Tuomivaara et al. 2017)
Customer relation	The development process is guided by the needs and desires of the customer through direct engagement and consistent feedback. Customers are not treated as passive recipients of the final product but rather play an active role in the development process. (Tuomivaara et al. 2017)
Visualization of work progress	The team utilizes visual representations, such as task boards or charts (e.g., burndown chart or velocity chart) to convey information about the progress of their work. These visual aids effectively communicate the tasks that have been completed and those that are still pending. (Tripp et al. 2016)

1.2 Job demands-resources theory

AWP have an influence on how individuals perceive job characteristics (Rietze and Zacher 2022; Tripp et al. 2016). The JD-R theory (Demerouti et al. 2001) provides a comprehensive theoretical framework that links aspects of job characteristics with indicators of occupational well-being, such as work exhaustion, or engagement. Job characteristics can be categorized into two groups: Job demands are work aspects that require high levels of physical, emotional, or mental effort, such as workload or emotional demands. Job resources are aspects that promote health, personal growth, and effective coping with high job demands, such as social support or autonomy. The presence of high job demands combined with a lack of job resources can lead to strain and exhaustion through a health impairment process. Conversely, the presence of high job resources is linked to work engagement and well-being through a motivational process. There are also interaction effects: resources mitigate the negative impact of job demands on strain (buffer effect), while job demands enhance the positive impact of job resources on work engagement (boost effect). Personal and organizational resources can have a reciprocal relationship with job resources and can moderate the impact of job demands on occupational well-being (Bakker et al. 2022).

1.3 AWP, work design, and occupational well-being

Introducing AWP in the workplace changes the way team members communicate and collaborate (Moe et al. 2012). For example, new meeting routines like daily stand-up, planning, or retrospective meetings enable regular information sharing and feedback, collaborative problem-solving, and discussions on potential improvements. AWP support feelings of belonging and building supportive relationships (Whitworth and Biddle 2007). The self-management approach motivates individuals through perceived autonomy and decision-making competence (Moe et al. 2012). Positive effects of AWP on occupational well-being are not only assumed but also defined in the agile manifesto (Beck et al. 2001). On the one hand, AWP promote the performance and empowerment of employees, on the other hand, they can reduce demands and stress by creating a protection-oriented space in which the team can work in a focused manner and disruptions are eliminated (Pfeiffer et al. 2019).

The opportunities of AWP on occupational well-being have already been shown in various empirical studies. There is evidence for positive relationships with work engagement (Huck-Fries et al. 2019; Rietze and Zacher 2022), job satisfaction and motivation (Tessem and Maurer 2007; Tripp et al. 2016), as well as negative relationships with work-related stress and exhaustion (Augner and Schermuly 2023; Tuomivaara et al. 2017) and work fatigue (Rietze and Zacher 2022). A few studies highlight AWP as work design interventions that have a direct impact on perceived job demands and resources, and thus an indirect link to occupational well-being. For example, it was found that autonomy and feedback are positively influenced by AWP on the one hand and are directly associated with job satisfaction on the other hand (Tripp et al. 2016). Based on JD-R theory, the

two pathways between AWP and occupational well-being were demonstrated: a motivational pathway to affective engagement via job resources (i.e., social support, feedback, and autonomy) and a health-impairing pathway to affective fatigue via job demands (i.e., workload, time pressure, and work interruption) (Rietze and Zacher 2022).

However, positive effects with affective outcomes and job resources are not consistently found. AWP can also trigger demotivating or stress-inducing effects in the team (Meier et al. 2018; Pfeiffer et al. 2019). For example, daily reporting and the visibility of individuals' progress may demotivate some individuals by increasing performance pressure and thus, their stress levels (McHugh et al. 2011). The responsibility of team members in self-organized teams can result in pressure to not to disappoint but to prove themselves to the team, and it requires high communication efforts, which can have a negative impact on well-being (Cram and Newell 2016). Close involvement of customers can cause additional stress, for example, when promises are made that cannot be kept (Hoda et al. 2011).

Taken together, it can be assumed that under certain circumstances AWP can also increase job demands and decrease job resources, and thus pose a risk to occupational well-being. However, a systematic and theoretically sound approach to explain potentially negative associations between AWP and occupational well-being is missing, which is necessary to further develop AWP in research and theory, and to provide guidance for practitioners. In this study, we examine both opportunities and risks that arise in the context of specific AWP and occupational well-being, as well as organizational and personal resources which further influence those relationships.

2 Method

We used a qualitative research design to explore the variety of relationships between specific AWP, perceptions of job demands and resources, as well as occupational well-being. Data were collected through semi-structured interviews in order to capture vivid descriptions of the interviewees' experiences and to be flexible in cross-checking answers (Azungah 2018). We followed a purposive sampling strategy; more precisely a stratified sampling with predefined categories (i.e., company size, role in Scrum team) in order to ensure that certain categories of cases are represented within the overall sample (Robinson 2014). The sample group consisted of all working professionals who had worked at least one year in an agile Scrum team. We selected interviewees via social media. Participants included 14 agile professionals (9 male, 5 female), which represented various roles within agile teams, such as Scrum Master, Developer, or Product Owner as well as different industries, organization sizes, and levels of job experience.

Following guidelines on deductive qualitative research and based on in-depth interviews with a relatively homogeneous sample (professionals in the agile Scrum setting), we concluded that our sample size of 14 participants provides an adequate amount of data to achieve information saturation (Creswell and Creswell 2018; Onwuegbuzie and Leech 2007). Data was collected between March 2020 and April 2022 via video calls, which had a duration of 45 to 60 min. The interviews were audio-recorded and later transcribed verbatim. Anonymity and voluntary participation were assured via a consent form signed by the interviewees.

By basing analysis on a well-established pre-existing theory, the JD-R theory, we opted for a deductive research approach and data analysis following the process of qualitative content analysis (Mayring 2014). We followed a predesigned interview guide and developed a category system based on the theory before coding the text. Subcategories were also defined a priori but were slightly improved during the coding process. Categories and subcategories (in brackets) included direction of influence (i.e., opportunity, risk), job resources (i.e., autonomy, feedback, social support, goal clarity, task-related resources), job demands (i.e., workload, time pressure, emotional demand, work interruption), occupational well-being (i.e., work motivation, work stress), AWP (i.e., the seven AWP introduced earlier in the paper), and potential moderators (i.e., organizational resources, personal resources). At the start of the coding process, we marked all relevant interview passages to identify logic units in relation to the research question, which serve as sampling units of our dataset ($n = 184$). Interview statements that had no relation to the research questions were already sorted out in the first step and not considered further. After, we worked through the sampling units in four separate steps to increase reliability of the coding. First, the units were categorized by direction of influence; second, by job resources, job demands, and occupational well-being; third, by AWP; and fourth, by potential moderators. The categorization allows to establish and compare frequencies between categories to describe and interpret the results. The frequency analysis based on the coding system is shown in Table 2. As some logic units could be assigned to more than one category, the total number per category in Table 2 does not correspond to the sum over the different subcategories.

An overview of the interviewees and their background, the interview guide, the complete dataset, and the coding of data units into categories and subcategories are available as online supplemental materials via the Open Science Framework OSF (https://osf.io/8vqwb/, accessed on 8th September 2023).

Table 2 Category system and frequency of codings per category

	Self-organized decision-making		Daily stand-up meeting		Retrospective meeting		Incrementation practice		Iterative planning		Customer relation		Visualization of work progress		Total	
	+	–	+	–	+	–	+	–	+	–	+	–	+	–	+	–
Job resources																
Autonomy	10	–	–	1	–	–	–	–	5	–	–	–	1	–	*16*	*1*
Feedback	2	–	3	–	8	–	3	–	2	–	13	–	2	–	*33*	–
Social support	3	–	3	–	3	–	–	–	1	–	–	–	–	–	*10*	–
Goal clarity	1	–	4	–	–	–	–	–	3	–	–	1	2	–	*10*	*1*
Task-related resources	5	–	–	3	2	1	3	–	3	1	–	–	–	–	*13*	*5*
Job demands																
Workload	3	–	–	–	–	–	–	–	3	1	–	2	–	–	*6*	*3*
Time pressure	2	–	–	–	–	–	1	–	5	8	1	–	–	1	*9*	*9*
Emotional demands	–	1	–	1	–	2	–	–	1	–	–	1	–	2	*1*	*7*
Work interruption	–	–	–	1	–	–	–	–	–	–	–	1	–	–	*3*	*2*
Occupational well-being																
Work motivation	7	–	2	2	1	1	1	–	2	–	1	–	1	1	*15*	*4*
Work stress	–	1	–	2	–	2	1	–	3	4	–	2	–	1	*4*	*12*
Overall	*27*	*5*	*11*	*8*	*14*	*9*	*6*	–	*21*	*16*	*13*	*8*	*5*	*4*	*97*	*50*

+ = amount of relationships representing opportunities, – = amount of relationships representing risks. Overall = the total number of quotes that were classified in this category (does not add up to the sum of the columns and rows, as quotes were also classified multiple or could not be classified in any sub-categories but into overall categories). $n = 184$ quotes

3 Results

Overall, more opportunities (66%) than risks (34%) were described in terms of the direction of influence on occupational well-being starting from AWP. Opportunities were mainly related to an increased perception of resources, and partly to a reduced perception of job demands. In contrast, risks were mainly related to an increased perception of job demands and only to a small extent to a reduced perception of resources.

Regarding specific AWP, opportunities were mostly mentioned in association with self-organized decision-making ($N=27$) and iterative planning ($N=21$), whereas risks were mostly associated with iterative planning ($N=16$) and retrospective meetings ($N=9$). Incrementation practice was the only AWP for which exclusively opportunities were described. For all other AWP both opportunities and risks were observed. Table 3 summarizes all relationships identified for each specific AWP, including examples from interview quotes, and categorizing the relationships into opportunities and risks for occupational well-being. The most important relationships are highlighted in the following.

3.1 Relationships between agile work practices, job demands and resources, and occupational well-being

Self-organized decision-making Self-organized decision-making was identified as the AWP that entails the most opportunities, where *autonomy* seems to be the most important resource in this context. Interviewees described a high level of self-determination and decision-making responsibility, which positively influences the speed and accuracy of problem solving. Increasing mutual trust, bidirectional *feedback* and *social support* were described to be positively related to self-organization. *Goal clarity* and transparency about roles and responsibilities seem to be positively associated with functioning self-organization as well as *task-related resources*, such as higher perceptions of influence, identification, and strength-based work. Regarding job demands, *workload* and *time pressure* seems to be negatively related with self-organized decision-making. Furthermore, it seems to be positively associated with team members' *motivation* due to high levels of responsibility and communication at eye level.

With regards to risks, self-organization can positively relate to *emotional demands* such as pressure to perform and thus, trigger *work stress.* In addition, cross-functionality of self-organized teams can be linked with stressful inefficiencies and ambiguities in the team, if team members are supposed to take over tasks without having the appropriate skills.

Daily stand-up meetings *Feedback* is described as an important and *motivating* resource arising from daily stand-ups, where team members check in to discuss task accomplishments, potential hindrances, and solutions. Daily stand-ups are also positively related to *social support* as team communication and creating transparency takes place regularly. *Goal clarity* is cited as the most common resource positively related to daily stand-up including increased transparency, coordination, and focus.

Daily stand-ups can also have negative relationships with *autonomy* and positive relationships with *emotional demands* if a meeting culture of status reporting and mutual task control arises. Some individuals also reported negative associations with meaningfulness as a task-related resource and positive associations with *work interruption.*

Retrospective meetings Holding retrospectives can be positively related to providing *feedback* on a relational and procedural level regularly within the team, as well as to drawing insights, and to directly deriving measures that can be implemented in the next iteration. Retrospectives can also be positively associated with *social support,* e.g., they support team members to speak openly, to listen to each other, and to increase mutual understanding. They are also positively related to *task-related resources,* e.g., joint reflection within the team helps to shed light on the meaning of the work, or to adapt the range of tasks to own strength and ambitions. Retrospectives are also used to recognize each other and to celebrate successes together, which is reported to positively relate to team member's *motivation.*

However, the focus of retrospectives to always reflect on potential improvements can also be positively associated with *emotional demands*. For example, if iteration goals are not achieved and psychological safety is low, reflection processes can lead to blame, justification, or conflicts. This can also be positively related to performance pressure and *stress*, as well as negatively related to *motivation* if same issues are talked over again and again without any changes.

Incrementation practice Incrementation is reported to be positively related to *feedback,* and regularly obtaining feedback from the user's perspective increases the likelihood of satisfying results. Incrementation can also be positively associated with *task-related resources,* e.g., it promotes task identification, feelings of contributing quality work, and meaningfulness. Interviewees also described how the incremental approach can have a demand- and stress-reducing effect. It can be negatively related to *time pressure* and *workload,* in particularly, if the end of the iteration is not understood as a hard deadline for releasing but for reflection and planning. It supports that teams recognize much earlier if they are going in the wrong direction. Completing product increments in each iteration can be positively

Table 3 Opportunities and risks of agile work practices for occupational well-being, including examples from interviews

Agile work practice	Potential relationships with agile work practices	Examples from interview
Self-organized decision-making	*Opportunities*	
	High level of participation and autonomy associated with high levels of motivation Increased speed and quality of problem solving as responsibility lies where the delivery lies (results in higher commitment and motivation) Two-directional feedback at eye-level and mutual learning processes Strong team cohesion, collaboration, and social support in collegial setting Increased goal clarity through regular coordination Greater identification with the product and team members actively shaping their work scope Reduced workload and time pressure through self-determined work and time planning	*Sebastian: "I think the motivation is generally increased because the team is trusted more. You put more emphasis on the team's opinion and get feedback from the team."* *Charles: "Through the freedom that you gain and the little control that is exercised from above, you actually create such a framework where everyone can contribute according to their skills and interests."* *Sarah: "This self-organization of teams, [...] which should also protect the team as much as possible from overworking itself. Because the team only takes as much work into the sprint as it believes it can manage."*
	Risks	
	Autonomy and self-responsibility can increase emotional demands and stress Pressure to perform and risk of self-exploitation Endless self-optimization, never being satisfied Cross-functionality can lead to inefficiencies and ambiguities due to a lack of required skills	*Sarah: "It can also be very stressful for one or the other when this part of responsibility is transferred to the team. [...] it can cause massive pressure for the individual who is perhaps less able to deal with it."*
Daily stand-up meeting	*Opportunities*	
	Motivating source for feedback, social support, and learning from each other Issues and hindrances are discussed and solved quickly before causing any damage Goal clarity, transparency, and prioritization within the team are increased and support a healthy work balance Close alignment makes it possible for colleagues to step in for each other, information does not get lost	*Emma: "The dailies are also well used to get feedback on development issues and so on. In every meeting there is the possibility for feedback, the space is there."* *Ben: "Daily stand-ups are good because you don't invest much time, but you get the most important information from the others. [...] I have to manage my daily life and I have to know what to prioritize."*
	Risks	
	Increased emotional demands and stress if transparency on individual work progress turns into status reporting, mutual control, and justification processes Demotivation and questioning of meaningfulness due to daily repetition, redundancy of information in the sessions, or rigid adherence to fixed timeboxes Daily stand-ups perceived as frequent work interruption leading to reduced productivity	*Sarah: "Those are also the kinds of things that are resisted by many team members because it sounds like control: What have I done, what am I going to do? That's perceived by some as negative and controlling."* *Christian: "Many meetings [...] You have to report a lot. Daily standups and everything. [...] Productivity suffers from that as well. Because when you're writing code [...] you get to the point where you're fully into it, and then you have a meeting. [...] and then you try to get back into it. And it's like that every day."*

Table 3 (Continued)

Agile work practice	Potential relationships with agile work practices	Examples from interview
Retrospective meetings	*Opportunities*	
	Regular opportunity for reflection, feedback, and learning from mistakes that enables continuous improvements of team and work processes Fosters a shift in discussion from operating issues to relational issues, obstacles to collaboration can thus be removed at an early stage Makes work easier and more pleasant as everyone feels supported, can have a say and solutions are found together Time for team to celebrate little successes and praise each other, which increases motivation Increased meaning and significance through regular reflection of the work Provides opportunities to reflect on and optimize the use of skills and strengths	*Sebastian: "The feedback from the developers or the POs is such that with a retro you already get a lot more content or also insights from the team that you would have otherwise simply missed."* *Tim: "It serves so many functions for me: team building, understanding the team, taking the pulse, fixing real problems—I think that's one of the most important meetings."* *Susan: "Through the retros and the constant reflection level, you ask yourself again and again, what is the meaning of what I'm doing right now?"* *Charles: "At some point we declared the Retro the official compliment exchange. We took the opportunity to give compliments [...], to praise each other."*
	Risks	
	Constantly reflecting, solving problems and conflicts, and talking about what can be improved can be emotional overwhelming and increase performance pressure (stress of self-optimization) Frequency of reflection is perceived as too often by some individuals Dissatisfaction if nothing changes and actions are not followed Risk of blaming and justification during reflection processes if those are not moderated well	*Sarah: "Especially this timebox from the sprint and when you see 'So we haven't made much progress yet, what's the reason for that?'—that can lead to retrospectives somehow triggering performance pressure in gentle and sensitive minds, or even turning into blaming or the like."* *Christian: "You do [...] the ceremonies, but there's no end to it. And then it becomes kind of demotivating. You see recurring problems pop up. Things not being done right, you hear the same complaints in retro, things not getting better."*
Incrementation practice	*Opportunities*	
	Motivation through frequent releases and frequent feedback from customers or stakeholders Regular feedback and adapting accordingly increase the likelihood of satisfying results Increased feelings of task identification, contributing, and delivering high quality work through continuously adding small chunks to the whole product Releasing finished increments regularly can be celebrated as small successes	*Susan: "The advantage of incremental development is that I always integrate the small increments into a complete product, which is then ready to run. That means I always have a big whole into which I add my little thing."* *Christian: "And when you're almost done, you have four tasks left until you can release the first version, that's motivating. Then you finish that, and you release the first version. And then you have the feeling of completing an Epic, that's a very nice feeling."*
	Risks	
	–	–

Table 3 (Continued)

Agile work practice	Potential relationships with agile work practices	Examples from interview
Iterative planning	*Opportunities*	
	Team members have the autonomy to determine what they can accomplish and how to process Regular planning helps to improve quality and accuracy of forecasting, and thus, avoiding overload and time pressure The iterative approach follows inspect-and-adapt feedback cycles, so that team members are not at risk to lose track but follow clear goals and expectations The planning activity itself (planning poker) increases fun and support within the team Breaking down larger tasks supports getting tasks done in a more structured way, which can reduce workload Working in iterations support a sustainable pace and rhythm of work that fosters focus instead of work interruptions	*Richard: "With any developer it is always the issue, am I disturbed, interrupted, or distracted for some small question. No developer wants that. Agile gives you more time, blocks where you can concentrate."* *Sebastian: "This empirical process creates transparency, which is necessary but often not available. When we started estimating, we first noticed how we over-estimated ourselves and how long we actually worked on individual topics. [...] In theory, these are simple processes, but they have a very big impact. This 'aha' effect is already an extreme success."* *Sarah: "Because the team only takes as much work into the sprint as it believes it can manage. In principle, it should already be capped so that there is not too much in there that can't be done."*
	Risks	
	Increased workload if team repeatedly plans too many tasks and puts itself under pressure due to high ambitions, especially when effects of overtime occur Feelings to rush from one iteration to the next one can increase time pressure and stress Overload due to too many and too long coordination meetings, where too many people are involved; also leading to reduction of meaningfulness	*Brian: "I realize they are valuable, but I personally hate them because they are 8-hour sessions and that is the most boring thing in the world to me."* *Susan: "The typical just-before-the-end-of-the-sprint stress. The sprint is soon over, and you realize you're behind with things and think you still have to finish everything quickly."* *Richard: "You rush from one sprint to the next."*
Customer relation	*Opportunities*	
	High product quality and customer satisfaction through regular exchange and feedback from practice Avoiding going in wrong directions and having to take steps back which could cause more time pressure Motivation through praise, positive feedback from and direct exchange of team members with customers	*Tim: "Basically, the idea with agile methods is that you give out very small bites to the customer as quickly as possible to get feedback as quickly as possible. [...] Not planning and building things for weeks. [...] which then nobody uses."* *Susan: "And you don't run the risk of running off in strange directions forever, because at the end of the sprint you have another moment of reflection where you look back and ask yourself, what are we actually doing here? You also notice more quickly when you start doing really weird things."*
	Risks	
	Lacking goal clarity and work focus if customer requirements change to frequently, hindering team from moving forward Increased workload and stress if customers require too much at once and does not want to follow the incremental approach Exclusive orientation towards customer limits the teams' own innovation and creativity Regularly having to disappoint excessively high customer demands; demotivation through customer dissatisfaction and negative feedback	*Tim: "I think you have to be careful. Anyone can say: I'd like this, I want that. That's almost always useless."* *Christian: "Sometimes tasks were thrown in the middle of the sprint, which causes some headaches for the developers [...] because it interrupts the workflow."* *Sarah: "Negative feedback from the stakeholder [...] can also cause resentment in some people and create pressure to perform or even trigger unhappiness."*

Table 3 (Continued)

Agile work practice	Potential relationships with agile work practices	Examples from interview
Visualization of work progress	*Opportunities*	
	Metrics and visualizations create transparency and provide feedback and information for improvements especially when team autonomy is high	*Tim: "It's a question of how we get the metric and what do we do with it. In our case, the developers themselves are responsible for creating the update for their platform. I.e., they will create, provide, and explain the metric. [...] We don't measure you; we measure ourselves as a team and see how we can get better."*
	Motivation through visualization of work progress increases goal clarity and prioritization	
	Risks	
	Transparency on work progress can lead to increased emotional demands due to feelings of control and pressure to perform	*Christian: "When you see that there are 4 days left and it's not working properly yet, it can get a little stressful."*
	Especially demotivating when reflection processes focus on what was not achieved	*Emma: "For this team it turned out at that time it does not work. The meetings and the team culture suffered so much that it was better to leave it out. [...] You went into them with a bad feeling."*

associated with feelings of success and *motivation* of team members.

Risks to occupational well-being starting from incrementation practice were not described in the interviews.

Iterative planning Iterative planning can be positively related to *autonomy*. Team members can decide for themselves how many tasks they can realistically accomplish in the next iteration and to plan buffers accordingly. Iterative planning follows a process of inspect-and-adapt cycles which can be positively associated with *feedback*, especially on the quality of planning and forecasting. The planning meeting activity itself, the so-called Planning Poker game, is reported to be positively associated with *social support. Goal clarity* could be positively linked to iterative planning, where setting iteration goals together is an important part of the meeting. It is also reported to be positively related to *task-related resources* as breaking down larger tasks supports getting them done in a much more structured way and regular reflecting processes highlight work significance. Negative associations with perceptions of *time pressure* and *workload* were described. Team members can control their own workload and work pace due to team planning. This requires a shared team attitude that overtime should not take place just to achieve iteration goals. Instead, if planning was wrong, learnings should be drawn for future improvements. Negative associations between the iterative approach and *work interruptions* are described as it supports the team to work in a focused and uninterrupted manner. Positive relations with *motivation* as well as negative relations with *stress* might rise from proceeding in short work cycles and following a realistic planning process.

The interviewees described risks from iterative planning with regards to the effort involved, e.g., planning meetings can take up to one working day from the whole team and require a high level of information exchange and communication. Negative relationships with *task-related resources* such as meaningfulness were described by some interviewees. Planning within the team can also be positively related to *workload*, especially if the team repeatedly takes on too many tasks, puts itself under pressure, and accepts overtime if there is a risk that goals will not be achieved. Some people described feelings of rushing from one iteration to another arise, thus, describing positive relationships with *time pressure* and *stress.*

Customer relation Close customer relation is positively associated with regular and early *feedback*, which is essential to meet the customer's requirements in all respects. Positive customer feedback and appreciation can also be positively related to the team's *motivation.* Regarding job demands, customer relation was reported to be negatively associated

with *time pressure* due to the regularity of feedback and alignment whether results are on target.

Risks can occur if customer interaction is too often and not structured, leading to a constant change of direction, and thus being negatively related to *goal clarity* and focus. An unstructured approach to handling customer requirements can be positively associated with *workload, work interruptions,* and *stress.* In case of constant dissatisfaction and negative feedback from the customer, positive relationships with *emotional demands* and feelings of pressure and *demotivation* were described.

Visualization of work progress Visualization of work progress (e.g., in form of burndown or velocity charts) can be positively related to *autonomy.* Metrics and visualizations can also be positively associated with *feedback* and information for improvements, as well as with *goal clarity* and the visibility and discussion about the status of task achievement, delays, and priorities. Visualization can also be directly associated with the *motivation* of the team when the visualization of progress and goal achievement of objectives works as an incentive.

Regarding risks, frequently using agile visualization methods for team reflection can be positively related to job demands, such as feelings of *time pressure* or *emotional demands,* especially when the visualization shows that set goals may not be reached. Then, negative thoughts and feelings of pressure can arise, which are negatively related to *motivation,* and thus hinder further collaboration and performance.

3.2 Personal and organizational resources

In addition, personal and organizational resources were identified as potential moderators that could positively or negatively influence the relationships described. Those results are summarized in Table 4.

Regarding organizational resources, positive influences were associated with low hierarchical decision-making structures, empowering leadership, and trust in teams, a dedicated Scrum Master with strong leadership skills, and an open feedback and failure-friendly environment. Negative influences were associated with traditional hierarchical settings, where managers have difficulties to hand over control and choose micro-management, as well as if agile methodologies are only introduced technically but an understanding of the purpose of agile work is lacking.

Regarding personal resources, it was reported that working in an agile, self-organized team requires new skills and behaviors from the team members compared to traditional development environments, such as communication and interpersonal skills, proactive behaviors, and being a team player. Extraverted people might find themselves more at ease with agile work methods. However, introverts might additionally benefit from agile approaches as a protected and structured space for communication is created. Negative influences might arise with people who only want to do their professional job and do not want to engage with their colleagues on a social level or do not want to take on this responsibility that is expected of them.

4 Discussion

In this paper, we have identified several relationships between specific AWP, job demands and resources, and occupational well-being. We were able to identify both opportunities and risks for almost each agile work practice except for incrementation practice. Previous research results have mainly described rather weak but positive effects of AWP and have not empirically investigated the risks of AWP (Koch et al. 2023; Rietze and Zacher 2022). Our results may provide an explanation for the finding that positive associations only show low effect sizes: it can be assumed that simultaneous negative relationships may weaken the positive relationships of AWP and occupational well-being. From our results we can conclude that double-edged effects of AWP can be assumed, and thus more differential approaches need to be considered in future research.

Furthermore, approaches that examined AWP as a work design feature are confirmed as direct links between AWP and job characteristics are shown (Rietze and Zacher 2022; Tripp et al. 2016). On the one hand, opportunities are particularly associated with a higher level of job resources. For example, autonomy and feedback seem to be strengthened through the self-organized, iterative setting in agile teams. Opportunities are also associated with lower levels of job demands, such as workload or time pressure, as agile teams can have control over their own work planning and processing. On the other hand, two relationships that have not yet been empirically investigated, are identified. First, specific AWP can also increase job demands. For example, too rigid adherence to iteration logic can lead to a higher workload and time pressure. And secondly, AWP and their impact on resources can also lead to a "too much of a good thing" effect (Grant and Schwartz 2011). For example, individual autonomy in the sense of decision-making responsibility might not be perceived as a supportive resource but a hindering demand leading to exhaustion. Our results are consistent with previous assumptions, that only the protection-oriented type of agile work, i.e., where iterations provide a protective space for focused work, can ensure a healthy team climate in the long term (Pfeiffer et al. 2019).

Various personal and organizational resources are identified that could influence occupational well-being in agile teams in a positive or negative direction. These also coin-

Table 4 Overview of the personal and organizational resources that might influence identified relationships

Level	Potential moderator	Examples from interview
Personal resources	*Opportunities*	
	Extroverts may cope better with the high density of meetings and the open communication in the team; however, introverts can also benefit from getting more involved and having the possibility to communicate within a structured and supported framework Team orientation as well as social and interpersonal skills are advantageous for working in agile teams Initiative and proactive behavior is required, as individuals are encouraged to actively raise concerns or ask for help People who attach more importance to their work might be more motivated in agile teams	*Ann: "You definitely need team spirit. [...] You shouldn't be afraid to get help. That's also very important. You are responsible for your own stuff. [...] You have to go outside when you get stuck and get advice and feedback."* *Susan: "I think in a well-managed agile team there is room for both. I can imagine that introverts tend to have a harder time getting involved. But that they then benefit more from getting involved. Because it also offers a possibility to communicate with people in a relatively structured, supported framework, to talk about things that are otherwise not so easy, e.g., conflicts."*
	Risks	
	High social and emotional demands related to agile work could cause stress for individuals who do not want to work with such a social intensity People who just want to earn money and do their technical might be overwhelmed and stressed by the high level of self-responsibility	*Sebastian: "There are also team members who like to work classically. They're used to 'Okay, I get my requirements, I do my work here, I write my code and then I'm done'. They have a hard time being so involved. For them, it's really a bit exhausting to get used to being asked so much and suddenly having so much more responsibility."*
Organizational resources	*Opportunities*	
	An empowering and trusting leadership encourages self-organization, autonomy, and motivation in agile teams The role of the Scrum Master is particularly important and requires important leadership skills; the person supports the team identifying and solving problems as early as possible and moderating team processes A culture of psychological empowerment and safety is required When agile methods are introduced, the purpose of the methodology must be fully understood by everyone	*Alex: "It's not enough if a project runs according to Scrum [...] but still pressure comes from above from the management team with some deadlines or expectations. [...] It also needs trust, freedom, and a good working environment."* *Emma: "By keeping all possible impediments away from the team or solving them accordingly. That can be all kinds of things. From listening when someone has a problem, [...] or someone needs new hardware."*
	Risks	
	Directive control-and-command style of leadership and symbolic self-organization can increase job demands, such as time pressure or emotional conflicts, and frustrate individuals An overloaded meeting culture and thus constant distraction needs to be avoided; this can occur especially when agile meetings and traditional reporting meetings both take place Missing dedication of roles to one agile team can lead to role conflicts and increased workload Merely introducing agile methodology without establishing an understanding why can be demotivating for team members	*Ann: "If any requirements come from above or from the project perspective for any reason, which then had to be implemented quickly, then dissatisfaction increases."* *Sebastian: "The main problem with those who had negative experiences was simply that the framework was briefly presented, then it was introduced and the complete meaning behind each individual event was never really explained. So, you often forgot to explain to the team why these processes and events are carried out in detail, what the benefits behind them are. [...] It's clear that some developers felt that this was being imposed on them a bit."*

cide with previous assumptions and provide new insights at the same time. The organizational environment should be set up in a way that teams are trusted to work autonomously and to make their own decisions (Dikert et al. 2016; Parker et al. 2015). The Scrum Master requires well equipped leadership skills and behaviors to successfully moderate the team process and to ensure focused and customer-oriented work (Srivastava and Jain 2017). A climate of psychological safety needs to be created in which the team members feel safe to talk about unpleasant issues, to admit mistakes, and to express insecurity (Edmondson 1999).

Working in an agile, self-organized team also requires new skills from the team members compared to traditional development environments, e.g., social skills and conflict management (Whitworth and Biddle 2007), organizational skills (Venkatesh et al. 2020), customer collaboration (Tessem 2014), or the ability for self-reflection and self-management (Stettina and Heijstek 2011). However, it needs to be highlighted that these skills can be learned, and we should be careful with drawing a conclusion that agile work is more suitable for some people than for others.

4.1 Limitations and future research

We decided on a deductive approach with a predefined theory-driven coding scheme and followed qualitative content analysis as a rule-guided, transparent, and structured methodological way. Nevertheless, there are some limitations to the study and the choice of research approach that need to be discussed. First, the disadvantages of qualitative research should be considered (Griffin 2004). Even though different perspectives on agile project work were considered through purposive sampling, one limitation is the small sample size. Thus, it cannot be assumed that all existing aspects concerning our research question could be fully answered, but that our results only reflect the opinion and experience of a few individuals. Self-reports also require the interpretation of the researcher to make sense of interview statements. A mixed-method approach, e.g., the use of external evaluation in addition to self-report or adding quantitative data, could have been an even stronger approach.

The response behavior of the participants could have been influenced by certain biases, such as distorted memory or by socially desirable response behavior. In addition, self-selection bias is possible to have influenced the results as only individual volunteers were directly requested for the interviews and not randomly selected.

The study represents a significant contribution for the theoretical body of research and lays a foundation for generating hypotheses for future research but cannot be generalized. It would be desirable that our findings are a starting point for quantitative research that investigates opportunities and risks of AWP on occupational well-being and considering that specific AWP should be studied separately and not combined into one construct. Organizational and personal resources identified should be included in future research as interaction effects to further investigate underlying mechanisms.

As already discussed, more attention can be paid to the too-much-of-a-good-thing effect (Grant and Schwartz 2011) in the context of AWP. This effect could provide explanations why some perceive high decision-making autonomy or a high degree of feedback as a strengthening resource and others as stressful demands. It could be examined where the tipping point is, meaning where a good thing becomes a burden, and how this can be prevented.

Another aspect that should be critically examined is the influence of the Covid-19 pandemic, as the interviews were conducted during this time. Certain risk factors for virtual teams were identified that could emanate from Covid-19 stressors and potentially reinforce the risks described in the paper, such as lack of psychological safety, failing to ask questions and provide feedback, or loss of collective efficacy (Tannenbaum et al. 2021). On the other hand, the Covid-19 pandemic may have had a positive impact on the opportunities of AWP. Improving practices, for communication, collaboration, and feedback, e.g., by setting new rules, introducing new meeting structures, encouraging shared leadership, or training team members on how to take self-responsibility, are recommended to increase effectiveness of virtual teams (Kniffin et al. 2021; Newman and Ford 2021). AWP consider all those measures, thus providing teams an effective structure for virtual collaboration. Koch and Schermuly (2021a) investigated the extent to which AWP act as a buffering job resource in the relationship between Covid 19 demands and emotional exhaustion. However, the authors only found the hypothesized buffering effect for their German sample but the opposite effect for the US sample. It is difficult to make a concrete statement in which direction the Covid 19 situation could have influenced our results. However, it is most likely that it has strengthened both opportunities and risks. Further exploration of the research topic in the post-pandemic period could possibly eliminate this uncertainty.

4.2 Implications for practice

With the help of JD-R theory as the basis of our research, very useful insights can be generated that help guide interventions at both individual and organizational levels. At the organizational level, AWP can be implemented to strengthen resources and reduce demands to ensure healthy and high-performing teamwork. AWP can be understood as work design measures, whose implementation should be accompanied by organizational psychologists and human

resources experts to prevent the risks that can arise when simply implementing the methodology without an understanding of people and culture. On an individual level, the paper provides indications on how team members can pay attention to their own well-being and related effects, e.g., whether they run the risk of self-exploitation and emotional overload or whether they proactively create a healthy scope of action including realistic planning of work. In addition, results give insights on personal resources of individuals in agile teams that can be strengthened through training and education.

Practitioners are sensitized to a differential view of agile work, i.e., they should learn to differentiate between the effects that can be an opportunity for occupational well-being and the effects that can be risks and need to be paid particular attention to.

5 Conclusion

In the study, the different and partly contradictory relationships starting from AWP were for the first time systematically investigated in connection with job demands, job resources, and occupational well-being. The results support our assumptions that the examined relationships are very heterogeneous and that more differential hypotheses for direct and indirect relationships based on specific AWP should be investigated in the future. Simplifying the understanding of AWP in research into a single construct cannot account for these important nuances. Additionally, we identify possible moderator variables at the personal and organizational level which are also recommended to be included in a systematic hypothesis-testing approach in the future. Findings of the current study may also be of relevance for practice. It raises awareness for both opportunities and risks and thus, provide concrete design tips for the implementation of agile work.

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