The direct and indirect effects of initial job status on midlife psychological distress in Japan: evidence from a mediation analysis

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Abstract: In the current study, we investigated how initial job status at graduation from school is associated with midlife psychological distress, using microdata from a nationwide Internet survey of 3,117 men and 2,818 women aged 30–60 yr. We measured psychological distress using the Kessler 6 (K6) score (range: 0–24) and the binary variable of K6 score ≥5. We found that unstable initial job status substantially raised midlife K6 scores and the probability of a K6 score ≥5 for both men and women. Furthermore, our mediation analysis showed that for men, slightly less than 60% of the effect was mediated by current job status, household income, and marital status. For women, the effect of initial job status was somewhat lesser than that for men, and only 20–30% of it was mediated. Despite these gender asymmetries, the results indicated that initial job status was a key predictor of midlife mental health. The association between job status and mental health should be further investigated with special reference to the institutional attributes of the labor market and their socio-economic/demographic outcomes.

Key words: Initial job status, Unstable job status, Psychological distress, K6 score, Mediation analysis

Introduction

Unstable job status, expressed as fixed-term, temporary, flexible, or atypical employment, including unemployment, has been shown to have a negative association with mental health in previous research[1–13]. Individuals in such unstable jobs tend to feel more distressed, depressed, precarious, and/or dissatisfied with their job. A close association between unstable job status and mental health is common, because individuals are generally risk-averse and inclined to avoid instability and uncertainty about working conditions.

It should be noted, however, that current mental health might be affected not only by current job status but also by job history, as well as other socioeconomic/demographic factors. In a society with limited mobility across job statuses, failure to obtain a stable initial job after graduation from school may be perceived as the start of an unsuccessful life[14]. In such a society, individuals who begin working life with an unstable status may be more likely to remain trapped in unstable jobs and thereby experience more psychological distress later in life.

In the current study, we focused on how midlife psychological distress is determined both directly and indirectly by initial job status, based on micro data from a nationwide Internet survey conducted in Japan. It can be reasonably predicted that the effect of initial job status on midlife psychological distress is mediated by several life outcomes af-

ter beginning working life. However, initial job status may affect midlife psychological distress in a direct, unmediated manner, especially if unstable initial job status is widely perceived to signal limited chances of success later in life. Hence, we attempted to examine the extent to which the effect of unstable initial job status on midlife psychological distress is mediated by later life outcomes. This mediation analysis is expected to provide new insights on the socio-economic determinants of workers' mental health.

Background

It is widely known that unstable job status has a negative association with mental health. Cross-sectional studies in several countries have found that temporary or fixed-term workers have poorer mental health, more depressive symptoms, more job dissatisfaction, and even experience more frequent suicidal ideation[1–6]. Unemployment has also been found to have an adverse effect on mental health[7, 8]. Individuals in unstable jobs tend to feel more depressed, stressed, and/or frustrated than individuals in stable jobs, because they perceive their living conditions to be vulnerable to external forces and do not have positive prospects for their future.

Cohort studies have also observed unstable job status to have a negative association with mental health, consistent with the results obtained from cross-sectional studies. These studies have focused on the dynamic associations between changes in job status and mental health[9–13]. For example, downward movers, who have experienced a change from core to peripheral work, reported more depression and less job satisfaction than other types of movers[9]. In contrast, fixed-term workers who obtained a permanent job were found to report lesser psychological distress and greater job satisfaction than downward movers[12].

In recent years, more attention has been paid to the association between job status and mental health in Japan. The proportion of non-regular employees—such as part-time workers, workers dispatched from temporary labor agencies, and entrusted and contract employees—increased above 37% in 2014, from around 20% in 1990[15]. Japanese firms have been employing more lower-wage, non-regular employees to reduce labor costs and compete with other Asian countries[16]. Against this background, recent studies in Japan have focused on how job status affects mental health in terms of psychological distress, job strain, and depression[17–19]. They have generally observed an adverse impact of unstable job status on workers' mental health.

The association between job status and mental health can be considered from a socioinstitutional perspective.

Notably, the long-lasting effect of initial job status has been attracting increased attention in recent years. Indeed, there has been a debate about the long-term consequences of flexible market entry across European countries[14, 20, 21]. On the one hand, the entrapment scenario argues that once an individual begins his or her working life with non-regular jobs, such as those with fixed-term contracts, entrapment in such jobs is inevitable. On the other hand, the stepping-stone scenario argues that a flexible entry offers individuals opportunities to gain work experience, thereby allowing them to catch up with other entrants over time. Empirical studies in European countries have been largely supportive of the stepping-stone scenario[21–23].

In contrast to many European countries, the entrapment scenario appears prevalent in Japan. Studies have demonstrated that failure to obtain regular employment at graduation has an adverse effect on subsequent employment status and leads to lower long-term welfare for Japanese workers[24–26]. These findings suggest that we need to further examine the long-lasting effect of initial job status on mental health in later life.

The current study

The purpose of the current study was to investigate the association between initial job status and midlife psychological distress, an issue that has remained largely insufficiently studied, not only in Japan but also in other countries. As illustrated in Fig. 1, we used a mediation analysis[27, 28] to examine how the effect of initial job status on midlife psychological distress is mediated by key life outcomes (current job status, household income, and marital status), all of which are expected both, to be affected by initial job status and to affect midlife psychological distress[24, 29, 30].

We tested three hypotheses. The first hypothesis was that initial job status has a long-lasting effect on midlife psychological distress. We can predict that beginning working life as a non-regular employee increases the likelihood of unstable job status and career instability in later life[25, 26]. If this prediction is correct, household income is likely to be affected negatively by initial job status. In addition, past and present job instability, as well as low income, may reduce one's chances of marrying[29]. Each of these factors is likely to have adverse effects on mental health, as suggested by previous studies on the social determinants of health[30].

The second hypothesis was that the effect of unstable initial job status on midlife psychological distress would remain significant even after controlling for the mediating effects of other life outcomes. Studies have demonstrated
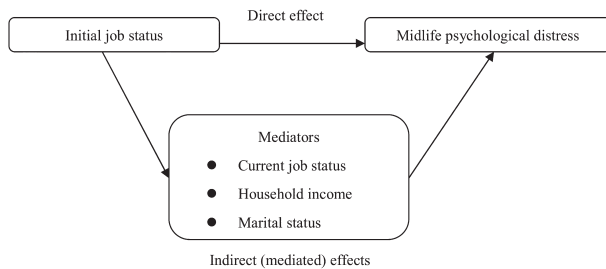
Fig. 1. Direct and indirect effects of initial job status on midlife psychological distress: A framework of mediation analysis.

that childhood adversity, such as parental abuse and neglect, tends to have a traumatic effect on socioeconomic and subjective well-being in adulthood[31, 32]. It is of interest to examine whether unstable initial job status has a similar long-lasting negative effect on midlife mental health. The effects of initial job status are expected to depend on how seriously individuals perceive unstable initial job status as a "bad start"[22].

The third hypothesis suggests gender asymmetries in the association between initial job status and midlife psychological distress. It is well known that in many countries, patriarchy, the systematic domination of women by men, is still present and assigns women a larger share of domestic responsibilities, with consequences for women's health status[33]. Thus, the consideration of a gender-based division of labor in occupational health studies must take into account the potential different implications depending on the role of men and women in different social contexts[34–36]. Especially in Japan, which is characterized as a relatively patriarchal society[37], the gender-biased division of labor can be predicted to confound the association between initial job status and midlife psychological distress.

Subjects and Methods

Study sample

We used microdata collected from the Japanese Longitudinal Survey on Employment and Fertility (LOSEF), conducted from November to December 2011. The Ethics Committee of the Research Institute for Policies on Pension and Aging reviewed and approved the aims and procedures of this survey. LOSEF questionnaires were distributed to registrants of an Internet survey company; questions addressed job status history since graduation, household income and other socioeconomic variables, marital and family situations, and various aspects of subjective well-being. The survey remained open until 1,000

respondents were obtained for each of the age categories by gender (males and females in their 30s, 40s, and 50s); thus, the prospective sample was around 6,000. The regional distribution of the questionnaires to the registrants was based on the actual distribution of population across main regional blocks in Japan.

As a novel aspect, respondents were asked to post their membership in public pension programs and identify their wage earnings for each year since graduation from administrative records reported in Social Security Statements (SSS). The SSS is an official statement regarding public pension programs; it is mailed regularly from the government to those who pay public pension premiums. Because membership in public pension programs relates closely to job status, recall errors in reporting past jobs could be substantially identified. After excluding those who reported inconsistent answers and those with missing data required for statistical analysis, data for 5,935 respondents were included (30s: 1,965; 40s: 1,916; 50s: 2,054; men: 3,117; women: 2,818).

It should be noted, however, that there were biases in the survey sample. First, the sample was limited to those holding the SSS, meaning that public sector employees (covered by their own pension programs) were excluded. Second, the sample had biases that are inherent in an Internet survey. Most notably, the sample was skewed toward those with higher educational attainment; graduates from college or above consisted of 50.9% of the original sample, compared to 25.6% for the same age group (30–59 yr old) in the Population Census in in 2010[38].

Measures

The key variable was job status. Survey respondents were asked to choose what their jobs were called in their workplace: (a) executive, (b) regular employee, (c) self-employed worker, (d) part-time worker, (e) temporary worker, (f) dispatched worker, (g) contract employee, (h) entrusted employee, (i) family worker, (j) others, (k) not working and seeking a job, (l) not working and not seeking a job, or (m) full-time homemaking. We combined (d)–(h) and (j) and defined them as "non-regular employees," following the official categorization in the Labor Force Survey, which is compiled by the Statistical Bureau of the Ministry of Internal Affairs and Communications[39].

In the current study, we divided respondents' job statuses into two categories: "stable job status" (a and b) and "unstable job status" (d to l)—following preceding studies on labor economics in Japan (albeit different terminologies were used)[25, 26]. Here, stable job status included regular employees and executives, whereas unstable job status

included non-regular employees, self-employed, and family workers. In addition to these two job categories, we considered the status of "full-time homemaking" (m), because its prevalence was high among Japanese married women[37].

We also considered current household income. First, we divided reported household income by the square root of the number of household numbers to adjust for household size. This adjustment was based on recent publications of the Organisation for Economic Co-operation and Development (OECD)[40, 41]. Second, we constructed a binary variable for low household income to indicate that household-size-adjusted household income was below the poverty line (1.22 million yen), defined by the Japanese Ministry of Health, Labour, and Welfare for 2012[42]. In terms of marital status, survey categories asked respondents to classify themselves as unmarried, married, divorced, or widowed. In the regression analysis, we dichotomized respondents as either unmarried or other in order to focus on the association between initial job status and whether they were (first) married.

We measured psychological distress with the Kessler 6 (K6), a standardized and validated measure of non-specific psychological distress[43–45]. We calculated K6 scores according to respondents' answers to the six-item questionnaire ("During the past 30 d, how often did you feel (a) nervous, (b) hopeless, (c) restless or fidgety, (d) so depressed that nothing could cheer you up, (e) that everything was an effort, and (f) worthless?"). Each item was rated on a five-point scale: *all of the time* (4), *most of the time* (3), *sometime* (2), *a little time* (1), and *none of the time* (0). In this sample, the Cronbach's alpha coefficient was 0.928. We used the total K6 score (range 0–24) and a binary indicator of ≥ 5 to indicate mood/anxiety disorders in Japan[46].

Finally, we used educational attainment and age as covariates. We categorized educational attainment as having graduated from (a) high school or below, (b) junior college, or (c) college or above. Additionally, we categorized respondents into three age brackets (i.e., 30s, 40s, or 50s).

Analytic strategy

Initially, we performed a descriptive comparison of current outcomes between those with stable and unstable initial job status for men and women, respectively, without controlling for other variables. This was expected to provide a rough approximation of the effect of initial job status in later life.

Then, we conducted mediation analysis[27, 28]. Specifically, we used: (a) K6 score and a binary variable of K6 score ≥ 5 as dependent variables; (b) a binary variable of unstable initial job status as an independent variable; (c) binary variables of unstable current job status, low household income, and staying unmarried as mediators; and (d) educational background and age as covariates.

We followed the conventional steps of mediation analysis. First, we predicted K6 score and a binary variable of K6 score ≥ 5 by unstable initial job status, by estimating ordinary least squares (OLS) and logistic models, respectively. This purpose of this step was to examine to what extent initial job status could predict midlife psychological distress. At the second step, we regressed each mediator on unstable initial job status using logistic models to examine to what extent initial job status could predict each mediator. Finally, at the third step, we regressed K6 score and a binary variable of K6 score ≥ 5 on both unstable initial job status and mediators, again by OLS and logistic models, respectively. This step aimed to examine to what extent each mediator could predict midlife psychological distress, while controlling for initial job status. For each regression model, we included age and educational background as covariates.

Furthermore, based on the results obtained from these models, we calculated the proportions of the direct effect of unstable initial job status and its indirect effects through each mediator, along with their standard errors, calculated by bootstrap estimations (with 2,000 replications). This was expected to help assess the relative importance and statistical significance of each mediator, as well as the direct effect of unstable job status. To complete our statistical analysis, we used the Stata data analysis software (Version 13; StataCorp).

Results

Table 1 summarizes the basic features of the sample: 15.8% of men and 19.7% of women began their working lives with an unstable job status. The proportions of those having an unstable job status at present were 33.8% and 38.1% for men and women, respectively. Full-time homemaking accounted for job status in 45.6% of the female respondents, and including it raised unstable job status to 83.7%.

Table 2 shows the comparison of current outcomes across those who began with stable job status, unstable job status, and full-time homemaking for men (top part) and women (bottom). We computed the differences (unstable minus stable and homemaking minus stable) and assessed their statistical significance in terms of *p*-values, while those who began with full-time homemaking were quite

Table 1.   Sample descriptive statistics

		All	Men	Women
Proportion				
Age	30s	0.331	0.318	0.346
	40s	0.323	0.319	0.327
	50s	0.346	0.363	0.327
Educational level	High school or below	0.251	0.202	0.305
	Junior college	0.239	0.124	0.367
	College or above	0.510	0.674	0.328
Initial job status and homemaking				
	Stable job status[a]	0.814	0.840	0.786
	Unstable job status[b]	0.176	0.158	0.197
	Full-time homemaking	0.010	0.002	0.018
Current job status and homemaking				
	Stable job status[a]	0.424	0.659	0.163
	Unstable job status[b]	0.359	0.338	0.381
	Full-time homemaking	0.218	0.002	0.456
Household income	Level (million yen) *M*	3.980	4.146	3.797
	SD	3.349	3.602	3.034
	Below the poverty line	0.065	0.071	0.057
Marital status	Unmarried	0.235	0.302	0.161
	Married	0.704	0.649	0.765
	Divorced or widowed	0.061	0.049	0.073
Psychological distress	K6 score (range: 0–24) *M*	4.87	4.99	4.75
	SD	5.35	5.58	5.07
	K6 score ≥ 5	0.415	0.422	0.408
N		5,953	3,117	2,818

[a] Consisted of executives and regular employees. [b] Consisted of non-regular employees (part-time, temporary, dispatched, contract, entrusted, and other workers), self-employed and family workers, and non-working individuals.

few, especially among men.

For men, we found that unstable initial job status significantly increased the probability of unstable current job status, lower household income, unmarried status, and greater psychological distress, with *p*-values less than 0.1% for all outcomes. For women, unstable initial job status significantly increased the probability of unstable current job status as in the case of men. The difference in household income was significant only for a binary variable of low income. The difference in unmarried status was also significant, but its magnitude (0.108) was much lower than for men (0.293). More importantly, the differences in K6 score (1.02) and in the probability of K6 score ≥ 5 (0.085) were both much smaller compared to the differences for men (1.97 and 0.135, respectively), although they were both significant. We found no significant difference in any current outcome between stable initial job status and full-time homemaking for both men and women, except for current marital status for women (i.e., women who started

with full-time homemaking stayed married).

Table 3 presents the results of the mediation analysis for men, with the results for K6 score (based on OLS regression) and K6 score ≥ 5 (based on logistic regression). The results of the first step (top part) confirmed that unstable initial status significantly raised midlife psychological distress. The second step (middle) showed that unstable initial status significantly raised the probability of unstable current job status, low household income, and unmarried status. Finally, the third step (bottom) showed that midlife psychological distress was significantly associated with each mediator, while its association with unstable initial job status was somewhat attenuated, albeit still significant, compared to that observed at the first step. Taken together, these results confirm that the effect of initial job status on midlife psychological distress was mediated by current job status, household income, and marital status, while the direct effect of initial job status was also significant.

Table 4 summarizes the results of the mediation analysis

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Table 2. Differences in current outcomes based on initial statuses[a]

Starting with:	Stable job status	Unstable job status		Full-time housekeeping	
Men (*n*=3,117)					
Unstable current job status	0.194	0.419	(0.225)***	0.143	(−0.151)
Household income (million yen)	4.31	3.18	(−1.14)***	3.25	(−1.06)
Low household income[c]	0.062	0.125	(0.063)***	0.143	(0.081)
Unmarried status	0.260	0.553	(0.293)***	0.143	(−0.117)
K6 score (0–24)	4.70	6.66	(1.97)***	5.71	(1.02)
K6 score ≥5	0.402	0.537	(0.135)***	0.286	(−0.117)
Number of observations	2,654	456		7	
Women (*n*=2,818)					
Unstable current job status	0.331	0.423	(0.092)***	0.320	(−0.01)
Household income (million yen)	3.85	3.57	(−0.27)	3.95	(0.11)
Low household income	0.053	0.075	(0.022)*	0.100	(0.047)
Unmarried status	0.141	0.249	(0.108)***	0.000	(0.144)**
K6 score (0–24)	4.57	5.59	(1.02)***	4.28	(−0.29)
K6 score ≥5	0.392	0.477	(0.085)***	0.400	(0.008)
Number of observations	2,246	522		50	

[a] Numbers of parentheses indicate the difference from staring with stable job status. Not controlling for other variables. [b] Unstable minus stable. [c] Below the poverty line. ***p<0.001, **p<0.01, *p<0.05.

Table 3. Mediation analysis of the effect of unstable initial job status on midlife psychological distress for men (*n*=3,117)[a]

(Step 1) Predicting midlife psychological distress by initial job status

	K6 score (0–24)[b]		K6 score ≥5[c]	
	Coefficient	95% CI	OR	95% CI
Initial unstable job status	1.63***	(1.07, 2.19)	1.58***	(1.28, 1.94)

(Step 2) Predicting mediators by initial unstable job status (common to K6 score and K6 score ≥5)[c]

Mediators:	OR	95% CI
Current unstable job status	3.15***	(2.52, 3.94)
Low household income	2.12***	(1.51, 2.97)
Unmarried status	2.85***	(2.30, 3.54)

(Step 3) Predicting midlife psychological distress by initial unstable job status and mediators

	K6 score (0–24)[b]		K6 score ≥5[c]	
	Coefficient	95% CI	OR	95% CI
Initial unstable job status	0.77**	(0.20, 1.33)	1.25*	(1.00, 1.55)
Current unstable job status	1.57***	(1.08, 2.07)	1.44***	(1.18, 1.74)
Low household income	1.37***	(0.60, 2.14)	1.65***	(1.22, 2.24)
Unmarried status	1.82***	(1.37, 2.28)	1.81***	(1.53, 2.15)

[a] Controlling for age and educational attainment. [b] Estimated by ordinary least squares models. [c] Estimated by logistic models. ***p<0.001, **p<0.01, *p<0.05.

for women. In the first step, the effect of initial job status on midlife psychological distress was smaller for women than for men (Table 3), for both K6 score (0.87 compared to 1.63) and K6 score ≥5 (1.37 compared to 1.58), a result consistent with what was observed in Table 2. In the second step, unstable initial job status was positively associated with current unstable job status, excluding full-time homemaking, while it was negatively associated with full-time homemaking. The former finding was consistent with that for men, while the latter was related to the fact that unstable initial job status raised the probability of unmarried status (see the bottom row in the middle part). The

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Table 4. Mediation analysis of the effect of unstable initial job status on midlife psychological distress for women (*n*=2,818)[a]

(Step 1) Predicting midlife psychological distress by initial job status

K6 score (0–24)[b]		K6 score ≥5[c]	
Coefficient	95% CI	OR	95% CI
0.87***	(0.40, 1.34)	1.37***	(1.13, 1.65)

(Step 2) Predicting mediators by initial unstable job status (common to K6 score and K6 score ≥5)[c]

Mediators:	OR	95% CI
	1.60***	(1.31, 1.95)
	1.53*	(1.05, 2.24)
	1.81***	(1.43, 2.30)

(Step 3) Predicting midlife psychological distress by initial unstable job status and mediators

	K6 score (0–24)[b]		K6 score ≥5[c]	
	Coefficient	95% CI	OR	95% CI
Initial unstable job status	0.76**	(0.29, 1.25)	1.32**	(1.09, 1.61)
Current unstable job status	0.06	(−0.33, 0.46)	0.91	(0.77, 1.07)
Low household income	2.27***	(1.47, 3.06)	1.95***	(1.40, 2.70)
Unmarried status	1.55***	(1.03, 2.07)	1.61***	(1.30, 1.99)

[a] Controlling for age and educational attainment. [b] Estimated by ordinary least squares models. [c] Estimated by logistic models. ***$p<0.001$, **$p<0.01$, *$p<0.05$.

associations of initial job status with current unstable job status, low household income, and marital status in women were all significant but somewhat lower than for men.

We also observed from the third step that current unstable job status was not significantly associated with K6 score or K6 score ≥5 for women in contrast with the case for men, indicating that current unstable job status did not mediate the effect of initial job status. Meanwhile, low household income and unmarried status raised psychological distress, similar to the results for men.

Finally, we noticed that mediation of the effect of initial job status was not substantial for women. Although the association between unstable initial job status and psychological distress was attenuated from the first step, the reductions in the coefficient and OR (from 0.87 to 0.76 and from 1.37 to 1.32, respectively) were limited compared to those for men (from 1.63 to 0.77 and from 1.58 to 1.25, respectively) observed in Table 3.

For women, we further examined whether initial full-time housekeeping, which consisted of 1.8% of initial statuses, affected midlife psychological distress and whether its effects were mediated by life outcomes. Table 5 summarizes the effects obtained by replacing initial job status in Table 4 with initial full-time housekeeping. We found no association of initial full-time housekeeping with midlife psychological distress, current unstable job status,

or low household income, indicating that initial full-time housekeeping had no significant impact on midlife psychological distress and that its mediation analysis was mostly irrelevant.

Based on these results, Table 6 presents the estimated proportions of direct and mediated effects of unstable initial job status on midlife psychological distress for men and women. The table also provides the bias-corrected and accelerated 95% confidence intervals obtained by bootstrap estimations. We observed that for men, the direct effect of unstable initial job status was about 42% for both K6 score and K6 score ≥5; the remaining 58% was mediated by current unstable job status, low household income, and unmarried status. Among these three mediators, unmarried status had the largest effect, followed by current unstable job status. All effects, both direct and indirect (mediated), were statistically significant.

In the case of women, the direct effect of unstable initial job status accounted for 70–80% of total income, which was much higher than for men. In addition, the mediated effect of current job status was much more limited than for men. The mediating effect of current unstable job status was not significant for K6 score and modestly negative for K6 score ≥5.

Table 5. Mediation analysis of the effect of initial full-time housekeeping on midlife psychological distress for women (*n*=2,818)[a]

(Step 1) Predicting midlife psychological distress by initial full-time housekeeping

	K6 score (0–24)[b]		K6 score ≥5[c]	
	Coefficient	95% CI	OR	95% CI
Initial full-time housekeeping	−0.28	(−1.70, 1.13)	1.03	(0.58, 1.83)

(Step 2) Predicting mediators by initial full-time housekeeping (common to K6 score and K6 score ≥5)[c]

Mediators:	OR	95% CI
Current unstable job status	0.87	(0.47, 1.58)
Low household income	1.85	(0.72, 4.74)
Unmarried status[d]	NA	NA

(Step 3) Predicting midlife psychological distress by initial full-time housekeeping and mediators

	K6 score (0–24)[b]		K6 score ≥5[c]	
	Coefficient	95% CI	OR	95% CI
Initial full-time housekeeping	−0.13	(−1.53, 1.27)	1.08	(0.61, 1.92)
Current unstable job status	0.11	(−0.29, 0.50)	0.93	(0.78, 1.09)
Low household income	2.30***	(1.51, 3.10)	1.97***	(1.42, 2.72)
Unmarried status	1.61***	(1.10, 2.13)	1.65***	(1.34, 2.04)

[a] Controlling for age and educational attainment. [b] Estimated by ordinary least squares models. [c] Estimated by logistic models. [d] All respondents with initial full-time housekeeping remained married. ***$p<0.001$, **$p<0.01$, *$p<0.05$.

Table 6. Proportions of direct and mediated effects of unstable initial job status on midlife psychological distress (%)[a]

Dependent variable	K6 score (0–24)		K6 score ≥5	
	%	95% CI[b]	%	95% CI[b]
Men (*n*=3,117)				
Direct effect	42.7	(12.8, 60.5)	42.2	(1.8, 61.0)
Indirect (mediated) effect via:				
Current unstable job status	22.7	(13.9, 38.5)	18.0	(7.9, 34.2)
Low household income	8.1	(2.7, 17.3)	10.5	(3.7, 23.2)
Unmarried status	26.5	(16.1, 42.9)	29.7	(17.7, 52.2)
Total	57.3	(39.5, 87.2)	57.8	(39.0, 98.2)
Total	100.0		100.0	
Women (*n*=2,818)				
Direct effect	70.5	(43.3, 84.7)	79.5	(48.2, 92.8)
Indirect (mediated) effect via:				
Current unstable job status	0.7	(−4.9, 5.9)	−8.3	(−26.9, −1.2)
Low household income	11.5	(2.1, 28.0)	5.8	(0.4, 20.2)
Unmarried status	17.3	(8.2, 35.8)	10.4	(1.5, 29.8)
Total	29.5	(15.3, 56.7)	20.5	(7.2, 51.8)
Total	100.0		100.0	

[a] Controlling for age and educational attainment. [b] Bias-corrected and accelerated confidence interval.

Discussion

We examined the association between job status following graduation and midlife mental health of Japanese workers, focusing on how current job status, household income, and marital status mediated the effect of unstable initial job status on midlife psychological distress. We tested three hypotheses: (a) unstable initial job status has a long-lasting

effect on psychological distress, (b) the effect of unstable initial job status on midlife psychological distress remains significant even after controlling for mediating effects, and (c) there are gender asymmetries in the association between initial job status and psychological distress.

The first hypothesis was supported by the finding that unstable initial job status significantly raised the probability of midlife psychological distress for both men and women. Failure to obtain stable job status at graduation had a long-standing effect on mental health as well as other current outcomes. This finding was in line with earlier studies in labor economics focusing on changes in job status[25, 26] and suggested that the entrapment scenario holds in Japan, unlike in many European countries. This entrapment scenario is consistent with a traditional view of employment practices in Japan: full-time, regular employees are recruited almost exclusively from the pool of new graduates, which limits the chances of those who begin working as non-regular employees or who are unemployed upon graduation from re-entering into the labor market as regular employees[47].

One may suspect that initial job status is not exogenously determined and that its observed associations with other variables may be influenced by unobservable individual attributes. We controlled for age and educational attainment in all models, but the likelihood is that the results were still skewed due to other individual attributes. For example, one study argued that mental health problems in childhood might restrict individuals' chances to gain secure labor market positions[48]. This implies that the association between initial job status and midlife psychological distress observed in the current study was overestimated. Even if that is the case, however, results suggest that initial job status can be a reliable signal of psychological distress later in life.

The second hypothesis that initial job status has a direct, unmediated effect on midlife psychological distress was also confirmed by the findings in the current study. The adverse effect of unstable initial job status on midlife psychological distress was attenuated after controlling for mediators. Even after controlling for their mediation effects, however, the effect of unstable initial job status remained significant. Our mediation analysis showed that the direct effect of unstable job initial status accounted for slightly more than 40% of its total effect for men and around 70–80% for women.

One natural interpretation of this result is that failure to obtain stable job status at graduation would stigmatize Japanese workers; beginning working life as a non-regular employee or other precarious worker may signal limited chances of success in later life. This perception of a "bad

start" is likely to be intensified by actual observations of limited chances for non-regular employees to move to more stable job statuses and higher income, as evidenced by the current study.

Our mediation analysis indicated the validity of this interpretation for men. Unstable initial job status substantially raised the probability of unstable current job status, low household income, and unmarried status, all of which were positively associated with midlife psychological distress for men. These findings underscore the view that "a bad beginning makes a bad ending" for male workers in Japan.

However, we obtained somewhat different results for women, which supported the third hypothesis that argued for gender difference. First, the overall effect of initial unstable job status on midlife psychological distress was somewhat smaller for women than for men. Second, the proportion of the mediated effect of initial job status was much lower for women. To be sure, initial unstable job status raised the possibility of current unstable job status; however, the association between current unstable job status and psychological distress was not significant after controlling for the effect of initial unstable job status.

One possible interpretation of these results may be that women's psychological distress was associated with the gender-biased division of work, which may at least partly offset current job status and psychological distress. This may be especially the case in Japan, where women play a dominant role in unpaid work at home[49]. For example, even if regularly employed, women may face a heavy burden of housekeeping, which may reduce the psychological benefits of job stability. On the contrary, non-regular female employees may have more freedom to allocate their time to paid and unpaid jobs. These obscure associations between current job status and psychological distress may also reduce the mediating effects of initial unstable job status for women, although this issue should be further investigated.

We recognize that this study has several limitations, in addition to the potential biases inherent in Internet surveys. First, the cross-sectional aspect of the dataset, on which the analysis was based, did not allow for identification of any causality between current socioeconomic/marital status and psychological distress. For instance, we cannot rule out potential reverse causality, in that psychological distress reduced incentives to work. Second, related to the first point, the dynamic association between job status and mental health remains to be investigated. We considered K6 scores only during the survey year due to data limitations, leaving their changes over time unexamined. Third, we categorized both non-regular employees and

non-working individuals as having unstable job status for simplicity; however, they are likely to experience different mental health outcomes in later life. Finally, to control for potential endogeneity that may lead to biased estimation results, we need appropriate instrumental variables to explain initial job status.

Despite these limitations, we can conclude that initial job status was a key predictor of midlife mental health, especially for men. Failure to obtain stable job status at graduation tended to raise the probability of current unstable job status, low household income, and unmarried status, all of which added to psychological distress. Moreover, unstable initial job status had a direct, unmediated effect on psychological distress. The association between job status and mental health should be further considered, with special reference to the institutional attributes of the labor market and their socioeconomic/demographic outcomes.

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References

1) Artazcoz L, Benach J, Borrell C, Cortès I (2005) Social inequalities in the impact of flexible employment on different domains of psychosocial health. J Epidemiol Community Health **59**, 761–7. [Medline] [CrossRef]

2) Bardasi E, Francesconi M (2004) The impact of atypical employment on individual wellbeing: evidence from a panel of British workers. Soc Sci Med **58**, 1671–88. [Medline] [CrossRef]

3) Benach J, Gimeno D, Benavides FG, Martínez JM, Torné MM (2004) Types of employment and health in the European union: changes from 1995 to 2000. Eur J Public Health **14**, 314–21. [Medline] [CrossRef]

4) Kim IH, Khang YH, Muntaner C, Chun H, Cho SI (2008) Gender, precarious work, and chronic diseases in South Korea. Am J Ind Med **51**, 748–57. [Medline] [CrossRef]

5) Kim IH, Muntaner C, Khang YH, Paek D, Cho SI (2006) The relationship between nonstandard working and mental health in a representative sample of the South Korean population. Soc Sci Med **63**, 566–74. [Medline] [CrossRef]

6) Santin G, Cohidon C, Goldberg M, Imbernon E (2009) Depressive symptoms and atypical jobs in France, from the 2003 Decennial health survey. Am J Ind Med **52**, 799–810. [Medline] [CrossRef]

7) Milner A, Page A, LaMontagne AD (2014) Cause and effect in studies on unemployment, mental health and suicide: a meta-analytic and conceptual review. Psychol Med **44**, 909–17. [Medline] [CrossRef]

8) Riumallo-Herl C, Basu S, Stuckler D, Courtin E, Avendano M (2014) Job loss, wealth and depression during the Great Recession in the USA and Europe. Int J Epidemiol **43**, 1508–17 [CrossRef]. [Medline]

9) Kompier M, Ybema JF, Janssen J, Taris T (2009) Employment contracts: cross-sectional and longitudinal relations with quality of working life, health and well-being. J Occup Health **51**, 193–203. [Medline] [CrossRef]

10) Liukkonen V, Virtanen P, Kivimäki M, Pentti J, Vahtera J (2004) Social capital in working life and the health of employees. Soc Sci Med **59**, 2447–58. [Medline] [CrossRef]

11) Quesnel-Vallée A, DeHaney S, Ciampi A (2010) Temporary work and depressive symptoms: a propensity score analysis. Soc Sci Med **70**, 1982–7. [Medline] [CrossRef]

12) Virtanen M, Kivimäki M, Elovainio M, Vahtera J (2002) Selection from fixed term to permanent employment: prospective study on health, job satisfaction, and behavioural risks. J Epidemiol Community Health **56**, 693–9. [Medline] [CrossRef]

13) Virtanen P, Vahtera J, Kivimäki M, Liukkonen V, Virtanen M, Ferrie J (2005) Labor market trajectories and health: a four-year follow-up study of initially fixed-term employees. Am J Epidemiol **161**, 840–6. [Medline] [CrossRef]

14) Scherer S (2004) Stepping-stones or traps? The consequences of labour market entry positions on future careers in West Germany, Great Britain and Italy. Work Employ Soc **18**, 369–94. [CrossRef]

15) Japanese Ministry of Internal Affairs and Communications Labour Force Survey, http://www.stat.go.jp/data/roudou/longtime/03roudou.htm#hyo_9. Accessed December 15, 2014.

16) Hashimoto M, Higuchi Y (2005) Issues facing the Japanese labor market. In: Reviving Japan's Economy, Ito T, Patrick H and Weinstein D (Eds.), 341–81, MIT Press, Cambridge.

17) Inoue A, Kawakami N, Tsuchiya M, Sakurai K, Hashimoto H (2010) Association of occupation, employment contract, and company size with mental health in a national representative sample of employees in Japan. J Occup Health **52**, 227–40. [Medline] [CrossRef]

18) Inoue M, Tsurugano S, Yano E (2011) Job stress and mental health of permanent and fixed-term workers measured by effort-reward imbalance model, depressive complaints, and clinic utilization. J Occup Health **53**, 93–101. [Medline] [CrossRef]

19) Nishikitani M, Tsurugano S, Inoue M, Yano E (2012) Effect of unequal employment status on workers' health: results from a Japanese national survey. Soc Sci Med **75**, 439–51. [Medline] [CrossRef]

20) Scherer S (2005) Patterns of labour market entry: long wait or career instability? An empirical comparison of Italy, Great Britain, and West Germany. Eur Sociol Rev **21**, 427–40. [CrossRef]

21) Gebel M (2010) Early career consequences of temporary employment in Germany and the UK. Work Employ Soc **24**, 641–60. [CrossRef]

22) McGinnity F, Mertens A, Gundert S (2005) A bad start? Fixed-term contracts and the transition from education to work in West Germany. Eur Sociol Rev **21**, 359–74. [CrossRef]

23) Steijn B, Need A, Gesthuizen M (2006) Well begun, half done? Long-term effects of labour market entry in the Netherlands, 1950–2000. Work Employ Soc **20**, 453–72. [CrossRef]

24) Esteban-Pretel J, Nakajima R, Tanaka R (2011) Are contingent jobs dead ends or stepping stones to regular jobs? Evidence from a structural estimation. Labour Econ **18**, 513–26. [CrossRef]

25) Hamaaki J, Hori M, Maeda S, Murata K (2013) How does the first job matter for an individual's career life in Japan? J Jpn Int Econ **29**, 154–69. [CrossRef]

26) Kondo A (2007) Does the first job really matter? State dependency in employment status in Japan. J Jpn Int Econ **21**, 379–402. [CrossRef]

27) Baron RM, Kenny DA (1986) The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. J Pers Soc Psychol **51**, 1173–82. [Medline] [CrossRef]

28) MacKinnon DP, Fairchild AJ, Fritz MS (2007) Mediation analysis. Annu Rev Psychol **58**, 593–614. [Medline] [CrossRef]

29) Nagase N (2002) Non-regularization in youth employment and marital behavior. J Pop Prob **58**, 22–35 (in Japanese).

30) Braveman PA, Cubbin C, Egerter S, Chideya S, Marchi KS, Metzler M, Posner S (2005) Socioeconomic status in health research: one size does not fit all. JAMA **294**, 2879–88. [Medline] [CrossRef]

31) Currie J, Widom CS (2010) Long-term consequences of child abuse and neglect on adult economic well-being. Child Maltreat **15**, 111–20. [Medline] [CrossRef]

32) Zielinski DS (2009) Child maltreatment and adult socioeconomic well-being. Child Abuse Negl **33**, 666–78. [Medline] [CrossRef]

33) Borrell C, Palència L, Muntaner C, Urquía M, Malmusi D, O'Campo P (2014) Influence of macrosocial policies on women's health and gender inequalities in health. Epidemiol Rev **36**, 31–48. [Medline] [CrossRef]

34) Artazcoz L, Benach J, Borrell C, Cortès I (2004) Unemployment and mental health: understanding the interactions among gender, family roles, and social class. Am J Public Health **94**, 82–8. [Medline] [CrossRef]

35) Campos-Serna J, Ronda-Pérez E, Artazcoz L, Moen BE, Benavides FG (2013) Gender inequalities in occupational health related to the unequal distribution of working and employment conditions: a systematic review. Int J Equity Health **12**, 57. [Medline] [CrossRef]

36) Puig-Barrachina V, Malmusi D, Marténez JM, Benach J (2011) Monitoring social determinants of health inequalities: the impact of unemployment among vulnerable groups. Int J Health Serv **41**, 459–82. [Medline] [CrossRef]

37) Tsuya NO, Bumpass LL (2004) Marriage, work, and family life in comparative perspective: Japan, South Korea, and the United States. University of Hawaii Press, Honolulu.

38) Ministry of Internal Affairs and Communications The Population Census in 2010. http://www.e-stat.go.jp/SG1/estat/List.do?bid=000001032402&cycode=0. Accessed December 14, 2014.

39) Ministry of Internal Affairs and Communications Labor Force Survey. http://www.stat.go.jp/english/data/roudou/index.htm. Accessed December 14, 2014.

40) Organisation for Economic Co-operation and Development (OECD) (2008) Growing Unequal? Income Distribution and Poverty in OECD Countries. OECD, Paris.

41) Organisation for Economic Co-operation and Development (OECD) (2011) Divided We Stand. Why Inequality Keeps Rising. OECD, Paris.

42) Ministry of HealthLabour and Welfare. The Overview of the Comprehensive Survey of the Living Conditions of People on Health and Welfare in 2013. http://www.mhlw.go.jp/toukei/saikin/hw/k-tyosa/k-tyosa13/. Accessed December 14, 2014.

43) Furukawa TA, Kawakami N, Saitoh M, Ono Y, Nakane Y, Nakamura Y, Tachimori H, Iwata N, Uda H, Nakane H, Watanabe M, Naganuma Y, Hata Y, Kobayashi M, Miyake Y, Takeshima T, Kikkawa T (2008) The performance of the Japanese version of the K6 and K10 in the World Mental Health Survey Japan. Int J Methods Psychiatr Res **17**, 152–8. [Medline] [CrossRef]

44) Kessler RC, Andrews G, Colpe LJ, Hiripi E, Mroczek DK, Normand SL, Walters EE, Zaslavsky AM (2002) Short screening scales to monitor population prevalences and trends in non-specific psychological distress. Psychol Med **32**, 959–76. [Medline] [CrossRef]

45) Kessler RC, Green JG, Gruber MJ, Sampson NA, Bromet E, Cuitan M, Furukawa TA, Gureje O, Hinkov H, Hu CY, Lara C, Lee S, Mneimneh Z, Myer L, Oakley-Browne M, Posada-Villa J, Sagar R, Viana MC, Zaslavsky AM (2010) Screening for serious mental illness in the general population with the K6 screening scale: results from the WHO World Mental Health (WMH) survey initiative. Int J Methods Psychiatr Res **19** Suppl 1, 4–22. [Medline] [CrossRef]

46) Sakurai K, Nishi A, Kondo K, Yanagida K, Kawakami N (2011) Screening performance of K6/K10 and other screening instruments for mood and anxiety disorders in Japan. Psychiatry Clin Neurosci **65**, 434–41. [Medline] [CrossRef]

47) Clark R, Ogawa N (1992) Employment tenure and earnings profiles in Japan and the United States Comment. Am Econ Rev **82**, 336–45.

48) Virtanen M, Kivimäki M, Elovainio M, Vahtera J, Kokko K, Pulkkinen L (2005) Mental health and hostility as predictors of temporary employment: evidence from two prospective studies. Soc Sci Med **61**, 2084–95. [Medline] [CrossRef]

49) Organisation for Economic Co-operation and Development (OECD) (2008) Balancing paid work, unpaid work and leisure. http://www.oecd.org/gender/data/balancingpaidworkunpaidworkandleisure.htm. Accessed January 27, 2015.