Temporary Employment and Family Formation

van Wijk, Daniel C.; de Valk, Helga A. G.; Liefbroer, Aart C.

Published in:
European Sociological Review

DOI:
10.1093/esr/jcab007

European Sociological Review, 2021, Vol. 37, No. 4, 641–658
doi: 10.1093/esr/jcab007
Advance Access Publication Date: 26 March 2021
Original Article

Temporary Employment and Family Formation: An Income or Insecurity Effect?

Daniël C. van Wijk [1,*], Helga A.G. de Valk[1] and Aart C. Liefbroer [1,2,3]

[1]Netherlands Interdisciplinary Demographic Institute–KNAW/University of Groningen, 2511 CV The Hague, the Netherlands, [2]Department of Epidemiology, University Medical Centre Groningen, University of Groningen, 9713 GZ Groningen, the Netherlands and [3]Department of Sociology, Vrije Universiteit Amsterdam, 1081 HV Amsterdam, the Netherlands

*Corresponding author. Email: wijk@nidi.nl

Submitted July 2020; revised December 2020; accepted February 2021

Abstract

Recent studies show that temporary workers postpone family formation transitions, but it remains unclear whether this effect is due to the lower income or the stronger perceptions of job insecurity that go with a temporary contract. To address this question, we link data from a large-scale survey among Dutch employees to longitudinal population register data on marriage and first births. Logistic regression models estimate the effects of temporary employment on marriage and first birth, and mediation analyses assess to what extent these effects are explained by income and perceptions of job insecurity. Results show that temporarily employed women delay first birth. There is also some evidence that temporarily employed men postpone marriage and first birth. These effects are partly explained by income, which increases marriage and first birth rates among men and women alike. Perceptions of job insecurity generally had little effect on family formation, although higher marriage rates were found among women who experienced affective job insecurity. Overall, this shows that it is their low income rather than their feelings of insecurity about future employment that explains why temporary employees postpone family formation.

Introduction

The past decades have witnessed an increase in labour market flexibility in developed countries. Although this increased flexibility has often been suggested as a solution for economic problems and a stimulus for economic growth, a consequence has been that it has shifted risks and insecurity from employers to employees (Kalleberg, 2009; Standing, 2011). In Europe, this flexibilization of the labour market has been translated into an increase in temporary employment contracts, especially among young adults (Chung, Bekker and Houwing, 2012).

In response to these changes on the labour market, a substantial literature has emerged that examined the effects of temporary employment on family formation by linking life courses in the work and family domain (e.g. Blossfeld *et al.*, 2005). These studies have hypothesized, and often found, that individuals employed on temporary contracts delay major family formation transitions such as marriage and childbearing. The mechanisms behind this effect have, however, not often been examined empirically, and multiple explanations remain plausible (cf. Kalmijn, 2011). On the one hand,

individuals in temporary employment usually have a lower income than employees with a permanent contract. As higher incomes have frequently been related to the start of family formation (Hart, 2015; Schneider, Harknett and Stimpson, 2019), income may well explain the lower rates of family formation among temporary employees. On the other hand, workers in temporary employment are often insecure about their future employment (Anderson and Pontusson, 2007; Balz, 2017), which may prevent them from making long-term commitments such as marriage and childbearing.

The aim of this article is to examine to what extent the differences in marriage and first birth rates between permanent and temporary employees can be explained by temporary employees' lower incomes and to what degree it is a result of their stronger perceptions of job insecurity. As the vast majority of studies that have examined the relationship between temporary employment and family formation have not controlled for income, it remains unknown to what extent the effects of temporary employment found in these studies are due to the lower incomes of temporarily employed workers or to their stronger perceptions of job insecurity. The few studies that did include income in their models (Kalmijn, 2011; Schmitt, 2012; Vignoli, Drefahl and De Santis, 2012; Laß, 2020) generally found that after controlling for income a negative effect of temporary employment on family formation remained, which was attributed to temporary employees' stronger perceptions of job insecurity. However, even though this has often been suggested it has hardly been empirically tested. We are among the first to investigate how the (objective) condition of temporary employment is mediated by the (subjective) perception of job insecurity (see also Bernardi, Klärner and von der Lippe, 2008).

The focus of this study is on the Netherlands, a country that has witnessed a rising age at first marriage and first birth as well as a marked increase in the share of employees working on temporary contracts. We pooled data (2012–2016) from the Netherlands Working Conditions Survey ('Nationale Enquête Arbeidsomstandigheden'; NEA), a large-scale annual survey among Dutch employees that provides information on the type of employment contract and perceptions of job insecurity. The survey data were linked to longitudinal population register data, which provide information on marriages and first births of respondents in the years following the survey as well as detailed and complete data on income, which are often not available in surveys. Furthermore, this unique combination of survey and population register data allows us to control for a wide range of characteristics of both the respondent and his or her partner.

Theoretical Background

Temporary Employment and Family Formation

Economic precariousness has often been suggested to be key to explain the postponement of family formation in developed societies (Blossfeld *et al.*, 2005). A central hypothesis is that young adults in precarious employment situations delay major long-term commitments such as the transition to marriage or parenthood until a better position is achieved. This may be because individuals themselves perceive a stable employment position with a reasonable and steady income as a necessary requirement for family formation but also because economic precariousness may make individuals less attractive as a potential partner.

In the present study, we focus on temporary employment, which is often viewed as a key indicator of economic precariousness (De Cuyper *et al.*, 2008; Standing, 2011).[1] Quite some studies have investigated the effect of temporary employment on marriage and first birth rates, showing that the extent to which temporary workers delay family formation depends on the combination of the gender of respondents and the transition under study. Lower marriage rates were found among men in temporary—as opposed to permanent—employment in studies in Italy (Vignoli, Tocchioni and Salvini, 2016), Japan (Piotrowski, Kalleberg and Rindfuss, 2015), the Netherlands (de Lange *et al.*, 2014), and when pooling several European countries (Wolbers, 2007; Kalmijn, 2011), whereas no effects of men's temporary employment on marriage rates were found in Germany (Kurz, Steinhage and Golsch, 2005). The evidence regarding the effect of temporary employment on marriage for women is more mixed, with negative effects having been reported in Italy (Vignoli, Tocchioni and Salvini, 2016), Japan (Piotrowski, Kalleberg and Rindfuss, 2015), and in a sample of European countries (Wolbers, 2007), but not in Germany (Kurz, Steinhage and Golsch, 2005) and the Netherlands (de Lange *et al.*, 2014). Regarding the transition to parenthood, studies have found lower transition rates among temporarily employed men in Finland (Sutela, 2012), France (Pailhé and Solaz, 2012; Dupray and Pailhé, 2018), Italy (Vignoli, Drefahl and De Santis, 2012; Vignoli, Tocchioni and Mattei, 2019; but see Barbieri *et al.*, 2015), and Sweden (Lundström and Andersson, 2012). In contrast, no effects of men's temporary employment on the first birth rate were found in Australia (Laß, 2020), Germany (Kurz, Steinhage and Golsch, 2005; Schmitt, 2012; Auer and Danzer, 2015; Laß, 2020), the Netherlands (de Lange *et al.*, 2014), Spain (Barbieri *et al.*, 2015), the United Kingdom (Schmitt, 2012), and in a sample of European

countries (Wolbers, 2007). Finally, most convincing evidence for a delaying effect of temporary employment has been found for women's transition to parenthood, for which negative effects have been reported in Australia (Laß, 2020), Finland (Sutela, 2012), France (Pailhé and Solaz, 2012; Dupray and Pailhé, 2018), Germany (Schmitt, 2012; Auer and Danzer, 2015; Laß, 2020; but see Kurz, Steinhage and Golsch, 2005), Italy (Vignoli, Drefahl and De Santis, 2012; Vignoli, Tocchioni and Mattei, 2019; Barbieri *et al.*, 2015), Spain (Barbieri *et al.*, 2015), and Sweden (Lundström and Andersson, 2012), but not in the Netherlands (de Lange *et al.*, 2014) and in a sample of European countries (Wolbers, 2007).

Based on this summary of previous findings, we can conclude that negative effects of temporary employment on family formation have been found relatively consistently across studies, at least for marriage among men and for first birth among women. This is in line with the theoretical expectation that economic precariousness makes individuals postpone major long-term commitments and makes us hypothesize that:

H1: Individuals in temporary employment have lower marriage and first birth rates than individuals in permanent employment.

So far, however, it remains unclear from existing research what aspect of temporary employment results in a delay of family formation. We thus introduce and distinguish two potential mechanisms, one stressing differences in income and one focussing on differences in perceived job insecurity. We will discuss each of these mechanisms in more detail.

Income as Mediator

It has often been found that workers on temporary contracts face a wage penalty compared to permanent employees, which remains sizable after controlling for individual, family, and work characteristics (Giesecke and Groß, 2004; OECD, 2015). This wage gap may be the result of various factors. For example, temporary employees may have a less favourable bargaining position when discussing potential wage increases, employers may think temporary employees are less productive, and temporary employees may have less experience and responsibility at work than their counterparts employed on a permanent contract. In addition to lower hourly wages, temporary employees can be expected to face even lower annual incomes, since they may be more likely to experience periods out of employment (Giesecke and Groß, 2004) and may less often receive additional pay compensations (e.g. bonuses; OECD, 2015).

A large literature has in turn linked income with family formation. Historically, scholars expected a positive effect of income for men but a negative effect for women, building on the notion of a gendered division of labour (Becker, 1981). Recently, however, rising female labour force participation, also after childbearing, has been argued to promote a convergence in the effect of income across genders. As a result, the income of both partners is now usually expected to contribute to the resources that are (perceived to be) necessary to set up an independent family as well as to make them more attractive as a potential partner (Sweeney, 2002; Hart, 2015). This expectation has been supported by recent studies, which have found that a higher income encourages family formation for men and women alike (Hart, 2015; Schneider, Harknett and Stimpson, 2019). Combined with the expected lower income of temporary (compared to permanent) employees, this results in the hypothesis that:

H2: The negative effect of temporary employment on marriage and first birth rates is partly explained by the lower income that goes with a temporary contract.

Perceived Job Insecurity as Mediator

Perceived job insecurity refers to concerns regarding the future continuity of the current job (De Witte, 2005). A distinction can be made between cognitive job insecurity, or the perceived *likelihood* of losing the current job, and affective job insecurity, or *worries and anxiety* about losing the job (Anderson and Pontusson, 2007). Whereas cognitive job insecurity is shaped mainly by an employee's evaluation of the degree of employment protection and employability, affective job insecurity is also affected by the perception of the consequences of losing the job (Anderson and Pontusson, 2007).

As temporary contracts will—by definition—run out somewhere in the (near) future and might not be extended, temporary employees may experience higher cognitive and affective job insecurity, an expectation that has been supported by empirical findings (Auer and Danzer, 2015; Balz, 2017).

Perceived job insecurity has, in turn, often been expected to cause delays in major family formation transitions. Most theorizing in this respect has been based on the 'uncertainty argument' developed by Oppenheimer (1988). This theory argues that job insecurity raises considerable uncertainty about an individual's ability and willingness to commit to adult family

roles (see also Mills and Blossfeld, 2005). Individuals who perceive their job to be insecure face uncertainty about their future (socio)economic position but also about their future career path (e.g. location, working schedule, working pressure) and lifestyle (Kalmijn, 2011; De Lange *et al.*, 2014). As a response, they may decide to postpone family formation until a stable position is achieved (Laß, 2020). In addition, job insecurity—either perceived by the individual him/herself or by his/her partner—is often considered an unattractive characteristic in the relationship market, and young people may decide to postpone family formation until more information is available (Oppenheimer, 1988; Oppenheimer, Kalmijn and Lim, 1997). Finally, perceptions of job insecurity may act as a source of stress and relationship conflict (Blom, Kraaykamp and Verbakel, 2019), which may in turn inhibit family formation (Smock, Manning and Porter, 2005). Combined with the expectation that temporary employees are more likely to perceive job insecurity, this makes us hypothesize that:

H3: The negative effect of temporary employment on marriage and first birth rates is partly explained by the higher perceptions of cognitive and affective job insecurity that go with a temporary contract.

Given the centrality of perceptions of job insecurity to theoretical accounts on the postponement of family formation, surprisingly few studies have empirically tested its effects, and those who did exclusively focused on fertility. Of these, a study in Germany (Bhaumik and Nugent, 2011) found a lower probability of childbirth among women who were insecure about their job but not among men. Other studies in Germany (Kreyenfeld, 2010), Finland (Sutela, 2012), and Canada (Glavin, Young and Schieman, 2020) found no (main) effects of job insecurity perceived by women on first birth rates.[2] Finally, Auer and Danzer (2015) found that the negative effect of German women's temporary employment on fertility could not be explained by income or perceived job insecurity. However, in this study, employment status, income, and job insecurity were all measured in the year after graduation, whereas fertility outcomes were measured between 4 years and 10 years after that point, leaving a considerable time gap between the measurement of the explanatory variables and the outcome.

An overview of all hypotheses can be found in Figure 1.

Differences by Event and Gender

Although before we assumed that the effects of income and insecurity are similar for marriage and first birth as well as for men and women, there are reasons to expect that the effects may differ considerably in both size and direction depending on the event and by gender. Regarding the event under study, stronger income and insecurity effects could be expected for first birth than for marriage, as the transition to parenthood is associated with a higher cost and a more radical shift in daily activities than marriage (Liefbroer and Corijn, 1999). Regarding gender, it may be that the expected positive effect of income on family formation is weaker or even negative among women due to the higher opportunity costs of family formation for women with high incomes (Becker, 1981). Likewise, the expected negative effect of job insecurity on family formation may be weaker or even positive among women because some women may marry or have a child when they are faced with considerable uncertainty about future employment, to reduce uncertainty in other domains (Friedman, Hechter and Kanazawa, 1994). In contrast, the effect of job insecurity on first birth rates may be more strongly negative for women, as women may be more likely to lose their job when having a child than men because employers may expect women to take on most of the child-rearing responsibilities. To account for these potential differences by event and gender, we executed separate analyses for men and women and the two family formation events under study (marriage and first birth).

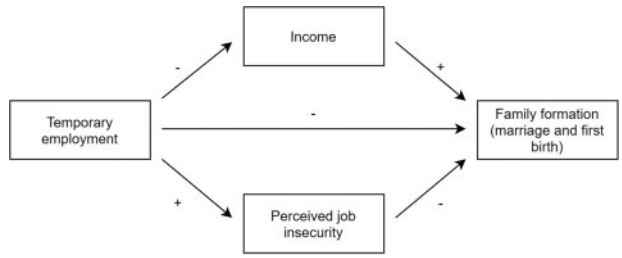

Figure 1. Conceptual model

Temporary Employment and Family Formation in the Netherlands

The Netherlands have witnessed a rapid increase in the prevalence of temporary employment contracts in the past decades. Whereas in 1997, only 11.4 per cent of Dutch employees were working on a temporary contract, this nearly doubled to 21.8 per cent in 2017 (OECD, 2019). Temporary employees on average are much younger than permanent employees, and more often are female than male. In the Netherlands in 2019, for example, 80.3 per cent of temporary employees were younger than 45 and 51.2 per cent were female, whereas only 51.7 per cent of all permanent employees were younger than 45 per cent and 47.8 per cent were female (Statistics Netherlands, 2020a). Different forms of temporary employment arrangements (e.g. fixed-term contracts, on-call employment, agency work) are used by employers to, for example, screen new employees, adapt to fluctuations in demand or replace absent workers (Van Echteld, Schellingerhout and De Voogd-Hamelink, 2015), but all provide employees with little security of employment after the contract ends.

At the same time, family formation patterns have also changed substantially. Nowadays, the vast majority of Dutch young adults start their relational career with a period of unmarried cohabitation (Fokkema *et al.*, 2008). For example, of all 25-year-olds in the Netherlands in 2018, 34.9 per cent were cohabiting with a partner, but only 24.5 per cent of these cohabiting couples were married (Statistics Netherlands, 2020b). Most still formalize their relationship before having children, however. In 2018, 50.6 per cent of all births to households without children happened to women who were either married or in a registered partnership (Statistics Netherlands, 2020b), which are very similar in terms of their legal status. In addition, 39.5 per cent of these births happened to women who were cohabiting but not married (Statistics Netherlands, 2020c).

Methods

Data

This study used data from the NEA, a yearly survey carried out by the Netherlands Organisation for Applied Scientific Research and Statistics Netherlands examining the quality of working conditions among employees in the Netherlands (Hooftman *et al.*, 2016). It focuses solely on employees and thus contains no information on the non-employed and the self-employed. As we are interested in the effects of temporary contracts, which are necessarily held by employees, the characteristics of the data fit the purpose of our study.

In the NEA, a new sample of employees is interviewed each year, with data collection taking place between early October and late December.[3] Data from the years 2012–2016 were pooled and all respondents aged 18–45 who were cohabiting with a partner in that same age range and had not made the transition under study (i.e. marriage or parenthood) were selected. Same-sex couples were excluded from all analyses. We focus on cohabiting respondents because we believe that our theoretical mechanisms are most relevant to family formation decisions within couples. Moreover, focusing on couples allows us to include partner characteristics in the model. However, sensitivity analyses that also included non-cohabiting respondents yielded substantively similar results to those reported here (see Supplementary Material S2).

To obtain data on the family transitions under study as well as on characteristics of the respondents and their partners who were not available in the survey, the selected respondents were linked to the Dutch longitudinal population register system of social statistical data sets (SSD). The SSD is a comprehensive data set built and maintained by Statistics Netherlands, in which the Dutch population registers (including the full residing population) are linked to other registers including, for example, tax and school registrations (Bakker *et al.*, 2014). Because the population registers provided time-varying information on marriages and first births, we converted the data to a person-month format, in which respondents left the sample after they experienced the event under consideration. This furthermore allowed us to censor respondents when they stopped cohabiting, at the end of the 2-year observation period, and when data were missing due to an incomplete observation period.[4] We excluded respondents with missing data on any of the variables (less than 5 per cent in every sample). Furthermore, respondents who participated in multiple waves of the NEA were randomly selected only once. This resulted in final sample sizes of 7,427 respondents and 158,893 person-months for men and marriage, 8,543 respondents and 183,548 person-months for women and marriage, 5,667 respondents and 106,811 person-months for men and first births, and 6,768 respondents and 126,245 person-months for women and first births.

Dependent Variables

Two dependent variables were used in this study, one indicating the transition to marriage and the other the

birth of a first child. For the transition to marriage, we selected all respondents who were cohabiting with a partner but who were not married at the time of the interview and had never been married before the interview. Respondents who were cohabiting with a partner who had been married in the past were also excluded. The dependent variable indicated whether respondents married (1) or not (0) in each month between the interview and 2 years after the interview (respondents who entered a registered partnership were recorded as married given the similarity in legal terms).

For the models predicting first births, we selected all respondents who were cohabiting (either married or unmarried) and did not have children and were not pregnant at the time of the interview. Respondents whose partner had had a child or was pregnant during the interview were also excluded. The dependent variable in these models measured whether respondents had their first child (1) or not (0) in each month between 9 months and 33 months after the interview. In other words, both dependent variables were based on monthly information for a period of 2 years after the interview, but first births were 'backdated' 9 months to approximate the date of conception.[5]

Main Independent Variables

Temporary employment was measured using a survey question on the type of contract and distinguished between respondents employed on a permanent employment contract on the one hand and respondents employed on a fixed-term contract, respondents employed through a temporary employment agency, and respondents in on-call employment on the other hand.[6] *Income* was measured using the personal annual income of a respondent in the interview year, derived from the tax registers. This includes all earnings from employment and benefits at the individual level (excluding child benefits and rent allowance). After setting negative values on this variable to zero,[7] converting the values to 10,000s of euros, and adding a 1 to each value, we took the natural logarithm of this variable because income effects are expected to be largest when incomes are relatively low (Oppenheimer, Kalmijn and Lim, 1997).

Job insecurity was measured by two dummy variables based on questions in the NEA that asked whether respondents thought they were at risk of losing their job (*cognitive job insecurity*) and whether they worried about keeping their job (*affective job insecurity*), answering categories being yes (1) or no (0).

Other Independent Variables

All models controlled for the effects of a respondent's *age*, *level of education*, *ethnicity*, *perceived general health*, *educational status*, *number of working hours*, *sector of employment*, and *occupational status*. Most of these variables were based on questions in the NEA, but ethnicity, educational status, and the sector of employment were derived from the SSD. *Age* was modelled by a linear and quadratic term of the age minus 18. *Level of education* was based on the highest level of educational attainment, categorized into three groups: low education (ISCED 0-2; reference category), middle education (ISCED 3-4), and high education (ISCED 5-8). *Ethnicity* was based on the country of birth of the respondent and his/her parents and grouped into Dutch, western, and non-western origin based on the official definition of Statistics Netherlands. *Perceived general health* was based on a survey question in the NEA that asked respondents how they perceived their health. As the possible answer categories to this question changed in 2014 (Mars, Michiels and Willems, 2016), standardized values for the periods before and after 2014 were used to obtain a single, continuous measure of health that is comparable across years. *Educational status* measured whether respondents were in full-time education, in part-time education, or not in education, with the last option specified as the reference category. As the NEA is limited to employees, all respondents who were in education were also employed. The *number of working hours* was measured by a survey question that asked how many hours per week respondents worked according to their contract and was included in the models as a continuous variable. The *sector of employment* was derived from the SSD and grouped into eight categories (see Table 1). Finally, a survey question on the respondent's occupation was used to measure *occupational status*. Before 2014, this question had over 40 potential answer categories. From 2014 onwards, an open question was used. For all years, respondents' answers were converted to International Standard Classification of Occupations (ISCO-08) minor unit groups, to which scores on the 2008 International Socio-Economic Index of occupational status (ISEI; Ganzeboom, De Graaf and Treiman, 1992) were assigned. Values range from 11.9 (agricultural, forestry, and fishery labourers) to 88.7 (medical doctors). Respondents who were in an 'other' occupation that did not fit in any of the categories (around 10 per cent) were assigned the mean ISEI score of all respondents. Occupational status was included in the models to control for the potentially lower status of occupations in which temporary contracts are common.

Table 1. Logit coefficients and standard errors of discrete-time event history models estimating the effect of temporary employment, income, and perceived job insecurity on the transition to marriage

	Men								Women							
	Model 1		Model 2		Model 3		Model 4		Model 1		Model 2		Model 3		Model 4	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
Temporary contract	−0.144	0.080	−0.107	0.082	−0.088	0.085	−0.084	0.084	0.070	0.064	0.100	0.065	0.068	0.068	0.065	0.066
Income (logged)			0.240*	0.117	0.240*	0.117	0.238*	0.117			0.306*	0.125	0.309*	0.125	0.315*	0.125
Cognitive job insecurity					−0.053	0.072							0.092	0.064		
Affective job insecurity							−0.096	0.076							0.127*	0.061
Type of contract, partner (ref = permanent)																
Temporary	0.072	0.067	0.068	0.067	0.066	0.067	0.067	0.067	−0.078	0.065	−0.076	0.065	−0.077	0.065	−0.075	0.064
Not in job registers	−0.009	0.117	−0.021	0.117	−0.020	0.117	−0.019	0.117	−0.312*	0.120	−0.312*	0.120	−0.308*	0.120	−0.304*	0.120
Income, partner (logged)	0.070	0.076	0.064	0.076	0.065	0.077	0.064	0.077	0.183*	0.076	0.168*	0.076	0.171*	0.076	0.176*	0.076
Age	0.017	0.036	0.008	0.036	0.009	0.036	0.009	0.036	0.066	0.034	0.055	0.034	0.055	0.034	0.055	0.034
Age^2	−0.001	0.001	−0.001	0.001	−0.001	0.001	−0.001	0.001	−0.004*	0.001	−0.004*	0.001	−0.004*	0.001	−0.004*	0.001
Age, partner	0.112*	0.034	0.112*	0.034	0.111*	0.034	0.112*	0.034	0.095*	0.035	0.096*	0.035	0.094*	0.035	0.095*	0.035
Age^2, partner	−0.005*	0.001	−0.005*	0.001	−0.005*	0.001	−0.005*	0.001	−0.003*	0.001	−0.003*	0.001	−0.003*	0.001	−0.003*	0.001
Duration of cohabitation	−0.038	0.030	−0.038	0.030	−0.039	0.030	−0.039	0.030	−0.026	0.031	−0.026	0.031	−0.026	0.031	−0.026	0.031
Duration of cohabitation^2	−0.002	0.002	−0.002	0.002	−0.002	0.002	−0.002	0.002	−0.002	0.002	−0.002	0.002	−0.002	0.002	−0.002	0.002
Child or pregnant at interview	−0.291*	0.077	−0.299*	0.077	−0.298*	0.077	−0.298*	0.077	−0.437*	0.076	−0.424*	0.076	−0.422*	0.076	−0.423*	0.076
Health	−0.007	0.030	−0.010	0.030	−0.012	0.030	−0.015	0.031	−0.012	0.028	−0.014	0.028	−0.012	0.028	−0.009	0.028
Ethnicity (ref = native Dutch)																
Non-western	0.107	0.133	0.120	0.133	0.119	0.133	0.126	0.133	0.224	0.124	0.222	0.124	0.220	0.124	0.212	0.124
Western	0.054	0.109	0.056	0.109	0.057	0.109	0.059	0.109	0.178	0.097	0.179	0.097	0.178	0.097	0.174	0.098
Ethnicity, partner (ref = native Dutch)																
Non-western	0.534*	0.126	0.534*	0.126	0.534*	0.126	0.537*	0.126	−0.131	0.131	−0.122	0.131	−0.119	0.131	−0.122	0.131
Western	0.095	0.099	0.098	0.099	0.098	0.099	0.100	0.099	−0.249*	0.114	−0.244*	0.114	−0.242*	0.114	−0.244*	0.114
Level of education (ref = low)																
Medium	0.050	0.112	0.037	0.112	0.037	0.112	0.035	0.112	0.035	0.138	0.014	0.139	0.011	0.139	0.011	0.138
High	0.038	0.121	−0.004	0.122	−0.004	0.122	−0.011	0.123	−0.134	0.143	−0.187	0.145	−0.195	0.145	−0.190	0.145
Highly educated partner	−0.045	0.067	−0.045	0.067	−0.045	0.067	−0.047	0.067	0.021	0.061	0.011	0.061	0.012	0.061	0.014	0.061

(continued)

Table 1. (Continued)

	Men								Women							
	Model 1		Model 2		Model 3		Model 4		Model 1		Model 2		Model 3		Model 4	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
Educational status (ref = not in education)																
Part-time	−0.328	0.181	−0.325	0.182	−0.325	0.182	−0.325	0.182	−0.058	0.149	−0.047	0.149	−0.044	0.149	−0.036	0.149
Full-time	−0.230	0.215	−0.162	0.217	−0.159	0.217	−0.168	0.218	−0.321*	0.158	−0.286	0.159	−0.274	0.159	−0.262	0.159
Educational status, partner (ref = not in education)																
Part-time	0.042	0.165	0.044	0.165	0.047	0.165	0.048	0.165	0.051	0.148	0.043	0.148	0.036	0.148	0.039	0.149
Full-time	−0.450*	0.158	−0.446*	0.158	−0.447*	0.158	−0.446*	0.158	−0.444*	0.195	−0.441*	0.195	−0.444*	0.195	−0.441*	0.195
Sector (ref = ICT, business and financial services)																
Agriculture, industry, construction	0.040	0.078	0.028	0.079	0.027	0.079	0.027	0.079	0.074	0.114	0.071	0.114	0.074	0.114	0.078	0.114
Trade and transportation	−0.035	0.086	−0.030	0.086	−0.033	0.086	−0.032	0.086	−0.017	0.093	0.003	0.093	0.009	0.093	0.011	0.093
Hotel and catering industry	−0.341	0.222	−0.306	0.223	−0.311	0.223	−0.316	0.223	−0.260	0.178	−0.230	0.178	−0.217	0.179	−0.217	0.178
Public administration	0.121	0.119	0.119	0.119	0.118	0.119	0.119	0.119	−0.038	0.138	−0.057	0.138	−0.058	0.138	−0.061	0.138
Education	0.376*	0.137	0.410*	0.138	0.405*	0.138	0.405*	0.138	0.230*	0.101	0.255*	0.102	0.257*	0.102	0.255*	0.102
Healthcare	−0.110	0.138	−0.096	0.138	−0.098	0.138	−0.096	0.138	0.146	0.076	0.141	0.076	0.140	0.076	0.136	0.076
Culture and other	−0.177	0.210	−0.159	0.210	−0.161	0.210	−0.163	0.210	0.071	0.135	0.089	0.136	0.093	0.136	0.093	0.136
Occupational status (ISEI)	0.001	0.002	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.002	−0.001	0.002	−0.000	0.002	−0.000	0.002
Hours worked	0.002	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.006	0.003	0.002	0.004	0.002	0.004	0.002	0.004
Hours worked, partner	−0.000	0.003	−0.000	0.003	−0.000	0.003	−0.000	0.003	0.001	0.002	0.001	0.002	0.001	0.002	0.001	0.002
Interview year (ref =2012)																
2013	0.101	0.110	0.097	0.110	0.095	0.110	0.094	0.110	−0.052	0.095	−0.054	0.095	−0.057	0.095	−0.058	0.095
2014	0.082	0.099	0.081	0.099	0.080	0.099	0.077	0.099	−0.036	0.091	−0.024	0.092	−0.029	0.092	−0.026	0.092
2015	0.144	0.094	0.142	0.094	0.139	0.094	0.135	0.094	0.030	0.088	0.039	0.088	0.040	0.088	0.043	0.088
2016	0.237*	0.095	0.233*	0.095	0.226*	0.096	0.225*	0.095	0.190*	0.087	0.198*	0.087	0.205*	0.087	0.208*	0.087
Months since interview	0.040*	0.004	0.040*	0.004	0.040*	0.004	0.040*	0.004	0.036*	0.004	0.037*	0.004	0.037*	0.004	0.037*	0.004
Constant	−5.699*	0.341	−5.844*	0.350	−5.838*	0.350	−5.823*	0.350	−6.135*	0.312	−6.241*	0.318	−6.260*	0.318	−6.295*	0.318
N respondents	7,427		7,427		7,427		7,427		8,543		8,543		8,543		8,543	
N person-months	158,893		158,893		158,893		158,893		183,548		183,548		183,548		183,548	
χ^2	390.08		393.52		393.87		394.97		479.7		482.11		483.58		485.64	

*$P < 0.05$.

After controlling for occupational status, differences in income between permanent and temporary employees can be interpreted as income differences despite having a job with a similar occupational status.

In addition, we controlled for several characteristics of the respondent's current partner, all of which were derived from the SSD. *Partner's age*, *ethnicity*, *educational status*, and *income* were measured in the same way as the respective variables for the respondent. *Partner's level of education* was measured by a dummy that indicated whether a respondent's partner had completed tertiary education in the Netherlands, measured in 2016 for all partners. *Partner's working hours* denoted the number of working hours in the interview month specified in the partner's contract, which was divided by 4.2 to give a measure similar to the one used for respondents. Finally, *partner's employment status* indicated whether a respondent's partner was employed on a permanent contract (reference category), a temporary contract, or did not appear in the job registers. In the last case, a respondent's partner was either not employed or self-employed.

We also included a set of dummies denoting the *interview year*. Furthermore, we controlled for the duration of cohabitation, measured as the number of months since the start of cohabitation (divided by 12) and modelled with a linear and a quadratic term. Finally, we included a variable that denoted whether a respondent had had a child or was pregnant at the time of the interview in the models predicting the transition to marriage, and a variable denoting whether a respondent was married at the time of the interview in the models predicting first births.

Age, time since cohabitation, and a control variable that indicated the number of months that had passed since the start of the observation period were included in the model as time-varying covariates. All other independent variables were included as time-constant covariates, measured at the time of the interview. This was done to ensure that all variables in the mediation analysis were measured at the same point in time.

Descriptive Statistics

Tables in the Supplementary Material S1 show descriptive statistics for all variables by sex and the transition under study, based on the 'standard' data format in which an observation represents a person rather than a person-month. In our sample of employed and cohabiting respondents who had never married at the time of the interview, 17.4 per cent of men and 16.9 per cent of women married within 2 years after the interview. Likewise, in the first birth sample, 27.5 per cent of men and 28.9 per cent of women had a first child between 9 months and 33 months after the interview. The share of respondents with a temporary contract ranged from 16.6 per cent for men in the marriage sample to 32.1 per cent for women in the first birth sample, which reflects the national figures during the 2012–2016 period. Cognitive and affective job insecurity were both experienced by approximately 25 per cent of respondents, with women slightly more likely to report job insecurity than men.

Modelling Strategy

The data were analysed using discrete-time event history analysis with logistic regression and clustered standard errors at the individual level. A mediation-based approach was used, with separate models by gender and event (marriage or parenthood). Model 1 estimated the effect of temporary employment on the transition rates, controlling for all independent variables except income and perceived job insecurity. Income was added in Model 2, cognitive job insecurity in Model 3, and affective job insecurity in Model 4. Cognitive job insecurity was removed from this last model because of the high correlation between the two job insecurity variables (e.g. Pearson's $r = 0.49$ for men in the marriage sample).

A problem when conducting mediation analysis using logistic regression models is that the individual-level error term of logistic regression models is fixed and, as a result, adding a new variable to the model changes the coefficients of other variables even when the new variable is unrelated to these other variables (Mood, 2010). In a final step, this problem of 'rescaling' was tackled by adopting the so-called KHB method (Karlson, Holm and Breen, 2012), which computes 'x-residualized' mediators that are unrelated to the predictor variable of interest (i.e. temporary employment). The effect of temporary employment in a model controlling for the x-residualized mediator is then compared to the effect of temporary employment in a model controlling for the 'normal' mediator. The difference between these effects gives the effect due to mediation, net of rescaling. The standard error of this difference is calculated using the delta method, allowing a formal statistical test of the extent of mediation (Karlson, Holm and Breen, 2012).

Results

Temporary Employment and Family Formation

The first models show the effects of temporary employment on marriage rates (Model 1, Table 1) and first birth rates (Model 1, Table 2), without controlling for a

Table 2. Logit coefficients and standard errors of discrete-time event history models estimating the effect of temporary employment, income, and perceived job insecurity on the transition to parenthood

	Men								Women							
	Model 1		Model 2		Model 3		Model 4		Model 1		Model 2		Model 3		Model 4	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
Temporary contract	−0.103	0.067	−0.030	0.069	−0.013	0.072	−0.015	0.070	−0.134*	0.053	−0.090	0.054	−0.091	0.058	−0.103	0.056
Income (logged)			0.520*	0.111	0.521*	0.111	0.516*	0.111			0.415*	0.108	0.415*	0.108	0.419*	0.108
Cognitive job insecurity					−0.053	0.067							0.001	0.056		
Affective job insecurity							−0.071	0.069							0.045	0.054
Type of contract, partner (ref = permanent)																
Temporary	−0.147*	0.060	−0.150*	0.060	−0.151*	0.060	−0.151*	0.060	0.061	0.055	0.059	0.055	0.059	0.055	0.060	0.055
Not in job registers	−0.069	0.115	−0.085	0.115	−0.083	0.115	−0.083	0.115	0.109	0.101	0.104	0.101	0.104	0.101	0.107	0.101
Income, partner (logged)	0.337*	0.062	0.327*	0.061	0.323*	0.061	0.323*	0.061	0.285*	0.067	0.256*	0.068	0.256*	0.068	0.258*	0.068
Age	0.112*	0.038	0.094*	0.038	0.094*	0.038	0.094*	0.038	0.339*	0.033	0.322*	0.034	0.322*	0.034	0.321*	0.034
Age^2	−0.004*	0.001	−0.004*	0.001	−0.004*	0.001	−0.004*	0.001	−0.013*	0.001	−0.013*	0.001	−0.013*	0.001	−0.013*	0.001
Age, partner	0.321*	0.039	0.318*	0.039	0.318*	0.039	0.318*	0.039	0.139*	0.033	0.141*	0.033	0.141*	0.033	0.141*	0.033
Age^2, partner	−0.013*	0.001	−0.013*	0.001	−0.013*	0.001	−0.013*	0.001	−0.005*	0.001	−0.005*	0.001	−0.005*	0.001	−0.005*	0.001
Duration of cohabitation	0.109*	0.033	0.108*	0.033	0.108*	0.033	0.108*	0.033	0.099*	0.030	0.098*	0.030	0.098*	0.030	0.098*	0.030
Duration of cohabitation^2	−0.016*	0.003	−0.016*	0.003	−0.016*	0.003	−0.016*	0.003	−0.015*	0.002	−0.014*	0.002	−0.014*	0.002	−0.014*	0.002
Married at interview	0.621*	0.061	0.620*	0.061	0.620*	0.061	0.620*	0.061	0.514*	0.053	0.517*	0.053	0.517*	0.053	0.517*	0.053
Health	0.031	0.028	0.024	0.028	0.023	0.028	0.020	0.029	0.015	0.024	0.011	0.024	0.011	0.024	0.014	0.025
Ethnicity (ref = native Dutch)																
Non-western	0.189	0.120	0.213	0.120	0.214	0.120	0.218	0.120	0.031	0.102	0.030	0.102	0.030	0.102	0.024	0.102
Western	−0.173	0.115	−0.165	0.116	−0.165	0.116	−0.163	0.116	−0.223*	0.093	−0.219*	0.094	−0.219*	0.094	−0.222*	0.094
Ethnicity, partner (ref = native Dutch)																
Non-western	−0.139	0.122	−0.138	0.122	−0.135	0.122	−0.136	0.122	0.198	0.105	0.205	0.105	0.205	0.105	0.208	0.105
Western	−0.098	0.095	−0.097	0.095	−0.098	0.095	−0.097	0.095	−0.013	0.093	−0.014	0.093	−0.014	0.093	−0.013	0.093
Level of education (ref = low)																
Medium	−0.130	0.104	−0.154	0.103	−0.153	0.103	−0.157	0.103	0.051	0.133	0.017	0.133	0.016	0.133	0.015	0.133
High	−0.052	0.110	−0.125	0.111	−0.125	0.111	−0.131	0.111	−0.096	0.135	−0.171	0.137	−0.171	0.137	−0.174	0.137
Highly educated partner	−0.007	0.060	−0.016	0.060	−0.015	0.059	−0.016	0.060	−0.070	0.051	−0.078	0.051	−0.078	0.051	−0.076	0.051

(continued)

Table 2. (Continued)

	Men								Women							
	Model 1		Model 2		Model 3		Model 4		Model 1		Model 2		Model 3		Model 4	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
Educational status (ref = not in education)																
Part-time	−0.108	0.152	−0.108	0.153	−0.107	0.153	−0.111	0.153	−0.261	0.134	−0.245	0.134	−0.245	0.134	−0.242	0.135
Full-time	−0.188	0.201	−0.068	0.201	−0.064	0.201	−0.070	0.200	−0.623*	0.171	−0.566*	0.172	−0.565*	0.172	−0.556*	0.173
Educational status, partner (ref = not in education)																
Part-time	−0.192	0.150	−0.182	0.149	−0.183	0.149	−0.183	0.149	−0.154	0.142	−0.167	0.142	−0.167	0.142	−0.167	0.142
Full-time	−0.276	0.142	−0.285*	0.142	−0.285*	0.142	−0.286*	0.142	−0.320*	0.162	−0.326*	0.162	−0.326*	0.162	−0.325*	0.162
Sector (ref = ICT, business and financial services)																
Agriculture, industry, construction	−0.007	0.071	−0.044	0.071	−0.045	0.071	−0.045	0.071	−0.250*	0.107	−0.272*	0.108	−0.272*	0.108	−0.270*	0.108
Trade and transportation	0.068	0.078	0.078	0.078	0.075	0.078	0.079	0.078	−0.167*	0.085	−0.144	0.085	−0.144	0.085	−0.142	0.085
Hotel and catering industry	−0.098	0.175	−0.020	0.175	−0.026	0.175	−0.025	0.175	−0.037	0.148	0.006	0.149	0.006	0.149	0.011	0.149
Public administration	−0.110	0.116	−0.121	0.116	−0.121	0.116	−0.119	0.116	−0.083	0.120	−0.106	0.120	−0.106	0.120	−0.107	0.120
Education	0.050	0.144	0.114	0.145	0.111	0.146	0.111	0.146	0.220*	0.084	0.249*	0.084	0.249*	0.084	0.248*	0.084
Healthcare	−0.030	0.120	−0.008	0.120	−0.008	0.120	−0.011	0.120	0.241*	0.065	0.235*	0.065	0.235*	0.065	0.235*	0.065
Culture and other	0.059	0.185	0.111	0.185	0.114	0.185	0.116	0.185	−0.060	0.127	−0.043	0.128	−0.043	0.128	−0.041	0.128
Occupational status (ISEI)	−0.004*	0.002	−0.006*	0.002	−0.006*	0.002	−0.006*	0.002	0.001	0.001	−0.001	0.001	−0.001	0.001	−0.001	0.001
Hours worked	0.005	0.004	−0.000	0.004	−0.000	0.004	−0.000	0.004	0.002	0.003	−0.003	0.003	−0.003	0.003	−0.003	0.003
Hours worked, partner	−0.000	0.003	−0.001	0.003	−0.001	0.003	−0.001	0.003	0.001	0.002	0.001	0.002	0.001	0.002	0.001	0.002
Interview year (ref = 2012)																
2013	0.077	0.093	0.062	0.093	0.060	0.093	0.060	0.093	−0.002	0.076	−0.007	0.076	−0.007	0.076	−0.008	0.076
2014	−0.071	0.085	−0.078	0.085	−0.079	0.085	−0.081	0.085	−0.221*	0.076	−0.205*	0.077	−0.205*	0.076	−0.206*	0.076
2015	0.010	0.081	0.011	0.081	0.007	0.081	0.007	0.081	−0.200*	0.073	−0.192*	0.074	−0.192*	0.074	−0.192*	0.074
2016	−0.028	0.087	−0.040	0.087	−0.046	0.088	−0.045	0.088	−0.156*	0.077	−0.144	0.078	−0.144	0.078	−0.142	0.078
Months since interview	0.010*	0.004	0.012*	0.004	0.012*	0.004	0.012*	0.004	−0.002	0.004	−0.001	0.004	−0.001	0.004	−0.001	0.004
Constant	−7.101*	0.339	−7.375*	0.341	−7.371*	0.341	−7.358*	0.341	−7.374*	0.309	−7.502*	0.310	−7.502*	0.310	−7.522*	0.311
N respondents	5,667		5,667		5,667		5,667		6,768		6,768		6,768		6,768	
N person-months	106,811		106,811		106,811		106,811		126,245		126,245		126,245		126,245	
χ^2	520.1		543.0		544.5		546.3		673.18		692.0		692.6		694.4	

*$P < 0.05$.

respondent's income and perceived job insecurity. These models show that women employed on a temporary contract were significantly less likely to give birth to a first child ($b = -0.134$; $P < 0.05$). The monthly probability of conceiving a child was 12.3 per cent lower for women with a temporary contract compared to women with a permanent contract (based on average marginal effects). An effect that is similar in size was found for men's temporary employment on marriage rates, but this effect did not reach conventional levels of statistical significance ($P = 0.07$). No effects of temporary employment were found for women on marriage and for men on first births. However, robustness checks showed that men's temporary employment did have a significant negative effect on the first birth rate when either non-cohabiting respondents were included in the sample or when the model was restricted to the first year after the interview (see Supplementary Materials S2 and S3). These results are largely mirrored by the effect of temporary employment of the partner (note, however, that these models already control for the income of the partner) and partly support the hypothesis (H1) that individuals in temporary employment have lower marriage and first birth rates than individuals in permanent employment.

Additional models included an interaction effect between temporary employment and educational attainment. This showed that the negative effect of women's temporary employment on the first birth rate was evident only for highly educated women, whereas temporary employment had no effect on the first birth rate among medium educated women and a positive effect among women with low levels of educational attainment. This confirms findings of previous studies (Pailhé and Solaz, 2012; Barbieri *et al.*, 2015). No significant interaction effects with education were found for women's marriage nor for men (see Supplementary Material S5).

The effects of the other independent variables largely confirm findings from previous research. Marriage and first birth rates initially increased and subsequently decreased with age. Time spent in cohabitation had a similar inverse U-shaped effect on first births but did not affect marriage. Having a child decreased the likelihood of marriage, but being married increased the likelihood of having a child. This confirms the predominance of family formation sequences in which couples either marry first and then have children or have children but do not marry at all. Level of education had no significant effect in any of the models, which is probably because our sample only included respondents who were employed and cohabiting. Being enrolled in full-time education, or having a partner who was enrolled in full-time education, generally decreased the likelihood of family formation. Turning to the sector of employment, it was found that men and women who worked in education were more likely to marry, compared to their counterparts in ICT, business, and financial services. Women employed in education and healthcare were also more likely to have a first child, whereas being employed in agriculture, industry, and construction or in trade and transportation decreased women's probability of having a first child. Occupational status had a significant negative effect on first birth rates for men but had no effect in the other models. Respondents' perceived general health had no effect on the rates of family formation in any of the models. Finally, having a partner with a higher income strongly increased the probability of having a first child for both genders, and women who had a partner with a higher income were also significantly more likely to marry.

Mediation Analysis

We now move on to examine to what extent the effect of temporary employment on the rate of family formation can be explained by income and perceptions of job insecurity. Analyses in the Supplementary Material S4 show that temporary employees had a substantially lower average income and experienced both cognitive and affective job insecurity much more often than permanent employees. This points to the potential relevance of income and job insecurity as mediators of the effect of temporary employment.

Next, we discuss the effects of income (Model 2), cognitive job insecurity (Model 3), and affective job insecurity (Model 4) on the transition to marriage (Table 1) and first birth (Table 2). The income of both male and female respondents, as well as their partners, had a strong positive effect on first birth rates. For example, an increase in the income of a male respondent by 50 per cent was associated with an increase in the average monthly probability of conceiving a first child by 18.9 per cent. Income also significantly increased the likelihood of marriage among male and female respondents, but effects were weaker than for first births. Turning to the job insecurity variables, it was found that affective job insecurity significantly increased the marriage rates of women ($b = 0.127$, $P < 0.05$). The average monthly probability of marriage was 13.4 per cent higher for women who were worried about keeping their job than for women who were not worried. Cognitive and affective job insecurity had no significant effects on the rates of marriage and first birth in any of the other models.

Table 3. Logit coefficients and standard errors of the effect of temporary employment on marriage and first birth before and after adding income, cognitive job insecurity, and affective job insecurity to the model

	Marriage				First birth			
	Men		Women		Men		Women	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
Without income	−0.143	0.079	0.071	0.064	−0.106	0.067	−0.135*	0.053
With income	−0.107	0.082	0.100	0.065	−0.030	0.069	−0.090	0.054
Difference	−0.037*	0.018	−0.029*	0.012	−0.075*	0.017	−0.044*	0.012
Without cognitive job insecurity	−0.108	0.082	0.099	0.065	−0.030	0.069	−0.090	0.054
With cognitive job insecurity	−0.088	0.085	0.068	0.068	−0.013	0.072	−0.090	0.058
Difference	−0.019	0.026	0.031	0.022	−0.017	0.022	0.000	0.019
Without affective job insecurity	−0.106	0.082	0.097	0.065	−0.031	0.069	−0.091	0.054
With affective job insecurity	−0.084	0.084	0.065	0.066	−0.015	0.070	−0.103	0.056
Difference	−0.023	0.018	0.032*	0.015	−0.016	0.015	0.012	0.015

Notes: *$P < 0.05$. Results are based on discrete-time event history models estimated using the KHB method. Coefficients in the 'Difference' rows refer to the change in coefficients due to the inclusion of the mediator. The standard error of this difference is calculated using the delta method (Karlson, Holm and Breen, 2012). The models control for all other independent variables in Table 1 (for marriage) or Table 2 (for first birth).

Tables 1 and 2 also show how the effect of temporary employment on marriage and first birth rates changed when the mediators were included in the models. However, due to the rescaling of coefficients, effects cannot be compared directly across models. We therefore report formal mediation tests using the KHB method (Karlson, Holm and Breen, 2012) in Table 3. This shows that income significantly mediated the effect of temporary employment in all models ($P < 0.05$). The negative effects of temporary employment for both events among men and for first births among women reduced substantially after taking into account the lower income of temporary employees, and after controlling for income temporary employment no longer had a significant effect on marriage and first birth rates in any of the models. This provides support for the hypothesis (H2) that the negative effect of temporary employment on marriage and first birth rates is partly explained by the lower income that goes with a temporary contract. Turning to the mediation by job insecurity, the only significant effect that was found shows that, contrary to what was expected, the effect of women's temporary employment on marriage became less positive once affective job insecurity was added to the model. The effect of women's temporary employment on marriage was itself not significant, however. Moreover, cognitive and affective job insecurity did not mediate the effects of temporary employment in any of the other models, which is in line with the small and insignificant effect of these variables reported in Tables 1 and 2 and makes us reject the hypothesis (H3) that the negative effect of temporary employment on marriage and first birth rates is partly explained by the higher perceptions of cognitive and affective job insecurity that go with a temporary contract.[8]

Discussion

In this article, we aimed to understand the potential mechanisms behind the commonly found link between temporary employment and the postponement of family formation using linked large-scale survey and population register data among employees in the Netherlands. Consistent with most previous studies, we found that women in temporary employment delay having a first child. In addition, some results showed that temporarily employed men postpone family formation, but results either did not reach conventional levels of statistical significance (marriage) or the effect was only found in robustness checks that included non-cohabiting respondents or restricted the analyses to the first year after the interview (first birth; see Supplementary Materials S2 and S3). Moreover, no effects of temporary employment were found for women and marriage. We then focused on the role of income, cognitive, and affective job insecurity. Our analyses first of all showed that the effects of temporary employment could partly be attributed to the lower annual income that goes with a

temporary contract. Both men's and women's income were positively associated with marriage and first birth rates, which was furthermore corroborated by the positive effect of the income of the respondents' partners. This clearly points to the fact that the income of both partners helps family formation, which confirms recent findings of a gender convergence in the effect of income (Hart, 2015; Kuo and Raley, 2016; Schneider, Harknett and Stimpson, 2019). In addition, income was shown to have a stronger effect on first birth rates than on marriage rates, which may be explained by the high costs associated with raising a child.

Secondly, we found that temporary employment was strongly linked to perceptions of cognitive and affective job insecurity. However, there was no evidence that respondents who experienced job insecurity postponed the transition to marriage or parenthood. This finding may seem surprising given the centrality of job insecurity in much of the theoretical accounts on the postponement of family formation. However, it fits well within the—still very limited—empirical evidence on the topic, which has generally found that perceptions of job insecurity have no (main) effect on family formation (Kreyenfeld, 2010; Sutela, 2012; Auer and Danzer, 2015; Glavin, Young and Schieman, 2020; but see Bhaumik and Nugent, 2011). Furthermore, studies that found effects of temporary employment—an 'objective' indicator of job insecurity—have generally not controlled for income, and therefore the postponement of family formation by temporary employees found in many of these studies may well be a result of temporary workers' lower income rather than their stronger perceptions of job insecurity.

In addition, our findings for female respondents as well as for male respondents' partners hint at a negative effect of women's temporary employment on first birth rates that cannot be explained by income and perceptions of job insecurity. This suggests that there are other aspects of temporary employment that make women delay childbearing. A plausible explanation may be that these women exhibit strategic planning behaviour by postponing childbearing until they have secured a permanent contract, which offers maternity benefits during the entire childbearing period and guarantees employment when women want to get back to work.

The general finding that it is income rather than perceptions of job insecurity that matters for family formation decisions resonates with recent macro-level trends in the Netherlands. As economic conditions improved, perceptions of job insecurity strongly decreased between 2013 and 2016 (Statistics Netherlands, 2017; see also Supplementary Material S4). During the same period, the income of employees did not increase (Statistics Netherlands, 2019b; corrected for inflation; see also Supplementary Material S4). If job insecurity was indeed an obstacle to family formation, we might expect an increase in marriage and birth rates during this period. In contrast, however, there has been an ongoing increase in the age at first marriage (Statistics Netherlands, 2018) and first birth (Statistics Netherlands, 2019a), coinciding with a TFR that dropped from 1.72 in 2012 to 1.59 in 2018 (Statistics Netherlands, 2019a). Our results suggest that one explanation of this ongoing postponement of family formation may be found in the stagnating incomes during this period. Such aggregations of individual-level results should be interpreted with care, however, as they neglect the presence of potential interactions between individuals that may cause macro-level outcomes to diverge from what would be expected based on micro-level relationships (Billari, 2015).

Although in general we found little evidence that perceptions of job insecurity mattered for family formation, one notable exception was found for women's transition to marriage. Contrary to what we hypothesized, we found that women who were worried about keeping their job (i.e. experienced affective job insecurity) were more likely to marry during the 2 years following the interview. A potential explanation can be found in the uncertainty reduction theory of Friedman, Hechter and Kanazawa (1994), which suggests that women who are worried about their job will try to reduce uncertainty in other life domains, for example through marriage.

Our study points to several avenues for future research. First, it seems essential to control for income in studies that examine the consequences of being employed on a temporary contract for family formation to be able to disentangle the effect of temporary employment as such and the effect of the lower incomes of temporary workers. Second, more studies are needed that investigate how perceptions of job insecurity (and other forms of uncertainty) affect family formation. Here, it is important to distinguish the subjective from the objective dimension of job insecurity rather than combining these dimensions in one overall measure as is commonly done. Third, more studies are needed that scrutinize the causal direction of the relationship between temporary employment and family formation. Although we accounted for a wide range of potential confounders often not included in previous studies (e.g. health, sector of employment), unobserved characteristics may still influence both the probability of being in temporary employment and the likelihood of family formation (e.g. socio-emotional skills, willingness to take on responsibilities). Fourth, future studies should examine the

impact of employment conditions on family formation at the couple level, exploring, for example, whether one partner's secure employment may mitigate the adverse effect of the other partner's insecure position. Although we were able to control for a range of partner characteristics, our lack of self-reported data on perceptions of job insecurity of the respondents' partners made us unable to perform a full mediation analysis at the couple level. Fifth, it would be interesting to expand our study to other countries. As our findings pertain to the Dutch context, they should be interpreted in light of the specific labour market institutions and family policies that are in place in the Netherlands. For example, most temporary workers in the Netherlands enjoy partially the same employment benefits as permanent workers (e.g. paid sick leave, retirement benefits, parental leave) and have access to relatively generous unemployment benefits, which may make the difference between temporary and permanent employment less accentuated in the Netherlands than in other countries. Finally, future studies could shed light on subgroup variation in the effects of temporary employment, income, and insecurity, which was beyond the scope of this research. For example, although we found little evidence for effects of job insecurity in the population as a whole, it may well be that job insecurity has differential effects depending on age (Pailhé and Solaz, 2012), type of contract (Sutela, 2012), level of education (Kreyenfeld, 2010; Glavin, Young and Schieman, 2020), or migrant origin (Lundström and Andersson, 2012; Dupray and Pailhé, 2018).

To conclude, our study shows that it is their low income rather than their feelings of insecurity about future employment that explains why temporary employees postpone family formation. Temporary workers often lack the financial means that are (perceived to be) required for marriage and to raise a child. Once this 'affordability clause' (Rindfuss and VandenHeuvel, 1990: p. 715) has been fulfilled, our results suggest that the experience of job insecurity will not keep temporary employees from making long-term binding commitments to their family.

Supplementary Data

Supplementary data are available at *ESR* online.

Notes

1 Following the OECD (2019), we define temporary employment as dependent employment (as opposed to self-employment) that has a predetermined termination date.
2 These studies did find interaction effects between women's perceptions of job insecurity on the one hand and educational attainment (Kreyenfeld, 2010; Glavin, Young and Schieman, 2020), local unemployment rates (Glavin, Young and Schieman, 2020), and temporary employment (Sutela, 2012) on the other.
3 Because the exact interview date was unknown, it was assumed that all interviews took place on 1st November.
4 As births were observed until February 2019 and backdated by 9 months, data on respondents in the first birth sample interviewed in 2016 were missing for the last 6 months of the 2-year observation window.
5 Additional models based on 1-year and 3-year periods gave similar results to those reported here.
6 If a respondent or his/her partner had multiple jobs, all variables refer to the job with the highest number of working hours.
7 A few respondents in the Netherlands Working Conditions Survey had a negative income, which was likely a result of having (had) a side job in self-employment where the expenses exceeded income.
8 Additional analyses examined the effect of labour market insecurity, which was measured as the perceived likelihood of finding a new job at (a) the current employer or (b) a different employer. Both variables had no effect in any of the models, which confirms our finding that perceived insecurity about future employment does not affect marriage and first birth risks. Results of these additional analyses are available from the first author upon request.

Acknowledgements

This work is part of the project 'Employment insecurity and family formation patterns in the Netherlands: Differences by migrant background explored and explained', financed by the Netherlands Interdisciplinary Demographic Institute as part of the internal strategic innovation funding. The authors would like to thank Katja Chkalova, Ingeborg Deerenberg, Ruben van Gaalen, and their colleagues at Statistics Netherlands for their help in constructing the data set analysed in this article as well as for useful feedback and reflections in developing the work. Earlier versions of this article were presented at the ECSR Annual Conference in 2019, the Dutch Demography Day in 2019, the Dutch Day of Sociology ('Dag van de Sociologie') in 2019, and the Dutch Labor Market Day ('Nederlandse ArbeidsmarktDag') in 2019.

References

Anderson, C. J. and Pontusson, J. (2007). Workers, worries and welfare states: social protection and job insecurity in 15 OECD countries. *European Journal of Political Research*, **46**, 211–235.

Auer, W. and Danzer, N. (2015). Fixed-term employment and fertility: evidence from German Micro Data. *CESifo Economic Studies*, **62**, 595–623.

Bakker, B. F., Van Rooijen, J. and Van Toor, L. (2014). The system of social statistical datasets of Statistics Netherlands: an integral approach to the production of register-based social statistics. *Statistical Journal of the IAOS*, **30**, 411–424.

Balz, A. (2017). Cross-national variations in the security gap: perceived job insecurity among temporary and permanent employees and employment protection legislation. *European Sociological Review*, **33**, 675–692.

Barbieri, P. *et al.* (2015). The rise of a latin model? Family and fertility consequences of employment instability in Italy and Spain. *European Societies*, **17**, 423–446.

Becker, G. S. (1981). *A Treatise on the Family*. Cambridge: Harvard University Press.

Bernardi, L., Klärner, A. and von der Lippe, H. (2008). Job insecurity and the timing of parenthood: a comparison between Eastern and Western Germany. *European Journal of Population/Revue Européenne de Démographie*, **24**, 287–313.

Bhaumik, S. K. and Nugent, J. B. (2011). Real options and demographic decisions: empirical evidence from East and West Germany. *Applied Economics*, **43**, 2739–2749.

Billari, F. C. (2015). Integrating macro- and micro-level approaches in the explanation of population change. *Population Studies*, **69**, S11–S20.

Blom, N., Kraaykamp, G. and Verbakel, E. (2019). Current and expected economic hardship and satisfaction with family life in Europe. *Journal of Family Issues*, **40**, 3–32.

Blossfeld, H.-P. *et al.* (2005). *Globalization, Uncertainty and Youth in Society: The Losers in a Globalizing World*. Florence, United States: Routledge.

Chung, H., Bekker, S. and Houwing, H. (2012). Young people and the post-recession labour market in the context of Europe 2020. *Transfer: European Review of Labour and Research*, **18**, 301–317.

De Cuyper, N. *et al.* (2008). Literature review of theory and research on the psychological impact of temporary employment: towards a conceptual model. *International Journal of Management Reviews*, **10**, 25–51.

De Lange, M. *et al.* (2014). The impact of macro- and micro-economic uncertainty on family formation in the Netherlands. *European Journal of Population*, **30**, 161–185.

De Witte, H. (2005). Job insecurity: review of the international literature on definitions, prevalence, antecedents and consequences. *SA Journal of Industrial Psychology*, **31**, 1–6.

Dupray, A. and Pailhé, A. (2018). Does employment uncertainty particularly impact fertility of children of North African immigrants in France? A gender perspective. *Journal of Ethnic and Migration Studies*, **44**, 401–424.

Fokkema, T. *et al.* (2008). The Netherlands: childbearing within the context of a "Poldermodel" society. *Demographic Research*, **19**, 743–794.

Friedman, D., Hechter, M. and Kanazawa, S. (1994). A theory of the value of children. *Demography*, **31**, 375–401.

Ganzeboom, H. B., De Graaf, P. M. and Treiman, D. J. (1992). A standard international socio-economic index of occupational status. *Social Science Research*, **21**, 1–56.

Giesecke, J. and Groß, M. (2004). External labour market flexibility and social inequality. *European Societies*, **6**, 347–382.

Glavin, P., Young, M. and Schieman, S. (2020). Labor market influences on women's fertility decisions: longitudinal evidence from Canada. *Social Science Research*, **88-89**, 102417.

Hart, R. K. (2015). Earnings and first birth probability among Norwegian men and women 1995–2010. *Demographic Research*, **33**, 1067–1104.

Hooftman, W. *et al.* (2016). Nationale Enquête Arbeidsomstandigheden (NEA) 2016. Methodologie en Globale Resultaten [The Netherlands Working Conditions Survey 2016: Methodology and Overall Results]. Hoofddorp: TNO.

Kalleberg, A. L. (2009). Precarious work, insecure workers: employment relations in transition. *American Sociological Review*, **74**, 1–22.

Kalmijn, M. (2011). The influence of men's income and employment on marriage and cohabitation: testing Oppenheimer's theory in Europe. *European Journal of Population/Revue Européenne de Démographie*, **27**, 269–293.

Karlson, K. B., Holm, A. and Breen, R. (2012). Comparing regression coefficients between same-sample nested models using logit and probit: a new method. *Sociological Methodology*, **42**, 286–313.

Kreyenfeld, M. (2010). Uncertainties in female employment careers and the postponement of parenthood in Germany. *European Sociological Review*, **26**, 351–366.

Kuo, J. C.-L. and Raley, R. K. (2016). Is it all about money? Work characteristics and women's and men's marriage formation in early adulthood. *Journal of Family Issues*, **37**, 1046–1073.

Kurz K., Steinhage, N. and Golsch, K. (2005). Case study Germany. In Blossfeld, H.-P., Klijzing, E., Mills, M., Kurz, K. (Eds.), *Globalization, Uncertainty and Youth in Society: The Losers in a Globalizing World*. Florence, United States: Routledge, pp. 47–78.

Laß, I. (2020). The effects of non-standard employment on the transition to parenthood within couples: a comparison of Germany and Australia. *European Journal of Population, Advance Online Publication*,

Liefbroer, A. C. and Corijn, M. (1999). Who, what, where, and when? Specifying the impact of educational attainment and labour force participation on family formation. *European Journal of Population/Revue Européenne de Démographie*, **15**, 45–75.

Lundström, K. E. and Andersson, G. (2012). Labor-market status, migrant status and first childbearing in Sweden. *Demographic Research*, **S12**, 719–742.

Mars, G., Michiels, J. and Willems, R. (2016). *Follow-up Analyse Methodebreuk Nationale Enquête Arbeidsomstandigheden*

2014 [Follow-up Analysis of the Divergence in Methods in the Nationale Enquête Arbeidsomstandigheden 2014]. Den Haag/Heerlen: Statistics Netherlands.

Mills, M. and Blossfeld, H.-P. (2005). Globalization, uncertainty and the early life course: a theoretical framework. In Blossfeld, H.-P., Klijzing, E., Mills, M., Kurz, K. (Eds.), *Globalization, Uncertainty and Youth in Society: The Losers in a Globalizing World*. Florence, United States: Routledge, pp 31–53.

Mood, C. (2010). Logistic regression: why we cannot do what we think we can do, and what we can do about it. *European Sociological Review*, **26**, 67–82.

OECD (2015). Chapter 4: non-standard work, job polarisation and inequality. In *OECD, in It Together: Why Less Inequality Benefits All*. Paris: OECD, pp. 135–208.

OECD (2019). *Temporary Employment (Indicator)*. doi: 10.1787/75589b8a-en [accessed 16 April 2019]. Paris: OECD.

Oppenheimer, V. K. (1988). A theory of marriage timing. *American Journal of Sociology*, **94**, 563–591.

Oppenheimer, V. K., Kalmijn, M. and Lim, N. (1997). Men's career development and marriage timing during a period of rising inequality. *Demography*, **34**, 311–330.

Pailhé, A. and Solaz, A. (2012). The influence of employment uncertainty on childbearing in France: A tempo or quantum effect? *Demographic Research*, **26**, 1–40.

Piotrowski, M., Kalleberg, A. and Rindfuss, R. R. (2015). Contingent work rising: implications for the timing of marriage in Japan. *Journal of Marriage and Family*, **77**, 1039–1056.

Rindfuss, R. R. and VandenHeuvel, A. (1990). Cohabitation: A precursor to marriage or an alternative to being single? *Population and Development Review*, **16**, 703–726.

Schmitt, C. (2012). Labour market integration, occupational uncertainties, and fertility choices in Germany and the UK. *Demographic Research*, **26**, 253–292.

Schneider, D., Harknett, K. and Stimpson, M. (2019). Job quality and the educational gradient in entry into marriage and cohabitation. *Demography*, **56**, 451–476.

Smock, P. J., Manning, W. D. and Porter, M. (2005). Everything's there except money: how money shapes decisions to marry among cohabitors. *Journal of Marriage and Family*, **67**, 680–696.

Standing, G. (2011). *The Precariat: The Dangerous New Class*. London: Bloomsbury Academic.

Statistics Netherlands (2017). Bezorgdheid om baanbehoud onder werknemers neemt af [Employees' worries about keeping their job decreased]. Den Haag/Heerlen: Statistics Netherlands, available from https://www.cbs.nl/nl-nl/nieuws/2017/19/bezorgdheid-om-baanbehoud-onder-werknemers-neemt-af [accessed 21 August 2019].

Statistics Netherlands (2018). Huwenden; leeftijd (op 31 december), voorgaande burgerlijke staat [Marriages; age (on December 31st), previous marital status]. Den Haag/Heerlen: Statistics Netherlands, available from https://opendata.cbs.nl/statline/#/CBS/nl/dataset/37586ned/table?ts=1563354735082 [accessed 17 July 2019].

Statistics Netherlands (2019a). Geboorte; kerncijfers [Birth; key figures].Den Haag/Heerlen: Statistics Netherlands, available from https://opendata.cbs.nl/statline/#/CBS/nl/dataset/37422NED/table?fromstatweb [accessed 17 July 2019].

Statistics Netherlands (2019b). Doorsnee inkomen werkenden al 10 jaar vrijwel constant [Average income of employees almost constant for 10 years]. Den Haag/Heerlen: Statistics Netherlands, available from https://www.cbs.nl/nl-nl/nieuws/2019/12/doorsnee-inkomen-werkenden-al-10-jaar-vrijwel-constant [accessed 21 August 2019].

Statistics Netherlands (2020a). Wie zijn de flexwerkers? [Who are the temporary employees?]. Den Haag/Heerlen: Statistics Netherlands, available from https://www.cbs.nl/nl-nl/dossier/dossier-flexwerk/hoofdcategorieen/kenmerken-van-flexwerkers [accessed 19 October 2020].

Statistics Netherlands (2020b). Personen in huishoudens naar leeftijd en geslacht, 1 januari [Persons in households by age and sex, January 1st]. Den Haag/Heerlen: Statistics Netherlands, available from https://opendata.cbs.nl/statline/#/CBS/nl/dataset/37620/table?dl=5227 [accessed 20 October 2020].

Statistics Netherlands (2020c). Levend geboren kinderen; huishoudenssamenstelling en migratieachtergrond [Life births; household composition and migration background]. Den Haag/Heerlen: Statistics Netherlands, available from https://opendata.cbs.nl/#/CBS/nl/dataset/82055NED/table?searchKeywords=Europa%202020 [accessed 19 October 2020].

Sutela, H. (2012). Temporary jobs and first child fertility in Finland. *Community, Work & Family*, **15**, 425–450.

Sweeney, M. M. (2002). Two decades of family change: the shifting economic foundations of marriage. *American Sociological Review*, **67**, 132–147.

Van Echteld, P., Schellingerhout, R. and De Voogd-Hamelink, M. (2015). *Vraag Naar Arbeid 2015 [Demand for Labor 2015]*. Den Haag: The Netherlands Institute for Social Research.

Vignoli, D., Tocchioni, V. and Mattei, A. (2019). The impact of job uncertainty on first-birth postponement. *Advances in Life Course Research*, advance online publication.

Vignoli, D., Drefahl, S. and De Santis, G. (2012). Whose job instability affects the likelihood of becoming a parent in Italy? A tale of two partners. *Demographic Research*, **26**, 41–62.

Vignoli, D., Tocchioni, V. and Salvini, S. (2016). Uncertain lives: insights into the role of job precariousness in union formation in Italy. *Demographic Research*, **35**, 253–282.

Wolbers, M. H. J. (2007). Employment insecurity at labour market entry and its impact on parental home leaving and family formation: a comparative study among recent graduates in eight European countries. *International Journal of Comparative Sociology*, **48**, 481–507.

Daniël C. van Wijk works as a PhD Candidate at the Netherlands Interdisciplinary Demographic Institute (NIDI). He aims to use quantitative methods to improve our understanding of demographic change, segregation, and socio-economic inequality. His PhD project focuses on how insecurity about employment influences the decision to make long-term commitments to the family among Dutch natives and migrant groups.

Helga A.G. de Valk is a director of the Netherlands Interdisciplinary Demographic Institute (NIDI, the Hague) and a professor at the University of Groningen. Her research focuses on migration and integration issues, the transition to adulthood of immigrant youth, union and family formation, the second generation, patterns of settlement and segregation, and European mobility. She was awarded an ERC starting grant (2010) and an ERC Consolidator Grant (2018). She was editor-in-chief of the *European Journal of Population* (EJP; 2014–2018) and winner of the 2016 European Demography Award and currently is the president of the European Association for Population Studies.

Aart C. Liefbroer is a research theme leader 'Families and Generations' at the Netherlands Interdisciplinary Demographic Institute, Professor of Life Course Demography at the University Medical Center Groningen, and Professor of Demography of Young Adults and Intergenerational Transmission at the Vrije Universiteit Amsterdam. His main research interests are determinants and consequences of demographic events, such as leaving home, unmarried cohabitation, marriage, parenthood, and divorce.