



# Young Workers on Digital Labor Platforms: Uncovering the Double Autonomy Paradox<sup>1</sup>

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## ABSTRACT

Drawing on interviews with 12 young adults in the Danish digital labor market, this article investigates how young workers on digital labor platforms experience the tension between 'algorithmic management' and autonomy. Digital labor platforms promise autonomy to workers, but the study shows that the platforms in varying degrees exert control over the labor process in different stages of the work. The inherent non-transparency of the algorithmic management systems makes it difficult for the young workers to understand the underlying mechanisms of the platforms. While the young workers' autonomy in some important ways is restricted by the algorithmic management systems, the young workers have all chosen the platform work because they feel that it allows them to control where and when they work. We propose the conceptualization 'the double autonomy paradox of young workers' to describe this phenomenon.

## KEYWORDS

*Algorithmic management / Control mechanisms / Digital platform work / Gig economy / Non-transparency / Working environment / Young workers*

## I Introduction

The digital revolution is continuously giving rise to new ways of working via digital platforms. It is predominantly young people taking up this type of work (Garben 2017; Popescu et al. 2018) within what is broadly termed the 'gig economy' (Howcroft & Bergvall-Kåreborn 2019). Work in the gig economy resembles temporary and 'nonstandard' forms of employment (Garben 2017) and must be viewed in the light of recent transformations of employment and the labor market at large, whereby work is characterized by greater volatility, uncertainty and precarity (Antonucci et al. 2014;

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Casas-Cortes 2014; Kalleberg 2009; MacDonald & Giazitzoglu 2019). Furthermore, digital platform work is, much like traditional work among youths (Nielsen et al. 2013, 2019; Tannock 2003), characterized by the work being delivered ‘on-demand’ when a customer requests it (Altenried 2020; Berg et al. 2018; Prassl 2018). A distinguishing trait of gig work, however, is its mediation by digital platforms as an organizing structure (Sutherland et al. 2019) with distinct features of labor process controls (Gandini 2019; Shapiro 2018; Veen et al. 2019).

Although digital platforms claim to be mere facilitators of transactions between entrepreneurs and customers (Prassl 2018), they exert a high degree of control over workers, particularly through algorithms that, for instance, control the matching, ranking and sorting of jobs and workers – a mechanism known as *algorithmic management* (Jarrahi & Sutherland 2019; Lee et al. 2015; Möhlmann & Zalmanson 2017). An emerging body of literature investigating worker experiences of algorithmic management on digital platforms has revealed an inherent ‘autonomy paradox’ in the platforms, as they promise autonomy to workers while never relinquishing control (Möhlmann & Zalmanson 2017).

This article explores algorithmic management on digital platforms operating in Denmark through the notions of control and autonomy. In contrast to the existing studies on algorithmic management, this article focuses particularly on the experiences of young workers. British youth researchers have argued that ‘young people are heavily involved in the shift towards non-standard work and the rise of the ‘gig economy’ (MacDonald & Giazitzoglu 2019, p. 734). Accordingly, similar to international trends (Popescu et al. 2018), in Denmark, it is often young people who take on work via digital labor platforms (Ilsøe & Madsen 2017).

According to MacDonald & Giazitzoglu (2019), young workers’ participation in the gig economy is motivated by the lack of alternative jobs. The authors describe gig work among British youths as a part of a precarious, insecure and long-lasting life condition. Compared with the rest of Europe, Denmark has relatively high levels of employment among young people, as well as high levels of education (European Commission 2019), but very little is known about young Danish workers in the gig economy. At the present time, the prevalence of digital platform work remains limited in the Nordic countries, but it is expected to grow (Ilsøe & Madsen 2017). From a Danish perspective, we know that young people under 30 years in general have a higher risk of accidents and injuries at work, and that the risk is increased for newcomers and for young people in part-time jobs (Danish Working Environment Authority 2013; Dyreborg et al. 2018). It is reasonable to assume that this also characterizes work that is disseminated through digital labor platforms. Here, a workday often comprises many different short-term tasks (Standing 2016), which increase the risk of work-related injuries (Garben 2017). Furthermore, we know that young people with a short-term view of work attach minimal importance to risks (Nielsen et al. 2013). Overall, this puts young platform workers in a particularly vulnerable situation.

As discussed above, the digital platforms’ deployment of algorithmic management systems is central to the platforms’ operations and work processes. In relation to this, the present article seeks to answer the following question:

*How do young Danish workers on digital labor platforms experience the tension between algorithmic management and autonomy related to platform work?*

## 2 Control and autonomy

### 2.1 Worker autonomy and being in control

Democracy, autonomy and participation of workers in workplace decision-making are core values of the Nordic Labor Market model (Dyreborg 2011; Sørensen et al. 2012). Furthermore, Nordic research traditions on working life practices emphasize a perspective on workers as acting and collectively involved subjects (Sørensen et al. 2012). Autonomy in the workplace can be understood as the ability to ‘exercise a degree of control over the content, timing, location and performance of activities’ (Mazmanian et al. 2013, p. 1). Hvid et al. (2010) argue that ‘to be in control’ includes more than control over one’s own present work tasks, it also includes being able to influence and form the work context that one is a part of. One of the leading figures who has inspired this Nordic research tradition is Karasek (1979), who developed the internationally well-known demands-control model. Karasek suggests that more worker participation and control over their work situation leads to less stress among workers. Following this perspective, a number of studies find that autonomy and control in work are pivotal factors in worker experiences of work-related stress (Bjarte et al. 2005; Thompson et al. 2006), burnout (Day et al. 2017), anxiety and depression (Bjarte et al. 2005), and in better worker health (Bond & Bruce 2003).

In this study, we understand worker autonomy as having a sense of control of one’s work and some degree of power or discretion to decide how and when to perform tasks (Kalleberg et al. 2009; Mazmanian et al. 2013; Wheatley 2017), as well as influence over work context. Furthermore, we pay particular notice to Kalleberg et al.’s (2009, p. 103) statement that ‘[a] high degree of autonomy implies considerable freedom from control by technical means, rules and detailed procedures’.

### 2.2 Algorithmic management and control mechanisms

In stark contrast to Kalleberg and colleagues’ (2009) description of autonomy, gig economy platforms rely heavily on technical means for control. The platforms use algorithms to manage a large pool of distributed workers and to match workers with customers. Such algorithmic management systems often result in managerial control, oversight and decision-making being transferred from managers to algorithms (Duggan et al. 2019; Jarrahi & Sutherland 2019; Lee et al. 2015). Duggan et al. (2019) assert that when management is delegated to algorithms, the interpersonal and empathetic aspects of people management disappear, which may lead to workers losing trust and confidence, negatively impacting well-being in the process.

While algorithmic management is also used in ‘offline industries’, it is an essential element in the operation of digital work platforms (Berg et al. 2018). From a labor process perspective, Gandini (2019) argues that gig economy platforms are examples of ‘nuanced and innovative forms of technologically centred, normatively driven practices of control over workers and their work’. These forms of control are unique because they are forms of control that are: ‘embedded in the functioning of the platform and cannot be escaped by workers, as the ‘feeding’ of these metrics affects their income and continuity of employment’ (Gandini 2019, p. 1051). This form of control is



conceptualized as ‘techno-normative’ control of workers (Ibid). The techno-normative control (Gandini 2019) on digital labor platforms resembles Richard Sennett’s (1998) early work on ‘new capitalism’ and his descriptions of how diffuse technological control mechanisms confine workers’ autonomy. He suggests that the deeper logics of technological aids used in work processes remain illegible to workers, which often leaves them feeling disoriented.

Several studies find that the digital platforms’ minimal display of information to workers about the algorithmic management system is a key control mechanism on the platforms, with negative consequences for workers’ autonomy on food delivery platforms (Shapiro 2018; Veen *et al.* 2019), ride-hailing apps (Chen 2018; Lee *et al.* 2015; Möhlmann & Zalmanson 2017; Rosenblat & Stark 2016), and online work platforms (Jarrahi & Sutherland 2019; Wood *et al.* 2018). However, the studies also report on workers acting to retain autonomy by, for instance, building algorithmic literacy (Jarrahi & Sutherland 2019, p. 587), or performing algorithmic activism by gaming the system (Chen 2018). Alongside information asymmetry, studies show how ratings of workers also serve as a control mechanism on the algorithmically managed platforms (Gandini 2019; Raval & Dourish 2016; Standing 2016; Wood *et al.* 2018). Several researchers assert that evaluation through rating systems can cause stress among workers (Garben 2017; Huws 2015; Jesnes *et al.* 2016) and have negative psychological impacts (Lee *et al.* 2015). Altenried (2020) argues that ‘digital Taylorism’ is a precise naming of a ‘labor regime’ where algorithmic management and surveillance, standardization and measuring of results and feedback are the dominating means of organizing the labor processes.

Viewing algorithmic management as a decentralized concentration of power (Sennett 1998, p. 55), where management is delegated from managers to technical systems, this article explores young workers’ responses to algorithmic control mechanisms and discusses autonomy in their working environment.

### 3 Method, data and approach

The study is based on qualitative interviews<sup>1</sup> with 12 young adults under age 30 from Denmark who work in the digital labor market, and readings of the Terms and Conditions (TC) from different digital platforms. In 2017, 1% of the working population in Denmark had tried working via a digital platform, of which 36% were students (Ilsøe & Madsen 2017). Given the limited prevalence of platform work in Denmark, it proved difficult to locate participants. A purposive sampling strategy was applied (Bryman 2016), locating young workers from different parts of the country who worked on different types of platforms. Open invitations to participate in the project via the platforms’ own newsletters and Facebook groups were not successful. We therefore chose to contact the young workers through various other channels: directly through their profile on the digital platforms; via their contact information on the platform; directly via Facebook Messenger (when member of a platform Facebook group); via the researchers’ stakeholder network; or were approached if we saw them in the street with a logo or company equipment indicating affiliation with a platform. Twelve of these 33 young people agreed to participate.

**Table 1** Overview of participants

Type of platform	Number of interviews	Age and sex	Period of interviews
Online digital platforms (WorkSome, 'Din tekst forfatter', Freelancer)	5	2 women and 3 men 21–28 years of age	2017–2019
Location based digital platforms (Wolt, HandyHand, Chabber, Care, Dogley, Hilfr)	7	3 women and 4 men 19–24 years of age	2017–2019

The interviews were conducted face-to-face and lasted between 60 and 90 minutes, with questions touching on their life situation, working routines, work organization, pay, social and economic risks, and working environment.

All interviews were recorded and subsequently transcribed verbatim and thematically coded (Braun & Clarke 2006) in Nvivo 12. The coding combined deductive and inductive approaches, with certain pre-selected codes such as 'physical and psychosocial working environment', 'receipt of jobs' and 'motivation'. Other codes were developed from reading the empirical data, for example 'digital aspects of the job', 'affective labor' and 'time management'. The analytic code 'digital aspect of their work' and the sub-code 'algorithms' were selected for closer investigation for this study. These two codes were read closely in combination with excerpts pertaining to the working environment. The young workers' experiences and their speculations of the inner workings of the platforms became the final focus of the analysis. Although the interviews did not explicitly address algorithms, some participants commented on the underlying workings of the platforms or mentioned algorithms. Following this, the analysis investigated how workers experience algorithms in practice (Seaver 2017). More specifically, the analysis took analytic inspiration from Taina Bucher's (2017) study of Facebook users; she takes a phenomenological approach, focusing on the users' experiences and sensemaking of the platform algorithms. While users of digital platforms may not understand the inner workings of the system, they still 'imagine, perceive and experience algorithms' (Bucher 2017, p. 31) and we can investigate how the users' understandings of algorithms shape their actions.

Following Bucher, the analysis is centered on the narratives<sup>2</sup> from the young workers about their experiences with the algorithmic systems on the digital work platforms. By studying worker experiences and sensemaking on digital labor platforms, one can begin to understand the performative effects of the algorithms (Kitchin 2017) in terms of how they create instances of control and shape workers' actions on the platforms. In our findings, we specifically introduce a subset of six young workers, who find work via six different digital labor platforms. We include workers from different platforms because the platforms differ in type of work, whether the work is online or offline, as well as in how work is distributed among workers on the platforms.

To achieve a better understanding of the workings of the different platforms we collected the TC from the different digital platforms where the young workers are signed up. The TC can be viewed as official documents from the platforms (Bryman 2016); these provided us with insights into how the platforms define the users of the platform, their restrictions, and their division of responsibilities. Table 2 provides an overview of the six platforms and workers.

**Table 2** Type of digital labor platform, employment relations and autonomy in work

Type of Platform	Platform/ type of work	Indicators of autonomy: responsibilities of taking in bids, price-setting and scheduling tasks	Interviewees representing the platform/type of work
Location-based work platforms	'Dogley'	Workers set a price for the service.	Ditte, 24.
	Dog walking/ sitting	The workers are contacted by customers and cannot bid on tasks themselves.	Student at the university. To earn some extra money, she takes tasks as a dog walker.
	'Hilfr'	The workers set a price for the service.	Hans, 22 years old.
	Cleaning	The workers cannot bid on tasks themselves.  Customers can book the worker for cleaning jobs by selecting a day and time. The worker can then accept, reject, or suggest another day for the job.	Bachelor's student, who provides cleaning services as a freelance Hilfr alongside his studies.
	'Chabber'	The customer determines the duration of a job and the hourly wage, (the customer must comply with existing collective agreements). Chabber pays workers their salary monthly and deducts taxes. They take a fee of 4.81 Euro for each shift a worker has (Chabber n.d.).	Charlotte, 24 years old.
	Waiter Cook Bartender		Works as a waiter as a source of income while taking a pause from studying.
	'Wolt'	The workers download a Wolt partner app on their smartphones. Here they sign up for shifts within a specific timeframe, during which time they earn a minimum hourly wage of €14.70. Or they can log on anytime and be paid per delivery.	Viktor, 19 years old.
Online work platforms	Food delivery app		High school student, works as a Wolt courier alongside his studies.
	'Worksome' (Danish)	Workers set their own price. Worksome suggests jobs for the workers, but the workers are not required to accept.	Vera, 27 years old.
	High-skilled freelancer platform for both online and local jobs.	Worksome may inform workers why they are rejected for work, e.g., due to price. On completion of a job, Worksome sends an invoice to the company (the customer) on behalf of the worker. Worksome takes a fee of 4% for each payment (Worksome 2019).	Graduated from university.  Solo self-employed.  Takes on communication and promotion tasks as a source of income, while she is starting out on her own.
	'Freelancer' (international)	The customer posts a task, and the workers submit bids. The customer can also encourage workers they deem qualified to apply.	Frederic, 26.
	Platform for freelance jobs.	Freelancer takes a fee of 10% for each payment after a completed job.	Graduated solo self-employed.  Takes on translation tasks as a source of income, while he is starting out on his own.

## 4 Findings

On reading the young workers' narratives and the TC we found how the control mechanisms across the various digital platforms are embedded in the different stages of the labor process. The presented findings therefore adopt a temporal structure and indicate how workers experience and react to different control mechanisms implemented *before* they are booked for a task, *during* the performance of the work and *after* completion of a task. Afterward, we link these findings to the young workers' overall experience of working via a digital platform.

### 4.1 Control within the matching process: workers' experiences of non-transparency

Digital work platforms serve as an intermediary by matching customers seeking the performance of a service or task with workers willing to deliver this work. Most platforms exercise some degree of control in the matching process, such as ranking workers based on different parameters, or not displaying all tasks to all workers (Meploy 2019; Wood et al. 2018). The platforms thus do not operate as 'free' marketplaces when exercising elements of control that condition the availability of tasks to workers, and workers' chances of getting booked for work (Prassl 2018). In this way, the platforms exercise control in the process *before* the workers secure a task.

For most of the young workers in our study, the parameters determining how they managed to secure work and how they were ranked compared to other workers were non-transparent and seemingly arbitrary:

- Ditte: I would like for them to have a more manageable website. For example, I cannot find myself if I search for dog walkers. When I'm not logged into the system, I find it really difficult to locate my profile because there are so many takers, you know? I think it's a very big search engine that is very unclear when you're not logged in.
- Interviewer: Do you have any idea how they rank people?
- Ditte: No, that's the thing. I have no idea. I wonder if it has anything to do with the stars [scoring system], but that's not the sense I'm getting. It just seems so random how they find a dog walker.

Ditte expressed confusion about how customers located her profile and selected her from the dozen or so other dog walkers in her area of the city. After a walk, the dog owner can evaluate the dog walker by assigning stars and writing a review. Yet, Ditte remained uncertain as to whether this influenced her ranking compared to other dog walkers. While Ditte was satisfied with the number of gigs she received through the platform, she still expressed a desire for greater transparency. The workers on Dogley and Hilfr cannot bid on tasks themselves. The workers set a price for their service, upload a photo, write a short text about themselves, and reply to questions quickly, all in the hope of becoming visible to customers. However, the basis for their ranking on the platform is inaccessible to them and it remains uncertain if they will secure any tasks, which makes their work-life and income unpredictable or 'random' as Ditte put it.



Another example is 26-year-old solo self-employed Frederic, who had gained some understanding of how the ranking system on the platform Freelancer functions. Frederic took on translation tasks on Freelancer as a source of income while he was trying to kick-start his own company. On Freelancer, customers post a task and then workers submit bids. The customers can also encourage workers they deem qualified to apply. When Frederic bid on a task, the algorithm ranked him in relation to the other freelancers who bid on the same task. Frederic learned that the algorithm on Freelancer determined his placement by calculating a wide range of factors:

Interviewer: So how are the bids ordered? Is it the one who has bid the lowest price?

Frederic: It is similar to when Google ranks web pages in the Google search engine. It is an algorithm of different values. And it is how big your turnover is, which is probably the most important factor. Then comes your number of reviews and your average rating. And this is weighted in a certain way.

Similar to the workers in Jarrahi and Sutherland's (2019) study, Frederic dedicated energy towards making sense of the algorithm on the platform that determined his ranking when he bid on a task. He thereby learned which factors the algorithm prioritized highest in his ranking.

When Frederic first started working on the platform, he took tasks at a low rate to establish a better ranking by the algorithm:

Frederic: I started bidding in there [on Freelancer] and steadily working my way up. It quickly became clear that you have to lower your offers in order to get some reviews. Because I didn't get any jobs on any of the tasks I bid on. Then I started bidding lower (...). And I got the job and that really kick-started things for me. Because, as I said, the algorithm states that the bigger your turnover on the platform is, the better your ranking and score will be.

Frederic quickly learned that he had to alter his tactics and accept tasks at a low rate in order to get further tasks and a higher score on the platform. Gillespie (2014, p. 184) describes how users on social media platforms are strategic about how they post content to become 'algorithmically recognizable', which amplifies their visibility and the impact of their efforts. Frederic took similar strategic actions to become recognized by the algorithms on Freelancer. This also exemplifies the highly individualized nature of labor on the platform (Coyle 2017; Duggan *et al.* 2019), where it is up to the individual worker to get booked for work. Not until Frederic achieved a better score was he in a position to raise his rate. On platforms that allow workers to set their own rates, several of our participants reported raising their rate after having obtained a number of tasks. The performative effects of the system become visible in Frederic's strategic actions of taking tasks at a low rate to accommodate a platform that values a high turnover. Yet, although Frederic learned how to earn a better ranking when he bid on a task, it remained uncertain whether he would be chosen for the work. Additionally, despite having some knowledge about the algorithm and the factors it considered in calculating rankings, Frederic still did not know exactly how his score was calculated:

- Frederic: Next to each freelancer you see a dollar sign that indicates their turnover through the platform. 8.4 is just a number stating that he has a higher turnover than someone with 8.3.
- Interviewer: It is from 0–10 or what?
- Frederic: I have no idea. I don't know how high it goes. I imagine that it is infinite, but I also believe the scale is logarithmic ... I don't know, but just by completing a well-paid job, you will get a score of 1.3. My rating, for instance, is 5.9. But I have no idea if that is high or low.

Frederic's score fed into his ranking, directly influencing his opportunities for obtaining tasks and maintaining an income. However, the way this score was calculated was 'illegible' to him (Sennett 1998). This demonstrates the selectiveness of the platforms in what information they provide to their workers (Shapiro 2018), exposing them to a platform logic that seems obscure and unfair.

The two examples above illustrate how algorithmic management, which matches workers and customers, calculates scores and determines the order in which workers are displayed to customers, was experienced as non-transparent by the workers. Various parameters feed into the platforms' ranking of the workers, who can experiment with different actions to increase their visibility on the platform, for example, taking tasks at a low rate to increase their score or detailing their qualifications in the profile text. This system remains implicitly unpredictable for the workers in terms of incoming tasks, and it puts them in constant competition with the other workers (Prassl 2018; Wood et al. 2018). The unpredictability in obtaining tasks may limit the workers' control as regards long-term planning and maintaining an income (Garben 2017; Standing 2016).

#### 4.2 Control while the work is carried out: workers' responses

Control in the examples above is exerted before workers perform the paid work. On the food delivery app Wolt, control is exerted *while* the paid work is being carried out. As described in table 2, the workers download a Wolt partner app on their smartphone, where they sign up for shifts within a specific timeframe, or they can log on anytime and be paid per delivery. When the couriers sign in to work, the app directs them to food pick-up locations through GPS tracking. Viktor explained how it works:

- Viktor: You're in the app and then it says, 'X has ordered takeaway on this address'. It refers to the restaurant. Then I bike to the restaurant and click that I have the food and then a new location pops up, which is the customer's address. Then I bike over there, deliver the food and say 'Enjoy your meal'. Then I go downstairs again, and when I am outside, I click 'I have delivered the food', and then a new order pops up. This is how it works.

The algorithms on the Wolt app automatically distribute pick-ups among the active workers. During a shift, the app guides the courier through the city for different pick-ups and deliveries. Thus, the algorithm explicitly dictates which deliveries the couriers must take, and hence their route, that is, where exactly they move from and to, and therefore how many kilometers they bike during a shift, which is often in the range of 40 to



45 kilometers. While Wolt couriers have the freedom and flexibility to decide when they wish to work, once they are active on the app, they have little control over the details of the work, that is, the delivery orders they must take. This is controlled by the algorithms, which decide the task allocation as the orders come in from customers. Couriers cannot reject a delivery; their only option is to click ‘I’m on it’. Viktor explained: ‘You just have to follow the app. The app controls everything’. Unlike other digital platforms where the customer can choose the worker, or on other courier apps where the courier can reject orders (Shapiro 2018; Veen *et al.* 2019), on the Wolt app the matching of worker and customer is solely determined by the algorithm that allocates the deliveries.

During a shift, the Wolt courier has consecutive deliveries to different customers. The algorithm does not provide the courier with the full details about a delivery, but only discloses the specific information the worker needs at a given time during a delivery. Control of the courier is meticulously exerted step by step during the execution of their work, exemplifying how non-transparency is built into algorithmic management (Rosenblat & Stark 2016; Shapiro 2018).

The number of deliveries couriers make per hour influences how much they earn. The hourly wage of couriers who complete three deliveries in an hour increases from €14.70 to €16.<sup>3</sup> While Wolt couriers do not receive the full information about an assigned delivery from the outset of the delivery, Viktor particularly viewed the distribution of pick-ups between active couriers as non-transparent and he felt that the logic of the algorithm on the Wolt app sometimes worked against him. Viktor speculated:

Viktor: The [app] controls where we bike, and which orders I have to pick up. But I have wondered if [Wolt] sometimes directs me to a place further away because then they would save money on me. The popular food places receive orders all the time. And it makes the most sense [for Wolt] to choose a restaurant that I am close to, because that is more efficient for Wolt. But even though I am right next to the popular food place, then suddenly it is a completely different restaurant I have to bike to. But then again, you have no intel about [how pick-ups are distributed].

Viktor felt it was unfair, and perhaps intentional, when he was assigned a distant route just as he was about to increase his hourly wage. Yet he was unable to know for certain, as information about route distribution remained inaccessible to him.

The prospect of increasing the hourly wage functions as an incentive for workers. On Wolt, there is no ranking system or ratings of the individual couriers. Instead, the promise of increased monetary gain seems to discipline workers towards effective delivery of the food. The prospect of a higher wage may incentivize couriers to bike faster, as was the case for Viktor. While Wolt’s system does not explicitly encourage couriers to bike faster, the prospect of monetary gain may incentivize risky behavior among the couriers, thereby increasing the risk of accidents. This becomes especially risky when cycling rapidly through traffic without a helmet, with one hand on the bike handlebars and their phone in the other.

In addition to non-transparency regarding the allocation of delivery routes, Viktor also found the calculation of his wages obscure. When he requested an explanation from Wolt support about the specifics of these calculations, Viktor received a standard reply about how Wolt generally calculates courier wages. The continued unavailability of insight into significant aspects of his work was a point of frustration: ‘The app might

as well trick me for money each shift ... without me being able to know it, because this information is unattainable'. While Viktor wanted greater transparency, he viewed non-transparency as a precondition of working via an app in an easily attainable job.

Although he experienced a high degree of control in choosing his courier shifts,<sup>4</sup> Viktor had a low degree of control over the specific delivery tasks he had to perform while working. This differs from other platforms where workers have the freedom to decide how they perform the work, for example, dog walking or translation, and they are usually not under surveillance by the platforms at this stage. However, researchers found that Upwork, a platform similar to Freelancer, takes screenshots of the workers' screen every 10 minutes to monitor that the workers are working (Jarrahi et al. 2019; Wood et al. 2018). This can be viewed as the platforms trying to maintain control over the workers' execution of the task.

The following section analyses worker responses to a third form of control on digital platforms, which is exerted at the end of a task.

### 4.3 Control exerted through evaluations and ratings: workers' responses

Customer ratings are embedded in many algorithmic management systems *after* the completion of tasks. By utilizing ratings, and often also reviews of workers, platforms delegate the management task of evaluating workers to the customers. These ratings can significantly impact a worker's ability to obtain tasks (Sutherland et al. 2019; Wood et al. 2018). Almost all of our interviewees expressed the opinion that ratings significantly affected their bookings. Hans, who worked via Hilfr, said: 'I have received more bookings after the first [stars and reviews] appeared'. It took six months before Hans received his first booking. Not until after he received a positive rating from the first customer, did the frequency of bookings increase. Ratings are often a parameter feeding into the algorithmic ranking of workers on these platforms, as Frederic explained concerning the algorithm on Freelancer. However, whether the delayed success in obtaining gigs on Hilfr, as experienced by Hans, was due to algorithmic ranking, customer preferences for already rated workers, or a combination of the two is unclear. During the provision of services such as cleaning and dog walking, platforms cannot monitor how the workers carry out the work; ratings thus serve as a control mechanism that provide the platforms with an assessment of the work performed. The 'mediating power of the rating system' disciplines and motivates workers towards certain behaviors (Rosenblat & Stark 2016, p. 3772).

While ranking and rating systems discipline workers to act in ways that are desirable for the platform, there are examples of workers finding ways to work around the system and thereby regain some autonomy over their work (Jarrahi & Sutherland 2019; Wood et al. 2018). Like Hans, Frederic experienced that his ratings on Freelancer impacted the probability of obtaining tasks on the platform, which drove him to make several efforts to maintain strong ratings. If Frederic deemed a bad rating inevitable, he employed a tactic to circumvent the publication of that rating:

Frederic: Both reviews will only be published when we've both evaluated each other. This allows you to be strategic if you've worked for an idiot. (...) So, if I don't evaluate [the customer], the evaluation I received never becomes public.



Like platform workers in similar studies, Frederic figured out a method for gaming the system and avoiding ratings he anticipated would be negative. An alternative tactic utilized by 27-year-old solo self-employed Vera, who worked via the high-skilled freelancer platform Worksome, was to always confirm alignment of expectations with her customers before completing a gig, thereby ensuring a top rating from the customer. When platform workers have no manager to contact and no official way to gain influence and control in their work life, this elicits strategic actions among the workers. Accordingly, 24-year-old Charlotte, who worked as a waiter via the platform Chabber, explained that she did not understand how the rating system worked which affected her behavior:

Charlotte: In the beginning, I thought the restaurants could see how I rated them, so I was very careful, like: ‘I have to give them good ratings if I want good ratings.’

Later Charlotte learned that ratings must be reciprocal before they are published.

Where the examples of control mechanisms operating before and during the work illustrate how non-transparency is embedded in the platforms’ operations in these stages, in the case of ratings, the workers are very aware of how their rating influences their access to jobs and they therefore deploy various tactics to maintain a good rating. The decentralized control of the workers through algorithms and customer ratings means that if a rating is deemed unfair, the workers have no manager they can contact to remedy its influence on their job opportunities, which moves power away from the workers (Duggan *et al.* 2019).

#### 4.4 Worker experiences: The invisible manager

As managerial control is delegated to algorithms, workers are rarely in contact with human managers. They tell about a labor market where they receive no help and support during their work. Neither do they become part of long-term work communities. Gandini problematizes this ‘as organizational models that ‘invisibilize’ the managerial figure (...) and prevent workers from socializing with each other, thus reducing the potential for resistance and unionization’ (Gandini 2019, p. 1051).

Consequently, all the young people included in this article have highly individualized working conditions, but this is very rarely something they problematize themselves. Many of the young workers in our empirical study described how easy it was to start working via the digital platforms. This is something they appreciate. However, they also described Gandini (2019)’s invisibility of the leadership figure, which resulted in little or no contact with a human leader, which the young people perceived as strange in that they only interacted with a technical system, such as an app or a web page. ‘It is strange to have an employer who is so invisible’, said Ditte who worked on Dogley. Hans, who obtained cleaning gigs via the platform Hilfr, similarly stated that having an online platform as intermediary sometimes left him feeling isolated in the work:

Interviewer: Do you see any issues with working this way [via a digital platform]?

Hans: Hmm ... Perhaps this aspect of being a bit far away if you need help or ...

Interviewer: Far away from whom?

Hans: Well, even though they [Hilfr support] are quick to answer over the web, it doesn't feel like real people you [interact] with.

When Hans was in the home of customers, he sometimes felt left to his own devices. He felt that the technology added a distance, and even when engaging with support it did not feel like interaction with a human manager. Also speaking on this element of distance, Viktor, who worked via the food-delivery platform Wolt, said, 'I actually don't know who I work for. It's just an app (laughs) ... It's a bit strange'. Despite feeling alone in their work, Ditte, Hans and the other young workers in our study viewed the absence of a boss, telling them when to work or what to do, as a form of freedom and flexibility. Hans, for instance explained 'It is so easy to choose when to work and to fit it around my studies'. Frederic emphasized the option to work from anywhere, which particularly pertains to the platforms with online work:

Frederic: We were in Malta a few years ago. That was possible because I worked 3 hours every morning. In that way I was able to gain an income while we were on holiday. I got up at 7 a clock, translated on the terrace, we eat breakfast and then I went up and translated again, and from 10 o'clock we were on vacation. (...) I really felt a freedom to be able to do that.

While workers on digital platforms have a great deal of flexibility compared to more traditional jobs, 'new structures of power and control' (Sennett 1998, p. 47) built into the platforms' algorithmic management systems condition the autonomy of platform workers in different ways, as we have seen in the analysis. Still, the young workers in our study proclaim that they enjoy a freedom in the gig work. We discuss below the paradox between platform control mechanisms and the experience of flexibility and freedom.

## 5 The double autonomy paradox

Digital labor platforms promise autonomy to workers (Möhlmann & Zalmanson 2017; Prassl 2018), but in line with other studies our study shows that worker autonomy is constrained by the digital platforms' algorithmic management systems in various ways, which do not offer the young workers an option of dialogue or insight. This poses an autonomy paradox as the platforms inhibit the autonomy they promise workers (Möhlmann & Zalmanson 2017). Kalleberg et al.'s (2009, p. 103) definition of autonomy as the absence from 'control by technical means' emphasizes the tension that exists between algorithmic management and the promise of autonomy.

Across the platforms included in this study, the control mechanisms embedded in the algorithmic management systems restricted the autonomy of the young workers regarding influence and insight into the platforms. Specifically, our findings show how workers lacked control in deciding critical aspects of the work, such as the distribution of delivery routes and rankings on the platforms, giving rise to feelings of unfairness, and demonstrate how the workers' control over processes in the work is constrained (Sennett 1998). In Sennett's (1998) work, employees become confused because 'illegible' technologies have overtaken a majority of the job functions. On digital platforms, where consecutive tasks or gigs replace regular jobs, machines have not taken over the manual



labor but rather the managerial functions surrounding the manual labor: the matching, ranking, and allocation of tasks, which takes place before, during and after the performance of the tasks. The obscurity of these processes leaves workers bewildered, and our findings show that the experience of non-transparency is consistent among young workers across different digital platforms.

However, in the narratives of the young workers, they also stress the importance of the flexible work-life where they can be ‘their own boss’, and for this reason, the non-transparency experienced by the young workers seems to be an insignificant trade-off to make for this freedom. How can the young workers experience such a high sense of freedom in their work, when they, at the same time, are tightly controlled, before, during, and after execution of a task? We suggest that these seemingly conflicting narratives represent a *double autonomy paradox*. It is a *double* paradox because despite the control mechanisms that create non-transparency and impede the autonomy promised by platforms, the young workers in our study experience the work as being highly flexible and they feel they have autonomy in choosing when and when not to work. This latter aspect seems to be the most important form of autonomy for the group of young workers in this study, and has also been reported among young student workers in retail trade (Nielsen et al. 2013).

The limited reflections recorded in this study regarding autonomy and the working environment are, however, not surprising, as young workers, many of whom are still students, often have a short-term perspective in their work and therefore rarely reflect on their working environment (Nielsen et al. 2013, 2018, 2019). For many of these young people, work may not be their primary activity or their primary income, as they are in different phases of transition from school to work (Nielsen & Laursen 2020). Thus they might have a more instrumental relationship to the work, where flexibility vis-à-vis other activities might be the most important.

## 6 Discussion

This study has shown that young workers on digital platforms experience a sense of autonomy in that they can choose when to work. However, they also expressed a lack of autonomy with regard to gaining insight into the inner workings of the platforms and the distribution of tasks which were linked to feelings of an unfair algorithmic management system and opaque remuneration of work tasks. Building on previous research on algorithmic management and the autonomy paradox, the present study suggests that the conflicting perceptions of control and autonomy among young people in platform work constitute a ‘double autonomy paradox’. Similar types of paradoxes, such as self-management and control structures embedded in new forms of labor processes, are well-known in the broad labor process debate (Smith & Thompson 1998).

We have suggested distinguishing control mechanisms that operate at different stages of the labor process: *before* workers get booked for a task, by controlling how workers are ranked/made visible on the platform compared to other workers; *during* the work as workers carry out the task, by algorithmically distributing deliveries, for example; and *after* the work is done, by having customers evaluate and rate workers, which often influences the worker’s ranking on the platform and hence their access to tasks. In our study, we identified examples of platforms that use control mechanisms

before and after the work, or while the work is carried out. However, some studies report platforms attempting control at every stage of the labor process (Jarrahi et al. 2019; Wood et al. 2018).

This paper therefore contributes to the emerging body of literature investigating worker experiences of algorithmic management on digital platforms, with insights into control mechanisms and experiences of autonomy among young workers in Denmark. British youth researchers found that young workers' participation in the gig economy is motivated by the lack of alternative jobs, and that gig work is a part of a precarious, insecure and long-lasting life condition. In contrast to this, the majority of the young workers in the present study merely used platform work as a supplementary activity for income generation.

The Danish context is significant in this regard. Compared with the rest of Europe, Denmark has relatively high rates of employment among young people and relatively high levels of education. Moreover, social security measures in Denmark mean that failing to find employment does not have quite as far-reaching negative consequences as in countries lacking such levels of state-run social security (Nielsen et al. 2018). In this way, the young workers in Denmark are not in the same precarious situation as young workers in the UK, as reported by MacDonald & Giazitzoglu (2019). The workers in our study are comparable to Dunn's (2020) 'short-timers' who are neither financially dependent nor emotionally invested in their work on the digital platforms.

Thus, the significant Danish context might be a supplementary explanation for our finding that young Danish workers' experiences of high autonomy and flexibility rest on their ability to organize for themselves when and where they wish to work, by applying for the specific tasks they want and only accepting the bookings that fit their schedule. As such, they experience autonomy in timing, even though whether they get booked for work is unpredictable. These young people may have developed a more instrumental relationship with working on digital platforms, where flexibility in relation to their primary activities, such as their education, is the most crucial thing for them. We should thus be cautious in extending the findings of this study to other groups of young people, particularly where platform work is the primary activity and income.

However, it is clear that young people in the Danish context still experience a lack of control and autonomy and a feeling of unfairness when working on digital platforms, and this might affect health and well-being at work. The algorithmic management and the invisibility of the manager (Gandini 2019) mean that the young workers have limited contact with a human manager. Several of the young workers included in this study mentioned this and found it odd that there was no 'real' manager. They experienced an unfairness of the algorithmic management system, that worked one-way. Some of them also spoke of the lack of colleagues and a workplace community. From previous research, we know that this can lead to social isolation (Garben 2017; Wood et al. 2018), have a negative impact on well-being (Duggan et al. 2019), and leave them vulnerable when they are performing tasks in other people's home (Moore 2018).

For these reasons, we suggest that algorithmic management poses a concern for the working environment on digital platforms in a Danish context, especially for young workers who are at higher risk in their work, partly because they have less experience when the work is not their primary occupation. However, there is a lack of empirical data on the health and well-being consequences for young workers on digital platforms.



Although this study has revealed important mechanisms and possible connections between algorithmic management and the work environment on digital platforms, future research must take a closer look at the specific consequences of algorithmic management on worker health and well-being.

## 7 Conclusion

While the young workers in our study enjoyed the flexibility offered by the platform work, their experiences of non-transparency led to feelings of unfairness and disorientation relating to the algorithmic management system. When the manager is invisible and control is embedded in a non-transparent algorithmic management system, the young workers have nowhere to turn to get help and instructions. It is well-known that lack of control and overview in one's work can negatively impact the working environment and pose risks for health and well-being. This in particular applies to young workers, who are especially vulnerable since they are new on the labor market, are working part-time, and are usually not well integrated into the social network related to the workplace. For this reason, it is important to pay attention to – and perhaps mitigate – how the use of algorithmic management fosters experiences of non-transparency, invisible managers, and limited control over the work processes, as this may negatively impact young workers' well-being. Research that investigates the relationship between algorithmic management and workers' health and well-being on digital platforms is encouraged.

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## Notes

- <sup>1</sup> The interviews come from two different research projects. Ten of the interviews are from a project focusing on young workers on digital platforms in Denmark conducted in 2018–2019. The other project is from 2017 focusing on young workers with 'atypical jobs' in the Nordic countries (Scheuer 2014). In accordance with the focus of this article, we only included the two interviews from the Nordic project that were with Danish workers on digital platforms.
- <sup>2</sup> All quotes are translated from Danish, and the names and personal identifiers of the participants have been altered to ensure their anonymity. Participants' personal data is handled in accordance with GDPR (European Parliament and The Council of the European Union 2016).
- <sup>3</sup> This was the salary as reported by our participants in 2019. Wolt might have adjusted their salary since then. At the beginning of 2021, they adjusted their bonus scheme during weekends, which was protested by workers (Gjoni 2021).
- <sup>4</sup> Twice a week at specific times, Wolt-couriers are able to choose their shifts for the coming week. Since many couriers may be interested in these shifts, workers must often be ready and very quick once the shifts are released to get their desired shifts.