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Gender Differences in Employed Job Search: Why Do Women Search Less than Men?

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ABSTRACT

Using an extended panel from the National Longitudinal Survey of Youth 1979, this study explores the impact of marriage and children on the employed job search behavior of young workers. Estimation results from a bivariate probit model of employed job search that accounts for the selective nature of participation and employment demonstrate that both marriage and children significantly reduce the likelihood of on-the-job search for women but not for men. We find that married women with children have an employed search probability that is 18 percentage points below that of single women without children. Moreover, both the age and number of children present in the household are important determining factors for women in the decision to conduct on-the-job search. The inhibiting effect of children, however, is only pronounced for married women; single women with children are no less likely to search than single women without children.

Keywords: Gender Differences; Job Search; Marriage; Children

1. Introduction

Past research has established notable behavioral differences between the sexes in many facets of labor supply including participation rates, quit rates, job mobility, and migration. However, one important aspect of labor mobility that has received only scant attention from a gender perspective is on-the-job search. Given the volume of studies validating the prevalence and importance of employed search in determining labor market outcomes (see [1-5], for example),[1] it is not surprising that a number of researchers have chosen to analyze its determinants [5-8]. But of these studies, only Parsons [7] and Keith and McWilliams [5] analyze both men and women; and while both indicate that women are less likely to search on the job than men, neither study investigates the source of the behavioral difference. This paucity of analysis is all the more curious considering the intriguing evidence tying gender differences in employed search to the male-female wage gap [9,10].[2]

In a simple model of on-the-job search, we find that the predicted probability of employed search for a woman is about 7.5 percentage points below that of a man with like characteristics.[3] Why do men and women exhibit different patterns of employed search? We attempt to answer this question by conducting an in-depth analysis of the determinants of employed search with a particular focus on the influence of household composition.

Theory does not provide an unambiguous prediction as to whether marital status or the presence of children encourages or discourages job search. For example, marriage or the presence of children, particularly young children, may raise the opportunity cost of employed search and thus reduce its likelihood. On the other hand,

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[1]Mattila [1] is among the earliest to report that the majority of workers who change jobs do so with no spell of unemployment, thus acknowledging the prevalence of employed search. Black [2] and Holzer [3] offer evidence to indicate that employed searchers experience higher wage offers compared to those who quit to search. Black [2] further suggests that the benefits from employed job search even accrue to workers who choose not to change jobs by increasing their bargaining power with current employers. Devine and Kiefer [4] and Keith and McWilliams [5] document the importance of employed job search to successful job mobility and wage growth.

[2]Bowlus [9] concludes that between 20 and 30 percent of the US male-female wage gap results from differing search behaviors; Bowlus and Grogan [10] provide similar evidence for the UK.

[3]Probabilities are calculated for an unmarried person with 12 years of completed schooling, three years of job tenure with their current employer, working 40 hours per week, with a wage and real family income equal to the sample average, and no children present in the household.

the added costs of children in the household may spur a search for more lucrative earning opportunities. Both Parsons [7] and Keith and McWilliams [5] found some evidence that married women are less likely to search on-the-job, supporting the hypothesis that the opportunity costs of searching are higher for women with a spouse present. Neither study, however, tests the hypothesis that children in the household serve as an added constraint on employed search. It is our hope that a better understanding of the potential asymmetric influences of household composition on the job search market behavior of men and women will contribute to a more complete picture of the interrelationship of work and family choices over the lifecycle.

We hypothesize that the constraints associated with marriage and children likely affect women more than men, for both social and biological reasons; furthermore, these constraints cannot always be relaxed through changes in household technology or division of labor. Using data from the National Longitudinal Survey of Youth 1979 (NLSY79), we examine whether marital status or the presence, number, and age of children constrains a worker's ability to conduct on-the-job search. Because the decision to search for a job is often being made in conjunction with marriage and fertility decisions, we also explore how changes in marital status and parenthood, both actual and anticipated, affect employed search behavior.

While some of our analysis serves to reinforce and support earlier work in this area, there are several aspects that distinguish our work from previous studies. First, although Parsons [7] and Keith and McWilliams [5] both provide evidence using the NLSY79 that women are less likely to search while employed, neither study examines the reasons for the difference. We explore the reasons for these differences by incorporating an in-depth analysis of the influence of marriage and children. Second, although we have opted to focus on employed workers and their decisions to search or not to search, we attempt to eliminate the econometric risks of selection bias by first estimating the likelihood of being employed. Thus, we can avoid the need for the caveat offered by Keith and Williams [8] that suggests the possibility of selection bias. Finally, we more fully utilize the data provided by NLSY79 by including more recent survey information. Although the information on employed job search gathered by NLSY in the early 1980s was discontinued in later surveys, the questions were reintroduced in the 1990s and we have included 1996 and 2000 data in our analysis. Not only does this yield a larger sample, but it enables us to analyze employed job search behavior over different stages in the life cycle.

Our results demonstrate that both marriage and children are among the most significant factors inhibiting the employed search of women. Reporting a married spouse present in the household reduces the likelihood of on-the-job search for women but not for men. This is true even for those just recently entering the married state, though the negative impact is much more pronounced for women married for longer periods of time. If anything, recently married men are more likely to search for alternative employment than their already married counterparts. The presence of children in the household also significantly reduces the likelihood of on-the-job search for women but not for men. We find that a married woman with a child has an 18.2 percentage point lower probability of engaging in employed search than a single woman with no children. The inhibiting effect of children, however, is only pronounced for married women; single women with children are no less likely to search than single women without children.

2. Empirical Model

Because employed search is conditional upon both participation and employment, issues of self-selection complicate empirical estimation of a discrete choice model of on-the-search. In an effort to limit the econometric risks of selection bias, we employ a bivariate probit model that directly incorporates the likelihood of employment into estimation. This empirical specification can be thought of as a variant of the sequential search model developed by Burdett [11], but with a particular focus only on that part of the model pertaining to on-the-job search.[4] According to Burdett, a worker will engage in employed job search whenever her current wage is less than her employed-search reservation wage. This reservation wage is a function of the distribution of alternative wage offers, the arrival rate of job offers, the discount rate, and the (marginal) opportunity cost of search. To implement the model empirically, define an index function S_i^*, such that

$$S_i^* = w_i^R - w_i^C = X_i\beta + \varepsilon_i \quad (1)$$

where observable characteristics X_i are a linear combination (with associated parameters β) and ε_i is an error term. Whenever $S_i^* > 0$, the individual searches for alternative employment. Obviously, S_i^* is not observed, but rather the dichotomous outcome S_i such that

$$S_i = 1 \text{ if } S_i^* > 0$$

$$S_i = 0 \text{ if } S_i^* \le 0$$

where S_i = 1 indicates the worker has engaged in employed job search.

A reduced-form specification of the probability of employed-search can therefore be modeled as a function of

[4]We do not deny the importance of quitting to search, but Keith and McWilliams [5] demonstrate cogently that men and women quit their jobs for very different reasons and with very different outcomes.

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the current wage, a measure of alternative wage offers, and any personal, job, and labor market characteristics affecting search costs, arrival rates, and the rate of discount. Assuming that ε_i is distributed (identically and independently) normal with mean zero and variance one, the model can be estimated using standard probit methodology. Unfortunately, estimation is complicated by the fact that the outcome of the decision to engage in employed job search is only observed when the worker is employed. This conditioning of observations becomes particularly troublesome when studying women since their participation rates are considerably lower than men in the sample. This selectivity, however, can be accounted for by directly incorporating the likelihood of employment into the model. To do so first requires specifying the selection mechanism that allows us to observe the outcome of the search decision. Define a latent variable I_i^* representing the net benefit to individual i of working for pay and let this be a linear combination of exogenous variables Z_i. This latent equation can be written as

$$I_i^* = Z_i\gamma + u_i \tag{2}$$

where u_i is distributed normally with mean zero and variance one. Because the worker is assumed to work for pay when this net benefit is positive, the observed selection mechanism is

$$I_i = 1 \text{ if } I_i^* > 0$$

$$I_i = 0 \text{ if } I_i^* \le 0$$

where $I_i = 1$ indicates that the worker is employed for pay.[5]

If ε_i and u_i are uncorrelated, then the employed-search equation can be estimated using a standard probit. But, if ε_i and u_i are correlated, such that $\rho = \text{corr}(\varepsilon_i, u_i) \neq 0$, then the probit estimate of β will be biased. Unbiased parameter estimates, however, can be obtained by directly incorporating the likelihood of employment into estimation. Van de Ven and Van Praag [12] formalize this procedure for the probit model. The log-likelihood function of the probit estimator with sample selection is given by

$$\begin{aligned} L = & \sum_{\text{search}} \ln\left[\Phi_2\left(X_i\beta, Z_i\gamma, \rho\right)\right] \\ & + \sum_{\text{no search}} \left[\Phi_2\left(-X_i\beta, Z_i\gamma, -\rho\right)\right] \\ & + \sum_{\text{not employed}} \ln\left[1-\Phi\left(Z_i\gamma\right)\right] \end{aligned} \tag{3}$$

where $\Phi_2(\cdot)$ is the cumulative bivariate normal distribution function and $\Phi(\cdot)$ is the cumulative standard normal distribution function [13]. The first term of the likelihood function represents the probability that workers engage in employed search. The second term represents the probability that employed workers do not search for alternative employment. The final term is the probability that workers are not employed.

Although the empirical model is estimated via the method of maximum likelihood, the parameters of the model can be identified in a couple of different ways. Because the model is highly nonlinear, parameters can be identified even when Z_i and X_i include the same set of covariates. However, this approach is precarious in that it yields rather imprecise estimates. Instead of relying solely on the nonlinearity of the model for identification, one could introduce exclusion restrictions among the covariates. In this case, not all of the variables included in Z_i can be entered as covariates in X_i. Since this is the more common approach with such models, we employ this strategy here. Discussion of the specific exclusion restrictions is deferred until the next section.

3. Data and Sample Selection

The NLSY79 provides a comprehensive data set well suited for the study of employed job search. Beginning with an original cohort of 12,686 men and women born between 1957-1964, the survey collected information on an annual basis from 1979 through 1994 and biennially thereafter. The NLSY79 data files contain information detailing the employment history of each respondent, including some information on job search activities. Unfortunately, the questions regarding on-the-job search are not asked in every year of the survey. Information on employed search is available annually from 1980 through 1984 but then not again until the 1996 and 2000 interviews. As a consequence, we are compelled to concentrate our analysis on a limited number of survey years. In all, we construct measures of on-the-job search corresponding to the 1980, 1984, 1996, and 2000 survey waves.

We find the specific years chosen for analysis to have particular advantages. Indeed, the spacing of the survey dates allows us to capture the impact of marriage and fertility constraints on employed search behavior at what we view as notable points in the lifecycle. At the time of the 1980 interview, the workers in our sample are in their early twenties; in 1984, they are in their mid-twenties; by the 1996 and 2000 survey dates, they are in their mid-to-late thirties. Having such a natural spread in the data points allows us to make certain inferences regarding the relationship between age and the magnitude of influence of household constraints. We view this as a novel contribution to the growing literature on the importance of gender in job search and mobility.

[5]In this case, the sample of individuals not employed will include both those who are unemployed and those not in the labor force. Because the number of unemployed individuals in our sample is relatively small one could reasonably interpret Equation (2) as a "participation" Equation.

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3.1. Dependent Variable: On-the-Job Search

Adopting the definition of employed search used by Parsons [7], data from the 1980 and 1981 survey waves are used to construct the employed search variable for 1980 (with the 1984, 1996, and 2000 measures constructed in a similar fashion). To enter the 1980 sample, the respondent must be employed at the time of survey in 1980, and both out of school and in the labor force in 1981. The latter restriction ensures that we are focusing attention on workers firmly attached to the labor force. We then use a series of survey questions to determine search behavior. Each employed respondent is asked whether they have searched for other work in the past four weeks. An answer in the affirmative then elicits an additional question regarding the method(s) of search utilized by the respondent. If the respondent returns a negative answer, then he/she is asked whether they intend to search for work of any type in the next twelve months. For purposes of this study, a respondent is considered to have conducted employed search if he/she has *either* searched for other employment in the past four weeks *or* intends to search in the next twelve months. An obvious alternative would be to treat only those respondents who reported having actually conducted search in the past four weeks. We adopt the more inclusive definition of search because this is the definition utilized by Parsons [7] in his seminal analysis and therefore provides us with a basis for comparison. Nevertheless, we repeat the analysis with the alternative measure based exclusively on search conducted in the past four weeks to check the robustness of our results.

3.2. Control Variables

Our primary measure of marital status is a dichotomous indicator of whether the respondent is married with the spouse present in the household (*Married*). Since it is likely that the timing of marriage is another important factor in the decision to search for alternative employment, we also explore the impact of recent and/or future changes in marital status on employed search. *Added Spouse* signals that the respondent has recently become married, while *Lose Spouse* indicates that the respondent has recently become separated, widowed, or divorced. Both variables measure changes in marital status since the date of last interview. We incorporate anticipated changes in marital status by including variables indicating whether the respondent reports being married in the next survey year (*Will Add Spouse*) or reports a change from "married, spouse present" to separated, widowed, or divorced status (*Will Lose Spouse*).

We explore the impact of children through several channels, with the simplest specification including a dichotomous indicator of the presence of children in the household (*Child in HH*).[6] We also ask whether the number and age of the children matter, neither of which has received much attention in the job search literature. The marginal search cost of additional children in the household are captured through a series of dichotomous variables indicating the total number of children under the age of 18 residing in the household. We explore the impact of age by including a dummy variable indicating the presence of very young children in the household. Finally, we include a variable indicating whether the respondent reports a new child in the household in the next survey year (*Will Add Child*).

We incorporate into each specification a diverse set of control variables describing the personal, job, and location characteristics of each respondent. Basic personal characteristics include dummy variables identifying whether the respondent is *Black* or *Hispanic*. *Age* is the age (in years) of the respondent at the time of interview. *HGC* is the highest grade of schooling completed by the respondent as of May 1 in the survey year. *Family Income* is the total net family income as reported in the NLSY79. To capture the impact of non-labor financial resources available to the respondent, *Nonlabor Income* is equal to total yearly net family income less any labor earnings of the respondent.[7]

We also include a rich set of covariates capturing aspects of the current job of the respondent.[8] *Wage* is the current real hourly wage from the primary employment relationship.[9] *Tenure* is the length of time the respondent has been with the current employer.[10] We also include a measure of the usual weekly hours worked at all jobs (*Hours*).[11] Because some respondents in the sample hold more than one job, we include a variable distinguishing

[6]Each of the child-related variables discussed below makes no distinction as to whether the children are natural to the respondent or not.

[7]See the NLSY79 Codebook Supplement (Main File) for details on the construction of the income variables. We also deflate these variables with the yearly CPI-U (1982-84 = 100).

[8]For respondents working multiple jobs, we use the job designated as the "CPS employer" as the primary employment relationship.

[9]All wages are deflated with the yearly CPI-U (1982-84 = 100).

[10]Both human capital theory and job matching point to job tenure as an important indicator of employed search propensity. If job tenure proxies for specific human capital accumulation, then we would expect individuals with longer tenures with a given employer to have higher mobility costs and thus be less likely to undertake employed search. If job tenure instead proxies for the quality of the job match, then individuals with longer tenures will have lower expected benefits from on-the-job search due to a low probability of obtaining a superior alternative employment match. Indeed, these effects reinforce each other Individuals with good job matches are expected to invest in more specific capital and, at the same time, firms are more likely to make specific investments in them. In either case, the predicted effect of *Tenure* on employed search propensity is unambiguously negative.

[11]One could reasonably argue that working more hours per week would reduce the likelihood of employed search due to time constraints. In addition, inspection of the reasons cited by respondents for on-the-job search indicates that the quest for additional hours is a primary motivating factor. Both reasons suggest a negative relationship between hours worked and employed search.

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those respondents holding multiple jobs (*Dual Job*). Other job controls include whether the respondent works in the public sector (*Public*) or belongs to a union or has her wages set by a collective bargaining agreement (*Union*). *Health Problem* indicates whether the respondent has a health condition that limits their ability to work. Finally, we include a complete set of 1-digit industry and 1-digit occupation dummies to capture general industrial and occupational differences in job search propensity.

Several variables are introduced to control for differences in labor market conditions. Because the density of local employment opportunities may influence the likelihood of on-the-job search, we include a dummy variable (*Urban*) indicating the respondent resides in an urban area within an MSA. To capture the tightness of local labor market conditions, we include controls indicating the unemployment rate in each respondent's county of residence. The NLSY79 reports this variable categorically, so dummies are created indicating either a local unemployment rate below 6 percent (*U-rate* < 6%) or above 9 percent (*U-rate* > 9%). To control for geographic differences in attitudes and institutions, we include three regional dummy variables comprising the *South*, *Northeast*, and *West* regions as defined by the US census.

3.3. Descriptive Statistics

Besides the selection criteria needed to insure accurate information regarding employed job search, we delete person-year observations for which the respondent had an indeterminate labor force status, was serving in the active military, reported working more than 90 hours per week on all jobs, reported being self-employed, or was missing pertinent personal, household, or job-related information necessary for the empirical analysis. We delete all respondents coming from the economically-disadvantaged ("poor white") supplemental sample of the NLSY 79, since those individuals were dropped from the survey in the early 1990s.

Our final pooled sample consists of 24,602 person-year observations contributed by 7404 men and women across survey years 1980, 1984, 1996, and 2000. Sample means for the variables used to estimate the models are provided in **Table 1**. The table is partitioned by gender, since the majority of the subsequent empirical analysis is conducted as such, and search status (searched/did not search). The full male sample consists of 11,851 person-year observations used to determine employment status and 7633 employed person-year observations used to determine employed search behavior. The female sample consists of 12,751 person-year observations with 6423 person-years associated with employment and used to identify employed job search. Respondents reporting having engaged in employed search tend to have lower observed levels for just about every variable, including age, schooling, income, wages, tenure, and weekly hours, as well as likelihood of marriage and children.[12]

4. Results

In this section we presents the coefficient estimates and standard errors from a series of cross-sectional, time-series bivariate probit models of employed job search that control for the selective nature of employment and labor force participation.[13] We first present results obtained from a pooled sample of men and women and then from analyses conducted separately by gender. For each model we report a pseudo-R^2 calculation, an estimate of the correlation coefficient ρ, and a Wald-test statistic.[14]

The econometric specification involves an employed search equation and an employment equation (*i.e.*, the selection equation). The employment equation is estimated using all of the variables described in the previous section except for those pertaining to job characteristics (since non-employed respondents have none to enter into the model). Because we use exclusion restrictions to identify the parameters of the model, it becomes necessary to include some variables in the employment equation that are excluded from the search equation. In this case, we employ two such variables. First, *Health Problem* indicates whether the respondent has a health condition that limits the ability to work. Second, to capture financial resources available to the respondent but that are unrelated to their own labor activities, we include a measure of *Nonlabor Income*. This variable is equal to total yearly net family income less any labor earnings of the respondent. The *Nonlabor Income* variable is, therefore, equal to *Family Income* for non-employed respondents.

Table 2 presents estimates obtained from the bivariate probit model using a pooled sample of men and women across all four survey-years. Looking first at the employment equation, the estimated coefficient on the fe-

[12]Although we hypothesize that these observational differences provide for much of the causal explanation of the propensity to engage in search for alternative employment opportunities, it also results, to some extent, from the fact that employed job searchers tend to be younger on average.

[13]Although this type of panel analysis has been applied by a multitude of researchers (see [14-17], for example), the approach is not beyond criticism. The major concern is that the patterns of job shopping change as the individual ages, with early market entrants typically changing employers with great frequency in the first few years and more stable employment in later years. In addition, the probabilities of marriage and having children rise as the cohort ages. Thus, quantifying how much of the measured relationship between marriage, children, and employed job search is due to the aging of the cohort rather than the demographic composition of the household remains difficult.

[14]When $\rho = 0$, the sum of the log likelihoods from independent employment and employed search probit models will equal the log likelihood from the bivariate probit model with sample selection. A likelihood ratio test yields the appropriate test statistic which is distributed Chi-squared with one degree of freedom for the null hypothesis of $\rho = 0$.

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Table 1. (a) Sample means: men; (b) Sample means: women.

(a)

Covariates	Non-Employed	Employed	Searched	Did Not Search
Married	0.102	0.489	0.347	0.547
Added Spouse in Past Year	0.021	0.059	0.069	0.055
Lost Spouse in Past Year	0.013	0.029	0.024	0.031
Will Add Spouse	0.028	0.056	0.058	0.055
Will Lose Spouse	0.011	0.028	0.026	0.029
Child in HH	0.112	0.445	0.302	0.504
Will Add Child	0.037	0.088	0.085	0.089
White	0.403	0.538	0.470	0.565
Black	0.399	0.268	0.347	0.236
Hispanic	0.198	0.194	0.182	0.199
Age (years)	23.6 (7.7)	31.4 (7.5)	28.3 (7.6)	32.7 (7.1)
HGC	11.2 (2.1)	12.7 (2.4)	12.3 (2.2)	12.8 (2.4)
Health Problem	0.121	0.032	0.037	0.029
Nonlabor Income	9.31 (1.99)	6.87 (3.99)	6.98 (3.96)	6.82 (4.00)
Family Income	9.31 (1.99)	10.01 (1.01)	9.80 (1.10)	10.10 (0.95)
Ln Wage		2.00 (0.59)	1.75 (0.55)	2.10 (0.58)
Tenure (yrs)		4.5 (5.0)	2.6 (3.6)	5.2 (5.3)
Total Weekly Hours Worked		44.6 (10.6)	42.1 (11.4)	45.6 (10.0)
Dual Job		0.079	0.078	0.079
Public		0.120	0.090	0.132
Union		0.116	0.150	0.102
Urban	0.774	0.844	0.825	0.851
U-rate < 6%	0.347	0.514	0.438	0.546
6% < U-rate < 9%	0.421	0.316	0.356	0.300
U-rate > 9%	0.232	0.170	0.206	0.155
Northeast	0.186	0.171	0.180	0.167
North Central	0.238	0.242	0.243	0.242
South	0.379	0.394	0.391	0.395
West	0.198	0.194	0.186	0.196
Year 1980	0.499	0.130	0.209	0.098
Year 1984	0.271	0.255	0.375	0.206
Year 1996	0.131	0.326	0.221	0.370
Year 2000	0.099	0.288	0.194	0.327
Observations	4218	7633	2232	5401

Data source: NLSY79. Standard deviations are in parentheses. Please see Section 3 for a detailed description of sample deletions and restrictions.

(b)

Covariates	Non-employed	Employed	Searched	Did Not Search
Married	0.352	0.476	0.329	0.530
Added Spouse in Past Year	0.053	0.057	0.066	0.054
Lost Spouse in Past Year	0.022	0.038	0.046	0.035
Will Add Spouse	0.037	0.059	0.077	0.052
Will Lose Spouse	0.026	0.032	0.025	0.035
Child in HH	0.534	0.592	0.478	0.634
Will Add Child	0.101	0.058	0.052	0.060
White	0.430	0.547	0.494	0.567
Black	0.360	0.282	0.354	0.255
Hispanic	0.210	0.171	0.151	0.179
Age (years)	25.6 (8.3)	31.9 (7.5)	29.4 (7.8)	32.9 (7.2)
HGC	11.5 (2.3)	13.1 (2.1)	13.0 (2.0)	13.1 (2.2)
Health Problem	0.133	0.048	0.069	0.041
Nonlabor Income	9.38 (1.75)	7.52 (3.82)	7.27 (3.90)	7.61 (3.79)
Family Income	9.38 (1.75)	9.94 (1.03)	9.76 (1.03)	10.01 (1.02)

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Continued

Ln Wage		1.80 (0.54)	1.64 (0.51)	1.86 (0.54)
Tenure (yrs)		4.4 (4.9)	2.8 (3.7)	4.9 (5.1)
Total Weekly Hours Worked		39.2 (10.2)	37.8 (10.5)	39.7 (10.0)
Dual Job		0.082	0.081	0.083
Public		0.170	0.149	0.178
Union		0.087	0.092	0.086
Urban	0.788	0.867	0.864	0.868
U-rate < 6%	0.379	0.537	0.476	0.560
6% < U-rate < 9%	0.387	0.304	0.340	0.291
U-rate > 9%	0.234	0.158	0.183	0.149
Northeast	0.167	0.164	0.176	0.160
North Central	0.226	0.243	0.255	0.238
South	0.414	0.416	0.404	0.421
West	0.194	0.177	0.165	0.181
Year 1980	0.402	0.116	0.174	0.095
Year 1984	0.283	0.246	0.347	0.209
Year 1996	0.176	0.321	0.251	0.347
Year 2000	0.139	0.317	0.229	0.349
Observations	6328	6423	1736	4687

Data source: NLSY79. Standard deviations are in parentheses. Please see Section 3 for a detailed description of sample deletions and restrictions.

male dummy variable is negative and highly significant, indicating that women have a lower likelihood of both participation and employment than the men in the sample. In the search equation, the estimated coefficient on the female dummy is also negative and highly significant. Translating this estimate into a "marginal effect" we find that the predicted probability of employed search for a woman with the average sample characteristics is about 7.5 percentage points below that of a man with like characteristics.[15] A married woman with a child in the household has a predicted probability of employed job search that is 15.7 percentage points below an unmarried man without children. This initial specification tells us little if anything about how actual constraints on employed search differ between men and women. Because the women in the sample differ so greatly from the men in terms of observable characteristics and behavior, we suspect that the marginal impact of marriage and children may differ substantially by gender. Therefore, all of the subsequent empirical analysis is conducted separately for men and women.

Table 3 reports the results when the model is estimated separately for men and women. For brevity, only the coefficient estimates for the search equation are presented, and in particular the impact of marriage and children on the likelihood of on-the-job search. The results for men are found in column (1). As human capital theory would suggest, higher total family income, a higher wage, longer job tenure, more weekly hours worked, and public sector employment all reduce the likelihood of employed job search. Black men and multiple-job holders are more likely to search for alternative employment on-the-job, *ceteris paribus*. The most important find, however, is that neither marriage nor the presence of children in the household affects the likelihood of employed job search for men. A recent marriage (*Added Spouse in PY*) produces only a modest positive effect on employed search.

The estimation results for the female employed search equation reported in column (2) show many similarities to the men with respect to the control variables but also some notable differences. We find that black women are significantly more likely to engage in on-the-job search than either white or Hispanic women. Consistent with theories that highlight both specific human capital and job matching, the likelihood of employed search increases with education (*HGC*) but declines with job tenure (*Tenure*). This last result is interesting because Parsons [15] found the influence of tenure to be negative and significant for men, but insignificant for women. Not surprisingly, the number of weekly hours worked (*Hours*) is negatively related to search; women often cite the quest for additional hours as a primary reason for on-the-job search. At the same time, women already working a significant number of hours per week will have less time available to devote to search activities. Holding hours constant, women working multiple jobs (*Dual Job*) are significantly more likely to search for alternative employment, most likely in an effort to consolidate current weekly hours into a single employer. As predicted by the Burdett [11] model, the respondent's wage (*Wage*) has a negative and significant effect on employed search. Of

[15]Marginal effects are calculated for a person with 12 years of completed schooling, three years of job tenure with their current employer, working 40 hours per week, with a real family income of $22,000 and a wage 10 percent below that predicted by their observable characteristics

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Table 2. Bivariate probit model with sample selection.

Combined Sample of Men and Women		
Covariate	Employment Equation	Search Equation
Female	−0.412*** (0.018)	−0.200*** (0.032)
Married	0.547*** (0.021)	−0.159*** (0.037)
Child in HH	−0.229*** (0.020)	−0.083** (0.033)
Added Spouse in PY	0.024 (0.029)	0.208*** (0.053)
Lost Spouse in PY	0.165*** (0.041)	0.062 (0.066)
Will Add Spouse	0.494*** (0.032)	0.018 (0.052)
Will Lose Spouse	−0.037 (0.037)	0.041 (0.072)
Will Add Child	−0.076*** (0.025)	−0.050 (0.046)
Black	−0.350*** (0.021)	0.291*** (0.034)
Hispanic	−0.123*** (0.024)	0.040 (0.037)
HGC	0.087*** (0.004)	0.030*** (0.007)
Age (years)	0.330*** (0.010)	−0.014 (0.029)
Age squared/10	−0.040*** (0.002)	0.000 (0.004)
Health Problem	−1.065*** (0.034)	
Nonlabor Income	−0.163*** (0.002)	
Family Income		−0.040*** (0.015)
Wage		−0.292*** (0.032)
Tenure (years)		−0.091*** (0.009)
Tenure squared/10		0.030*** (0.005)
Hours		−0.012*** (0.001)
Dual Job		0.247*** (0.048)
Public		−0.119** (0.048)
Union		−0.076* (0.040)
Urban	0.076*** (0.022)	0.063* (0.036)
U-rate < 6%	0.056*** (0.017)	0.031 (0.030)
U-rate > 9%	−0.201*** (0.021)	0.046 (0.037)
Constant	−5.104*** (0.181)	0.490 (0.514)
ρ		0.215 (0.056)
Wald Test (H_0: $\rho = 0$)		13.75***
Pseudo-R^2		0.110
Total Obs.	24,602	
Search Obs.		14,056

Notes: Robust standard errors are in parentheses. All specifications include region of residence (North Central omitted) and year dummies (1996 omitted). The search equation also includes 1-digit industry ("professional" omitted) and 1-digit occupation dummies ("clerical/unskilled" omitted). ***1-percent significance, **5-percent significance, *10-percent significance.

Table 3. Probability of employed job search.

Covariate	Men (1)	Women (2)
Married	0.051 (0.059)	−0.308*** (0.049)
Child in HH	−0.068 (0.051)	−0.169*** (0.049)
Added Spouse in PY	0.118* (0.072)	0.265*** (0.078)
Lost Spouse in PY	0.015 (0.102)	0.127 (0.089)
Will Add Spouse	0.002 (0.073)	0.079 (0.075)
Will Lose Spouse	0.065 (0.097)	−0.004 (0.107)
Will Add Child to HH	0.014 (0.059)	−0.152* (0.079)
Black	0.250*** (0.046)	0.316*** (0.050)
Hispanic	−0.008 (0.050)	0.065 (0.055)
HGC	0.012 (0.010)	0.052*** (0.011)
Age (years)	0.005 (0.040)	−0.021 (0.043)
Age squared/10	−0.001 (0.006)	0.000 (0.006)
Family Income	−0.051** (0.021)	−0.021 (0.022)
Wage	−0.357*** (0.048)	−0.225*** (0.045)
Tenure (years)	−0.101*** (0.012)	−0.087*** (0.013)
Tenure squared/10	0.033*** (0.006)	0.003*** (0.001)
Hours	−0.014*** (0.002)	−0.011*** (0.002)
Dual Job	0.335*** (0.068)	0.170** (0.069)
Public	−0.263*** (0.076)	−0.029 (0.064)
Union	−0.058 (0.052)	−0.130** (0.063)
Urban	0.037 (0.048)	0.105* (0.056)
U-rate < 6%	0.054 (0.041)	0.004 (0.046)
U-rate > 9%	0.071 (0.050)	0.000 (0.056)
Constant	0.510 (0.706)	0.122 (0.780)
ρ	0.284 (0.083)	0.204 (0.080)
Wald Test (H_0: $\rho = 0$)	10.42***	6.21**
Pseudo-R^2	0.135	0.102
Search Obs.	7633	6423

Notes: Robust standard errors are in parentheses. Search equations also include 1-digit industry ("professional" omitted), 1-digit occupation dummies ("clerical/unskilled" omitted), region of residence (North Central omitted) and year dummies (1996 omitted). The employment selection equations include all of the variables listed in **Table 3**. ***1-percent significance, **5-percent significance, *10-percent significance.

the remaining covariates, living in an urban area (*Urban*) marginally increases the likelihood of on-the-job search, while being a member of a union (*Union*) significantly reduces the likelihood. Although local labor market conditions significantly affect the likelihood of participation and employment for women, they have little impact on employed search.

The results in **Table 3** confirm that marriage and children affect the employed search behavior of men and women quite differently. Specifically, we find the presence of a spouse and/or children in the household significantly reduces the likelihood of employed search for the women in our sample. The coefficient estimate for *Married* is negative and highly significant indicating that married women are less likely to engage in employed job search relative to unmarried women. The marginal effect of having a spouse present in the household lowers the probability of on-the-job search by 12.1 percentage points. The presence of children in the household also significantly reduces the probability of employed search for young women though to a lesser extent than the effect of being married. The coefficient estimate on *Child in HH* implies a reduction of 6.7 percentage points in the probability of search. The combined effect implies that a married woman with children in the household has an 18.2 percentage point lower probability of engaging in employed search than a single woman with no children.

The timing of changes in household composition is also important for some women. The estimated coefficient for the covariate identifying the recent addition of a spouse in the past year (*Added Spouse in PY*) is positive

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and significant indicating that recently married women are more likely to search than other married women. However, when considered in conjunction with the negative coefficient estimate for *Married*, the implied search probability for a recently married woman is still 1.7 percentage points below that of a single woman. Perhaps not surprisingly, the impending addition of a child into the household in the next year (*Will Add Child*) reduces the likelihood of search, though the estimate is significant only at the 10 percent level.[16]

4.1. Effect of Children on Employed Search

Table 4 presents estimation results from bivariate probit models of employed job search with sample selection augmented to account for both the number and age of the children in the household. Each model is estimated with the full complement of variables listed in **Table 2**, though we only present the results for the variables of interest for the employed search equation. Because the specification differs only slightly from that discussed in **Table 3**, we focus attention on the child-related variables in the discussion. The first specification presented in columns (1) and (3) of the table (for men and women, respectively) replaces the simple dichotomous variable with the actual number of children (*Number of Children*). Because the marginal impact of a child will likely differ depending on the total number of children in the household, we also include the square of this variable. The number of children present in the household has no impact whatsoever on the employed search behavior of the men in the sample, but significantly affects the employed search behavior of women. In column (3), the positive coefficient estimate on the number-of-children variable together with the negative coefficient on the squared term implies that there is a major negative impact of children in the household and that it occurs over the first two children, peaking with the second child (cumulatively, though not marginally). For example, for a married woman with representative characteristics, adding a first child into the household reduces the probability of employed search by 4.1 percentage points; adding a second child into the household reduces this likelihood by another 2.3 percentage points. The marginal impact of a third child in the household, however, is close to zero. These findings could have important implications for policy design.

Table 4 also reports coefficient estimates for a model meant to capture the importance of the age of the children in the household on job search behavior. This specification includes a series of dummy variables specifying the age of the youngest child in the household (holding constant the number of children in the household). The results from this model, shown in columns (2) and (4) of the table, again clearly indicate that having children present in the household inhibits the employed search of the young women but not that of the men in the sample. For married women, the presence of a child under the age of two in the household (*Age Youngest* 0 - 2) reduces the probability of search by 0.054. The implied marginal effect of the youngest child falling between the ages of three and five reduces search likelihood by another 1.1 percentage points. However, having the youngest child in the household move into the next age category (*Age Youngest* 6 - 12) actually raises the likelihood of search

Table 4. Probability of employed job search.

Covariate	Men (1)	Men (2)	Women (3)	Women (4)
Married	0.017 (0.058)	0.035 (0.059)	−0.309*** (0.050)	−0.306*** (0.050)
Add Spouse in PY	0.136* (0.072)	0.130* (0.072)	0.263*** (0.078)	0.263*** (0.078)
Lost Spouse in PY	0.009 (0.102)	0.015 (0.102)	0.126 (0.090)	0.128 (0.090)
No. of Children	−0.027 (0.043)	0.033 (0.027)	−0.136*** (0.046)	−0.005 (0.027)
No. of Children squared	0.007 (0.010)		0.024** (0.012)	
Age Youngest 0 - 2		−0.104 (0.075)		−0.156** (0.076)
Age Youngest 3 - 5		−0.101 (0.085)		−0.191** (0.081)
Age Youngest 6 - 12		−0.139 (0.081)		−0.141* (0.075)
Age Youngest 13 - 17		−0.151 (0.107)		−0.164** (0.083)
Will Add Spouse	−0.001 (0.073)	−0.001 (0.073)	0.078 (0.075)	0.081 (0.075)
Will Lose Spouse	0.068 (0.097)	0.064 (0.097)	−0.007 (0.108)	−0.006 (0.107)
Will Add Child	0.017 (0.059)	0.019 (0.059)	−0.161** (0.080)	−0.153* (0.080)
ρ	0.290 (0.083)	0.285 (0.083)	0.189 (0.078)	0.205 (0.080)
Wald Test (H_0: $\rho = 0$)	10.92***	10.55***	5.58**	6.20**
Pseudo-R^2	0.135	0.135	0.102	0.102
Search Obs.	7633	7633	6423	6423
Individuals	3861	3861	3543	3543

Notes: Robust standard errors are in parentheses. Search equations also include will add spouse, will lose spouse, will add child, race, schooling, age, family income, wage, tenure, hours worked, dual job, public sector, union, urban residence, local unemployment rate, 1-digit industry, 1-digit occupation, region, and year dummies. The employment selection equations include marital status, add/lose spouse in PY, will add/lose spouse, children, will add child, race, schooling, age, health problem, nonlabor income, urban residence, local unemployment rate, region, and year dummies. ***1-percent significance, **5-percent significance, *10-percent significance.

[16]As a robustness check, we repeated the analysis using a more restrictive measure of employed search, with the search variable taking a value of unity only if the woman had searched for other employment in the last four weeks (and zero otherwise). The only notable difference between the results was a change in the magnitude of the marriage and fertility variables. More specifically, the child-related variables increased in strength while the marriage variables declined. The sign and significance level of the variables of interest, however, were similar across models. These results are available upon request.

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slightly (relative to a woman with a child falling between the ages of 3 and 5). The slight increase in impact of a child between the ages of 13 and 17 may demonstrate reluctance on the part of parents to uproot children established in secondary school. Taken together, however, it appears that the ages of the children are not so important as the presence and number of children in the household.

4.2. Differential Effects of Children by Marital Status

It is clear from the preceding analysis that both marriage and children significantly affect the employed search propensity of women but not that of men in the sample. One important question that emerges is whether the presence of children in the household affects married mothers differently than single mothers. Theory, however, offers no clear *a priori* prediction. For example, single mothers may be particularly attracted to the potential monetary gains from job mobility given their position as the primary wage earner in the household. In contrast, if husbands participate in the provision of childcare, married women may be in a position to allocate additional time towards productive search. In order to investigate these hypotheses we partition the sample into those respondents reporting to be married with spouse present in the household and those reporting to be unmarried, divorced, separated, or widowed.

Tables 5 and **6** present model results from the sample partitioned according to marital status. As before, the analysis is carried out separately by gender and only the coefficient estimates of the key variables are presented. We employ two alternative specifications: the first controls for the presence of a child in the household while the second controls for the number of children present in the household. **Table 5** presents the results for the sample of men; **Table 6** presents the results for the sample of women.

As before, we find no impact of children in the household on the employed search behavior of men regardless of marital status, but a different picture emerges in the results for women. The results presented in columns (1) and (2) of **Table 6** indicate that children significantly reduce the likelihood of employed search by young married women. The marginal effect of *Child in HH* (–0.117) is considerably larger in magnitude than that found in the baseline model reported in **Table 3**, suggesting that the inhibiting effect of children is much stronger for married women. The strong non-linear relationship between the number of children and reduced search likelihood is also evident for married women, as is the strong negative relationship between the impending addition of a child into the household (*Will Add Child*) and employed job search. The marginal effect of an anticipated child reduces the probability of on-the-job search for married women by 11.1 percentage points, a figure comparable to the negative influence of a child already present in the household.

Table 5. Probability of employed job search: men.

Covariate	Married (1)	Married (2)	Single (3)	Single (4)
Added Spouse in PY	0.124 (0.076)	0.147* (0.075)		
Lost Spouse in PY			0.017 (0.105)	0.017 (0.105)
Child in HH	−0.106 (0.065)		−0.009 (0.081)	
No. of Children		-0.031 (0.052)		-0.080 (0.089)
No. of Children squared		0.004 (0.011)		0.036 (0.025)
Will Add Spouse			−0.033 (0.077)	−0.038 (0.077)
Will Lose Spouse	0.037 (0.098)	0.044 (0.098)		
Will Add Child to HH	−0.021 (0.075)	−0.020 (0.075)	0.109 (0.101)	0.108 (0.101)
ρ	0.416 (0.154)	0.418 (0.154)	0.256 (0.105)	0.260 (0.104)
Wald Test (H_0: $\rho = 0$)	5.60**	5.70**	5.39**	5.67**
Pseudo-R^2	0.100	0.100	0.128	0.128
Search Obs.	3731	3731	3902	3902
Individuals	2260	2260	2649	2649

Notes: Robust standard errors are in parentheses. Search equations also include race, schooling, age, ln family income, wage, tenure, hours worked, dual job, public sector, union, urban residence, local unemployment rate, 1-digit industry, 1-digit occupation, region, and year dummies. The employment selection equations include marital status, add/lose spouse in PY, will add/lose spouse, children, will add child, race, schooling, age, health problem, ln nonlabor income, urban residence, local unemployment rate, region, and year dummies. ***1-percent significance, **5-percent significance, *10-percent significance.

The results obtained from the subsample of unmarried women (found in the final two columns of **Table 6**) contrast substantially with those for married women. In fact, we find no evidence of children (either present or expected) inhibiting employed search by women without a spouse present in the household. Although there may be some concerns regarding the partitioning of the sample across an endogenous variable like marriage, it is clear that the presence (as well as the anticipation) of children in the household affects married and single women quite differently.

5. Conclusion

Because research has shown that search and mobility decisions made during the early years of the working lifecycle have such far-reaching implications for lifetime wage growth, there is an important need to understand the human capital investment constraints facing young

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Table 6. Probability of employed job search: women.

Covariate	Married (1)	Married (2)	Single (3)	Single (4)
Added Spouse in PY	0.203** (0.082)	0.199** (0.082)		
Lost Spouse in PY			0.107 (0.092)	0.101 (0.092)
Child in HH	−0.296*** (0.082)		−0.071 (0.062)	
No. of Children		−0.266*** (0.070)		−0.029 (0.062)
No. of Children squared		0.050*** (0.017)		0.004 (0.016)
Will Add Spouse			0.061 (0.077)	0.061 (0.077)
Will Lose Spouse	−0.054 (0.105)	−0.057 (0.105)		
Will Add Child to HH	−0.279** (0.110)	−0.300*** (0.111)	0.011 (0.123)	0.009 (0.124)
ρ	0.261 (0.173)	0.233 (0.162)	0.140 (0.092)	0.131 (0.092)
Wald Test (H_0: $\rho = 0$)	2.06	1.92	2.25	1.98
Pseudo-R^2	0.077	0.078	0.092	0.092
Search Obs.	3055	3055	3368	3368
Individuals	2007	2007	2301	2301

Notes: Robust standard errors are in parentheses. Search equations also include race, schooling, age, ln family income, wage, tenure, hours worked, dual job, public sector, union, urban residence, local unemployment rate, 1-digit industry, 1-digit occupation, region, and year dummies. The employment selection equations include marital status, add/lose spouse in PY, will add/lose spouse, children, will add child, race, schooling, age, health problem, ln nonlabor income, urban residence, local unemployment rate, region, and year dummies. ***1-percent significance, **5-percent significance, *10-percent significance.

workers. Using data from the 1980, 1984, 1996, and 2000 waves of the National Longitudinal Survey of Youth 1979, this study explores the impact of marital status and the presence of children on the employed search behavior of young workers. Estimation results from bivariate probit models of employed job search that account for the selection accompanying employment demonstrate that both marriage and children significantly reduce the likelihood of on-the-job search for young women but not for men. Moreover, both the age and number of children present in the household are important determining factors for women in the decision to conduct on-the-job search. Recent changes in marital status also influence the likelihood of search. In particular, recently married women are less likely to search than single women, but more likely to search than those women who have been married longer. Our analysis demonstrates that the inhibiting influence of children is most pronounced for married women. In contrast, single women with children are no less likely to engage in employed search than single women without children.

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