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Working Paper

Temps dip deeper: Temporary employment and the midlife nadir in human well-being

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SOEP papers
on Multidisciplinary Panel Data Research

**Temps dip deeper:
Temporary employment and the
midlife nadir in human well-being**

Alan Piper

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Temps dip deeper:

Temporary employment and the midlife nadir in human well-being

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Abstract: Temporary employees rank lower than permanent employees on various measures of mental and physical health, including well-being. In parallel, much research has shown that the relationship between age and well-being traces an approximate U-shape, with a nadir in midlife. Temporary employment may well have different associations with well-being across the lifespan, likely harming people in midlife more than at the start of their working lives. Using over twenty years of the German Socio-economic panel (SOEP), this investigation considers the relationship between temporary employment, age and well-being. In doing so, it both sheds new light on the relationship between temporary employment and well-being, and explores a reason for the oft-found U-shaped relationship between age and well-being. The results show that temporary employment deepens the U-shape in midlife, and that this result holds when many socioeconomic factors as well as the industry, region, cohort, personality, employment security and job worries are taken into account. Furthermore, the investigation considers transitions between permanent and temporary employment and uses these to assess causation and selection.

Key words: temporary employment; permanent employment; age; life satisfaction; SOEP

JEL codes: I31; J41.

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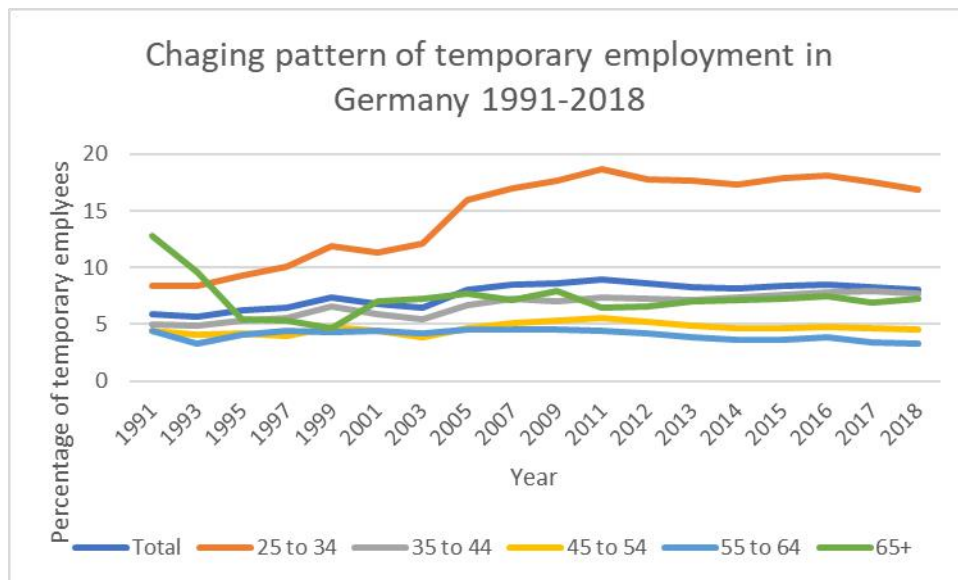
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Temps Dip Deeper: Temporary employment and the midlife nadir in human well-being

Section 1: Introduction

Over the past four decades, the labour market in many developed countries has loosened. During this process, one key trend has been the increasing use of temporary employees in many industries. Germany, the country on which this investigation is focused, is no exception. Since the 1980s, use of temporary employment has substantially increased in Germany. Straightforward comparisons between then and now cannot easily be made because both the law around temporary employment and how it is measured in official statistics have changed over this time period. Despite this caveat, the official figures presented in Figure 1 just below show the change since the early 1990s. In the mid 1990s, the start of the data used for the empirical analysis, around 6% of all employees aged above 25 were temporarily employed. This had increased to about 8.5% in the mid 2010s. Furthermore, the table also indicates that it is the young who have experienced this increase in temporary contracts more than any other age range: those employees younger than 34 (but at least 25 years old) have experienced a doubling in their number on temporary contracts. In contrast, the proportion of the middle aged on such contracts has not changed much.¹ In general, the overall number of temporary employees in Germany has increased from about 1.2 million in the mid-1990s to just over 3.15 million - the highest on record - in 2017 (Hohendanner, 2018).

Figure 1: Temporary employment in Germany between 1991 and 2018 (Temporary employees aged over 25 years and in dependent employment as %).



Source: Labour Force Survey (*Arbeitskräfteerhebung*)

¹ The noteworthy change in 2005 may well reflect a substantial change in that year regarding how temporary employment was officially measured. For a summary of the legal changes, see the legal appendix of Addison et al. (2019). Note well that these changes in the official statistics do not affect the estimations below.

The reasons for, and consequences of, the increasing use of temporary employment contracts have been widely discussed (von Hippel et al., 1997; Morris and Vekker, 2001; Giesecke and Groß, 2003; Engellandt and Riphahn, 2005; Virtanen et al., 2005; De Cuyper et al., 2008). For an economy, it has been argued that temporary employment is positive for job creation, for integration of people normally outside of the labour market, and for responding to economy-wide seasonal fluctuations (von Hippel et al., 1997; Morris and Vekker, 2001; Engellandt and Riphahn, 2005). For businesses, hiring temporary employees may help them be more flexible and respond to demand fluctuations, make it easier to manage the collective workload, help to reduce hiring and firing costs, and may result in hiring workers keen to impress in pursuit of a permanent position (von Hippel et al., 1997; Morris and Vekker, 2001; Giesecke and Groß, 2003; De Cuyper et al., 2008). However, what is of particular interest in this investigation is how temporary employment may benefit or hinder individuals, which is discussed further in section 2.

As also discussed in section 2, the balance between these positive and negative aspects is likely to shift based upon where an individual is in her working life. In particular, the negative aspects of a temporary contract seem weighted towards those in midlife rather than those at the start of their career. Despite this likely strong heterogeneity with respect to age, previous investigations into the well-being associations of temporary and permanent employment often control for age, but do not consider it explicitly (see the literature review in section 2 for examples). In contrast, this investigation specifically considers how temporary contracts affect the well-being of individuals in different age ranges, with an especial focus on midlife. This study investigates the issue for Germany, making use of the nationally representative German Socioeconomic Panel (SOEP). In the German context under investigation here, a permanent contract might be particularly important for worker well-being due to the high level of dismissal protection, making it difficult for employers to get rid of permanent employees.

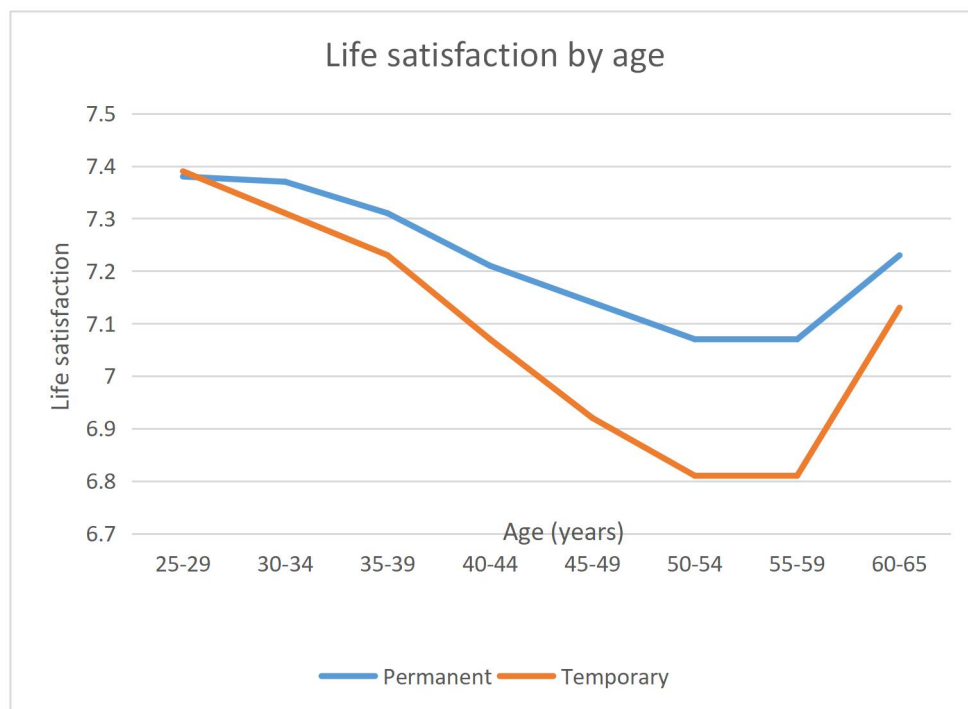
Many studies within economics and social science more generally have considered age and well-being, with the majority showing either direct evidence of a midlife low or evidence suggestive of a midlife low (as examples of a much wider literature, Blanchflower and Oswald, 2004; Blanchflower and Oswald, 2008; Cheng et al., 2015; Piper, 2015a; Schwandt, 2016; Clark 2019; Blanchflower and Graham, 2020) often by considering age as a quadratic or in reasonably small age groups.² Furthermore, evidence has been put forward that this oft-found U-shape of the relationship between age and well-being is a life cycle effect, while not necessarily ruling out a cohort influence (Piper 2015a; Clark 2019). A midlife passage or, as it is more frequently termed, a midlife crisis (the term is often thought to have been coined by a Canadian psychoanalyst in an essay about creativity [Jaques, 1965]) is also a common feature of our culture (see Setiya, 2017, and a recent Royal Society lecture [<https://royalsociety.org/science-events-and-lectures/2019/05/life-begins-at-40/>] for many examples) and is a source of substantial activity and interest for psychotherapists (for

² Some studies from psychology find no or limited evidence for such a midlife nadir, however, as Blanchflower and Graham (2020) forcefully demonstrate, such studies seem problematic.

example Hollis, 1993; Polden, 2002 Stein, 2014). This is a literature that suggests that a midlife nadir and turning point has always been a feature of human life.³

While largely established empirically, scientifically grounded explanations for this midlife low or nadir have only been a small part of the effort to understand the relationship between age and well-being (with Schwandt 2016 being an important exception). Whether the U-shape is universal, and are there factors that deepen it or ameliorate it are important issues. Descriptive statistics from the German Socioeconomic Panel suggest both the existence of a midlife lull and a sizeable difference in the depth of this lull between temporary and permanent employees (defined via a survey question that asks individuals about their contract type). The following figure presents average life satisfaction ratings (positively coded on a 0-10 scale) from over twenty years of annual nationally representative German data. The raw averages are suggestive of a deepening of the U-shape for temporary employees when compared to permanent employees. With a difference of about a quarter of a point in midlife, this deepening is substantial.⁴

Figure 2: Average Life Satisfaction Against Age in Permanent and Temporary employees, SOEP data 1995-2017



³ Stein's *In Midlife* makes, at book length, links between midlife concerns and Greek mythology; Polden suggests and discusses Homer's *Odyssey* as illustrative of midlife issues and Hollis opens his Jungian account of the midlife passage with a well-known quote from Dante, and cites the literature and lives of writers and artists throughout history as useful material for understanding the midlife turn. These are just three examples of a much wider literature.

⁴ These averages come from an eleven point ordinal scale so, as recently re-highlighted in the literature, caution is necessary when making these comparisons and with linear regressions with of ordinal data (Schröder and Yitzhaki, 2017; Bond and Lang, 2019).

SOEP data used: Socio-Economic Panel (SOEP), data for years 1995-2017, version 34, SOEP, 2017, doi: 10.5684/soepv34.

Most studies that investigate well-being associations with temporary and permanent employment contracts account for age as a control variable, thus obtaining results that do not consider or permit identification of the impact of age on these associations (Bardasi and Francesconi, 2004; Silla et al. 2005; Green and Haywood 2011, Dawson et al. 2015; Dawson et al. 2017). In contrast, this investigation adds to the evidence of these (and other studies) by considering potential systematic differences in well-being between temporary and permanent employees at different ages and, in doing so, provides new evidence. The next section, Section 2, considers the literature and theory regarding age, life satisfaction and type of employment contract. Section 3 describes the dataset used and the methods employed. Section 4 presents and discusses the results. Section 5 contains a discussion, conclusions and suggestions on future directions. Additionally, Appendix A contains analyses that attempt to provide evidence regarding selection and causation.

Section 2: Literature review

This section starts with a review of the literature regarding contract type and well-being, before discussing the role of age in this debate.

Using British panel data, Green and Heywood (2011) found, as a cross-sectional result, a negative association between being on a flexible (i.e. temporary) contract and life satisfaction, although when individual worker fixed effects were taken into account, they found no statistically significant relationship. However, as has been pointed out by Dawson et al. (2015) and Chadi and Hetschko (2016), when a worker changes contract type she often also changes company, working conditions and work culture too. If these are not controlled for (and information on work and corporate culture is rare in large socio-economic panel datasets) fixed effects estimates may not give an unbiased outcome. Chadi and Hetschko further emphasise and empirically demonstrate that simply being in a new job - something that affects temporary workers more than permanent workers - is associated with a honeymoon effect, which might bias the temporary employment fixed effects results of other studies if neglected. Furthermore Dawson et al. (2015) suggest workers leaving permanent employment may have had particularly poor permanent employment, prompting the move to temporary employment (in the same company or, perhaps more likely, elsewhere). Among their results, Dawson et al. (2015) found that, in comparison to permanent employment, being temporarily employed is associated with increased life dissatisfaction as well as greater psychological distress.

A study using Canadian data also found that temporary contracts (relative to permanent contracts) were associated with lower well-being and even linked their use to labour market discrimination. Konrad et al. (2013) focussed on the disabled, and highlighted the discrimination that the disabled may face in having to resort to temporary work, concluding that the disabled in particular face “underemployment and temporary work [which] are likely to be associated with a significantly lower level of well-being compared with being

permanently employed in a job that fully utilizes one's abilities." This skills argument was also made by von Hippel et al. (1997).

Possible heterogeneity of results is also highlighted by a study using primary data from Spain which follows Marler et al. (1998) in dividing temporary employees into four different categories based upon skills and preference for temporary work (Silla et al. 2005). They found that what they called 'traditional' temporary workers (low skilled, low preference for temporary work) had lower life satisfaction, although results for other temporary categories were not statistically significant. The authors generated their own data, which helped them to identify the different temporary categories, but their small sample size (n=383) may have contributed to the lack of statistical significance.⁵ An early study from the UK, making use of the British Household Panel Survey found a gender difference: females were more likely to have low life satisfaction if on a fixed term contract than a permanent one; while for males there were indications of a negative association, but they did not attain significance at conventional levels (Bardasi and Francesconi, 2004). The BHPS's scale was collapsed from 1-7 into a dummy variable coded one if the response was 3 or lower and the estimations undertaken included logistic regressions.⁶ Age was controlled for in this study, and sample participants were aged between 16 and 60, which is potentially problematic (as discussed below).

Despite the seemingly broad acceptance that individuals on a temporary contract are less satisfied with their lives than those permanently employed, studies have not often attempted to find potential explanations. One exception is Dawson et al. (2017), who used British Panel data and provide evidence that this difference is largely explained by job insecurity. Worries about job security will be investigated in the empirical analysis below as one potential explanation. Also considered are related concerns about employment security, which addresses how easy (or difficult) an individual thinks it would be to find another job; personality; the contribution of individual income to household income; and changing social norms. All these possibilities are discussed further and assessed in section 4.

None of these articles linking temporary employment and well-being specifically consider age, even though there are strong arguments for expecting a different relationship at different ages or stages within working life. Any positive aspects of a temporary contract largely applies only to those at or near the start of working life, whereas the negatives are more likely experienced by individuals more established in their career and working life. Specifically, it is easy to comprehend people at the start of their careers appreciating the following: the ability to be able to examine a company, career path or industry without

⁵ Of the 383 individuals surveyed, just under one third were temporarily employed. The other categories are boundaryless workers (high skills and a high preference for temporary work), transitional workers (high skills; low preference), and career temporary workers (low skills; high preference). for temporary work. However, one of their four temporary categories only contained nine people and another only comprised sixteen workers. Of relevance to the current investigation is that the average age was 32 and age was treated as linear in the estimations.

⁶ Though the authors do reveal in a footnote that the results are supported by ordered logistic regression making use of the life satisfaction responses without simplification into a dichotomous variable.

commitment.⁷ It is harder to imagine those in midlife reaping the same benefit from these facets of temporary employment, presented in the literature as advantages. Conversely, the following negative aspects of temporary employment might be less pressing for the young: a lack of job security; lower wages; a subjective feeling of not being good enough to get a permanent job; higher psychological morbidity; increased risks to health through lower income and heightened job insecurity; fewer social benefits; low autonomy; little influence on workplace decisions; general insecurity; feeling less tethered to the society they live in; and a general lack of support (all aspects presented here come from the following: von Hippel et al., 1997; Morris and Vekker, 2001; Giesecke and Groß, 2003; Engellandt and Riphahn, 2005; Virtanen et al., 2005; De Cuyper et al., 2008). In midlife, however, the feelings induced by these aspects of temporary employment might be more keenly felt. For those near the end, the picture may be more mixed, and particularly so based upon the individual's situation (including prior career). If this conjecture is correct, conventionally obtained coefficients for the relationship between temporary employment and life satisfaction may, as emphasised just below, not be fully informative for individuals at different stages of life.

To present an extreme illustration: if temporary contracts are more frequently positive for the young, but negative for those in midlife, the overall coefficient obtained for temporary employment might not be statistically different from zero. Such a finding, indicative of no difference from permanent employment, would obscure the possibility that both the young and those in midlife might be experiencing employment as a temporary worker in profoundly different ways to those in permanent employment. Indeed, temporary employment at the start of a career is itself a profoundly different phenomenon to temporary employment later in working life. This is precisely the reason why some studies explicitly rule out investigating very young adults, arguing that a temporary job is often inherently different at the start of working life than at other stages. For example, Chadi and Hetschko (2016) set 25 as the lowest age in the samples used in their analysis. The present analysis also includes no one younger than 25.

Most of the empirical studies discussed above control for age, recognising that there are general systematic differences in life satisfaction by age: as noted in the introduction, there is an oft-found approximate U-shape over the course of working life, with lows in the 40s and early 50s. Recent work by Blanchflower (2020) and Blanchflower and Graham (2020) has confirmed much of the previous work that reported this result and provided additional evidence in support of it. Given these systematic differences, controlling for age is generally good practice. However, as arguments advanced above also indicate, there is probably not enough for a better understanding of the relationship between employment contract type

⁷ A young temp may also appreciate the possibility of gaining useful experience, and perhaps having flexibility and freedom though these are benefits that permanent employees would also have in the German context. Whether temporary employment is seen as positive or negative does depend upon what it is compared to: if unemployment, then it might be seen rather positively; if permanent employment, rather negatively. Such reference group or point information is not always considered in the literature discussed in this paragraph, and is not available in the dataset used for analysis. Thus, while permanent employment seems better than temporary employment in almost all respects in Germany, some individuals may be comparing temporary employment to unemployment.

and life satisfaction at different ages.⁸ This is addressed, seemingly for the first time, with age group and temporary employment dummy variables, and their interactions, in this article. The next section describes the data analysed and the subsequent section, section 4, presents the results.

Section 3: Data and methodology

I use the SOEP dataset to empirically investigate the issue of temporary employment and the midlife nadir in well-being. This data is from a long-running (since 1984) nationally representative, panel survey that is often used for investigations into human well-being. Since 1995, it has included clear information about whether individuals work in a temporary or permanent position. Each year, individuals are also asked about their life satisfaction, giving an answer on an eleven-point scale, with 0 indicating complete dissatisfaction with life and 10 indicating complete satisfaction. The survey also includes much socioeconomic information, questions about job security and employment security and also information that can be used to indicate which (big 5) personality traits an individual has, all of which is useful for this investigation.⁹

For this sample, I focus on individuals who are conventionally employed. Thus we exclude individuals who are self-employed, who have a mini-job, who work within the workfare scheme or who are agency workers.¹⁰ Also in pursuit of a good comparison between permanent and temporary employees, the sample only includes individuals who are privately employed and aged between 25 and 64. This rules out public sector employees, and leaves out individuals at the very start of adult life, as explained in section 2. As clearly illustrated in Figure 2, the raw data does indeed show an approximate U-shape for well-being against age for both temporary and permanent employees, and indicates both less life satisfaction for temporary workers, and a greater well-being penalty for those in midlife and beyond if they are in a temporary job.

Table 1 shows some differences between temporary workers and those permanently employed. Of particular note are the differences for average real annual income and the proportion of full-time workers, which emphasise the need for regression analysis.

⁸ Relatedly, Helliwell et al. (2018) investigated what they call the social context of well-being, also using interaction terms and demonstrating how the age against well-being relationship is associated with many different factors, including (to give just one example) whether an individual is a partner of a company or a boss. Such findings demonstrate that even though the U-shape seems universal, there is a social element to it and the U-shape is more or less pronounced based on social factors. Contract type is not one of the factors they assess.

⁹ More information about the SOEP can be found in Goebel et al. (2019).

¹⁰ The workfare scheme in particular seems worthy of future research, since individuals on this scheme appear to have much lower satisfaction with life than other employed labour market groups. Including these individuals within the temporarily employed group would lower the average life satisfaction of that group and hence further widen the gap between the temporary and permanent workers. To be clear, these individuals are excluded from all of the analyses here.

Table 1 Descriptive statistics: temporary and permanent employees, SOEP 1995-2018.

	Temporary		Permanent	
	Mean	Std. Dev	Mean	Std. Dev.
Life Satisfaction	7.19	1.68	7.23	1.59
Real Annual Individual Income	24.44	36.21	37.77	27.56
Real Annual Wage	22.19	27.47	34.58	23.02
Full-time	0.46	0.50	0.73	0.45
New Job	0.51	0.50	0.10	0.30
Tenure	2.7	4.8	11.55	9.65
Small company	0.19	0.40	0.22	0.41
Medium company	0.57	0.50	0.53	0.50
Large company	0.24	0.43	0.25	0.43
Job Autonomy	2.58	1.09	2.72	1.03
Age	38.47	9.59	43.46	9.66
Male	0.47	0.50	0.55	0.50
Married	0.53	0.50	0.67	0.47
Separated	0.04	0.18	0.03	0.16
Divorced	0.09	0.29	0.09	0.29
Widowed	0.01	0.10	0.01	0.12
Single	0.33	0.47	0.19	0.39
Education: High School	0.53	0.50	0.66	0.47
Education: more than HS	0.35	0.48	0.25	0.43
Education: less than HS	0.12	0.33	0.09	0.28
Overnight stay in hospital	0.09	0.28	0.08	0.28
Disabled	0.04	0.19	0.05	0.22
East Germany	0.26	0.44	0.23	0.42

Note: Apart from life satisfaction (0-10), the income and wage measure (thousands of euros, deflated by the CPI), and the measure of autonomy in the job (1-5), all of the variables are dummy variables. SOEP data used: Socio-Economic Panel (SOEP), data for years 1995-2018, version 35, SOEP, 2018, doi: 10.5684/soepv35.

Table 1 suggests some possible reasons for the discrepancy in well-being between the temporary and permanent workers. For example, the average real wage is considerably lower for temporary employees; which may reflect their lower proportion in full-time work. Perhaps unsurprisingly, temporary employees are much more likely to be in a new job and have a much lower average tenure. The table also indicates that temporary employees are more likely to have a high level of education, a fact which may partly reflect age (given increasing rates of participation within higher education among young people).¹¹ Again possibly reflecting age, temporary employees are less likely to be married and more likely to be single. The information about almost all of these socioeconomic factors and job characteristics, as well as series of dummy variables capturing the industry the individual works in, the region (based on the 16 states), and the year is taken into account in every estimation below. Life satisfaction is the dependent variable, and age appears as a series of dummy variables capturing distinct age ranges (25-29, 30-34, 35-39 and so on until 60-64).

¹¹ That younger people have higher average levels of education, and are more likely to be temporarily employed, may also partly explain the finding that the relatively overeducated are less satisfied with life (Piper 2015b; Ahmed Lahsen et al. 2020).

Furthermore, these age group dummy variables are interacted with the dummy for temporary employment.

The key results centre on these three variable groups: temp dummy, age groups, temp dummy interacted with age groups.¹² Further additional estimated regressions consider the role of personality, and take into account workers' fears about job and employment security. Individuals surveyed within the SOEP are asked about their worries regarding job security and how difficult they think they would find it to get another job if they lost their current one, sometimes known as employment security. Based on the answers to these questions, two dummy variables were created, where 1 indicates at least some worries about job security/some difficulty finding another job and 0 corresponds to having no worries, and expecting it to be easy to find another job, respectively. Personality is considered via the 'Big 5' traits (agreeableness, conscientiousness, extroversion, neuroticism and openness), which are constructed as the factor analysis process described by Caliendo et al. (2014). The outcome results in standardised scores centred at zero with a standard deviation of 1 to ease interpretation of effects. Table 2 provides a comparison of the data by employment contract.

Table 2, Job security and employment security, and big 5 personality traits, SOEP data.

	Temporary	Permanent
Worries about job security	0.65	0.52
Employment Security	0.70	0.79
Agreeableness	-0.0004	-0.11
Conscientiousness	0.06	0.10
Extroversion	0.06	0.001
Neuroticism	0.02	-0.10
Openness	0.09	0.02

Note: Worries about job security and employment security are dummy variables. The Big 5 personality traits are standardised scores centred at zero with a standard deviation of 1. SOEP data used: Socio-Economic Panel (SOEP), data for years 1995-2018, version 35, SOEP, 2018, doi: 10.5684/soepv35.

Table 2 demonstrates that in the sample investigated temporary employees were more likely to have worries about their job security though less likely to be concerned about finding another job than permanent employees (though 70% of temporary employees do think it would be hard finding another job). The first result is unsurprising, and the second may reflect some kind of learning about the labour market, with temps more experienced at applying for jobs and the job search in general (something supported by the tenure averages

¹² Whether there is an approximate U-shape for the age-life satisfaction relationship for permanent employees is judged by the coefficients obtained for the age groups. For temporary employees, the age U-shape relationship is found by the age group dummy variables and the interaction variables. Thus, the difference in the age-life satisfaction relationship between temporary and permanent employees term is found by the temporary employment dummy variable and the interaction variables.

in the previous table). Temporary workers are more likely to be neurotic than permanent employees.¹³

Controlling for personality leavens somewhat (though not wholly) the issue of not controlling for individual fixed effects. There is not enough precision for fixed effects panel analysis due to a lack of independent ‘within’ variation: estimations which include age groups, a temporary employment indicator interacted with these age groups and year dummies to account for cohort effects and other concerns specific to a particular year cannot be accurately estimated while controlling for individual fixed effects. Thus, the analysis treats the data as pooled cross-sectional data and the estimations below are undertaken with Ordinary Least Squares, results which are fully supported by ordered logit and ordered probit estimations (not shown).

Section 4: Results

The first table of results, table 3, contains the coefficients obtained by four estimations, each of which are differentiated by the use of control variables. As well as the temporary employment and age group dummy variables and their interactions, column 1 just includes year (cohort) variables, column 2 adds socioeconomic controls (real wages, full or part-time work, gender, marital status, education, objective health, industry, region and year); column 3 also includes some basic job characteristics (new job, size of company, job autonomy); and column 4 additionally includes the big 5 personality traits. The results presented in these columns are discussed following the table.

Table 3 Temporary employment, age and life satisfaction. 1995-2018

VARIABLES	(1) Life Satisfaction	(2) Life Satisfaction	(3) Life Satisfaction	(4) Life Satisfaction
Temporary employment	-0.059** (0.029)	-0.022 (0.030)	-0.023 (0.030)	0.082* (0.046)
Age: 30-34	-0.034** (0.016)	-0.153*** (0.016)	-0.158*** (0.016)	-0.135*** (0.028)
Age: 35-39	-0.093*** (0.015)	-0.268*** (0.016)	-0.271*** (0.016)	-0.209*** (0.028)
Age: 40-44	-0.210*** (0.015)	-0.409*** (0.016)	-0.406*** (0.016)	-0.381*** (0.028)
Age: 45-49	-0.295*** (0.015)	-0.485*** (0.017)	-0.479*** (0.017)	-0.453*** (0.028)
Age: 50-54	-0.374*** (0.016)	-0.545*** (0.017)	-0.531*** (0.018)	-0.502*** (0.029)
Age: 55-59	-0.362*** (0.017)	-0.508*** (0.018)	-0.496*** (0.019)	-0.458*** (0.030)
Age: 60-64	-0.253*** (0.021)	-0.387*** (0.022)	-0.383*** (0.023)	-0.350*** (0.034)

¹³ This is perhaps unsurprising given the anxiety about job security as evidenced by both the wider academic literature and the descriptive statistics. Whether there is any causal link between neuroticism and having a temporary contract is an interesting question for future research. See the appendix for an investigation of causation and selection between life satisfaction and employment contract.

Age: 30-34 + temporary contract	-0.054 (0.042)	-0.061 (0.042)	-0.060 (0.043)	-0.132** (0.067)
Age: 35-39 + temporary contract	-0.101** (0.045)	-0.084* (0.045)	-0.064 (0.045)	-0.200*** (0.075)
Age: 40-44 + temporary contract	-0.150*** (0.048)	-0.116** (0.048)	-0.092* (0.049)	-0.174** (0.083)
Age: 45-49 + temporary contract	-0.195*** (0.051)	-0.142*** (0.051)	-0.086* (0.051)	-0.199** (0.081)
Age: 50-54 + temporary contract	-0.244*** (0.058)	-0.165*** (0.058)	-0.136** (0.059)	-0.298*** (0.090)
Age: 55-59 + temporary contract	-0.242*** (0.069)	-0.216*** (0.068)	-0.214*** (0.068)	-0.367*** (0.101)
Age: 60-64 + temporary contract	-0.150 (0.102)	-0.156 (0.104)	-0.150 (0.104)	-0.169 (0.130)
Wave control	Yes	Yes	Yes	Yes
Socioeconomic Controls	No	Yes	Yes	Yes
Basic job characteristics	No	No	Yes	Yes
Big 5 personality controls	No	No	No	Yes
Constant	7.036*** (0.024)	7.229*** (0.055)	6.859*** (0.057)	7.598*** (0.094)
Observations	195,532	189,477	185,405	69,336
R-squared	0.023	0.069	0.074	0.143

Note: Robust standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. SOEP data used: Socio-Economic Panel (SOEP), version 34, SOEP, 2019, doi: 10.5684/soepv34.

Indicated by the age group dummy variables, a pattern similar to a U-shape for the well-being against age relationship is found in all four columns (i.e. with and without controls). Based on the coefficients in the table, and other analyses (not shown), the midlife nadir in well-being occurs, on average, in the early fifties. This has been previously found by Cheng et al. (2015) with an SOEP sample that uses an earlier range of years and includes everybody (i.e. not just the private-sector employees aged 25-64).¹⁴ An additional dip for those on temporary contracts is found in all four estimations, though the extent of this dip differs based upon the specific set of controls. Midlife and particularly the fifties age range does appear to be associated with lower well-being than in other life cycle phases. The temporary employment dummies represent any difference for temporary and permanent employees who are aged between 25 and 29, and indicate no ceteris paribus difference when socioeconomic controls (and job characteristics) are included. Moreover, when personality is additionally controlled for, these young temps are on average actually more satisfied with life. However, given the availability of personality information (2005 onwards), the sample size in column 4 is considerably lower. Table 4 re-estimates the first three columns with only the observations in the sample of column 4.

¹⁴ Cheng et al (2015) considered the 'within' change in life satisfaction, taking account of the properties of the quadratic (for age and well-being), which is a very different method, nevertheless finding a remarkably similar age for the nadir in human well-being.

Table 4 Temporary employment, age and life satisfaction. 2005-2018

VARIABLES	(1) Life Satisfaction	(2) Life Satisfaction	(3) Life Satisfaction
Temporary employment	0.095** (0.046)	0.082* (0.047)	0.063 (0.047)
Age: 30-34	-0.040 (0.029)	-0.159*** (0.029)	-0.158*** (0.028)
Age: 35-39	-0.051* (0.027)	-0.239*** (0.029)	-0.234*** (0.029)
Age: 40-44	-0.187*** (0.027)	-0.408*** (0.029)	-0.400*** (0.029)
Age: 45-49	-0.258*** (0.026)	-0.486*** (0.029)	-0.474*** (0.029)
Age: 50-54	-0.346*** (0.027)	-0.556*** (0.030)	-0.537*** (0.030)
Age: 55-59	-0.320*** (0.028)	-0.514*** (0.031)	-0.496*** (0.031)
Age: 60-64	-0.197*** (0.033)	-0.375*** (0.035)	-0.358*** (0.035)
Age: 30-34 + temporary contract	-0.149** (0.071)	-0.122* (0.070)	-0.120* (0.069)
Age: 35-39 + temporary contract	-0.272*** (0.079)	-0.232*** (0.078)	-0.207*** (0.077)
Age: 40-44 + temporary contract	-0.329*** (0.087)	-0.203** (0.086)	-0.156* (0.086)
Age: 45-49 + temporary contract	-0.300*** (0.086)	-0.208** (0.084)	-0.162* (0.083)
Age: 50-54 + temporary contract	-0.400*** (0.095)	-0.269*** (0.094)	-0.236** (0.093)
Age: 55-59 + temporary contract	-0.464*** (0.109)	-0.406*** (0.107)	-0.354*** (0.106)
Age: 60-64 + temporary contract	-0.171 (0.131)	-0.257* (0.138)	-0.191 (0.133)
Wave control	Yes	Yes	Yes
Socioeconomic Controls	No	Yes	Yes
Basic job characteristics	No	No	Yes
Big 5 personality controls	No	No	No
Constant	7.652*** (0.030)	7.751*** (0.097)	7.513*** (0.098)
Observations	69,336	69,336	69,336
R-squared	0.016	0.068	0.074

Note: Robust standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. SOEP data used: Socio-Economic Panel (SOEP), version 34, SOEP, 2019, doi: 10.5684/soepv34.

Again, the age group coefficients results indicate a U-shape pattern for age and life satisfaction, and the interactions of the age groups with the temporary dummy variable show a deepening of the midlife nadir in human well-being for temporary workers.¹⁵ The

¹⁵ This remark is based on the size, sign and significance of the coefficients. An F-test does not demonstrate significant differences between the many of the interaction term coefficients.

temporary employment dummy variable indicates that young temps (aged 25-29) are happier than permanent employees or, in column 3, at least no less happy suggests that temporary employment has become less burdensome since 2005. Given that comparisons are important for well-being, one possibility is that with more other workers temporarily employed the negative well-being association might be reduced.¹⁶ Simple tests of this were undertaken by splitting the full sample into three approximately equal time periods. In all cases we can see the U-shape for all privately employed individuals and there is evidence of some deepening of the U-shape for some of the age groups in some of the years. Overall, the analysis seems inconclusive, but does not seem to provide much evidence supportive of a social norm and comparison effect.

As the literature review demonstrated, one key difference between permanent and temporary workers is job security (see, for example, Dawson et al., 2017). Table 5 is once more the equivalent of the fourth column of table 3 (i.e. the estimate includes socioeconomic controls, wave, region, industry, job characteristics and personality traits) with the addition of either one or both of dummy variables: worries regarding job security and how difficult they think they would find it to get another job if they lost their current one (employment security). Given that job security and/or employment security is controlled for, the expectation is that the coefficients of the interaction effects below will be lower than those equivalent ones obtained previously (column 4 of table 3).

Table 5 Temporary employment, age and life satisfaction, job worries and employment security. 1995-2017

VARIABLES	(1) Life Satisfaction	(2) Life Satisfaction	(3) Life Satisfaction
Temporary employment	0.155*** (0.046)	0.072 (0.048)	0.143*** (0.048)
Age: 30-34	-0.107*** (0.028)	-0.115*** (0.029)	-0.094*** (0.029)
Age: 35-39	-0.177*** (0.028)	-0.177*** (0.029)	-0.163*** (0.029)
Age: 40-44	-0.336*** (0.028)	-0.340*** (0.029)	-0.320*** (0.029)
Age: 45-49	-0.400*** (0.028)	-0.407*** (0.029)	-0.382*** (0.029)
Age: 50-54	-0.460*** (0.029)	-0.438*** (0.030)	-0.430*** (0.030)
Age: 55-59	-0.456*** (0.030)	-0.386*** (0.032)	-0.423*** (0.032)
Age: 60-64	-0.418*** (0.034)	-0.265*** (0.037)	-0.375*** (0.037)
Age: 30-34 + temporary contract	-0.142** (0.067)	-0.154** (0.071)	-0.160** (0.071)
Age: 35-39 + temporary contract	-0.206***	-0.196**	-0.196**

¹⁶ If so, this would support a social norm explanation for the lower well-being of individuals, reflecting attenuation of the stigma of being temporarily employed as the number of individuals temporarily employed increases.

	(0.075)	(0.079)	(0.079)
Age: 40-44 + temporary contract	-0.168**	-0.184**	-0.175**
	(0.083)	(0.087)	(0.087)
Age: 45-49 + temporary contract	-0.170**	-0.219***	-0.190**
	(0.080)	(0.085)	(0.083)
Age: 50-54 + temporary contract	-0.255***	-0.286***	-0.239**
	(0.089)	(0.094)	(0.094)
Age: 55-59 + temporary contract	-0.304***	-0.369***	-0.309***
	(0.100)	(0.107)	(0.107)
Age: 60-64 + temporary contract	-0.086	-0.100	-0.023
	(0.130)	(0.132)	(0.136)
Constant	7.36***	7.02***	7.37***
	(0.056)	(0.063)	(0.063)
Observations	179,504	148,777	146,603
R-squared	0.101	0.077	0.101
Constant	7.36***	7.02***	7.37***
Wave control	y	y	y
Socioeconomic controls	y	y	y
Job security	y	n	y
Employment security	n	y	y

Note: Robust standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. SOEP data used: Socio-Economic Panel (SOEP), version 34, SOEP, 2019, doi: 10.5684/soepv34.

In columns one and three of table 5 the coefficients of the interaction terms for those in their fifties are less negative than those previously obtained (column 4 of table 3), whereas those in column 2 are similar. This means that job security is responsible for part (about a sixth) of the deepening of the U-shape for midlife temps, and that employment security plays no role. The bar chart just below, figure 3, highlights the differences between estimates with and without the job security control.

Figure 3: the dip in life satisfaction for temporary employees with and without considering worries about job security.



A summary so far: a pattern similar to the U-shape is found; in midlife (particularly) temporary employees have, on average, less well-being than permanent employees; and some of this suffering is explained by worries about job security.

Perhaps these results, both the deeper dip of life satisfaction of temps and the partial explanation of job security differ by gender, and by income contribution to the household?¹⁷ Justification for choosing gender and income contribution are below when the results are discussed. To answer this column 4 of table 3 and column 1 of the previous table (table 5) were re-estimated by gender, and less than one third or more than two thirds contribution of own income to household income.

Table 6 Temporary employment, gender, age and life satisfaction. 1995-2017

VARIABLES	(1)	(2)	(3)	(4)
	Life Satisfaction Females	Life Satisfaction Females Job Security	Life Satisfaction Males	Life Satisfaction Males Job security
Temporary employment	0.088 (0.062)	0.186*** (0.063)	0.081 (0.068)	0.118* (0.067)
Age: 30-34	-0.097** (0.041)	-0.076* (0.041)	-0.174*** (0.038)	-0.138*** (0.037)
Age: 35-39	-0.194*** (0.041)	-0.170*** (0.041)	-0.235*** (0.037)	-0.195*** (0.037)
Age: 40-44	-0.375*** (0.041)	-0.339*** (0.040)	-0.395*** (0.038)	-0.342*** (0.038)
Age: 45-49	-0.446*** (0.041)	-0.408*** (0.040)	-0.466*** (0.038)	-0.398*** (0.038)
Age: 50-54	-0.463*** (0.042)	-0.442*** (0.041)	-0.541*** (0.039)	-0.479*** (0.039)
Age: 55-59	-0.428*** (0.044)	-0.446*** (0.043)	-0.489*** (0.041)	-0.468*** (0.041)
Age: 60-64	-0.290*** (0.051)	-0.376*** (0.051)	-0.401*** (0.045)	-0.453*** (0.045)
Age: 30-34 + temporary contract	-0.136 (0.090)	-0.139 (0.090)	-0.153 (0.102)	-0.162 (0.101)
Age: 35-39 + temporary contract	-0.255** (0.104)	-0.234** (0.105)	-0.139 (0.106)	-0.168 (0.106)
Age: 40-44 + temporary contract	-0.183* (0.108)	-0.198* (0.109)	-0.163 (0.132)	-0.124 (0.131)
Age: 45-49 + temporary contract	-0.077 (0.103)	-0.078 (0.102)	-0.415*** (0.132)	-0.338*** (0.130)
Age: 50-54 + temporary contract	-0.306*** (0.118)	-0.263** (0.119)	-0.308** (0.138)	-0.253* (0.137)
Age: 55-59 + temporary contract	-0.298** (0.143)	-0.228 (0.142)	-0.436*** (0.143)	-0.368*** (0.141)
Age: 60-64 + temporary contract	-0.237 (0.215)	-0.126 (0.208)	-0.078 (0.165)	0.007 (0.170)
Wave control	Yes	Yes	Yes	Yes

¹⁷ Sub-samples based on education were also undertaken, but do not reveal any noteworthy differences.

Socioeconomic Controls	Yes	Yes	Yes	Yes
Basic job characteristics	Yes	Yes	Yes	Yes
Constant	7.077*** (0.131)	7.364*** (0.130)	7.316*** (0.127)	7.601*** (0.128)
Observations	32,783	32,288	36,553	36,007
R-squared	0.135	0.156	0.156	0.178

Note: Robust standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. SOEP data used: Socio-Economic Panel (SOEP), version 34, SOEP, 2019, doi: 10.5684/soepv34.

The choice to test sub-samples based on gender simply reflects the literature which shows a difference by gender regarding how, on average, they suffer lower life satisfaction due to unemployment. For temporary contracts (as compared to permanent contracts) there is seemingly little difference by gender. For females and males separately, whether worries about job security is controlled for or not, an approximate U-shape is observed for the age-well-being relationship. There is also some evidence of temps dipping deeper for both genders: for males, the lower life satisfaction of temps occurs broadly in midlife, and for females, the dip is found both early in the career and in the fifties age range. As with the bar chart above, taking into account the temporary employees' worries about job satisfaction reduces the dip (and eliminating it for females aged between 55 and 59). The pattern of the additional dip for females is particularly interesting and worthy of future research.

One possibility to explore here is the individual's role in the family. Perhaps the lower life satisfaction of temporary employees, and particularly at midlife, reflects concerns about being able to provide for the household. In midlife, compared to the early part of adult life, individuals may have more responsibilities that stable employment helps them fulfil. Alternatively, the nature of the household may have protective properties, particularly if an individual is not a substantial contributor to household finances. To examine this, the same estimation as the last column of the last estimate (i.e. with socioeconomic controls, job and employment security, and personality all taken into account) was run for a sub-sample of individuals whose income contributes less than a third to the total household income, and run again for a sub-sample of individuals who contribute at least two thirds. If the speculation about role in the family in terms of income contribution is correct, in the first sub-sample individuals may not suffer as much from being temporarily employed and those in the second sub-sample may suffer more. In summary, this is testing the idea that being in a temporary job may not necessarily be negative for those whose income contribution is not so predominant within the family, i.e. that not being so responsible for the family is somewhat protective.

Table 7 Temporary employment, income contribution to household, age and life satisfaction. 1995-2017

VARIABLES	(1) Life Satisfaction More than two thirds contribution	(2) Life Satisfaction More than two thirds contribution Job Security	(3) Life Satisfaction Less than one third contribution	(4) Life Satisfaction Less than one third contribution Job security
Temporary employment	0.065 (0.072)	0.138* (0.072)	0.150* (0.085)	0.204** (0.085)
Age: 30-34	-0.126*** (0.042)	-0.093** (0.041)	-0.156** (0.074)	-0.123* (0.074)
Age: 35-39	-0.209*** (0.041)	-0.167*** (0.042)	-0.196*** (0.072)	-0.180** (0.072)
Age: 40-44	-0.387*** (0.041)	-0.333*** (0.041)	-0.336*** (0.074)	-0.293*** (0.073)
Age: 45-49	-0.425*** (0.042)	-0.362*** (0.042)	-0.439*** (0.074)	-0.403*** (0.074)
Age: 50-54	-0.517*** (0.043)	-0.470*** (0.043)	-0.406*** (0.076)	-0.388*** (0.076)
Age: 55-59	-0.414*** (0.044)	-0.408*** (0.044)	-0.462*** (0.081)	-0.460*** (0.081)
Age: 60-64	-0.244*** (0.048)	-0.317*** (0.048)	-0.378*** (0.102)	-0.434*** (0.103)
Age: 30-34 + temporary contract	-0.170 (0.107)	-0.187* (0.106)	-0.168 (0.137)	-0.154 (0.136)
Age: 35-39 + temporary contract	-0.229* (0.125)	-0.256** (0.126)	-0.193 (0.136)	-0.177 (0.137)
Age: 40-44 + temporary contract	-0.086 (0.134)	-0.081 (0.135)	-0.413*** (0.146)	-0.387*** (0.148)
Age: 45-49 + temporary contract	-0.315** (0.129)	-0.271** (0.128)	-0.140 (0.138)	-0.078 (0.134)
Age: 50-54 + temporary contract	-0.255* (0.138)	-0.212 (0.140)	-0.525*** (0.162)	-0.442*** (0.162)
Age: 55-59 + temporary contract	-0.304** (0.145)	-0.227 (0.145)	-0.217 (0.198)	-0.129 (0.200)
Age: 60-64 + temporary contract	-0.253 (0.175)	-0.109 (0.172)	0.567 (0.364)	0.585 (0.396)
Wave control	Yes	Yes	Yes	Yes
Socioeconomic Controls	Yes	Yes	Yes	Yes
Basic job characteristics	Yes	Yes	Yes	Yes
Constant	6.859*** (0.133)	7.230*** (0.135)	7.684*** (0.202)	7.660*** (0.204)
Observations	34,138	33,625	11,071	10,880
R-squared	0.157	0.178	0.146	0.166

Note: Robust standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. SOEP data used: Socio-Economic Panel (SOEP), version 34, SOEP, 2019, doi: 10.5684/soepv34.

These results are inconclusive. In some strata they fully support the conjecture above. For example, individuals in temporary employment aged between 45-49 and contributing less

than a third of family income are no less satisfied with life than equivalently aged permanent employees who also contribute less than a third of family income. Those of the same age contributing more than two thirds suffer much more from temporary employment than equivalently aged permanent employees, but in other age ranges they sometimes do not (e.g. the result for the 40-44 age range which is the opposite to that predicted). This inconclusive overall outcome may reflect that those contributing less might be especially reliant on the main breadwinner, which could cause its own stresses. The stresses of an over-reliance on one's partner (or other household members) may counterbalance the lack of job-related stress from having a temporary job. For the main breadwinners, when their worries about job security are taken into account the dip in life satisfaction experienced by temps is somewhat mitigated (and in some age ranges eliminated).

Overall, the results indicate a U-shape for all (both temporary and permanent employees), and show evidence of a deepening of the U for those on temporary contracts. This overall result is irrespective of socioeconomic variables (income, marital status, objective health, education, industry, region), year, big 5 personality traits, whether the employee is a substantial contributor to the household finances or not, whether they worry about losing their job and, if they were to lose their job, how hard they think it would be to get another one.¹⁸ An explanation for the deepening of the U in midlife for temporary workers must be found elsewhere.

Section 5: Discussion, conclusions and future directions

The analysis above has yielded evidence that the well-being of both permanent and temporary employees follows an approximate U-shape over the working life. Furthermore, the midlife dip is deeper for those in temporary employment. This suggests that, although the U-shape seems universal, since both groups of employees exhibit it (along with all the other evidence from studies cited elsewhere in this article), it is experienced differently dependent upon their employment situation. The results above show that the difference between permanent and temporary employees in midlife holds when many socioeconomic factors are considered (income, marital status, health, education, industry, geographic region) and also when taking into account the year of the interview, whether the respondent worries about their job, how easily they think they would be able to find another job if they lost their current job, and their personality traits. Some of the difference between temporary and permanent employees is explained by worries about job security, but this only accounts for about one sixth of the additional dip for the temps. Thus, much of the explanation for the difference in well-being between temporary and permanent employees must therefore be found elsewhere. A number of possible reasons were identified in the literature review (section 2) and, of these, the following remain to be investigated: a subjective feeling of not being good enough to get a permanent job; general insecurity;

¹⁸ These results are also unaffected by controlling for whether the individual has a new job, which is more likely to be the case for temps than permanent staff and has been demonstrated to provide a boost in job satisfaction (Chadi and Hetschko 2016). Analysis with this sample suggests that this boost is much more prevalent for job satisfaction than life satisfaction and should be explicitly controlled for in job satisfaction work investigating temporary employment, though see Chadi and Hetschko (2020) for recent evidence regarding the honeymoon effect of new jobs on life satisfaction.

feeling less tethered to the society they live in; and a general lack of support. Additionally, while the analyses conducted controlled for industry (as categorised by the SOEP data), an interesting refinement for future research would be to analyse the depth of the U-shape in sectors and occupations with higher and lower proportions of temporary contracts, perhaps dichotomising them with a dummy variable.

Considering the findings of this investigation, most individuals should be wary of taking up temporary positions when changing jobs. Given the cumulative loss of well-being from many years of temporary employment, individuals at the start of their career should think carefully about entering industries that are perhaps over-reliant on temporary employment. Academia is perhaps a prime example of such over-reliance, since the experience of many academics is of insecure employment and multiple consecutive short-term contracts despite, certainly by midlife, having become very experienced.¹⁹ The problems faced by temporary employees in academia may well be acute, and perhaps shared by other sectors that are heavily reliant on temporary contracts. Certainly, the results presented in section 4 above suggest that working in such sectors may involve lower average future well-being than sectors where there is less of a temporary contract culture.

Notwithstanding the findings presented in the previous section, these results do not explain the U-shape itself. After all, on average both permanent and temporary workers experience the same approximate pattern of well-being. Nevertheless, the finding that the midlife dip is deeper for temporary employees (despite substantial controls) could suggest that some of the explanation for the depth of any midlife low may lie in some fundamental insecurity (insecurity that goes beyond concerns about job security, which was controlled for). As well as the reasons suggested above, this deeper midlife low may connect with some of the issues traditionally associated with the midlife crisis or, as it is sometimes rebranded, the midlife passage. These issues include a sense of failure, a sense of inadequacy, an existential fear, a feeling of not belonging or being lost, regrets, achieving a less successful career than had been expected, and other more general unfulfilled aspirations. This last of these possibilities was put forward by Schwandt (2016) in his pursuit of reasons for the U-shape; the others are possible angles for future research.

In general, U-shape research needs to move on from establishing that the U-shape exists to attempting to find explanations for it. If we are right to suppose that the age patterns found

¹⁹ Anecdotally, articles in *The Guardian* newspaper contain interviews with and quotes from academics on short-term contracts that viscerally highlight the lack of well-being and satisfaction with life such individuals feel. (Fazackerley, 2013; Anonymous, 2017; Hall, 2019; Jones, 2020). Similarly, *Nature* has a dedicated collection of articles about academic careers and mental health which often refer to the (over)use of temporary contracts (Science careers and mental health, 2018). In Germany, temporary academic contracts have received political attention. For example, in February 2020, Dr. Thomas Sattelberger, a member of the pro-business Freie Demokratische Partei, responded to a motion put forward by Die Linke partei in the Bundestag describing the 80 percent rate of temporary jobs in academia/science as “incredible”, stating that the “...personal burdens, uncertain professional future, relationships and family planning under pressure and dependence” were “...harmful to innovation...” and saying that what he referred to as “...temporary chain contracts...” can be sustained over decades (Sattelberger, 2020). The research detailed above, from the perspective of the individual employee, supports these initiatives for a change in the law with respect to (the overuse of) temporary contracts in academia.

for subjective well-being are often reflections of a changing pattern of social relationships, then they are likely to be detectable in some places and not in others, and for some people but not for others, depending on the social circumstances in which they live. The finding that the U-shape is deeper for temporary employees does indicate that it is not exclusively a biological trait (without ruling out a biological basis, see Weiss et al. 2012) and that people can ameliorate (or exacerbate) a midlife nadir.

This was seemingly the first investigation regarding well-being to consider temporary employment and age together. Many studies have controlled for age, but did not explicitly consider the possibility that the relationship between employment contract (temporary or permanent) and life satisfaction (or indeed job satisfaction) may actually change as a function of age. The combination of temporary employment and age needs to be more routinely considered than hitherto, because it is seemingly a fundamentally different phenomenon at different ages (the results presented above and the arguments set out in section 2 provide ample evidence of this). In general, studies into human well-being should more explicitly consider the role of age in their analyses and not just control it out. The large body of work on life span development and the various stages of life also suggest such a conclusion; some of which explicitly discuss a midlife low. For example, Levinson (1978) which, like many books, was inspired by the author's own low feelings in midlife. The analysis above and the U-shape finding in general suggest some underlying differences affecting well-being in different parts of the lifecycle, which might substantially affect the relationship between life satisfaction and several oft-studied topics (e.g. income). More research is needed to find explanations for the age against well-being relationship, and, specifically, for why temporary employees have considerably less well-being at midlife compared to permanent employees.

This is similar to a line of thought traced in the foreword to an early book on the midlife crisis, written two years after Jacques coined the term. The argument was that "each of us goes through it in his own way, experiences it with greater or lesser intensity, and emerges from it more or less reconciled to the years ahead. It is a "natural" developmental crisis, and it is unavoidable" (Fried, 1967, vii). If correct, the employment contract seems to play a systematic role in determining who experiences the midlife low to a greater or lesser extent. There will be other systematic causes for social scientists to discover. Collectively, researchers need to investigate the following: why the slide in well-being for the young? Why the up-tick later in life? And, particularly, given the midlife low in human well-being, what might be responsible for the turn in well-being at the bottom of the U? The research above suggests that, while the pattern cannot, on average, be eradicated, there are many factors which might ameliorate the midlife low. Finding a permanent job rather than a temporary job is just one of them. Additional research, perhaps linked to how people interact with (or are isolated from) others will provide even more. This is an important topic that merits further research, since understanding it could potentially help save many from extreme lows in midlife.

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Appendix: Causation and Selection

This appendix presents a brief attempt to ascertain whether the relationship found between temporary employment and life satisfaction is a causal one, with temporary employment making individuals less satisfied with their lives, or is a relationship involving selection, with less life satisfied individuals entering temporary employment (by choice or through a failure to find permanent employment). The methodology here makes use of the longitudinal nature of the SOEP and is based on Dawson et al. (2015), who split employees into six categories: *nevers* are individuals who have never experienced temporary employment; *futures* are permanently employed individuals who will experience temporary employment in the future, but not next year; *switchers in* are permanently employed individuals who will be temporarily employed next year; *temps* are individuals employed on a temporary contract; *switchers out* are individuals who switched from temporary employment to permanent employment in the previous year; and *pasts* are permanently employed individuals who were also permanently employed last year and have been temporarily employed at some point during their employment history. In their analysis, Dawson et al. (2015) “retain only employees that are either Nevers or Futures in their first year of occurrence in the [British Household Panel Survey] BHPS in order to capture the whole transition process of the latter group.” My replication using SOEP data maintains this restriction. Table A1, just below, lists descriptive statistics.

Table A1 Descriptive statistics: temporary and permanent employees, SOEP 1994-2017.

	Nevers	Those with temp experience at some point				
	Mean	Futures	Switchers In	Temps	Switchers Out	Pasts
Life Satisfaction	7.30	7.15	7.15	7.06	7.18	7.11
Real Annual Income ('000s)	41.76	38.58	36.47	39.43	36.92	42.27
Full-time	0.77	0.79	0.78	0.71	0.75	0.80
Male	0.59	0.58	0.56	0.56	0.56	0.55
Married	0.71	0.68	0.68	0.68	0.70	0.73
Separated	0.02	0.03	0.03	0.04	0.03	0.03
Divorced	0.09	0.10	0.11	0.10	0.11	0.11
Widowed	0.02	0.02	0.01	0.01	0.01	0.02
Single	0.15	0.17	0.17	0.18	0.14	0.11
Education: High School	0.67	0.64	0.63	0.62	0.64	0.65
Education: more than HS	0.25	0.25	0.24	0.25	0.25	0.27
Education: less than HS	0.08	0.11	0.13	0.13	0.11	0.08
Overnight stay in hospital	0.08	0.09	0.07	0.08	0.07	0.09
Disabled	0.06	0.03	0.04	0.05	0.05	0.06
Former East Germany	0.23	0.28	0.24	0.22	0.24	0.26

Age	45.30	42.06	43.21	39.43	44.86	48.01
Observations	95,404	2,599	603	830	417	1,748

Note: Apart from life satisfaction (0-10) and the income measure (thousands of euros, deflated by the CPI), all of the variables are dummy variables. SOEP data used: Socio-Economic Panel (SOEP), data for years 1995-2017, version 34, SOEP, 2017, doi: 10.5684/soepv34.

The life satisfaction averages are perhaps the most noteworthy element in this sample. Life satisfaction is highest for those who never experience temporary employment. In contrast, those currently in temporary employment have the lowest life satisfaction, and the other permanent employment groups are in between and not that far apart in terms of their average life satisfaction. The other descriptive statistics do not indicate large differences between the six groups, although the sample restriction should be remembered.

This sample is used to more clearly highlight issues of selection and causation. Five of these permanent and temporary employment categories (*futures*, *switchers in*, *temps*, *switchers out*, and *pasts*) enter into a regression equation with *nevers* comprising the comparator base category group, along with standard socio-economic variables and estimated by ordered logit analysis.²⁰ Simply put, if the *futures* and *switchers in* are less happy than the *nevers* this is evidence for selection. The logic being that those individuals who are permanently employed but will become temporarily employed are already less satisfied with life than those who are permanently employed (but never were) and will never be temporarily employed: thus, less satisfied individuals ‘select’ into temporary employment. Similarly, if the *pasts* and *switchers out* are less happy than those who never were (and never will be) temporarily employed, then this is taken to be evidence of causation: temporary employment causing lower life satisfaction. The results are presented below, and a discussion follows.

Table A2: Ordered logit regression coefficients,

	All (25-65)	25-39	40-60
Futures	0.09**	-0.09	0.10**
Switchers in	-.19**	-0.29**	-0.13
Temps	-0.32***	-0.49***	-0.21**
Switchers out	-0.21**	-0.32**	-0.18*

²⁰ Fixed effects analysis with its focus on intra person change would not permit a comparison between individuals in these different groups.

Pasts	-0.29***	-0.29***	-0.27***
Observations	94,948	26,330	63,350

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Controls include: income, full-time, new job, gender, marital status, education, objective health, industry, region and year.

The estimations, whose key results are presented in Table A2, provide an assessment of causation and selection. For selection, individuals who (at least while in the dataset) never experience temporary employment - the base category *nevers* – are directly compared with individuals who are permanently employed, but will become temporarily employed (the *futures* and *switchers in*). For causation, those who are permanently employed, but have prior experience of temporary employment (*pasts* and *switchers out*) are compared with those who are permanently employed, but do not have this experience (and will never have this experience). In short, the coefficients thus constitute evidence suggestive of causation for all three groups: a simple comparison of *pasts* and *nevers* indicates that those permanent employees with past experience of temporary employment are less satisfied with life than those permanent employees without this experience. It is important to note that since this outcome is found after controlling for the period of employment before becoming a temporary worker and when a temporary worker, this is therefore not just people reporting low well-being throughout their lives (i.e. before, during, and after the period of temporary employment). In counterpoint, for young people (who are at least twenty five), those who will experience temporary employment in the future (*futures*) are no less happy than those who will not, constituting evidence suggestive of no selection, although the *switchers in* coefficients likely indicate an anticipation effect for younger permanent employees who will enter temporary employment next year. For older, broadly middle-aged adults, there is some evidence of a selection effect into temporary employment. (These conclusions, and especially the causality finding, are broadly supported by estimations that also include the big five personality traits as well as worries about job security and subjective confidence about the likelihood of being able to find another job if the current one the individual has were to be lost.)²¹

Given the analysis of the main text, the coefficients obtained for *temps* in table A2 may at first glance appear puzzling. The magnitude of the ordered logit coefficient is smaller for the middle-aged than for the younger cohort, an outcome confirmed by the marginal effects and ordinary least squares analysis.²² However, as mentioned above in the appendix's first paragraph, *temps* here are only those who have had prior experience of permanent employment, which is less than 15% of all temps. Relaxing the restrictions used to select the sample above, and thus including all temps, and comparing them to all permanent employees confirms the analysis presented in the main text: there is a U-shape in the age against well-being relationship for both permanent and temporary employees, with the

²¹ These results are not included because of the substantial reduction in observations, but are available on request.

²² For brevity, marginal coefficients are not shown here - there are eleven for each coefficient in the table - though they always fully support the analysis presented, and are available on request.

midlife nadir being more keenly felt by those in midlife. Table A3 presents the overall coefficients.

Table A3 Overall ordered logit coefficients for permanent and temporary workers.

	1995 - 2001	
	P	T
30-34	-0.26***	-0.38***
35-39	-0.40***	-0.51***
40-44	-0.55***	-0.75***
45-49	-0.65***	-0.86***
50-54	-0.72***	-0.97***
55-59	-0.69***	-1.00***
60-64	-0.56***	-0.79***

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. See note for table A2 for controls.