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Master Thesis submitted in partial fulfilment of the requirements for the degree of Master of Science in Sociology

Measuring employment precariousness among platform-based food couriers in Brussels. A pilot study combining fieldwork with survey data.

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"Discussion and brainstorm were my favourite activities; they were in the most literal sense the ludic, fun, pleasure dimensions of academic life. What I did alone, usually, was the slow and careful analysis of data. But that's the only thing that's really individual in a range of activities that were collective and involved intense sharing, exchange and generosity. And even that thing – the data analysis – was usually submitted to the judgment of others before it could be publicly shown. So much for being the lone, unique and autonomous genius researcher" (J. Blommaert, p.1 - Looking back: What was important in my academic life?).

The above quotation from a beautiful essay by professor Blommaert perfectly illustrates why scientific products are always the result of positive cooperation between minds. Moreover, it highlights the importance of acknowledgements. I was lucky enough to be part of such a 'collective of minds' this year. I am profoundly grateful to 'the precarious team' for the openness with which they welcomed me and especially for all the interesting discussions, questions and meetings that we had. Two members of this team deserve a special thanks. My promotor, professor Christophe Vanroelen, for all his time, guidance and support in writing this thesis. And especially for his encouragement and trust during my first steps in fieldwork. And my supervisor, Jessie Gevaert, who I could always count on for clear feedback, especially when I got stuck with the structure of the text or the composition of the measurement scale.

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Table of contents

Abstract

Background: Digitalisation of labour markets has led to new business models that aim to be more flexible and cost-efficient by creating online platforms that match workers and customers. These platforms do not operate as traditional employers, but instead hire large numbers of workers, often with non-standard contracts, that perform demarcated tasks (i.e. 'gigs') in a flexible manner. Platform-based food couriers are exemplary of this employment model, and many authors argue that their jobs are precarious. A formal measurement approach for precarious work among gig workers has however not yet been developed. Objective: The central objective of this research was to find a suitable data-collection approach for gig workers and to adapt, test and validate the theory-based, multidimensional Employment Precariousness Scale (EPRES) to the context of platform-based food couriers in Belgium. Methods: To this end, fieldwork observations were combined with primary survey-data (N=123). The scale was then quantitatively validated by testing reliability and external validity. Results: The results of this pilot study showed that in-depth and tailored fieldwork is a promising strategy for reaching a "hard to reach" population such as couriers. The EPRES-gw ('gig work') revealed metric potential for the population of food couriers. It showed good reliability through sufficiently high internal consistency. The scale also showed a good external validity through a significant positive correlation with poor well-being. The results were found to be comparable with previous research on precarious work among other Belgian worker populations. No significant differences in precariousness could be found between the socio-economic and demographic groups in the sample.

Key words: Gig economy; Food couriers; Precarious work; Digitalisation; Fieldwork; Methodological Challenges.

1. Introduction

The past five decades have been characterised by a flexibilisation of labour markets (Bosch, 2004). One of the most visible consequences is the decline of standard jobs, which were characterised by security through full-time employment, permanent contracts, regular working hours and internal labour market careers (Vives et al., 2010). Temporary, part-time and other 'non-standard jobs', instead, have been on the rise. In addition, a growing amount of the permanent jobs also show characteristics of non-standard jobs (e.g. unpredictable working hours) (Eurofound, 2013). Certain types of self-employed work, such as solo self-employment, also show similar features of insecurity, unpredictability, less sustainable incomes, and low bargaining power (Gevaert et al., 2020). Moreover, these types of self-employed work are often used to replace standard employee contracts (Schmidt, 2017). Non-standard types of employment often entail poor employment quality (Vives et al., 2011), which is why an emerging group of researchers argue that this decline of standard jobs can best be described as an evolution towards precarious employment (Kalleberg, 2009; Standing, 2011).

On top of this broader trend, the digitalisation of labour markets has led to new business models that aim to be (even) more flexible and cost-efficient by creating online platforms that match available workers and customers, lowering transaction costs as well as expenditures (Schmidt, 2017). To guarantee this flexibility and cut (wage-) costs, these platforms do not operate as traditional employers. Instead, they hire large numbers of workers - often independent contractors who perform demarcated tasks (i.e. 'gigs') and can quickly be put in and out of work (Friedman, 2014). These atypical types of work are not uncontested (Dablanc et al., 2017). Concerns have been raised on how digitalisation affects the job quality of those who do these gig jobs (Goods et al., 2019). The most prominent topic in this debate concerns the unclear employment status of many gig workers. Often, they are formally classified as independent contractors, while factually working as employees (Graham & Woodcock, 2018). This frequently results in a situation of uncertainty and economic risk that is magnified by a lack of social protection (Friedman, 2014).

The model described above is clearly visible in the food delivery sector (Drahokoupil & Piasna, 2019). Ordering prepared meals online is becoming an ordinary consumption habit, particularly in urban areas (Graham, 2020). This leads to an increasing number of platform-based food couriers (De Groen et al., 2018). While many food couriers enjoy the intrinsic aspects of the job itself (e.g. cycling through the city, exercise, etc.), most of them find the conditions of the job (e.g. the wages) problematic (Goods et al., 2019). It can therefore be argued that the disruptive character of these jobs is primarily due to the employment relationship under which they are

organised (Drahokoupil & Fabo, 2016).

Food couriers usually don't get stable nor guaranteed incomes (CEPS, 2021) and wages are often low (Drahokoupil & Piasna, 2019). Furthermore, they cannot enjoy the customary financial security that comes with employment, should they not be able to work (Bérastégui, 2021). Most of them – depending on their employment status – are not eligible for sick pay or paid holidays and they rarely have the opportunity to participate in employer-subsidised training or other activities that maintain working capacity (Juntunen, 2017). Although their working hours are flexible, job availability depends on customer demand and the opening hours of restaurants (Vallas & Schor, 2020), so couriers often work during non-standard working hours (Drahokoupil & Piasna, 2019) and cannot always work when and as much as they would like to. Moreover, they have higher risks of getting involved in traffic accidents and often lack work-related accident insurance (European Trade Union Institute, 2017). They encounter difficulties in becoming a collectively represented group of workers with bargaining power (e.g. the absence of regulatory institutions for work arrangements), making it harder for them to enforce those rights (Vandaele, 2018).

Many of these features (work accident insurance, collective representation, stable working hours, …) are nevertheless labour rights that were acquired after WWII and established in the so called standard employment relationship (SER) (Bosch, 2004). This regulated framework of the employment conditions and relations, was an important aspect in constituting workers' relative power position in relation to their employers (Benach et al., 2014). However, when platforms hire workers as independent contractors and not as employees, workers fall outside the safety net provided by established employment relations, consequently removing minimum employment standards (Goods et al., 2019).

Since platform-based food couriers share similar characteristics (irregular working hours, low bargaining power, etc.) with other worker populations in which precarious employment has been identified (e.g. the self-employed: Gevaert et al., 2020), it can be suspected that they also have precarious jobs (Drahokoupil & Piasna, 2017). A formal measurement approach for precarious work among gig workers, in which precarity can be assessed based on a fixed number of criteria, has however not yet been developed. A successful empirical instrument for investigating employment precariousness in employee populations, is the theory-based, multidimensional Employment Precariousness Scale (EPRES). It showed good metric properties in Spain (Vives et al., 2010) and was recently extended to Belgium (Vandevenne et al., 2020). This instrument can grasp the interplay of different dimensions of employment precariousness and identify precarious

work as a social determinant of health and well-being (Benach et al., 2014). It has however not been tested with gig workers before.

Developing a measurement tool for employment precariousness among food couriers is challenging. This population can typically be described as 'hard to reach': large-scale survey data are scarce and often of poor quality (Badger & Woodcock, 2019). Furthermore, applying the standard dimensions of employment precariousness to gig work, that in some respects profoundly diverges from waged employment, requires adaptation. Messier and Floro (2008) conducted a similar exercise when they tried to measure employment quality in the Ecuadorian informal economy. The authors came to the conclusion that, as these quasi-legal jobs are not governed by a minimum of protective laws or worker rights, the standard measures of employment were of limited use (Messier & Floro, 2008). In other words, these 'new' worker populations require an adapted measure of employment precariousness (ILO, 2013). It is within that context, that this study aims to make a contribution by adapting, testing and validating the EPRES for platform-based food couriers in Brussels.

2. Background

In this section, the position of food couriers within the growing gig economy is examined with a focus on changing employment relations. Subsequently, two existing measurement approaches of precarity in this population and their limitations are evaluated. Finally, the EPRES-gw ('Employment Precariousness Scale - gig work') is introduced as an alternative measurement approach, followed by an outline of the research objectives.

2.1 The rise of the urban food courier: changing employment relations

In 1994, Pizza Hut was the first company ever to offer online pizza delivery (LA Times, 1994). Ever since, the popularity of food delivery is on the rise. Around 2010, various online platforms were created with the aim of matching available couriers and customers (Dablanc et al., 2017). Delivering prepared meals that are ordered online has become increasingly popular in several parts of the world, including Belgium (Lenaerts & Vandekerckhove, 2020), resulting in an increase of the number of platform-based food couriers as well (De Groen et al., 2018).

Compared to the EU-27 countries Belgium has fewer platforms, platform workers and clients who use platforms (Hauben, Lenaerts, & Kraatz, 2020). However, the platform economy, including food delivery, is growing rapidly (Lenaerts & Vandekerckhove, 2020). Most of the platform work in Belgium is locally based (Lenaerts & Vandekerckhove, 2020) and can be considered as 'gig work',

meaning that it concerns work tasks that cannot be practiced online (Vallas & Schor, 2020). Couriers are paid for isolated 'gigs' and online platforms mediate the interaction with customers. These jobs mostly take place in urban areas (Graham, 2020) and are typically performed by young men who also live in urban areas (Hauben, Lenaerts, & Kraatz, 2020). Although the work is low-skilled, many of the workers are highly educated (Vandaele, Piasna, & Drahokoupil, 2019). This general socio-demographical profile also holds for Belgium; a recent study found that 85,5% of the food couriers were students. One third were migrant workers (Vandaele, Piasna & Drahokoupil, 2019).

The rapid expansion of platform mediated food delivery and their employment relations and conditions are the subject of a broader debate on job quality and the future of work (Méda, 2017; Sundararajan, 2016). Unlike traditional labour relations, digital platforms intermediate the relationship between a courier and a customer, acting as 'shadow employers' (Friedman, 2014). The transformative power of these gig jobs is therefore not so much related to the job content, but rather to the employment relationship (Dundon, 2018). The job of food courier - and other activities that are currently organised in a platform-like manner – is not new, but already existed before the digitalisation of labour markets took place. The debate and policy issues mainly revolve around the unclear employment status of food couriers. This refers to the difficulty in classifying these jobs within the classic dichotomy, as either work that happens within the framework of an employment relationship (as employee or 'worker'), or as work for own account (self-employed) (Council of the European Union, 2019). In sum, it is not so much the work task, but rather the employment relationship – i.e. brokering 'gigs' mediated by online platforms (Vallas & Schor, 2020)– that is new and often disruptive (Dundon, 2018).

Much has been written about the transformative power of gig jobs in terms of employment relations, both from a rather optimistic and rather pessimist perspective (Brynjolfsson & Mcaffee, 2014). The optimistic view considers the gig economy as a driver of entrepreneurship: it enables people to put underused assets to work and as such expand their economic opportunities (Sundararajan, 2016). Furthermore, the gig economy offers a large supply of democratically accessible, flexible work tasks, allowing excluded workers access to the labour market (van Doorn, Ferrari, & Graham, 2020). The gig economy is then portrayed as offering services of low cost and maximal choice for consumers, while workers can enjoy flexibility in a labour market that is able to quickly respond to volatile demand (Sundararajan, 2016).

Critics have nuanced this positive narrative of gig jobs by arguing that this flexibility generates a lot of disadvantages for workers. The basic argument is that businesses can use these forms of

flexible employment to undermine the social rights that formed the basis for the standard employment relationship (SER) (Friedman, 2014). The SER characterised the post-war labour market through lifelong, stable, full-time employment with regular, predictable working hours, trade unions representing large groups of workers and a long-term perspective on work (Bosch, 2004). Moreover, it was an important aspect in constituting workers' relative power position in relation to their employers (e.g. stability of contracts and working hours, social protection, etc.) (Benach et al., 2014). In research on precarity, the SER is often used as a golden standard against which to position changes in employment relations (Julià et al., 2017). From this perspective, digital labour platforms can be perceived in relation to the progressing degrading of SER-employment – i.e. as an extreme example of a much wider trend towards de-standardisation and 'precarisation' of employment (e.g. Dundon, 2018).

There are good reasons to assume that food couriers are exemplary for (precarious) digital platform labour because they are, first of all, vulnerable to all kinds of social risks (Friedman, 2014). Food couriers usually work 'on demand', which means that the availability of work directly depends on demand conditions (Dablanc et al., 2017). Consequently, there is little certainty of continued employment. Second, hiring workers for the 'gig' rather than being full members of staff, ensures employers more liberty in adjusting employment and wages entirely to their needs without any liabilities towards their workforce (Friedman, 2014). Economic risks are passed on to employees, costs such as benefits or unemployment insurance are avoided and minimum wage norms are not met with (Aloisi, 2016). Trade unions in several European countries accuse food delivery companies of bogus self-employment (Bruzz, 2020; El Pais, 2020; The Guardian, 2021b). Finally, gig jobs also generate a shift in the focus from 'the career' (e.g. jobs with career opportunities), to 'the job' (one single task or 'gig') (Davis, 2015). Food delivery companies often claim that young couriers can acquire useful 'employability skills' and 'soft skills' and that their gig job can be a steppingstone to a long-term career (e.g. the 'Deliveroo academy'). However, it seems difficult to build a career in these jobs, as the turnover is very high: on average, food couriers work for a food delivery company for one month up to a year (European Agency for Safety and Health at Work, 2010). Moreover, the business model of these platforms is based on the Taylorist breakdown of a job into smaller components (i.e. accept one order, go pick it up, deliver it) (Schmidt, 2017). As a consequence, the job of food courier is generally considered to require limited skills (Van Doorn, 2020) which results in low entry barriers, but also in limited opportunities (Juntunen, 2017) and limited career mobility.

In sum, labour becomes increasingly fragmented and the traditional employment relationship and associated social protection and employer-responsibilities are undermined (Dundon, 2018). This

is not only relevant because the gig economy is a growing segment of the labour market, but also because it reflects a broader set of trends that sooner or later may affect more traditional jobs as well (Huws, Spencer, & Holts, 2016). The development of non-union employee representation channels (Dundon, 2018), employee ratings based on customer reviews and working on a project basis (rather than within a job) (Schmidt, 2017) are some examples of this so-called 'platformisation' of the traditional labour market.

2.2 Existing assessments of precarity in gig work and their limitations

It has often been theorised before that gig workers, including food couriers, are exposed to employment precariousness (e.g. Scholz, 2016; Vallas, 2019). However, studies that empirically identify precarity in gig work populations by using a formal measurement approach, whereby precarity can be assessed based on a fixed set of criteria are more scarce (Kahancová et al., 2020). Nevertheless, the development of measurement tools in this domain is necessary to 1) reach a common understanding of what constitutes employment precariousness in gig work (Montgomery & Baglioni, 2020), 2) properly identify it – and study its consequences and antecedents (Bérastégui, 2021), and 3) base policy recommendations on these comparable findings (Kahancová et al., 2020). Two assessments of precarity and their shortcomings are discussed below and subsequently the EPRES-gw is introduced as an alternative, multidimensional measurement tool.

One of the best known and most recent evaluations of precarity in gig work is the fair work foundation project by Graham et al. (2020). This action research project is designed to promote greater transparency about working conditions in the platform economy and to encourage fairer working arrangements. More than measuring precarity, this project aims to develop rating schemes to determine whether platforms are providing 'decent work'. The project adopts a platform-oriented approach; platforms are scored, evaluated, ranked and compared. Nevertheless, this research offers a contribution to the understanding of what precarity (which is in many ways the opponent of fairness) means in the broad sense (i.e. across places and sectors), because it develops thresholds of measurement. The dimensions included are: pay, conditions, contracts, management and representation. Although a focus on the platform has the advantage of holding companies accountable for their policy strategies regarding labour relations with their workers (Graham & Woodcock, 2018), from a worker perspective, it is also important to focus on the perceived working conditions and to give the impact on workers' psychological and physical well-being a prominent place (Holman, 2013). An empirical tool that examines the 'precarious experience' of food couriers could therefore complement the fair work project.

The multidimensional conceptualisation of precariousness by Kahancová et al. (2020) makes an important contribution as well. The authors develop a clear conceptual delineation of precarity which is specifically applied to the gig economy in Eastern-Europe. It contains six dimensions: income, working time, autonomy at work, job security, social security, and representation. This approach is focused on capturing different types of gig work and evaluate how gig work impacts the overall reconfiguration of precarity and related labour market institutions. However, there are some limitations to this approach. First, the six dimensions are put together inductively based on interviews with gig workers and themes from the gig work literature. This method, however, runs the risk of subsuming isolated, adverse job characteristics into a single measurement scale for precarity, whereas the broader literature on job quality points to the importance of distinguishing between intrinsic job characteristics and characteristics of the employment relationship (Gevaert, De Moortel, & Vanroelen, 2018). Autonomy, for example, is an intrinsic characteristic of the job itself, whereas the concept of precarity addresses the tendency of degrading employment conditions and relations (Bosch, 2004). As already mentioned in the background, the disruptive aspect of gig jobs is mainly situated in this area. Rather than the job itself, it is the circumstances under which the job is performed (i.e. contract, working time, social rights, etc.) that break with post-war labour relations, and tend to foster precarity (Dundon, 2018).

Second, although the six dimensions are theoretically subsumed under the concept of precarity, the tool methodically treats all six aspects of precarity as mutually independent and separable. The authors for instance attribute precarity in gig work to the dimensions of autonomy and collective representation (Kahancová et al., 2020). While a closer look at the dimensions can indeed provide insight into the problematic aspects of a particular gig sector, precarity should primarily be approached as the interplay of all these dimensions reflecting an overall situation of powerlessness and lack of bargaining power (Vanroelen et al, 2021). It is precisely the accumulation of these adverse employment characteristics that is referred to in the literature as ‘precarious employment’ (Vosko, 2006).

Finally, while this approach identifies the heterogeneity of the gig work population as an important issue (Schor et al., 2020), it does not provide a methodological assessment of it. For example, low incomes or lack of employment do not affect all groups of gig workers equally. Students, groups who do gig work as a side job and groups who are entirely depending on their gig job, differ significantly in terms of risk of precarity (Schor et al., 2020). In sum, measuring instruments for employment precariousness have to be adapted to specific types of gig workers. In what follows, the EPRES scale will be introduced as an alternative measurement instrument

that builds on the aforementioned measurement approaches, but also attempts to address their limitations.

2.3 Using the EPRES as a theory-based, multidimensional approach to employment precariousness in the gig economy

The concept of employment precariousness is embedded in a research tradition that attempts to understand the transformation of employment systems and the new social fault lines emerging around labour market insecurity (Rodgers, 1989). This is understood to be a wider consequence of the erosion of the post WWII standard employment model (Puig-Barrachina et al., 2014). Using the EPRES to understand the gig economy allows us to study its connection to these broader trends and changes in labour markets (De Stefano, 2016).

The EPRES, originally developed by Vives et al. (2010) in Spain and later applied in the Belgian context (Vandevenne et al., 2020), consists of seven dimensions related to the employment conditions and relations of workers: 1) temporariness (i.e. the duration of the formal contract), 2) disempowerment (i.e. representation and participation), 3) vulnerability (i.e. adverse interpersonal relations and administrative issues), 4) workplace rights (i.e. lack of access and lack of power to exercise rights), 5) economic unsustainability (i.e. low or unstable income), 6) undesirable working times (i.e. long, irregular, unpredictable or at 'unsocial' moments) and 7) low employability opportunities (i.e. training and internal labour market careers) (Vanroelen et al., 2021).

This theory-based, multidimensional tool is used predominately in epidemiological studies. Consequently, a key advantage of this scale is its ability to capture the relationship with health-related outcomes, in particular (mental) well-being (Benach et al., 2014). Uncovering its relationship with well-being concretises the impact of precarity in gig work, which also makes it easier for policymakers to localise potential problems. This is especially relevant in relation to food couriers, given the previously mentioned health and well-being risks (Lehdonvirta, 2018). Furthermore, the EPRES also proves successful in detecting differences in precarity between several socio-economic and demographic groups. For example, women, younger people and people with a migration background tend to score higher on precarity (Vives et al., 2011). Similarly, workers with lower levels of education and skills also tend to have more precarious jobs (Puig-Barrachina et al., 2014).

The scale is developed from a worker perspective: it is worker-reported and evaluates employment characteristics based on whether they are favourable to the worker (Julià et al.,

2017). It can be used in various types of employee populations. The EPRES has already been applied in different worker groups in various countries (a.o. Sweden, Chile, Norway, Portugal, Greece, Belgium, etc.) and can contribute to cross-national comparative research (Padrosa et al., 2021). Nevertheless, the EPRES scale has primarily been used among formal employees, often excluding students, self-employed workers or informal workers from the analysis (e.g. Padrosa et al., 2020). These groups are however overrepresented among food couriers (Vandaele, Piasna & Drahokoupil, 2019). The main reason for this exclusion is that these groups relate differently to social legislation, social benefits and collective representation than formal employees (De Stefano & Aloisi, 2018). Measuring instruments based on a 'traditional' employment relationship between employers and employees are insufficiently adapted to address precarity in these groups of workers. This shows that the EPRES has to be further aligned with worker populations that are likely to be exposed to precarity (De Stefano & Aloisi, 2018) but do not fit the standard definition of employee (Padrosa, 2021), which is why gig workers make an interesting case. In that respect, this pilot study with platform-based food couriers could be a first step towards a broader assessment of precarity in gig jobs. Using the EPRES scale to measure precarious employment among gig workers presents us with three challenges: 1) collect data in these hard-to-reach populations, 2) adapt the standard dimensions for precarious work to the working conditions specific to these populations and 3) grasp potentially other aspects of precariousness in the gig economy.

Therefore, the objective of this pilot study[1] is to find a suitable data-collection approach for gig workers and to develop and test a measuring instrument that can provide a foundation for assessing employment precariousness among gig workers. The instrument will be tested with platform-based food couriers in Brussels. The measurement instrument will be developed based on the EPRES, but adapted to food couriers. This version will be referred to as the EPRES-gw (EPRES gig work). The first research question is: how can platform-based food couriers be approached for data collection? (RQ1) Once the data are collected, the suitability of the adopted EPRES-gw measure for assessing employment precariousness among Brussels, platform-based food couriers, will be tested (RQ2). To validate the instrument, two quality criteria will be evaluated:

RQ2.1) Reliability: Are the items a reliable representation of the dimensions underlying EPRES-gw?

- H2.1: We expect internal consistency between the items in the sub-dimensions of the EPRES-gw .

[1] This study serves as a pilot study for a broader research project on sustainable employment in the age of digitalisation (SEAD: https://sead.be/).

RQ2.2) External validity: Are the findings of the study consistent with the results from previous research in other workers populations that made use of the EPRES?

- H2.2: Based on the consulted literature, we expect higher precarity scores among younger, female food couriers with low educational levels or a migration background that work exclusively as a food courier.
- H2.3: We expect a positive correlation between the degree to which a job is precarious and adverse scores on well-being[2].
- H2.4: We expect the EPRES-gw scores to be comparable with previous research on precarious work among other Belgian workers populations that made use of the EPRES ('EPRES-Be').

3. Methods

The methods section follows the same structure as the challenges outlined above: 1) Data-collection and adaptation of the EPRES to food couriers (RQ1), and 2) validation of the measuring instrument (RQ2).

3.1 Research design: fieldwork and survey adaption process

The target population in this study is the platform-based food couriers in Brussels. To select them, the following definition for fast deliveries was used and adapted to food delivery: *"Instant delivery services provide on-demand delivery within two hours – by either private individuals, independent contractors, or employees – by connecting consignors, couriers and consignees via a digital platform*" (Dablanc et al., 2017, p. 2). Two types of data collection methods were used, namely qualitative fieldwork and a quantitative survey. The research design of this study thus concerns a cross-sectional analysis of fieldwork data and primary survey data. Since little data are available on the employment quality of platform-based food couriers (Lenaerts & Vandekerckhove, 2020), the collection of primary data was necessary.

Fieldwork methods were used to support the survey development process (see next paragraph) and to stimulate food couriers to answer the survey. Findings from fieldwork can indeed inform the process of both data collection and survey design (Sieber, 1973). Subsequently, they serve as a form of 'legitimisation' of the survey by the research population and as a yardstick to evaluate the nature and completeness of the survey data (Sieber, 1973). Direct contact with respondents

[2] The relationship between precarity and (poor) well-being is a relevant study topic in its own right, as is also indicated in the literature (Julià et al., 2017). However, in this study it is primarily addressed as an external validation of the EPRES that was designed for epidemiological research and has been used successfully in the past to capture the relationship with poor well-being (Benach et al., 2014).

also allows for a more tailored contact strategy and can potentially reduce non-response (De Leeuw & Hox, 1998). The fieldwork in this study consisted of short and long informal conversation with couriers, observations, attendance at events (meetings with courier collectives, strikes), observations in online courier groups on social media and discussions with trade unions, courier collectives and key persons who have close contact with couriers. First, a series of observations were carried out to find out which locations were frequently visited by food couriers and at what times they were there. Then, one researcher went out on the streets every night for a period of three months (from February 2021 to April 2021), asking people to complete the survey, which often led to informal conversations. A flyer with a QR code on it provided quick access to the survey, so it could be easily completed with a smartphone. Additionally, social media were used to spread the survey (e.g. rider groups on Facebook). Both textual and graphic messages were posted (e.g. videos in three languages). Moreover, snowball sampling techniques were used (i.e. asking participants if they know other couriers who might also want to complete the survey). The survey was also shared on the social media of the 'Koerierscollectief' ('courier collective') as well as on those of the two largest trade unions in Belgium: the Socialist (ABVV) and the Christian (ACV) trade union.

The development of the survey took place through a process of adaptation of the original EPRES to platform-based food couriers. This entailed searching for alternative indicators to reflect the seven original dimensions. To this end, three sources of information were used: first, a literature review was conducted based on a thematic search on terms such as 'platform work in the food delivery sector', 'quality of employment', 'precariousness' and 'well-being'; second, previously used measurement instruments from research on gig work were reviewed (i.e. NEA-TNO; Graham & Woodcock, 2018; Kahancová et al., 2020; Vandaele, Piasna & Drahokoupil, 2019); and finally, the insights from the initial steps in the fieldwork were used to shape and adapt the dimensions of the employment precariousness scale. The seven final dimensions used to compile the EPRES-gw for food couriers are hence the result of an extensive adaptation process that is presented in the results. The survey was made available in French, Dutch and English. Beforehand, attention was paid to a good intelligibility of the questions, by testing the survey with a pilot group (n=12). The final version was launched through an online surveying software tool: 'Qualtrics TM', in order to let respondents complete it by using their computer or smartphone, via the principle of self-report. Attention was also paid to the length, so that it took no longer than twelve minutes to complete it. The research sample (n=123) concerns a convenience sample. Due to the adopted reach-out strategy, a representative sample of the Brussels, platform-based food delivery couriers was not obtained. Using probability sampling techniques is inconvenient in a population about whom there is so little information. For example, until now researchers don't know how many

food couriers are working in Brussels (Drahokoupil & Piasna, 2019). Considering this lack of information, this study can provide a relevant contribution to the field by sampling as described above. Table 1 gives an overview of the general characteristics of the sample. The self-drawn survey made it possible to accurately gauge the aspects of employment arrangements that were important for this research. It is a convenient design in populations that are difficult to reach, because completing a short online survey on a smartphone, requires relatively little effort. This design does however not allow to make statements about causality.

Table 1 *Sample characteristics: gender, age, educational level, employment status and migration background (n=123)*

Item	Response options	n	%
Sex	*Male*	91	74,0
	Female	8	6,5
	Other/Missing	24	19,5
Age	*0-18*	7	5,7
	19-25	45	36,6
	26-30	21	17,1
	31-40	20	16,3
	41-60	3	2,4
	60+	1	0,8
	Other/Missing	26	21,1
Educational level	*Low-educated*	2	1,6
	Higher secondary education	33	26,8
	Higher education	44	35,8
	Unrecognised diploma	16	13,0
	Other/Missing	28	22,8
Employment status	*Other job besides food courier*	21	17,1
	Student	42	34,1
	Looking for a job	20	16,3
	Exclusively working as a food courier	12	9,8
	Other/Missing	28	22,8
Migration background	*Born in Belgium and both parents born in Belgium*	16	13,0
	Born in Belgium and (one of the) parents not born in Belgium	27	22,0
	Not born in Belgium and (one of the) parents not born in Belgium	54	43,0
	Other/Missing	26	21,1

Source: *EPRES-gw survey (own analysis).*

3.2 Validation EPRES-gw: reliability and external validity

After designing and conducting the survey and fieldwork, the EPRES-gw was constructed and quantitively validated. The final EPRES-gw was constructed by means of a sum scale that consist of seven dimensions. Each of these dimensions expresses a component of the underlying theoretical concept of employment precariousness. Precarity was thus operationalised as the accumulated occurrence of adverse scores on each of the dimensions. These dimensions sometimes consist of several sub-dimensions and a series of items. The sub-dimensions within each dimension were first constructed separately by summing the items and then dividing by the

total number of items. Then, to construct the entire dimension, this step was repeated by summing all sub-dimensions and dividing by the number of sub-dimensions. This means that all dimensions and sub-dimensions were given equal weight in the final measurement instrument, regardless of the number of sub-dimensions per dimension, or number of items per sub-dimension. Each subdimension was coded so that a score close to 1 always indicated the most precarious situation and a score close to 0 indicated the least precarious situation. The final sum scale thus expresses an overall, decimal score for precarious employment ranging from 0 (not precarious) to 1 (very precarious). The final EPRES-gw and coding of the scale is shown in Table 2. The metric potential of the EPRES-gw was evaluated by assessing both the criteria of reliability and (external) validity (see objectives). Reliability was tested via the calculation of Cronbach's Alpha's and a correlation matrix (hypothesis 2.1). To test for external validity, the distribution of the EPRES-gw scores by demographic and socio-economic groups (hypothesis 2.2), the statistical relationship between EPRES-gw and poor well-being (hypothesis 2.3), and the comparability with previous research on precarious work among other Belgian workers populations (EPRES-Be: Vandevenne et al., 2020) (hypothesis 2.4) were examined.

Poor well-being (dependant variable) In order to measure (poor) well-being, the WHO-5 index, was used. It exists out of five statements on which respondents can answer using a five point Likert scale, ranging from all the time to - at no time (Topp et al., 2015). The following statements were questioned: 1) I have felt cheerful and in good spirits; 2) I have felt calm and relaxed; 3) I have felt active and vigorous; 4) I woke up feeling fresh and rested; 5) My daily life has been filled with things that interest me. A sum scale was calculated expressing for each respondent a continuous decimal score ranging between 0 (good state of well-being) and 1 (poor state of well-being) for poor well-being (α= 0,886).

Sociodemographic variables The EPRES-gw scores were compared between different demographic and socio-economic groups: sex (male/female); age (25 or younger, 26 to 35 and older than 35); level of education (no education + higher secondary education, higher education and unrecognised diploma); migration background (born in Belgium and parents born in Belgium, born in Belgium and parents not born in Belgium, not born in Belgium and parents not born in Belgium); and employment status (other job besides food courier, student, looking for a job and exclusively working as a food courier).

4. Results

4.1 Qualitative results: fieldwork and survey adaptation process

The first part of the results is qualitative and concerns an assessment of the reachability of food couriers (RQ1) and the adaptation process of the EPRES to the context of food couriers.

4.1.1 Some general observations from the fieldwork

Below, three general observations from the fieldwork in the population of Brussels food couriers will be briefly discussed. The focus lies on whether and how the fieldwork approach has contributed to reaching (a higher number of) respondents.

a) Boundaries: a lack of response due to suspicion and distrust?

A first observation concerns feelings of distrust by the couriers towards the researcher when asked to participate in the survey. During the fieldwork I was regularly suspected of working for one of the food delivery platforms, presumably carrying out an inspection. Around that time Deliveroo announced that they were going to conduct field inspections on the usage of rider accounts under false names (Bruzz, 2021). The same experience was previously reported by another researcher who conducted fieldwork among food couriers in China (Sun, 2019). I was also often suspected of looking for negative testimonies about courier-jobs and of wanting to use that to 'attack' platforms. When I asked about working conditions, the responses were sometimes defensive. Couriers would say thing like: *"at least this is a job, otherwise I have nothing at al"* and "*you shouldn't try to abolish these jobs" (location 5, author's own fieldnotes March).* Last, I was frequently asked if the survey could be completed anonymously. This seemed to be an important requirement for some couriers. Possibly because some practiced their job unlawfully (e.g. being underaged, undocumented migrants) (Zuev, Psarikidou, & Popan, 2021). Feelings of distrust are typically mentioned as a symptom of a conflict situation; a situation in which individuals or groups perceive their needs, goals or interests as contradictory to those of 'the other side' (Kriesberg, 1998). In those situations, communities typically go through a process of internal unification (i.e. feelings of 'togetherness' and 'belonging'), while the researcher is viewed as an outsider who should be approached with suspicion (Cohen & Arieli, 2011). This general distrust could partly explain the boundaries that researchers tend to encounter (Badger & Woodcock, 2019) when trying to reach couriers.

b) Gender-based motives for completing the survey

During the period of fieldwork, I was also regularly confronted with romantic proposals from the couriers whom I tried to reach. The outsider position I held by presenting myself as a researcher (Cohen & Arieli, 2011) was confirmed by my appearance (female, white, young), as I did not look like a courier (usually men). However, this outsider-position may also have provided an

advantage as women are usually considered less threatening, especially in male-dominated communities (Pawelz, 2018) and sexuality may have been a motive for some couriers to participate (Lisiak, 2015). Important in relation to the number of responses is awareness of the fact that appearance and behaviour of a researcher, especially in this context of hard-to-reach participants, can be a determining factor for the amount of responses obtained (Lisiak, 2015).

c) Limited impact of advocacy groups

A last observation concerns the limited impact of trade unions and other advocacy groups in acquiring additional respondents. The two largest trade unions in Belgium (Socialist and Christian) both shared the survey on their social media channels, but this hardly yielded extra responses. The same applies to the courier collective that shared the survey ('Koerierscollectief'). While in many academic studies, 'traditional' trade unions prove to be helpful allies in data collection (e.g. Vandevenne et al., 2020), this may to a lesser extent be the case for platform-based food couriers.

4.1.2 Adaptation process and construction of the EPRES-gw

The section below shows the adaptation process and the development of the EPRES-gw. For each dimension, the conceptual considerations, fieldwork findings and adjustments are discussed. The end product of this adaptation process, the precarity scale 'EPRES-gw', is quantitatively validated in the second part of the results (RQ2). The EPRES-gw, consisting of seven dimensions and its coding are shown in Table 2.

a) Temporariness

This first dimension aims to capture contract instability, referring to the increase in non-standard contracts and the corresponding increase in flexible work forms (Julià et al., 2017). Permanent contracts are considered the least precarious, while deviations of the permanent contract type (e.g. forms of temporal or triadic employment) are considered precarious to various extents (Vanroelen et al., 2021). Traditional indicators for this dimension are contract type, short tenure (in permanent employment) and contract duration. The underlying rationale is that an employment contract acts as the main gateway for labour protection (Hotvedt, 2018).

The contractual status is perhaps the most discussed aspect of (food delivery-) gig work. Many food couriers tend to work as self-employed independent contractors, but it has been argued that this status does not truly reflect the employment relationship between food couriers and the platforms (De Stefano & Aloisi, 2018). Namely, because food couriers do not have the required autonomy that is associated with self-employment, but yet bear the risks that come with self-employment (Eurofound, 2018). For example, food couriers technically only work for one client

(the platform) and yet find themselves in socially vulnerable positions (e.g. no access to social security). To operationalise this dimension for food couriers, it should therefore be taken into account that their contracts are by default uncertain and temporary and often take place in a legal 'grey zone' (Vallas & Schor, 2020). Nevertheless, despite this 'general uncertainty', food couriers work statutes are still quite heterogeneous. Their terms and conditions vary (e.g. wages), and they do not always share the same characteristics (e.g. student job or not) (De Stefano & Aloisi, 2018). The challenge for the adaptation of this dimension is thus to capture this variation.

Open-ended contracts tend to be very scarce among food couriers and many work as job students (Vandaele, Piasna & Drahokoupil, 2019). The latter usually have a relatively favourable and transparent employment status, including a tax advantage applicable to all student-workers. They are also insured for work accidents and should have a clear contract duration that is set in advance (Rijksdienst voor Sociale zekerheid, 2021). Interim jobs, contracts of temporary duration and flexi-jobs are moderately stable. They have in common that they are fixed in time and that there is a certain degree of social protection and social security entitlement (VDAB, 2021). Couriers working as self-employed (the majority of the couriers) are argued to find themselves in an unstable employment situation as platforms can terminate without prior notice (Drahokoupil & Piasna, 2019). Moreover, self-employed are responsible for compliance with all registration procedures, the management of financial and administrative aspects of their work and revenue, and have to pay for their social security themselves (Deliveroo, 2021). Finally, it can be assumed that the most precarious contractual situation occurs when couriers work without a contract, or are not aware of the contract which they are working with.

In addition to the contractual indicator, there was also added a question to the survey on driving with an account under a different name. Two respondents in the pilot round (n=12) reported this as a missing aspect of the questionnaire. This was also discussed in other literature (see, for example: Zuev, Psarikidou, & Popan, 2021). The disadvantage of including this question is that respondents may feel threatened and quit the survey (see section 4.1.1). The amount of missing responses on this question was 10.3 %. Furthermore, the chances of couriers answering honestly may be low. It was therefore chosen not to include this aspect in the final version of the scale, although conceptually it is a relevant indicator.

b) Disempowerment

'Disempowerment' is a dimension that consists of two subdimensions: collective representation and the involvement of the individual employee in the regulation of employment conditions, such as working hours or the way of doing ones job (Vives et al., 2011). Social dialogue and collective

bargaining are key elements of the industrial labour relations, especially in Belgium where unionisation is strong (Vandaele, 2018). Collective representation is also an important factor in protecting the rights and employment conditions of workers (Vosko, 2006).

Trade unions find it difficult to represent platform-based couriers, inter alia because the regular institutional frameworks do not apply to them (Dunn, 2020). Furthermore, the job of platform-based food courier raises new social questions for trade unions. For example, questions on privacy protection because the job involves data collection on workers by the platforms and the so-called 'algorithmic management' of workers via apps (Rosenblat & Stark, 2016). Finally, many couriers hold this job as a second job and the turnover among food couriers is very high, which makes it difficult for trade unions to (permanently) retain these workers (Vandaele, 2018). The limited impact of trade unions discussed earlier in the general observations from the fieldwork illustrates this. Consequently, new trade union models emerge, both on- and offline (Vandaele, 2018). These developments pose a challenge regarding adapting the essential dimension of (collective) representation and voice for food couriers.

Unions are trying to adapt to this changing situation by launching new initiatives to reach gig workers (Vandaele, 2018). In addition to trade unions, alternative courier collectives emerge (Vandaele, 2018). Although these collectives often have stem from trade unions, they are separate organisations with their own name and board. An example of this is the collective 'Coursiers en Luttes' ('Struggling couriers'), which stems from the youth work of the Christian trade union (i.e. JOC/MOC) and was founded during the period of the study[3]. In order to account for this diversity of interest groups, the questionnaire did not only ask about trade union representation, but about any form of interest representation.

The operationalisation of the second aspect of disempowerment, the individual participation of workers in their employment conditions, could be taken from the original EPRES-be (see Table 2). The autonomy that couriers have with regard to their working hours, tasks, way of doing their job, etc. is often propagated as an advantage of the job by platforms (Lehdonvirta, 2018) and is one of the main motivations for couriers to do this job (Kilhoffer et al., 2019). However, this supposed autonomy has been challenged in research (e.g. Vallas & Schor, 2020). It is therefore important to evaluate this aspect of precarity in empirical research.

c) Workplace rights

This dimension reflects a lack of entitlement to established workplace rights (e.g. paid holidays,

[3] https://www.facebook.com/Coursiers.en.lutte

paid sick leave, pensions, taking time off for important reasons, …) (Vanroelen et al. 2021). It aims to evaluate to what extent acquired workplace rights are undermined in (precarious) jobs (Vives-Vergara et al., 2017).

As was already discussed in the background, due to their lack of employee status, food couriers are generally not entitled to unemployment benefits or labour protection, and have no right to occupational health care (Juntunen, 2017). This dimension thus concerns a similar adaptation-problem to the temporariness-dimension because the vast majority of food couriers are potentially exposed to sub-optimal rights (De Stefano & Aloisi, 2018). In other words, a degree of 'variation in rights' should be sought within a group of workers who are not generally entitled to established workplace rights. Therefore, alternative rights were sought in the literature and through the fieldwork. The four indicators used for EPRES-gw are highlighted below.

First, some platforms offer equipment (e.g. helmet, bicycle, clothing, etc.) to their couriers, either for rent or sometimes free of charge (Kilhoffer et al., 2019). Others do not, and in that case, couriers must provide the equipment themselves. The cost of the equipment is then deducted from the income earned by couriers. Couriers who are (partly) reimbursed for their equipment have an advantage. Furthermore, if there is something wrong with the equipment, replacement can also be arranged if the platform provides it (Kilhoffer et al., 2019). Otherwise, the courier in question is responsible for the repair costs. The second and third indicator of workplace rights concerns a lack of insurance (accidents and damage to third parties). Previous research has already shown that this is one of the major concerns of food couriers (Kilhoffer et al., 2019). Some platforms offer insurance in case of accidents, but many couriers drive around unprotected (CEPS, 2021). Informal interviews during the fieldwork also showed that couriers are concerned about this, especially because should there be a problem, they do not only have to pay for the costs themselves but are also incapacitated and thus unable to earn an income (Location 5 , author's own fieldnotes Keyperson 1). Fourth, some platforms (e.g. Take-Away) offer their (employed) couriers a fixed wage on top of the additional amount that they receive per order (De Groen et al., 2018). As such, a certain degree of stability is provided during the periods with fewer orders. In the fieldwork, the difference in dissatisfaction between couriers who were entitled to this right and those who did not was indeed noticeable. Particularly during the period of Ramadan when the number of orders fell very sharply: *Today I had a long conversation with a young courier of Macedonian origin. After a while, I asked him if he had any runs and if he minded that it took so long. "No, now I'm paid to do nothing," he said, laughing. That is a very contradictory reaction compared to the negative attitude of most couriers I have spoken to in recent days... (Location 16, author's own fieldnotes April 14th).*

In the original EPRES, 'workplace rights' consists of a second subdimension 'exercise of rights' (see table 2) which gauges the possibility of actually enforcing the acquired rights (Vanroelen et al., 2021). However, this subdimension was not included in the EPRES-gw as couriers have no legal grounds on which they can enforce the above rights (De Stefano & Aloisi, 2018). These are rather 'favours' from the platform.

d) Vulnerability

The dimension of vulnerability aims to detect adverse aspects in the interpersonal relationship with an employer (e.g. discrimination) and possible inaccuracies in administrative arrangements (e.g. payment of wages) (Julià et al., 2017). It typically consists of four subdimensions: authoritarian treatment, abusive treatment, being uninformed and being cheated (Vanroelen et al., 2021).

The most important difference with employees, and thus the challenge in adapting this dimension for food couriers, derives from the fact that there is no dual relationship between an employer and employee. Rather, there is a so-called triangular relationship between the courier, the intermediary platform and the customer (Stewart & Stanford, 2017). Food delivery platforms position themselves as companies that do not offer delivery-services but only operate as 'neutral' market intermediaries (Rosenblat & Stark, 2016). Therefore, there is very little direct contact between the platform and the courier. A lot of food couriers work through a platform without ever having spoken to anyone from that platform (Waters & Woodcock, 2017). The challenge is therefore to evaluate the aspects of vulnerability within this indirect relationship.

Despite that triangular employment relationship, the platform does instruct, monitor and evaluate food couriers from a distance. Work settings and jobs are assigned, optimised, and evaluated through algorithms and tracked data (Lee et al., 2015). Hence, there may also be instances of abuse, inaccuracies, authoritarian treatment, etc. The four sub-dimensions used in EPRES-gw are briefly explained below.

First, couriers' performances are evaluated by the algorithm through which the platform app operates. Platforms collect information about couriers' delivery speed, percentage of refused rides, customer reviews, etc. (Sutherland & Jarrahi, 2018). How this happens and what criteria are being used is very unclear (Sutherland & Jarrahi, 2018). This leads some authors to speak about an information asymmetry between the worker and employer (Rosenblat & Stark, 2016), which makes the detection of any potential discrimination more difficult. The dimension of abusive

treatment therefore gauged the feeling of being discriminated at work and fear of arguing about it. Second, sometimes couriers are 'fired' by having their accounts blocked based on these evaluations (Schmidt, 2017). It happened during the fieldwork that a courier told me about this: *A man (I estimate between 35 and 40) shows me an e-mail on his mobile phone saying that his orders are not delivered fast enough, that there have been complaints from customers and that his account might therefore be blocked. He is angry that he cannot contact the platform and cannot defend himself. He also says that the slow deliveries are due to restaurants taking too long to prepare orders and that it is not his fault (Location 5, author's own fieldnotes April 18th).* Therefore, in the dimension of 'authoritarian treatment', fear of being excluded from the platform and the feeling of being easily replaceable were probed. This fieldwork observation also confirmed the importance of a question in the survey about being able to contact the platform in case of any problems (in the subdimension of 'being uninformed'). Last, for the subdimension of being cheated, the original indicator from the EPRES could be taken (see table 2) as it questions whether wages and other conditions are paid out correctly. Recent literature shows that in some cases there are complaints from couriers about unfair disbursements, for example because they were not at the right delivery-location (CEPS, 2021). Again, this relates to a lack of clarity about the criteria used to make such decisions.

e) Undesirable working times

This dimension of the EPRES aims to evaluate the undesirable nature of working times (Vanroelen et al., 2021) based on the idea that irregular, excessively long, unpredictable and unsocial working hours are often problematic for the well-being of workers (Bannai & Tamakoshi, 2014). The irregularity of working hours (e.g. often having to be stand-by for work) (Vanroelen et al., 2021) occurs with couriers in the form of 'unpaid overtime' and is dealt with in the economic unsustainability dimension (see paragraph f). The extent to which couriers have control over their own working hours ('unpredictable working times') is included in the disempowerment dimension (see table 2). The dimension of working hours is therefore concerned with the two remaining subdimensions: the (high) average number of hours worked per week and the (unsocial) times during which couriers work.

The challenge of adapting this dimension to food couriers is capturing the difference between workers who do it as their main job and those who have another job(s). The job of platform-based food courier is usually practiced as a student job or combined with another job (Kilhoffer et al., 2019). The number of working hours per week should therefore be much lower, on average, than for full-time workers. This is also confirmed by the (scarce) figures that exist on the subject: Drahokoupil and Piasna (2019) found out that couriers worked, on average, only 23 hours per month (i.e. one-tenth of what a full-time job would be in Belgium). However, some couriers also

do this as their main job. They generally find themselves in much more precarious positions because they cannot fall back on (the certainties of) another job and depend entirely on the (strongly fluctuating) income of their food delivery jobs (Schor et al., 2020). A high number of working hours in this job therefore usually indicates a disadvantageous employment situation. Therefore, the survey asked how many hours per week on average people worked as couriers. The coding of this question was based on the assumption that working more than 32 hours per week as a courier (4 days of 8 hours) is too much to be considered a 'side job' and that this indicates a high(er) degree of dependence on the job.

The second aspect evaluated in this dimension is the extent to which couriers' working hours interfere with their social life. Food couriers are typically working at moments when most people have leisure time and relax (e.g. during lunch breaks, in the evening, during weekends, on a public holiday, etc.) (Drahokoupil & Piasna, 2019). Other literature already showed that these unsocial working hours are a significant psychosocial risk factor for gig workers, as it can be detrimental to the work-life balance and family life (Bérastégui, 2021). Therefore, the survey also enquired how many times on average people work during the evening, weekends, public holidays, etc.

f) Economic unsustainability

Economic unsustainability is a dimension that aims to capture different aspects of remuneration problems (Vives et al., 2010). This extends beyond monthly pay to also encompass non-wage benefits, involuntary over/under-employment and unpaid overtime (Vanroelen et al., 2021).

The biggest challenge in adapting this dimension to food couriers concerns the correct interpretation of (low) incomes in relation to potential other job(s) and employment status (student, unemployed, etc.) and finding alternative indicators for traditional economic remuneration among employees.

First, it became clear from the fieldwork and the literature that couriers do not always know exactly how much their net income is, as it is usually very volatile (Goods et al., 2019) and the taxations that vary by employment contract are not always clear (Eurofound, 2018). Therefore, an estimation of the average gross monthly income was surveyed. Since the job of food courier is typically characterised by short working hours, this usually translates into relatively low monthly incomes (Vandaele, Piasna & Drahokoupil, 2019). The impact of those (low) incomes on economic stability differs vastly according to the dependency on that income (Schor et al., 2020). Hence, wage standards generally used to classify workers do not apply to food couriers. Nevertheless, there is a variation in payment even within these generally low incomes. The previously

mentioned differences in the allocation of rides by the algorithm (Rosenblat & Stark, 2016) plays a role in this, but also the amount of deliveries that a courier can make in a certain time (depending on the vehicle, personal speed, age, etc.). This was illustrated when Deliveroo went public and promised to distribute shares among its 'most loyal riders' (The Guardian, 2021a). This meant that the couriers who had been working for the platform for at least a year and had delivered the most orders (i.e. performed best) would be rewarded (The Guardian, 2021a). In order to capture wage variation within these generally low incomes, they were coded by quartile in the EPRES-gw (see Table 2). As such, classification is based on the distribution of incomes rather than on a predetermined, uniform wage standard - precisely because the impact varies so much.

Given this dubious role of income, other subdimensions should also be taken into account to capture economic unsustainability. The second subdimension concerns a lack of non-wage benefits. In the case of employees, this is usually operationalised as access to eco-vouchers or consumption vouchers (Vandevenne et al., 2020), but for couriers alternative benefits should be explored. During the fieldwork, informal discussions with couriers regularly revealed dissatisfaction with the loss of non-wage benefits that were previously provided, such as rain premiums and peak period premiums (Keyperson 1, author's own fieldnotes December) but also covid-premiums (location 5; 6, author' own fieldnotes March). This is also mentioned in the literature (e.g. CEPS, 2021) and therefore questioned in the survey. The third subdimension, 'unpaid overtime' is frequently mentioned as an aspect of the economic instability of food couriers (Bérastégui, 2021). Due to long waiting times in restaurants and at customers' premises, traffic congestion or other obstacles on the road, couriers sometimes work longer, unpaid hours within the system of piece-rate payment (De Groen et al., 2018). Therefore, in the survey 'unpaid overtime' was operationalised as the percentage of (unpaid) waiting times. The last dimension, underemployment, could be taken from the original EPRES without much modification (see table 2) and reflects the overall satisfaction with the available number of working hours per week.

g) Low employability opportunities

This last dimension measures the extent to which a job is a so-called 'death-end job', or in other words a job with no possibilities for developing an internal labour market career (Vanroelen et al., 2021). The indicator that is used for this dimension in the EPRES is 'access to employer subsidised training' (Vandevenne et al., 2020). Training can serve as a career driver, both within a profession and an overall career (Campbell & Price, 2016).

The challenge in adapting this dimension, again lies in accounting for the heterogeneity of the group of food couriers. Their heterogeneous profiles make it difficult to determine to what extent

the job of courier contributes to a career in a more stable, formal job (Schor et al., 2020). For example, a job as courier may offer a very different career perspective for a young student than for an older man whose foreign diploma is not recognised in Belgium.

Nevertheless training is an important dimension for food couriers because, as indicated in the background, the turnover in these jobs is very high (Vandaele, 2018). Therefore, the obtained job resources of couriers should be captured. Moreover, platforms often propagate that the job of courier can be a stepping stone to a long-term career (e.g. 'Deliveroo Academy'). Some platforms do offer couriers trainings. For example, DLP Deliveroo in Italy developed e-learning platforms with courses on road safety, health and safety at work (CEPS, 2021). However, training for food couriers is still rather scarce and the training that is offered is usually very basic (e.g. learning how to use the app) (De Groen et al., 2018). The value of a training is likely to vary greatly from courier to courier.

To account for this heterogeneity, the concept of 'training' was approached in a broad way. It was surveyed whether couriers themselves think that the job gives them the opportunity to learn something new.

Table 2 *Operationalisation of the EPRES-gw based on employment research in Belgium and adapted to food couriers. Similarities and differences with the original EPRES-Be.*

Dimensions	Original EPRES-Be	EPRES-gw for food couriers	Indicators Response options and coding (0 = least precarious, 1= most precarious)
1. Temporariness	**Type of contract** Contract of indefinite duration or not	**Variations within unstable contracts** A contract of indefinite duration, a job student, a temporary contract, an interim job, a flexi-job, a self-employed contract (P2P, fully independent, student-self-employed) or no contract	**Variations within unstable contracts:** With what contract do you work as a food courier at your platform? 0. As an employee with a contract of indefinite duration + As a job student 0.33 As an employee with a temporary contract + As an interim job + As a flexi-job 0.66 As a self-employed (P2P, fully independent) + As a self-employed student 1. No contract + I don't know
2. Disempowerment	**No worker representation** Involvement of trade unions in the regulation of the following working conditions: hourly wages and salaries; social benefits and rights	**No worker representation** Being a member of an organisation that defends food couriers interests (including alternative interest groups)	**No worker representation** Are you a member of an organisation that defends your interests? 0. Yes (trade union or riders collective) 1. No
	No participation in workplace issues Involvement of the worker in the regulation of the following working conditions: the work tasks of the day; the weekly or monthly schedule	**No participation in workplace issues** Involvement of the worker in the regulation of the following working conditions: how often one works; which jobs one can take on; the way one does their job; the working times	**No participation in workplace issues** (α=0,812) How are the following four aspects of your work arranged? Think about the most common situation. *How often I work.* *Which jobs I take on.* *The way I do my job.* *The times when I work.* 0. I choose this myself 0.5 I partly choose this myself, and partly depend on the platform and the app 1. It is imposed on me without consultation by the platform and the app

3. Workplace rights	**Lacking access to established workplace rights** (e.g. paid holidays, paid sick leave, pensions, taking time off for important reasons, …)	**Variations within a lack of workplace rights** (e.g. contributions to the costs of equipment, medical insurance, a fixed wage, etc.)	**A lack of four workplace rights** (α=0,774) *"My platform contributes to the costs of my equipment (e.g. a helmet, bicycle, clothing, mobile phone, ...)"* *"If I have an accident while performing my job, I am medically insured"* *"If I cause damage to third parties or their goods during my work, I am insured"* *"I am entitled to a fixed wage in addition to the amount I receive per order delivered"* 0. Totally agree + Slightly agree 0.5 Partially agree, partially disagree 1. Slightly disagree + Totally disagree + I don't know
	No exercise of rights Not being able to exercise the rights one is entitled to	**No exercise of rights** This subdimension was not included because couriers cannot legally enforce the above rights, as they are not entitled to them	
4. Vulnerability	**Authoritarian treatment** Adverse aspects in an authoritarian relationship between employer and employee (e.g. fear of asking for better working conditions, worrying about dismissal if someone is temporarily underperforming, feeling easily replaceable, etc.)	**Authoritarian treatment** Adverse aspects in an authoritarian relationship with the platform through the app and the associated algorithm (e.g. being concerned about exclusion from the platform, feelings of being easily replaceable, etc.)	**Authoritarian treatment** (α=0,615) *"If I temporarily underperform at work, I should be concerned about fewer job opportunities, less wage or exclusion from the platform"* *"If I were to participate in a protest action, I should be concerned about less job opportunities, less pay or exclusion from the platform"* *"The platform through which I work (most) for gives me the feeling that I am easily replaceable.* 0. Slightly disagree + Totally disagree 0.5 Partly agree, partially disagree + I don't know 1. Totally agree + Slightly agree
	Abusive treatment Abusive treatment by the employer towards the employee (e.g. discrimination, psychological and/or verbal abuse)	**Abusive treatment** Abusive treatment by the platform through the app, the associated algorithm and in relation to customers and restaurants (e.g. being treated unfairly or discriminately at work and fear to argue about it)	**Abusive treatment** (α=0,637) *"I am treated unfairly or discriminately at work"* *"If I were to be treated unfairly, I wouldn't dare to argue."* 0. Slightly disagree + Totally disagree 0.5 Partly agree, partially disagree + I don't know 1. Totally agree + Slightly agree
	Being cheated Incorrect administration of wage and employment conditions (e.g. payment of wages and bonuses)	**Being cheated** Incorrect administration of wage	**Being cheated** *"The payment of my salary and optional premiums usually happens correctly."* 0. Totally agree + Slightly agree 0.5 Partially agree, partially disagree + I don't know 1. Slightly disagree + Totally

	Being uninformed Being uninformed about the health and safety risks inherent to the job	**Being uninformed** Being uninformed about the health and safety risks inherent to the job and difficulties in communicating easily with the platform in case of a problem	**Being uninformed** (α=0,600) *"I am well informed about the health and safety risks inherent to my job"* *"If a problem arises, I can communicate easily with my platform in order to resolve it."* 0. Totally agree + Slightly agree 0.5 Partially agree, partially disagree + I don't know 1. Slightly disagree + Totally
5. Undesirable working times	**Long working hours** High average amount of working hours per week; High amount of overtime hours per week	**Long working hours** High amount of working hours per week as a courier on the platform through which one works most, indicating more dependence on this job	**Long working hours** How many hours per week do you work on average as a courier with the platform through which you work most? 0. 0-16 hours a week 0.5 17-32 hours a week 1. More than 32 hours a week
	Working times irregularity Often being stand-by for work	**Working times irregularity** Treated in the economic instability-dimension: unpaid overtime	
	Unpredictable working times Changing work schedules on a regular basis and not (or at the last minute) being informed of the changes	**Unpredictable working times** Treated in the disempowerment dimension: participation in setting working times	
	Work at 'unsocial' times Work often per month during the following moments: between 5 pm and 10 pm; nights; Saturdays; Sundays; during a public holiday	**Work at 'unsocial' times** Work often per month during the following moments: between 5 pm and 10 pm; weekends; during a public holiday	**Working during 'unsocial' times** (α =0,688) Can you indicate how often you work on average per month at the following times? *"I work ... between 5 pm and 10 pm"* *"I work … on weekends"* *"I work ... on a public holiday"* 0. Never + I don't know 0.33 Sometimes 0.66 Regularly 1. Always
6. Economic unsustainability	**Low income** Low monthly net income from main paid job	**Low income** Low monthly gross income out of the job of courier via the platform through which one works most	**Low income** What is your monthly gross income (net of tax) that you earn as a courier via the platform through which you work most? 0. Two highest income quartiles 0,5. Second income quartile 1. Lowest income quartile

	Lack of non-wage benefits i.e. Eco vouchers, meal vouchers, gift vouchers	**Lack of non-wage benefits** i.e. Rain premium, corona premium, peak period premiums	**Lack of non-wage benefits** *"I am entitled to at least one of the following reimbursements: rain premium, corona premium, peak period premiums"* 0. Totally agree + Slightly agree 0.5 Partially agree, partially disagree 1. Slightly disagree + Totally disagree + I don't know
	Unpaid overtime Treated in the working times-dimension (i.e. working times irregularity)	**Unpaid overtime** High amount of unpaid working hours (e.g. waiting for an order, waiting for a ride,…)	**Unpaid working time** How many of your working hours are unpaid (e.g. waiting for an order at a restaurant, waiting for a ride that you can accept,…)? 0. < 10% 0.5 10% - 40% 1. > 40%
	Underemployment Being involuntary part time employed and/or wanting to work more hours than actually working	**Under/overemployment** Not being satisfied with the amount of hours per week that one can work as a courier, both too many and too few working hours	**Under/overemployment** Are you satisfied with the amount of hours per week that you can work as a courier? 0. Yes 0.5. No, I would like to work less 1. No, I would like to work more
7. Low employability opportunities	**Lack of training opportunities** Have not attended any training paid for or provided by the employer in the past 12 months	**Lack of opportunities** Not being given the opportunity to learn something new	**Lack of opportunities:** *"The platform through which I work (most) offers me the opportunity to learn something new."* 0. Totally agree + Slightly agree 0.5 Partly agree, partially disagree + I don't know 1. Slightly disagree + Totally disagree

4.2 Quantitative results: validation of the EPRES-gw

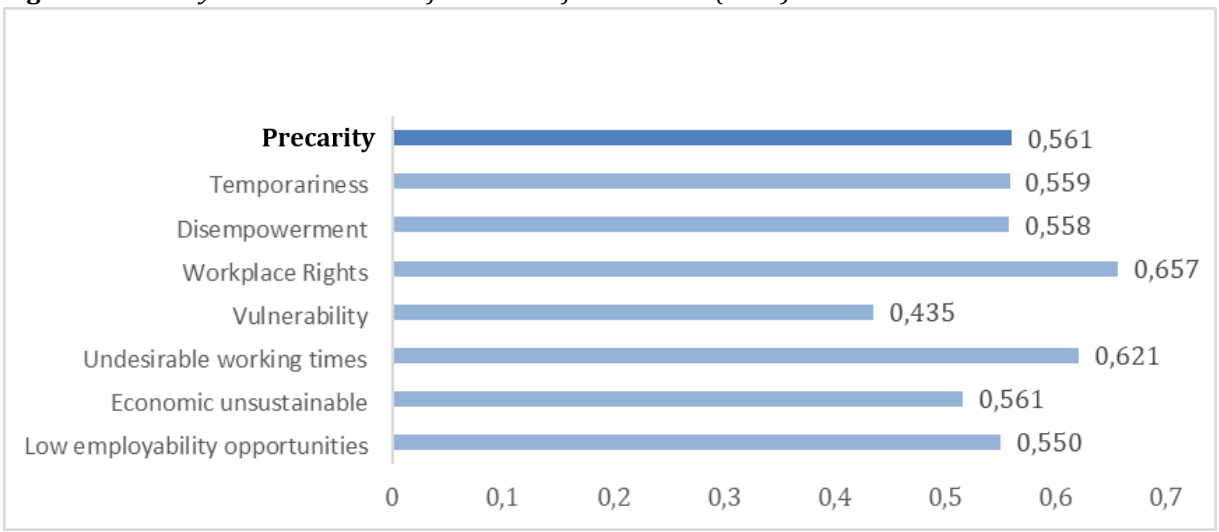
In this second part of the results the EPRES-gw (n=99) is quantitatively validated (RQ2) in two steps, respectively a reliability test and an external validation.

4.2.1 Reliability

EPRES-gw was constructed as shown in Table 2. The sample size consisted of 70 respondents. A means imputation was performed on the scale. This means that missing values on the dimensions were replaced by the averages of at least five of the other seven dimensions (Hill, 1997). The final imputed EPRES-gw scale contains 99 respondents. The imputed scale and the original scale differ little in their scores on descriptive statistics and relationship to poor well-being, as the sensitivity analysis shows (see appendix). Table 2 also shows the coding of the (sub)dimensions of the EPRES-gw. The Cronbach's Alpha is always indicated when a subdimension contains more than one item. All the scores are above 0,6, indicating a good reliability (Ahmad, Zulkurnain, & Khairushalimi, 2016). The appendix also contains a correlation matrix of EPRES-gw and the sub-dimensions (see Table A2).

Figure 1 shows the mean scores on the precarity scale and its sub-dimensions. The mean score on precarity for all couriers in the sample is 0,561 (a score of 1 expresses the most precarious situation). The dimensions 'workplace rights' (0,657) and 'undesirable working times' (0,621) have the highest mean scores. 'Vulnerability' (0,435) has the lowest mean score.

Figure 1 *Precarity and its dimensions for Brussels food couriers (n=99)*



***Source**: Epres-gw survey, own analysis.*

4.2.2 External validity

Table 3 shows the EPRES-gw scores for a range of demographic and socio-economic groups. The analysis of variance does not show any significant differences (p>0,05). A few groups show larger (but insignificant) differences. Employment status shows larger differences between groups, especially for the respondents who work exclusively as food couriers and have no other job. They

score higher on both precarity (0,608) and poor well-being (0,506). Also for educational level, a larger difference can be noted between the couriers with a diploma that is not recognised in Belgium and the other groups. Couriers with an unrecognised diploma score the worst on both precarity (0,582) and poor well-being (0,488).

Table 4 shows the correlations between EPRES-gw and its dimensions with poor well-being. Precarity correlates significantly and positively with poor well-being (ρ= 0,373 ***). Three of the seven dimensions of precarity individually also correlate significantly and positively with poor well-being. These are respectively workplace rights (ρ=0,480 ***), economic unsustainability (ρ=0,412 ***) and disempowerment (ρ= 0,238 *). The statistical relationship between EPRES-gw and poor well-being is further explored in Figure 2, which shows the average scores on poor well-being per precarity-quintile. Leaving aside a slight deviation in quintile 2, a gradual pattern can be observed whereby higher scores on poor well-being can be recorded in the highest precarity quintiles.

Table 3 *Precarity scores and poor well-being scores per demographic and socio-economic group (n=99).*

	Precarity		**Poor well-being**	
	Mean (S.D.)	n	Mean (S.D.)	n
All workers	0,561 (0,138)	99	0,419 (0,217)	96
Sex (non-sig. p-value)				
Male	0,565 (0,138)	87	0,410 (0,218)	88
Female	0,506 (0,158)	8	0,520 (0,184)	8
Age (non-sig. p-value)				
25 or younger	0,546 (0,138)	50	0,428 (0,213)	51
26 – 35	0,584 (0,143)	36	0,404 (0,234)	36
Older than 35	0,520 (0,138)	8	0,425 (0,196)	8
Educational level (non-sig. p-value)				
No education + Higher secondary education	0,541 (0,149)	34	0,381 (0,221)	35
Higher education	0,570 (0,142)	43	0,419 (0,209)	42
Unrecognised diploma	0,582 (0,157)	15	0,488 (0,241)	16
Employment Status (non-sig. p-value)				
Other job besides food courier	0,571 (0,132)	21	0,328 (0,167)	20
Student	0,532 (0,123)	40	0,433 (0,171)	42
Looking for a job	0,567 (0,156)	19	0,428 (0,260)	20
Exclusively working as a food courier	0,608 (0,186)	12	0,506 (0,290)	11
Migration background (non-sig. p-value)				
Born in Belgium and both parents born in Belgium	0,532 (0,121)	15	0,405 (0,166)	15
Born in Belgium and (one of the) parents not born in Belgium	0,587 (0,143)	27	0,383 (0,232)	26
Not born in Belgium and (one of the) parents not born in Belgium	0,555 (0,145)	52	0,433 (0,223)	54

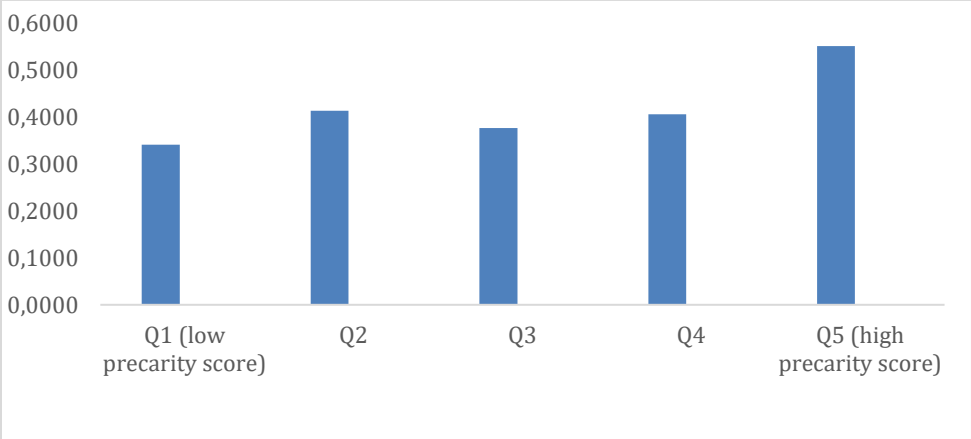
***Source**: EPRES-gw survey (own analysis). ANOVA, t-test and post hoc test with Bonferroni correction; S.D. = Standard deviation; Sig. = Significance level.*

Table 4 *Pearson correlations between precarity, its dimensions and poor well-being*

	Poor well-being	
	ρ (Sig.)	n
Precarity	0,373 (***)	93
Temporariness	-0,063	91
Disempowerment	0,238 (*)	91
Workplace Rights	0,480 (***)	87
Vulnerability	0,136	93
Undesirable working times	0,064	88
Economic unsustainability	0,412 (***)	88
Low employability opportunities	0,189	96

Source: *EPRES-gw survey (own analysis). * p<0,05, **p<0,01, ***p<0,001. Sig.= Significance level.*

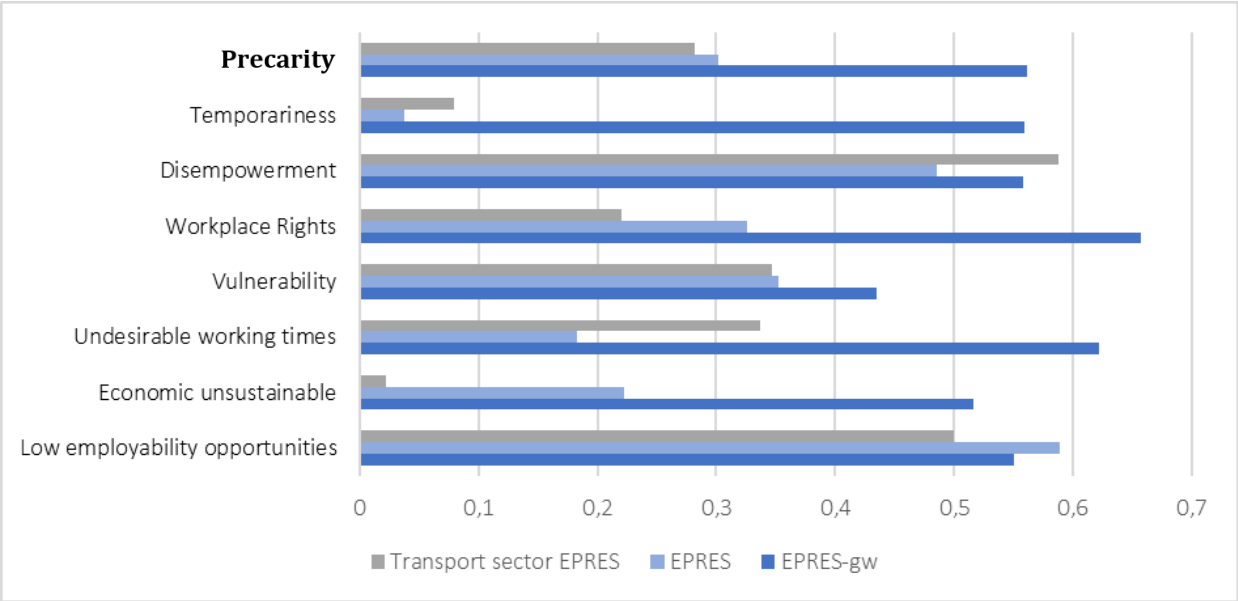
Figure 2 *Average scores on poor well-being for EPRES-gw, divided into quintiles*



Source: *EPRES-gw survey (own analysis).*

Figure 3 completes the external validation and concerns a general comparison between three groups. These are 1) EPRES-gw (the precarity scale constructed in this study for food couriers), 2) EPRES (a precarity scale constructed in 2019 based on data collected among 2332 Belgian employees: Vandevenne et al., 2020) and 3) the group of employees working in the transport sector from the EPRES sample (n=50). The comparison between the two scales should be interpreted with caution given the difference in both sample size and scale composition. Nevertheless, EPRES-gw is constructed in such a way that the dimensions should theoretically reflect the same as the EPRES-Be dimensions and both scales - as indicated above - showed a similar relationship with poor well-being. The food couriers score on average higher on precarity (0,561) than the other two groups (EPRES: 0,302 and EPRES-Transport: 0,282). A look at the dimensions shows that the biggest differences between the food couriers and the other groups can be found in the dimensions of 'temporariness, 'workplace rights', 'undesirable working times' and 'economic unsustainability'. On the other hand, the differences between the employees in the transport sector and the gig workers in food delivery are smaller in the dimensions of 'low employability opportunities' and 'disempowerment'.

Figure 3 *A comparison between EPRES transport sector (n=50), EPRES (n=2332) and EPRES-gw (n=99)*



Source*: EPRES-gw survey (own analysis).*

5. Discussion

This pilot study developed a measuring instrument to assess precarity in the population of gig workers and tested it with Brussels platform-based food couriers. The measuring instrument was based on the Employment Precariousness Scale (EPRES), but adapted to the target population. As food couriers are known to be a hard-to-reach population, fieldwork was used to boost the number of responses (RQ1). The initial insights from the fieldwork were also used to support the adaptation process of the scale. The final scale was then validated to determine its metric potential (RQ2).

Eventually, 123 Brussels food couriers were reached through fieldwork carried out by one researcher over a period of three months. Given the lack of quantitative data, fieldwork thus proves to be a promising strategy to recruit gig workers in the future (De Leeuw & Hox, 1998). However, the results also showed that couriers set certain boundaries when being approached to participate in research. The role that researchers adopt and their performance in the field have an important influence on the willingness to participate (Lisiak, 2015). For example, the initiating steps in the field showed that gender could be a factor in this. The influence of the researcher of course applies to all forms of fieldwork, but is especially something to take into account in a hard-to-reach population (Pawelz, 2018). Other authors have already addressed the lack of good reach-out methods in this respect. Badger and Woodcock (2019) for instance advocate for an 'engaged ethnographic approach' for gig workers. In-depth and wide-ranging fieldwork that pays sufficient attention to the characteristics and sensitivities of the population builds on their thesis and could contribute to the *"longer conversation about what kind of research is appropriate - and needed - to*

confront the changing nature of work and work quality in the contemporary economy" (Badger & Woodcock, 2019, p.7). For example, the notion of the limited impact of advocacy groups, that emerged in the results, is a useful preliminary observation for a targeted, more tailored reach-out approach. Instead of trying to capture the aspect of voice and representation of gig workers through traditional channels (e.g. contact with trade unions), perhaps more thought should be given to alternative ways (e.g. occupying public space in a city: Gregory & Maldonado, 2020) and places (e.g. online riders group and forums: Vandaele, Piasna & Drahokoupil, 2019) in which and through which gig workers make themselves visible and audible.

In addition to the insights on the reachability of food couriers through fieldwork (RQ1), this study also conducted an adaptation and validation of the EPRES-gw scale (RQ2). The adaptation process of the EPRES indicated certain operational constraints for couriers (e.g. the heterogeneity of the group, thresholds that are not usable, a triangular employment relationship with the platform etc.) and thus confirmed the importance of 'translating' the concept of precarity to the context of gig workers (Kahancová et al., 2020). Nevertheless, the seven-dimensional conceptualisation of precarity proved theoretically useful in addressing the various employment aspects of gig work, even though it was originally developed for employees. This was confirmed by the quantitative validation of the scale. The scale showed good reliability with Cronbach's Alpha's above 0,6 in the sub-dimensions (hypothesis 2.1). The external validation showed that the EPRES-gw scores vary across different demographic and socio-economic groups (hypothesis 2.2). However, no significant differences could be identified. This is possibly due to the small sample size (e.g. the sample consisted of only eight women). Furthermore, the most remarkable and important conclusion of this study is perhaps the high, positive correlation between the EPRES-gw and poor well-being (hypothesis 2.3). Given that the capture of the relationship between precarity and poor well-being is such an essential feature of the EPRES scale (Benach et al., 2014), this provides a strong argument for the generalisability of the EPRES to address precarity among food couriers. It also provides opportunities and perspective to further develop the scale for other groups of gig workers. Despite the fact that a number of dimensions also correlated separately with poor well-being, the significant correlation with the full scale demonstrates that it is the accumulation of the seven dimensions that establishes a precarious work situation (Vosko, 2006). Finally, the comparison between EPRES-gw (for food couriers) and EPRES-Be (from previous research on Belgian employees) (hypothesis 2.4) also proved useful. Despite the inevitable differences between the two scales, the findings are consistent with what we would expect based on the literature. The precarity score of couriers is high compared to transport workers and the entire EPRES-Be sample, indicating that they do indeed have precarious jobs (Friedman, 2014). The largest differences were situated in the dimensions of 'temporariness', 'workplace rights',

'undesirable working times' and 'economic unsustainability'. These are indeed frequently cited negative job characteristics in scientific articles and policy reports on gig work (e.g. Minter, 2017). Moreover, they cover the main demands of trade unions concerning gig workers' rights (e.g. employee contracts, hourly wages, access to occupational healthcare) (Lenaerts & Vandekerckhove, 2020). It is also noteworthy that smaller differences were found in the dimensions of 'disempowerment' and 'low employability opportunities'. This observation aligns with the literature, as the previously discussed fragmentation of trade unions and labour movements (a subdimension of disempowerment) concerns a general trend that is much broader than the gig economy (Vandaele, 2018). Furthermore, the possibility of internal labour market careers through training is also a problem in many other sectors that were included in the EPRES-Be sample (e.g. cleaning sector and construction sector: Vandevenne & Vanroelen, 2020). Hence, this finding contributes to the thesis of several 'precarity-scholars' who theorise gig work as an extreme case within a much wider trend of precarisation (Scholz, 2016; Dundon, 2018; Vallas, 2019).

This study also had some limitations. A first important limitation relates to the heterogeneity of the group of gig workers. As was already mentioned, it is important that a measuring instrument for precarity can distinct between food couriers who do this as their main job, those who do it as a side-job or job students (Schor et al., 2020). This was taken into account in the adaptation process by, for example, avoiding uniform thresholds (such as for 'economic unsustainability') or deliberately approaching certain dimensions in a 'broad' way (such as for 'low employability opportunities'). Furthermore, it was also evaluated whether the precarity scores differed per employment status (Table 3). However, in the instrument itself no distinction was made between these positions (e.g. by applying a different coding per group). Detecting this heterogeneity with a measuring instrument constitutes an important challenge for future research (Schor et al., 2020). A second limitation, related to the previous one, stems from the fragmented nature of gig jobs (Dundon, 2018). Given the high turnover, a one-shot-in-time approach (like in this study) offers little insight into career perspectives and long-term security. This is likely to also vary between gig workers and sectors (Dunn, 2020). In this study, this was briefly touched upon in the dimension of 'low employability opportunities'. Still, more insight is needed into employment trajectories (Dunn, 2020). Mapping the motivations and movements of gig workers across the labour market could provide a relevant contribution in that respect: how long have they been doing gig work; where do they come from and where do they want to go with their careers?

In conclusion, this study has also highlighted a few important issues from a policy perspective. Processes like the 'platformisation' and de-standardisation of labour markets change the

employment conditions and relations (Huws, Spencer, & Holts, 2016) and entail new social risks for the health and well-being of workers (Hauben, Lenaerts, & Wayaert, 2020). Growing numbers of precariously employed gig workers with a poor overall wellbeing undermine sustainable employment in this digital age. Policy makers should therefore take note of these new health risks that extend beyond gig workers' employment status. The upcoming economic recovery phase that will have to lead us out of the covid crisis, offers the perfect opportunity to (re)design labour markets (OECD, 2021) with a stronger emphasis on digital and flexible, but also healthy jobs that are feasible in the long run.

Appendix

Table A1. *Sensitivity analysis precarity scale (EPRES-gw) imputed and not imputed.*

	EPRES-gw (n=70)	**EPRES-gw imputed (n=99)**
Mean (S.D.)	0,557 (0,128)	0,561 (0,138)
Median	0,566	0,571
Pearson correlation with well-being (Sig.)	0,330 (**)	0,373 (***)
Regression with well-being (Sig.)	β = 0,529 (**)	β = 0,581 (***)

Source: *EPRES-gw survey (own analysis). * p<0,05, **p<0,01, ***p<0,001. Sig.= Significance level.*

Table A2. *Pearson correlation matrix EPRES-gw and its dimensions.*

Pearson correlation (Sig.)	**Precarity**	*Temporariness*	*Disempowerment*	*Workplace Rights*	*Vulnerability*	*Undesirable working times*	*Economic unsustainability*	*Low employability opportunities*
Precarity	1	0,333***	0,115	0,644***	0,574***	0,276**	0,486***	0,698***
Temporariness	0,333 ***	1	-0,247*	0,181	-0,147	0,068	-0,029	0,017
Disempowerment	0,115	-0,247*	1	-0,279**	0,028	0,078	0,231*	-0,050
Workplace Rights	0,644***	0,181	-0,279**	1	0,260*	-0,071	0,369***	0,347***
Vulnerability	0,574***	-0,147	0,028	0,260*	1	0,175	0,207	0,359***
Undesirable working times	0,276**	0,068	0,078	-0,071	0,175	1	-0,278*	-0,032
Economic unsustainability	0,486***	-0,029	0,231*	0,369***	0,207	-0,278*	1	0,246*
Low employability opportunities	0,698***	0,017	-0,050	0,347***	0,359***	-0,032	0,246*	1

Source: *EPRES-gw survey (own analysis). * p<0,05, **p<0,01, ***p<0,001. Sig.= Significance level.*

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