INFORMAL JOB SEARCH
AND BLACK YOUTH UNEMPLOYMENT

Harry J. Holzer

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ABSTRACT

In this paper I analyze how young black and white unemployed jobseekers use various methods of search, and the employment outcomes which result from their use. The focus is on distinguishing informal search methods (i.e., friends and relatives or direct application without referral) from more formal ones in analyzing racial differences.

The results show that the two informal methods of search account for about 90% of the difference in employment probabilities between white and black youth. This also accounts for 57-71% of the difference in unemployment rates between the two. Furthermore, most of these results reflect differences in the ability of these methods to generate job offers, as opposed to differences in search effort or job acceptance rates. However, our ability to explain these differences through personal, family, and household characteristics was generally quite limited.

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I. Introduction

The problem of unemployment among young blacks remains one of the nation's most serious socioeconomic problems. While recent research efforts have contributed some new insights into this problem,[1] many questions have gone unanswered and many claims have been unsubstantiated to date. Furthermore, policy approaches to the problem have had mixed success at best, and new ideas on the topic are less than abundant.

One potential source of the unemployment problem for young blacks which has long been suggested but rarely analyzed empirically is the network of contacts available to them.[2] The importance of such contacts through friends and relatives for jobseekers in general has been stressed and well-documented,[3] but the issue of whether such contacts are less available or effective for blacks and especially young blacks is less clear.

There are many reasons for believing that blacks may enjoy fewer benefits from such contacts than do whites. For one thing, the number of female-headed and welfare-dependent black families has risen substantially in recent years; and young males in these homes may have greater difficulty obtaining information and referrals from household members who are themselves unemployed.[4] Furthermore, the high unemployment rates of older blacks and their low representation in skilled blue-collar positions may compound the difficulties of younger blacks who look to them for help. Even when such older blacks are situated in attractive jobs, their recommendations might be taken less seriously by white employers.

Contacts through friends and relatives can be considered part of the more general category of informal job search, which also includes direct application to firms from walk-ins without referral. More formal methods of

search include state or private employment agencies, responding to newspaper ads, school or community placement services, and other institutional activities.[5] The hypothesis that blacks do relatively better with formal methods than with informal ones has been frequently stated over the years.[6] This might occur because informal methods involve fewer explicit or objective criteria by which to judge applicants, and instead rely heavily on subjective judgments by employers or references. While the latter may often contain more accurate and extensive information about applicant qualifications, the possiblities for discriminatory judgment also rise. This is particularly true for direct applications from walk-ins, where the applicant's race might be among his or her most salient features.

The evidence to date that blacks do relatively better with formal methods than with informal ones has consisted primarily of their higher use of the former and lower use of the latter than whites.[7] But direct evidence on relative effectiveness of these methods for blacks and whites has not been provided. Furthermore, there has been little evidence on use or effectiveness of such methods for younger cohorts of blacks and whites; and possible links between these issues and unemployment rates of black youth have not been seriously analyzed.

In this paper I hope to provide some evidence on these issues. In particular, I analyze data on the use of various methods of search by unemployed young white and black males; and on the effectiveness of using these methods for each group, as measured by the job offers and acceptances in which they result. The data are based on a unique set of questions which appear in the 1981 and 1982 panels of the National Longitudinal Survey (NLS) of Youth.

Using these data, we can test whether the hypothesized differences in effectiveness of various search methods truly exist; and, if they do, we can measure their effects on unemployment differentials between young whites and blacks. Given the nature of the data, it is also possible to decompose the total observed difference in employment probabilities into components attributed to each method of search; and further into differences in use, job offers, and job acceptances based on each method. These results might shed some light on the important question of the extent to which the high rate of black youth unemployment is based on individual search choices as opposed to market constraints. Finally, we can try to explain any observed racial differences in search method outcomes to both personal and family background or household characteristics of individuals. In particular, we can see to what extent family and household characteristics explain differences in effectiveness of personal contacts between blacks and whites.

The rest of the paper is organized into two sections. The first section presents the empirical evidence. It is subdivided into parts in which we consider summary measures of search method use and outcomes for blacks and whites, a decomposition of total differences, and explanatory equations for observed outcomes. The second section discusses conclusion and implications.

The major finding of this paper is that the two informal methods of search, especially direct application, account for almost the entire difference in employment probabilities between unemployed young black and white males. Furthermore, most of this difference reflects differences between blacks and whites in the effectiveness of these methods in producing job offers, as opposed to differences in search choices. However, family and household characteristics appear to explain only a very limited part of these observed racial differences in offer probabilities.

II. Empirical Evidence

A. Data and Summary Results

The 1981 and 1982 panels of the NLS each contain extensive information on search method use and outcomes. The questions in the 1981 panel focused on job search activities during the month preceding the survey date. The questions in the 1982 panel dealt with search methods used to obtain the respondent's most recent job. The results based on data from each panel are considered successively below.

The 1981 panel asked a broad range of questions regarding job search activities in the previous month. Anyone who had searched for work was asked whether he or she had used each of about thirteen different methods.[8] If so, the respondent was then asked whether that method resulted in a job offer and whether the offer had been accepted. Other questions included the time spent using each method of search and any wage offers received.

The sample used in the analysis below is limited to nonenrolled and nonenlisted white and black males.[9] The ages of the respondents range from 16 to 23 in this group. Since the focus of the analysis is the jobseeking behavior of the unemployed, it was necessary to develop a sample of individuals who had been unemployed in the previous month, regardless of their current employment status. The sample used below therefore includes all individuals who searched in the previous month and who are currently unemployed or who are currently employed but whose duration of employment is thirty days or less.

Using this sample and the variables described above, it is possible to analyze the probability of becoming employed for young white and black job seekers. The overall probability for any person is based on the probabilities of being employed through each method of search:

1) $P(E) = \sum_j P(E_j) = \sum_j P(Use_j) \cdot P(Off_j|Use_j) \cdot P(Acc_j|Off_j)$

where P(E) is the overall probability of becoming employed in a given period; $P(E_j)$ is the probability of becoming employed through the use of methods j; $P(Use_j)$ is the probability of using method j; $P(Off_j|Use_j)$ is the probability of receiving an offer, conditional on the use of j; and $P(Acc_j|Off_j)$ is the probability of accepting such an offer, conditional on receiving it. The equation assumes that a maximum of one offer is accepted per period.[10] It should also be noted that this equation is closely related to the standard search formulation in which receiving offers depends on search effort and labor demand factors while accepting offers depends on comparisons of reservation and offered wages.[11]

The mean probabilities of becoming employed in the previous month, and the underlying probabilities on which they are based, are shown for young white and black jobseekers in Table 1. Five search methods are analyzed: friends and relatives, direct contact without referral, state agencies, newspaper ads, and a composite category that includes all other methods. The probabilities listed for each method are the use, conditional offer, and conditional acceptance ones described above, as well as the employment probability for each method. All means are weighted by sample weights, to correct for the oversampling of low-income whites in the NLS.

A number of important results appear in Table 1. For both white and black youth, the most frequently used methods of search are checking with friends and relatives and direct application without referrals. These are also the two most productive methods, in terms of offers and acceptances generated. This is consistent with a model of search choices in which

Table 1

Search Method Use and Outcomes

1981 NLS, Unemployed

Whites and Blacks

	Friends/Rels.		Direct App.		State Agency		Newspaper		Other	
	W	B	W	B	W	B	W	B	W	B
Percent Using Each Method in Previous Month:	.862	.818	.808	.758	.548	.501	.584	.556	.528	.509
Percent of Users Obtaining Offers:	.183	.156	.211	.094	.092	.079	.109	.065	.169	.130
Percent of Offers Accepted:	.809	.801	.654	.649	.511	.633	.339	.800	.627	.546
Probability of Gaining Employment:	.128	.102	.111	.049	.026	.025	.022	.029	.056	.036

NOTE: Samples include nonenrolled and nonenlisted males who were unemployed and searching for work one month prior to the survey. Sample sizes are 398 for whites and 211 for blacks.

relative productivities of search methods determine their frequency of use.[12] Overall, the two informal search methods account for over 60% of the jobs obtained by both black and white youth.

Furthermore, the conditional acceptance probabilities are highest for the use of friends and relatives for both blacks and whites. This is consistent with the views expressed by several previous authors that friends and relatives provide better information and better employment opportunities for individuals than do other methods, given their skill levels and other labor market factors.[13]

As for comparisons between blacks and whites, we find the frequency of search method use to be just a bit lower for blacks in each category. However, most of these differences do not appear to be significant.[14] Much more substantial are the differences in the probabilities of obtaining offers between the two groups. For each method, whites have significantly higher probabilities of obtaining offers than do blacks.[15] The largest difference, in both absolute and percentage terms, occurs for the method of direct application. The large racial difference in this category, compared to more formal methods where criteria are likely to be more standard and objective, suggests that discrimination may be a relevant explanation for a major part of the difference in youth employment probabilities.

Racial differences in the conditional probabilities of accepting job offers also appear to be less significant than those for the probabilities of receiving offers. For the two informal search methods, acceptance probabilities are quite comparable between blacks and whites. For the formal methods, acceptance rates are higher for blacks in some cases and lower in others.

Finally, the employment probabilities of the last row show that racial differences are largest for the two informal methods. Among the formal methods, higher acceptance rates outweigh lower offer probabilities for young blacks to give them higher employment probabilities than whites from state agencies and newspapers (though not from "other methods"). Summing across the employment probabilities for different methods (and adjusting for the small fractions who report accepting more than one job) results in overall monthly employment probabilities of .298 for whites and .201 for blacks.

The questions in the 1982 panel of the NLS dealt with search methods used by the respondent to obtain his most recent job. All those who listed having a job in the previous year were asked whether or not they were already employed when they obtained this job; whether or not they had been searching for work when they obtained it; if they had, what methods they used and how many weeks they spent searching; and which method resulted in the obtaining of this job. Those without any jobs in the previous year remain in the sample, which consist of nonenrolled and nonenlisted young males.

To establish some degree of comparability between these questions and those of the previous panel, we compute employment probabilities based on each search method. According to Bayes' Rule, we can write the probability of obtaining employment through search method j conditional on having had some form of employment as follows:

$$2) \qquad P(E_j \mid E\ ) = \frac{P(E \mid E_j) \cdot P(E_j)}{P(E)} = \frac{P(E_j)}{P(E)}$$

since $P(E \mid E_j) = 1.$[16] Since all jobs held the previous year were achieved through some method $_j$, we can write:

3) $\qquad \dfrac{\sum\limits_{j} P(E_j)}{P(E)} = 1$ or $\sum\limits_{j} P(E_j) = P(E)$

Using sample means we then calculate (approximate) ex-post monthly employment probabilities based on each method, conditional on having held a job at same time during the year which was obtained through that method:

4) $\qquad P(E_{jm}|E_j) = \dfrac{P(E_{jm})}{P(E_j)} = 4/DN_j$

where DN_j is the completed duration of unemployment (measured in weeks) for any job obtained using search method j.[17] Finally, we can write the relationship between overall monthly probabilities and those for particular methods of search as follows:

5)

$$P(E_m|E) = \sum\limits_{j} \dfrac{P(E_j)}{P(E)} \cdot \dfrac{P(E_{jm})}{P(E_j)}$$

$$\text{or } P(E_m) = \sum\limits_{j} P(E_j) \cdot \dfrac{P(E_{jm})}{P(E_j)} = P(E) \cdot \dfrac{P(E_{jm})}{P(E_j)}$$

Thus the overall monthly probability reflects the sum of probabilities for each method j, which in turn reflect the products of annual marginal probabilities and conditional monthly probabilities for that method.

The data used for these calculations appear in Table 2. For each of the five search methods, we find the percentages of jobholders who obtained their jobs through this method (i.e., $P(E_j|E)$) as well as the percentages of all jobseekers who did the same (i.e., $P(E_j)$). The table also includes monthly probabilities for those obtaining jobs through each method (i.e., $P(E_{jm}|E_j)$), monthly probabilities for each method among all jobseekers (i.e., $P(E_{jm})$), and the percent of all jobseekers using each method. All data

Table 2

Method of Obtaining Job in Previous Year

1982 NLS, Unemployed

Whites and Blacks

	Friends/Rels.		Direct App.		State Agency		Newspaper		Other	
	W	B	W	B	W	B	W	B	W	B
Percent of Jobholders Who Obtained Job Through:	.352	.329	.337	.257	.032	.048	.067	.036	.212	.330
Percent of Jobseekers Who Obtained Job Through:	.318	.255	.304	.199	.029	.037	.060	.028	.191	.256
Monthly Probability of Employment For Jobholders Through:	.460	.332	.505	.412	.436	.428	.474	.563	.464	.326
Monthly Probability of Employment For Jobseekers Through:	.146	.085	.154	.082	.013	.016	.028	.016	.089	.083
Percent of Jobseekers Using Each Method:	.691	.669	.598	.481	.313	.418	.351	.335	.336	.391

NOTE: Samples include nonenrolled and nonenlisted males who were unemployed and searching when they obtained their most recent (rows 1 and 3 jobs plus those who held no employment in the previous year (rows 2, 4 and 5). Sample sizes are 1269 and 472 for whites and blacks respectively who had jobs, and 1405 and 609 for the total sample.

reflect weighted means for whites and blacks separately. As in Table 1, the sample is restricted to those who were unemployed when searching and who are neither enrolled nor enlisted.[18]

The results show, as before, that friends and relatives and direct applications produce the largest number of accepted jobs for both whites and blacks. Also as in Table 1, the largest racial differentials exist for direct applications. However, the racial differentials for probabilities based on friends and relatives are larger than they were in Table 1, especially when conditional monthly probabilities are included. It therefore appears from this table that both informal search methods are important determinants of differences in employment probabilities between young whites and blacks. Summing across the monthly probabilities for all jobseekers in row 4 we obtain .430 and .282 respectively for whites and blacks. Finally, the percent of seekers using each method show more use of direct application among whites and more use of state agencies among blacks, consistent with relative productivities that we expect here.

Overall, then, the results from the two panels of the NLS are quite consistent. To the extent that some differences do exist between the two, several possible explanations might be given. One of these is the problem of length bias in the 1981 panel.[19] The focus of that survey on a particular month implies that longer unemployment spells are likely to be overrepresented in this sample, compared to the 1982 panel which looks at spells over a year or more. The higher monthly employment probabilities calculated from the 1982 data appear to confirm this viewpoint. Other advantages from using the 1982 data include larger sample sizes and an avoidance of the problem of multiple job acceptances (since the questions in the survey focus on the individual's most recent job). Of course, certain problems may bias results in the 1982

survey as well--e.g., measurement error in durations recalled from memory, etc. Therefore both sets of data are useful in analyzing the issues considered here.

B. Decomposing Racial Employment Differentials

The summary data of Tables 1 and 2 can be used to decompose the overall racial difference in employment probabilities into fractions accounted for by each search method. The fractions of this difference which are accounted for by differences in search method use, offer probabilities and acceptance probabilities can also be calculated.

The decomposition of the overall difference in probability of employment for the 1981 data appears in Table 3. The first row of this table lists the absolute differences in overall employment probabilities based on Table 1. All other numbers in the table reflect fractions of these differences. The second row of the table represents the fractions of the overall difference which are accounted for by differences in employment probabilities for each method of search. These are simply based on the following equations derived directly from Equation 1):

6) $\quad \Delta P(E) = \sum_j \Delta P(E_j)$

The numbers in the second row thus reflect $\dfrac{\Delta P(E_j)}{\Delta P(E)}$ for each method j.

In order to further decompose these percentages into components based on use, offers, and acceptance, we take logs of the ratios of employment probabilities for whites and blacks:

$$7) \quad \ln\left(\frac{P(E_j)^W}{P(E_j)^B}\right) \equiv \ln\left(\frac{P(Use_j)^W}{P(Use_j)^B}\right) + \ln\left(\frac{P(Off_j|Use_j)^W}{P(Off_j|Use_j)^B}\right) + \ln\left(\frac{P(Acc_j|Off_j)^W}{P(Acc_j|Off_j)^B}\right)$$

$$\equiv \Delta \ln P(Use_j) + \Delta\ln P(Off_j|Use_j) + \Delta \ln P(Acc_j|Off_j)$$

Dividing each of the three components by the overall log ratio gives us the percentage of each difference in employment probabilities accounted for by use, offers, and acceptances. When, in turn, these percentages are multiplied by the respective $\frac{\Delta P(E_j)}{\Delta P(E)}$ percentages of the second row, we get the percentages of the total difference in employment probabilities accounted for by use, offers, and acceptances with each method. These last numbers appear in the third, fourth and fifth rows respectively of Table 3. Given these calculations, we can add across each row to obtain the percentages of the total difference accounted for by use, offers, and acceptances from all search methods. These numbers appear in the first column of Table 3. Likewise, we can add across each column to obtain the percentages of the total difference due to each method, which appear in the second row.

The results of Table 3 show that the two informal search methods, friends and relatives and direct applications, are the most important sources of differences in youth employment probabilities between young blacks and whites. Together these two methods account for about 90% of the total racial difference in employment probabilities. Direct applications alone account for almost 60%. The percentage of the total difference accounted for by friends and relatives is second in magnitude, while the composite category of "other methods" picks up the rest of the difference.

It is also noteworthy that differences in the probabilities of receiving offers for each method explain the vast majority of total differences attributable to each method. Differences in the conditional offer

Table 3

Decomposition of Racial Differences

in Probabilities of Gaining Employment

1981 NLS

	TOT	Fr./Rel.	Direct Contact	State Agency	Newspaper	Other
Total Difference in Employment Probability in Previous Month:	.104	.025	.065	.001	-.007	.020
Percentage of Difference Due to Each Method:	1.000	.244	.628	.007	-.070	.192
Percentage Due to Differences in:						
Use of Methods:	.154	.058	.046	.022	.012	.016
Receiving Offers:	1.028	.176	.576	.037	.125	.114
Accepting Offers:	-.181	.010	.006	-.052	-.207	.062

NOTE: Calculations, based on data from Table 1, are described in the text.

probabilities for the two informal methods can together explain almost 75% of the total difference in youth employment probabilities. Furthermore, differences in offer probabilities for the five methods together can explain the entire racial difference in youth employment probabilities. Though differences in frequency of search method use could explain an additional 15% of the total difference, this component is fully counteracted by the higher conditional probabilities of accepting offers among young blacks. Thus, if we consider frequency of use and conditional acceptance probabilities together as choice variables while offer probabilities reflect market responses, we see that market responses account for the entire difference in youth employment probabilities while choice variables have no overall effect.

Table 4 presents a decomposition of the racial differences in employment probabilities based on data from the 1982 panel. The first two rows of this table are comparable to those of Table 3, in presenting absolute and percentage differences in monthly employment probabilities attributable to each method of search. The third and fourth rows decompose the percentage differences of row 2 into portions attributable to annual and conditional monthly differences for each method, based on the following equation:

$$
8) \quad \ln\left(\frac{P(E_{jm})^W}{P(E_{jm})^B}\right) \equiv \ln\left(\frac{P(E_j)^W}{P(E_j)^B}\right) + \ln\left(\frac{P(E_{jm}|E_j)^W}{P(E_{jm}|E_j)^B}\right)
$$

$$
\equiv \Delta \ln P(E_j) + \Delta \ln P(E_{jm}|E_j)
$$

Dividing each of these terms by the sum and multiplying by the percentage differences in row 2 give us the percentages due to annual and monthly probabilities of rows 3 and 4. As before these can be summed across to give

us fractions of the total difference curve to differences in annual and conditional monthly probabilities.

Finally, rows 5 and 6 decompose the percentage differences in row 2 for each method into components attributable to use and to receiving and accepting offers from each method. These are based on equations similar to those in Equation 7 above except that the final row here reflects a residual difference in monthly probabilities after differences in use have been accounted for.[20]

The results of Table 4 show that friends and relatives and direct applications can account for about 90% of the difference in monthly employment probabilities between young blacks and whites. Direct application alone accounts for almost half of the differential while friends and relatives account for over 40%. Furthermore, both measures contribute substantially to differentials at the annual level as well as the conditional probability within a month. All methods together account for about 44% at the annual level and about 56% at the monthly level for those with employment.

As for the distinction between use of method and outcomes, the results show that differences in use account for about 8% of the total monthly difference. While differences in direct applications account for almost 17% of the total differential, part of this difference is overturned by higher use of other methods by blacks. As for the difference between receipt and acceptance of offers, a formal breakdown between the two is not possible here. However, an additional question in the 1982 panel asked whether individuals had rejected any offers before accepting their most recent job. The evidence showed a higher rate of offer rejections among whites than among blacks.[21] Thus virtually the entire difference in employment probabilities is accounted for by differences in probabilities of receiving offers, as was also true in the 1981 panel.

A number of comments are in order here before proceeding. For one thing, the distinction between offers and acceptances may not be quite so distinct. In particular, it is possible that reservation wages affect the decisions of individuals to seek explicit offers from particular firms as well as the decisions of whether to accept such offers; in other words, individuals who believe that they could obtain jobs at certain low-wage firms may not bother to apply since they know in advance that they would reject such offers. Thus, the fact that the entire black-white difference in employment probabilities can be explained by offer probabilities does not necessarily imply that reservation wages play no role here. In fact, other evidence from the NLS suggests that the reservation wages of young blacks are higher relative to offered wages than are those of young whites; and that these reservation wages help to explain some fraction (40% or less) of the higher unemployment durations of young blacks.[22]

The importance of informal job search, and especially friends and relatives, for explaining racial differences in job-finding is underscored by comparable data on employed jobseekers. In this group, the magnitude of the racial difference in offer probabilities for friends and relatives is larger than for any other method, while direct application is also important.[23] Therefore both types of informal job search are crucial for explaining racial differences in overall employment outcomes.

A final issue here concerns the contribution of racial differences from using informal search methods to the overall racial difference in unemployment rates among youth.

To calculate this, we convert employment probabilities for a particular month into expected durations of unemployment, where the latter are merely reciprocals of the former. The relationship between racial differences in

Table 4

Decomposition of Racial Differences

in Probabilities of Gaining Employment

1982 NLS

	TOT	Fr./Rel.	Direct App.	State Agency	Newspaper	Other
Total Difference in Monthly Employment Probability:	.148	.061	.072	-.003	.012	.006
Percentage of Difference Due to Each Method:						
Total:	1.00	.412	.486	-.020	.081	.041
Probability of Holding Job During Previous Year:	.443	.168	.327	.003	.110	-.165
Probability of Obtaining This Job Within A Month:	.557	.244	.159	-.023	-.029	.206
Percent of Total Difference Due to:						
Use of Methods:	.081	.024	.168	-.028	.007	-.090
Receiving/Accepting Offers:	.919	.388	.318	.008	.074	.131

NOTE: Calculations, based on data from Table 2, are described in the text.

unemployment durations and unemployment rates can then be analyzed according to the following identities:

9) $U \equiv F \cdot D$

10) $\ln(\dfrac{U^B}{U^W}) \equiv \ln(\dfrac{F^B}{F^W}) + \ln (\dfrac{D^B}{D^W})$

$\equiv \Delta \ln F + \Delta \ln D$

where U represents the steady-state unemployment rate, F represents frequency of becoming unemployed, and D represents expected duration of unemployment.[24]

The necessary data for these calculations appear in Table 5. The table presents overall unemployment rates of young blacks and whites in the NLS, as well as expected durations of unemployment that are based on the employment probabilities of Tables 1 and 2. Logs of the black-white ratios are also presented, as are implied frequencies of unemployment for each group.

The results show that differences in employment probabilities from Tables 1 and 2 imply differences in expected durations which account for 65-79% of the total differences in unemployment rates.[25] The implied differences in frequency presumably reflect racial differences in probability of job loss, which have been documented and analyzed elsewhere.[26]

These results therefore suggest that informal search methods, by accounting for 87-90% of racial differences in employment probabilities, also account for 57-71% of the total difference in unemployment rates before the two groups. Differences in conditional offer probabilities from use of the informal search methods account for most of this effect. The importance of informal job search outcomes for exploring the high unemployment rates of black youth relative to white youth therefore appears to be quite strong.

Table 5

Unemployment Rates, Durations and Implied Frequencies

1981 and 1982 NLS, Whites and Blacks

	1981			1982		
	W	B	LOG(B/W)	W	B	LOG(B/W)
Unemployment Rate:	.169	.279	.501	.156	.299	.651
Expected Duration In Months:	3.355	4.975	.394	2.326	3.546	.422
Implied Monthly Frequency:	.050	.056	.109	.067	.084	.228

NOTE: Calculations, based on data from Tables 1 and 2 (for expected duration), are described in the text.

C. Econometric Evidence

The data and decompositions of the previous section established the fact that the racial differences in offer probabilities from the use of informal search methods account for a major part of the black-white difference in youth unemployment. To try to explain these differences, we turn to estimated equations for conditional offer or employment probabilities for these methods, In particular, we hope to find out how much of the racial differences can be explained by observed personal characteristics and by the employment and occupational status of one's parents and household.

The equations which are estimated are of the following form:

10) $O_{ij} = O_j(X_i, R_i, Fam_i) + e_{ij}$

where O_{ij} is a dummy variable for whether or not the ith individual obtained an offer or a job from using method j; X_i is a set of personal characteristics which includes age, education, marital status, South, urban residence, and the local unemployment rate; R_i is a dummy variable for race (Black = 1); and Fam_i is a set of variables used to measure employment or occupational status of the family or household. The dependent variables for the 1981 equations are the conditional probabilities of receiving offers from the use of each search method (i.e., $P(Off_j|Use_j)$); while for 1982 they are the conditional probabilities of having obtained employment from each method in the previous month (i.e., $P(E_{jm}|E,Use_j)$).

The equations are estimated independently for friends and relatives, and for direct applications. Equations were also estimated for a third category which combines all of the formal search methods, though these are not included in the tables below. The samples in each case are limited to those

who used the relevant search method in the previous month. The 1981 equations and those in 1982 for annual probabilities are estimated using Probit techniques, while those in 1982 for ex-post monthly probabilities (which are measured continuously) are estimated using OLS.

The various sets of independent variables are added sequentially in each equation, so we can see how much of the race effect can be explained by each. Two sets of Fam_i variables are also used in different specifications. They are: 1) Father's occupation, represented by dummy variables for clerical/sales, crafts/operatives, and laborer/service,[27] and 2) a set of dummy variables for household structure and employment status--whether the individual lives at home, whether the father lives at home and is employed, whether the father lives at home and is unemployed, and whether other older household members (male or female separately) are employed.[28]

With any of these sets of variables, it is unclear whether estimated effects are capturing human capital factors, correlation with unobserved skills, or the actual effects of family and household factors on the effectiveness of using informal networks. If the last of these effects is important, we would expect to see stronger effects of these variables in the equations for friends and relatives than for the other methods. Thus comparisons across methods will be an important way of sorting out these effects.

Before moving on, the problem of self-selection into each of the samples by the use of the relevant search method must be briefly mentioned. Since the use of each method presumably reflects expected productivity of using that method, the samples may not be random with respect to outcome equations. Though the techniques for dealing with self-selection problems are fairly well-known,[29] these do not appear to be appropriate in a case such as

this where the samples are not mutually exclusive (since individuals can choose more than one method of selection). Fortunately, though, the summary evidence in Table 1 and 2 suggests that self-selection should not create serious biases on the estimates of interest here. In particular, the fairly comparable frequencies of search method use between young blacks and whites imply little bias in estimates of race effects in outcome equations.[30]

Table 6 presents results for the 1981 equations for conditional offer probabilities from use of informal methods. For those using friends and relatives, the race effects are negative (though not significant) in all specifications. The addition of household employment variables does little to the magnitude of the race coefficient, and these coefficients show a significant effect only from the presence of an unemployed father (relative to an absent father), which is negative. The results thus cast some doubt on the hypothesis that residence in female-headed households is a major cause of the lower effectiveness of friends and relatives in obtaining offers for young blacks. But as for father's occupation, these variables have a larger effect on the race coefficient and show marginally significant negative effects for those in blue-collar jobs.

The race effect for use of direct application is significant in all cases but is almost totally unaffected by the inclusion of household employment status or father's occupation. Furthermore, these variables show no significant effects on the conditional probability of receiving an offer from use of this method. In other equations not reported for the formal methods, a similar lack of effects on the race variable resulted.[31]

Table 7 presents results from the 1982 equations for conditional monthly employment probabilities from the use of informal methods. The results show once again that household employment characteristics do not

Table 6

Effects of Household Employment

and Father's Occupation on

Conditional Offer Probabilities—1981 NLS

	Friends/Relatives			Direct Application		
	1	2	3	1	2	3
Race (1 = Black):	-.103 (.147)	-.093 (.150)	-.019 (.153)	-.379 (.168)	-.389 (.170)	-.387 (.174)
Father's Occupation:						
Clerical/Sales	—	—	-.043 (.271)	—	—	-.129 (.429)
Craft/Operative	—	—	-.311 (.306)	—	—	-.020 (.293)
Laborer/Service	—	—	-.458 (.277)	—	—	.120 (.321)
Household Characteristics:						
Father Employed:	—	.075 (.162)	—	—	.062 (.176)	—
Father Unemployed:	—	-.712 (.352)	—	—	-.225 (.304)	—
Other Males Employed:	—	.017 (.163)	—	—	.027 (.170)	—
Females Employed:	—	-.093 (.159)	—	—	-.065 (.174)	—
Not Living At Home:	—	.117 (.216)	—	—	-.102 (.251)	—
-2 Log L	468.12	460.62	460.06	398.28	397.10	397.60

NOTE: All equations are estimated using Probit. Sample sizes are 516 for friends and relatives and 481 for direct application. Samples in each case are limited to those who used each method in the previous month. Control variables included in each equation are age, education, marital status, urban residence, South, and the local unemployment rate.

Table 7

Effects of Household Employment

and Father's Occupation on

Conditional Offer Probabilities—1982 NLS

	Friends/Relatives			Direct Application		
	1	2	3	1	2	3
Race (1 = Black):	-.071 (.029)	-.072 (.030)	-.068 (.030)	-.078 (.034)	-.074 (.035)	-.074 (.035)
Father's Occupation:						
Clerical/Sales	--	--	.054 (.060)	--	--	.002 (.068)
Craft/Operative	--	--	.031 (.042)	--	--	.004) (.047)
Laborer/Service	--	--	.038 (.049)	--	--	-.063 (.057)
Household Characteristics:						
Father Employed:	--	.039 (.033)	--	--	.005 (.039)	--
Father Unemployed:	--	-.031 (.060	--	--	-.080 (.076)	--
Other Males Employed:	--	.007 (.033)	--	--	-.009 (.038)	--
Females Employed:	--	.047 (.032)	--	--	.065 (.038)	--
Not Living At Home:	--	.012 (.040)	--	--	.047 (.046)	--
$\bar{R}^2$	.010	.011	.008	.031	.031	.029

NOTE: All equations are estimated using OLS. Sample sizes are 1175 for friends and relatives and 967 for direct application. Samples in each case are limited to those who used each method in the previous month. Control variables included in each equation are age, education, marital status, urban residence, South, and the local unemployment rate.

explain the negative coefficients for blacks from use of either method. The presence of an unemployed father again has negative (though not significant) effects in both equations, while those for having employed females are positive in both. These effects were not observed in equations for use of formal methods.[32] Thus, while household employment characteristics may have small effects on the effectiveness of informal job search, they do not account for the strong racial differences in outcomes observed from using these methods.

The results for father's occupation in the 1982 data are also very weak for both informal methods. In neither case are there substantial effects on the race coefficient, and the coefficients on the occupations themselves are generally not significant. Thus, some inconsistencies appear between results from the 1981 and 1982 panels with regard to use of friends and relatives. But given the much larger sample sizes and larger time periods under consideration in the 1982 data, the weaker results observed in these data are probably the more accurate.

The relatively weak explanatory power of the family and household variables with regard to the race effect may reflect the limitations of those variables as measures of one's family background and how it affects informal networks. Alternatively, they could indicate a more general kind of discrimination against blacks from all backgrounds in which their referrals are taken less seriously and their direct appearances are viewed more skeptically than they are for whites. The exact nature of the racial difference in outcomes from using informal search thus remains a puzzle at this time.

C. Conclusion

In this paper I analyze how young black and white unemployed jobseekers use different methods of search, and what outcomes result from these methods. The focus is on distinguishing informal search methods (i.e., friends and relatives or direct application without referral) from more formal ones in analyzing racial differences.

The results show that the two informal methods of search, especially direct application, account for 87-90% of the difference in youth employment probabilities between blacks and whites. This also accounts for 57-71% of the difference in unemployment rates. Furthermore, most of these results reflect differences in the ability of these methods to produce job offers, as opposed to differences in search effort or job acceptance rates. However, our ability to explain these differences through personal, family, and household characteristics was generally quite limited.

These findings have a number of potential implications. They suggest that search choices play a limited role relative to market responses in determining racial differences in youth employment (though search choices may have some effects on conditional offer probabilities). The finding that informal job search accounts for almost all of the difference in employment probabilities also raises some important questions about policy approaches which stress more formal, institutional mechanisms for placing job applicants.[33] To the extent that some recent youth employment programs have stressed lessons in job search which may result in more effective direct application procedures, some positive results may occur for young blacks. But disadvantages in the network of friends and relatives facing blacks are not likely to be overcome through this mechanism. More research on the causes of

disadvantages for blacks who use informal search methods is necessary before

remedies for this problem can be promoted with confidence.

FOOTNOTES

[1]A volume of new papers on the topic has recently been edited by Freeman and Holzer (1986). Other important contributions include Cogan (1982).

[2]The suggestion that young blacks are at a disadvantage with respect to informal networks has been made by Osterman (1980) and Freeman (1980), among many others.

[3]The lengthy literature on this topic dates back to Reynolds (1951) and also includes Granovetter (1974) and Corcoran, et. al. (1980). An application of this issue to the general problem of youth unemployment appears in Rees and Gray (1982).

[4]The higher rate of unemployment among young blacks in AFDC households is documented by Lerman (1986), though the exact explanation for this phenomenon is not clear.

[5]The distinction between formal and informal search methods was first emphasized in Rees (1966). A similar (though not identical) distinction between "direct" and "indirect" methods has since then been used by Chirinko (1982) and Barron and Gilley (1981).

[6]See Bradshaw (1973); also Bureau of Labor Statistics Report No. 1671 (1975).

[7]Ibid.

[8]The focus of this analysis is on the unemployed as opposed to the non employed, where the latter also includes those out of the labor force. The relevance of the distinction has recently been debated by Clark and Summers (1982) and Flinn and Heckman (1983). In these data, the percentage of unemployed youth who have actively sought work in the previous month is very similar among young whites and blacks, thereby leaving the results here unaffected by this distinction.

[9]The decision to focus on males reflects the huge differences in labor force behavior and labor markets between young males and females. Differences in behavior and markets for enrolled and nonenrolled youth led to a similar decision to exclude the former. Non-black minorities (such as Hispanics) are also omitted from the sample.

[10]A small fraction of whites and blacks (13.1% and 16.6% respectively) in the 1981 panel report accepting more than one offer in the previous month. Calculations of overall monthly employment probabilities reported below correct for this by subtracting these percentages from the sums of probabilities across methods.

[11]In such an analysis, the probability of becoming employed in a given time period is given by $P(E) = \pi \cdot (1 - F(w^r))$, where π is the probability of obtaining an offer, w^r is the reservation wage, and $f(w)$ is the density function of wage offers facing an individual. $(1 - F(w^r))$ is thus the conditional probability of accepting any offers received. The use of various

search methods is related to this framework by their relationship to total search effort $SE = \sum_j T_j$ where T_j is the time spent on search method j. In many such models, search effort is an argument in the offer probability function. See, for example, Barron and Mellow (1979).

[12]Such a model appears in Holzer (1986).

[13]The argument that job offers obtained through friends and relatives contain more reliable information about nonwage job characteristics first appeared in Reynolds (1951) and might explain the high rate of job acceptance. A comparable argument is made by Datcher (1982) in explaining the low rate of quits out of jobs obtained through this method.

[14]Standard errors on the means of the use probabilities are in the vicinity of .01-.02 for whites and .02-.03 for blacks on most methods. Since the samples of whites and blacks are independent, the standard errors on differences in means are calculated by $SE = ((S.E.)_w^2 + (S.E.)_B^2)^{1/2}$. Thus, standard errors on differences in search method use are approximately .02-.04.

[15]Standard errors on the conditional offer probabilities are approximately .03 for whites and .04 for blacks, implying standard errors of about .05 for the differences by the formula stated above.

[16]Though the question in the survey referred to any jobs held in the previous year, the vast majority (all but about 2%) were obtained during this year as well. P(E) can thus be considered an annual probability of obtaining employment.

[17]This formula is based on the assumption that transition probabilities are constant and therefore that unemployment durations are geometrically distributed. If so, then $E(DN_j) = 1/P(E_{jm}|E_j)$ where DN_j is measured in months and approximately equals $4/P(E_{jm}|E_j)$ when DN_j is measured in weeks. Given the properties of the geometric distribution, the ex-post mean duration of the sample $\overline{DN}_j \cong 4/ \overline{P(E_{jm}|E_j)}$, and solving for the conditional monthly probability we arrive at Equation 4). These calculations are also adjusted so that $P(E_{jm}) < 1$ for any individuals whose completed durations were under four weeks.

[18]Due to the sequencing of questions in the 1982 survey, we have no data on the jobseeking activities of those without employment in the previous year. Since we are considering nonenrolled and nonenlisted young males, I make the assumption that all such individuals spent some time searching for work in the previous year. However, those individuals who claim to have not been searching when they obtained their most recent jobs are omitted from the sample.

[19]The problem of "length bias" was first discussed by Kaitz (1970).

[20]Due to the omission of data on jobseeking activities of those without jobs in the previous year (Footnote #18), the calculations performed here assume that this group of individuals used search methods in roughly similar proportions to those with jobs in the previous year.

[21]In response to the question, "Did you reject any offers achieved through any of these methods," 21.0% of white jobholders and 11.8% of blacks

answered yes. The higher rate of job rejection (conditional on having held a job) among whites approximates that observed in the 1981 panel.

[22]See Holzer (1986a). Results of that paper, based on data from the 1979 and 1980 panels of the NLS, showed that the ratio of reservation wages to received wages was about 15% higher for unemployed blacks, although the levels of reservation wages were comparable for the two groups. The ratio of reservation to received wages in the 1981 panel was 9.1% higher for blacks, while in the 1982 panel it was 6.0% higher among the unemployed.

[23]Using data from the 1981 panel, we find that 8.5% of whites and 3.9% of blacks who were employed and searching obtained jobs in the previous month through friends and relatives. Employment probabilities from using all other methods are as high or higher for blacks as for whites. Using data from 1982 we find 25.6% of whites and 23.6% of blacks who were employed when they obtained their most recent jobs got them through friends and relatives. Comparable numbers for those using direct application are 24.0% and 22.9% respectively.

[24]Again, these calculations assume constant transition probabilities and geometrically distributed unemployment durations.

[25]The estimated contributions of racial differences in duration to differences in nonemployment are comparable to those presented in Clark and Summers (1982) and in Ballen and Freeman (1986).

[26]See, for instance, Jackson and Montgomery (1986).

[27]The omitted category here is professional/managerial occupations. An additional dummy variable was added to capture the effects of those whose fathers were either not alive or not employed, as well as those with missing occupations. Since these data are based on questions which only appeared in the 1979 panel of the NLS, some additional measurement error might be caused by changes over time in father's occupation status.

[28]The employment status variables for family members are defined only for individuals living at home. Of those, the two variables for father's employment status are defined relative to the omitted category of absent father. The two variables for employment of other older males and females are not exclusive with the variables for father's employment.

[29]See Lee (1978) or Willis and Rosen (1979).

[30]To the extent that whites use the informal methods a bit more frequently than do blacks, their offer probabilities will be biased downward relative to those of blacks. The racial differences in offer probabilities considered here are thus lower bounds to the true estimates for these methods.

[31]A racial difference of -.248 in the offer probability equation for formal methods declined to -.233 when father's occupation was added and to -.233 when household employment variables were added.

[32]The coefficient on having an unemployed father present was .036 (standard error of .135), while that for employed females was -.066 (standard error of .085) in the equation for formal methods.

[33]The limitations in the usefulness of improving formal job search mechanisms has been noted by Rees (1966), among others.

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