

YOUTH UNEMPLOYMENT MEASURED BY THE CPS

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For years the unemployment rate for youths has been considered a problem. Considerably higher than the rate for older people (for example, averaging 15.2% for 18-19 year olds and 9.7% for 20-24 year olds in 1987), the youth unemployment rate has been the focus of our investigations for the last four years, since the senior author was an ASA/NSF/BLS Senior Research Fellow at the Bureau of Labor Statistics. Our basic question is whether the high youth unemployment rate is, in part, artifactual.

Unemployment is measured officially by the Current Population Survey (CPS), a monthly survey of approximately 60,000 households. CPS classifies individuals into three mutually exclusive categories -- employed, unemployed, and not in the labor force according to responses to survey items. To be classified as unemployed an individual must have been not working during the reference week (the week prior to the survey week), must have been available during that week for work if offered, and must have actively looked for work during the previous four weeks. Individuals need not report for themselves; an adult household member (designated the household respondent) reports for all household members.

We have found (Tanur and Shin, 1990a) that young people are overwhelmingly responded for by proxy on the CPS, at rates over 90% for 16-17 year old, over 80% for 18-19 year old, and approximately 70% for 20-24 year old males and over 50% for 20-24 year old females. (Data are for March 1982 and March 1988.) We expect these proxy reports to cause a significant artifactual impact on the unemployment rate,

especially for youths.

Our interest is specifically in the conceptualization of job search. We argue that if youths and adults conceptualize job search differently, then youths may use different criteria for reporting themselves as looking for work than adults use to report for themselves. Furthermore, if such differences in conceptualization exist, then adults who report as proxies for youths may report job search differently for those youths than the youths might have reported for themselves had they self-reported. Such differences in reported job search might result in differences in calculated unemployment rates.

We have found some evidence of differential conceptions of job search (Tanur and Shin, 1990b; Tanur, 1992) and, whether for that reason or for others, differences in unemployment rates between self reporting youths and youths who are reported for by proxy (Tanur and Shin, 1990a). We have also presented some evidence (Tanur and Shin, 1990a) that these differences in unemployment rates were not solely due to self selection -- which would occur if unemployed youths are more likely than those who are employed to be at home and thus more likely to self report. The purpose of this paper is to attempt to better understand these differences in unemployment rates.

Table 1 (adapted from Tanur and Shin, 1990b) gives unemployment rates for youths (16 - 24 years old) and adults by race and sex, calculated from the March 1982 and March 1988 CPS. A word about the determination of proxy status is necessary

here. In the 1982 data the only way to determine proxy status is to compare the line number of the subject of the report with that of the household respondent -- a match indicated a self report while a non-match indicated a proxy report. By 1988 the CPS had added an interviewer check item that had not been available earlier and that categorized each subject's data as being supplied by him/herself, by a proxy, or by both self and proxy. We categorized combined self and proxy reports as self reports and used this assignment of proxy status as well as the line number matching method for data from 1988. Hence every analysis for 1988 will be done twice, once using line number matching and once using the interviewer code method of assigning proxy status. In particular, the second line of each panel of Table 1 gives data using the interviewer code method, while the third line gives data using the line number match method.

Table 1. Unemployment rates by age, sex, race and proxy status, CPS March 1982 and March 1988.

	MALES				FEMALES			
	Whites		Blacks		Whites		Blacks	
	Proxy	Self	Proxy	Self	Proxy	Self	Proxy	Self
YOUTHS								
1982	18.4%	15.6%	39.4%	31.6%	12.3%	12.8%	32.9%	35.1%
1988(a)	11.6%	10.9%	26.5%	25.1%	7.7%	10.4%	22.1%	29.9%
1988(b)	11.9%	9.5%	26.6%	24.1%	8.4%	9.6%	24.1%	28.5%
ADULTS								
1982	5.8%	8.7%	13.4%	15.0%	4.9%	6.6%	11.4%	12.7%
1988(a)	3.5%	5.3%	9.3%	9.6%	2.5%	3.7%	6.5%	9.3%
1988(b)	3.8%	5.0%	10.1%	8.8%	3.0%	3.6%	6.4%	9.6%

a. Proxy status determined by interviewer code method.
 b. Proxy status determined by line number match method.

In Table 1 we see that for male youths of both races, regardless of year or proxy assignment method, those reported for by proxy show a higher unemployment rate than those who self-report. For female youths the direction is reversed, with self reporters showing a higher unemployment rate than those who are reported for by proxy. With the exception of Black males in

1988 with proxy status determined by the line number method, adults follow the youthful female pattern, with self reporters having higher unemployment rates than those reported for by proxy.

We attempted to understand these findings better by modelling the probability of being categorized as unemployed among those categorized as being in the labor force. We used logistic regressions to see whether the proxy status in interview (1 - proxy, 2 - self) makes a significant difference in the unemployment rate. Other independent variables included in this logit analysis are age (16-17, 18-19, 20-24, and 25 and over); sex (1 - male, 2 - female); and race (1 - white, 2 - black; other races excluded).

Our initial attempts to fit a model to the complete data sets for each year, including both young people and adults, was unsuccessful, as had been our earlier attempt to model artifactual change in labor force status between CPS interview and reinterview (Tanur and Shin, 1990b). So we turned to the strategy that had earlier been successful, modelling the probability of being unemployed separately for youths and adults and then comparing the models. Tables 2, 3 and 4 present the results of these analyses. Table 2 is based on data from the March 1982 CPS, and Tables 3 and 4 are based on data from the March 1988 CPS; they differ in the method of assigning subjects to proxy status as described above. For all these models parameters are estimated with the SAS CATMOD procedure, which uses the effect coding method, as suggested by Swafford (1980), for the underlying design matrix, and the last category of each independent variable serves as the omitted category for estimation. The goodness of fit for each model is examined with a chi-square test and provided at the bottom of each column.

The first column of each of the tables represents the best fit model for youths. We

see that the model fits reasonably well for the 1982 data but only barely for both analyses of the 1988 data. On examining the parameters, we see that proxy status plays an important role in all three analyses. There are consistently statistically significant main effects for proxy status, interactions with sex and with age that are statistically significant except in the line-match data in Table 3, and a statistically significant 3-way interaction involving proxy status in Table 4. Age also seems to play an important role among youths, yielding consistently statistically significant main effects that indicate a decreasing probability of being unemployed with age. In addition to the interactions with proxy status described above, age also interacts statistically significantly with sex in Tables 2 and 3 and with race in Table 3.

Table 3. Parameters of logit models of unemployment rates, separately for youths and adults, CPS 1988, using line number match determination of proxy status.

	Best Fitting Youth Model For Youths			Best Fitting Adult Model ¹	
	With Age to Adults	Without Age	Applied to Adults	For Adults	Applied to Youths
Intercept	-1.28***	-1.62***	-2.78***	-2.80***	-1.62***
Age (3 categories)	.38***	—	—	—	—
	.24**	—	—	—	—
Sex	.08	.08*	.14***	.12***	.04
Race	-.58***	-.58***	-.46***	-.44***	-.59***
Proxy Status	-.22***	.02	-.12***	-.10***	.01
Age X Sex	-.12	—	—	—	—
	-.18*	—	—	—	—
Age X Race	.19**	—	—	—	—
	-.18**	—	—	—	—
Age X Proxy	-.13	—	—	—	—
	-.04	—	—	—	—
Sex X Race	.09*	—	—	.02	.07
Sex X Proxy	.02	.11**	.00	.06*	.11*
Race X Proxy	—	—	—	-.03	.02
Age X Sex X Race	.15*	—	—	—	—
	-.12*	—	—	—	—
Age X Sex X Proxy	-.05	—	—	—	—
	-.09	—	—	—	—
Sex X Race X Proxy	—	—	—	-.09**	.00
χ^2	11.86	3.87	12.04	1	1
df	6	3	3	—	—
p	.07	.28	.01	—	—

1. The best fitting adult model is the saturated model.

*** p < .001

** p < .01

* p < .05

Table 2. Parameters of logit models of unemployment rates, separately for youths and adults, CPS 1982.

	Best Fitting Youth Model Model For Youths			Best Fitting Adult Model	
	With Age to Adults	Without Age	Applied to Adults	For Adults	Applied to Youths
Intercept	-.85***	-1.18***	-2.30***	-2.30***	-1.17***
Age (3 categories)	.40***	—	—	—	—
	.12	—	—	—	—
Sex	.14**	.15***	.12***	.12***	.18***
Race	-.62***	-.59***	-.39***	-.40***	-.59***
Proxy Status	-.15**	.03	-.17***	-.13***	.02
Age X Sex	-.19**	—	—	—	—
	-.17**	—	—	—	—
Age X Race	.06	—	—	—	—
	-.09	—	—	—	—
Age X Proxy	-.15*	—	—	—	—
	.03	—	—	—	—
Sex X Race	.02	—	—	—	—
Sex X Proxy	.08**	.07*	-.03	—	—
Race X Proxy	—	—	—	.06**	.01
Age X Sex X Race	-.19**	—	—	—	—
	.13*	—	—	—	—
χ^2	11.61	3.70	7.44	3.33	10.22
df	8	3	3	3	3
p	.17	.30	.06	.34	.02

***p < .001

Table 4. Parameters of logit models of unemployment rate, separately for youths and adults, CPS 1988, using interviewer code item determination of proxy status.

	Best Fitting Youth Model For Youths			Best Fitting Adult Model ¹	
	With Age to Adults	Without Age	Applied to Adults	For Adults	Applied to Youths
Intercept	-1.31***	-1.60***	-2.83***	-2.81***	-1.58***
Age (3 categories)	.44***	—	—	—	—
	.15*	—	—	—	—
Sex	.07	.11***	.16***	.13***	.10
Race	-.061***	-.58***	-.45***	-.47***	-.59***
Proxy Status	-.26***	.06	-.20***	-.15***	.07
Age X Sex	—	—	—	—	—
	-.04	—	—	—	—
Age X Race	-.07	—	—	—	—
	-.24**	—	—	—	—
Age X Proxy	.09	—	—	—	—
	.07	—	—	.05	.07
Sex X Race	.11***	.11***	.01	—	—
Sex X Proxy	.04	—	—	-.06*	.02
Race X Proxy	.22**	—	—	—	—
Age X Race X Proxy	-.16*	—	—	—	—
χ^2	15.34	3.50	8.81	2.54	13.74
df	9	3	3	2	2
p	.08	.32	.03	.28	.00

*** p < .001

** p < .01

* p < .05

Next we examine whether proxy reporting and the other factors show different behaviors in predicting unemployment rate for youth and older people. In order to model the probability of unemployment among youths in a way that would be comparable to a model for older people, however, we had to drop age from the analysis. The resulting models appear in the second columns of Tables 2, 3, and 4. These reduced models fit the data far better in all three analyses than did the more elaborated ones. Further, the main effect of proxy status is no longer statistically significant, but there is a consistently significant interaction between sex and proxy status. The main effect of race remains statistically significant as it had in the more elaborated model, while the main effect for sex is augmented. When the reduced youth model is applied to data for adults, we find that the fit is poor. The resulting parameters, however, appearing in column 3 of Tables 2, 3, and 4, are similar to those for youths in terms of sex and race, but different with respect to proxy status. In this case there is a strong and statistically significant proxy main effect, with no statistically significant interaction.

Turning the procedure around, we used the same variables to attempt to derive a model of the probability of unemployment using data on adults only. The results appear in the fourth columns of Tables 2, 3, and 4. While we were able to obtain good fits for the 1982 data and for the data using the interviewer coding approach to proxy status in 1988, any model containing fewer terms than the saturated model failed to fit the data from 1988 using the line number approach to proxy status. All three models show statistically significant main effects for sex, race, and proxy status, and the two well-fitting models also show a statistically significant interaction for race by proxy status. The saturated model in Table 3, on

the other hand, shows a statistically significant interaction of sex by proxy status, as well as a three-way interaction. When we attempt to apply the models derived on the adult data to the data from youths, we find the fit unsatisfactory, and in Tables 2 and 4 the only statistically significant main effects are for sex and race. The saturated model in Table 3 shows a statistically significant main effect for race and an interaction of sex by proxy status.

The results of this complicated procedure can perhaps best be summarized in Table 5, where we display the probabilities of unemployment (i.e., unemployment rates) as predicted by the best fitting models, using the reduced models fitted on the youth data to calculate the probabilities for youths and those fitted on the adult data to calculate the probabilities for adults.

Table 5. Predicted probabilities of unemployment from reduced logit models.

	MALES				FEMALES			
	Whites		Blacks		Whites		Blacks	
	Proxy	Self	Proxy	Self	Proxy	Self	Proxy	Self
YOUTHS								
1982	18.0%	15.3%	41.5%	36.9%	12.5%	13.2%	31.5%	33.0%
1988(a)	11.8%	10.6%	29.9%	27.6%	7.9%	10.7%	21.5%	27.7%
1988(b)	11.9%	9.5%	30.4%	25.2%	8.6%	10.0%	23.2%	26.3%
ADULTS								
1982	5.9%	8.5%	13.6%	15.4%	4.6%	6.7%	11.0%	12.5%
1988(a)	3.5%	5.3%	8.7%	10.3%	2.5%	3.8%	7.6%	9.0%
1988(b)	3.8%	5.0%	10.1%	8.8%	3.0%	3.6%	6.4%	9.6%

a. Proxy status determined by interviewer code method.
b. Proxy status determined by line number match method.

For youths we see that among males the predicted probability of unemployment is higher for those reported for by proxy than for self reporters, regardless of race, while among females the predicted probability is higher for self reporters, again regardless of race. Among those reported for by proxy, the predicted probability of unemployment is considerably higher for males than for females (especially among blacks), while among self reports that difference is almost nonexistent, regardless of race.

Among adults, on the other hand, the predicted probability of unemployment is higher for self reporters than for those reported for by proxy, regardless of sex or race, and higher for males than for females, regardless of proxy status or race (with the slight exception of blacks categorized as reporting for themselves by the line number match method of proxy status assignment -- and these results come from the saturated model).

Note the parallels between these predicted probabilities and the actual computed unemployment rates shown in Table 1. Indeed, Table 6 presents residuals, actual unemployment rate minus predicted unemployment rate, by age, sex, and race. We see that the fit for whites is excellent, while that for Blacks, especially young people, is considerably less good.

Table 6. Residuals, actual unemployment rates minus predicted unemployment rates by age, sex, race and proxy status. CPS March 1982 and March 1988.

	MALES				FEMALES			
	Whites		Blacks		Whites		Blacks	
	Proxy	Self	Proxy	Self	Proxy	Self	Proxy	Self
YOUTHS								
1982	0.4%	0.3%	-2.1%	-3.3%	-0.2%	-0.4%	1.4%	3.1%
1988(a)	-0.2%	0.3%	-3.4%	-2.5%	-0.2%	-0.3%	0.6%	2.2%
1988(b)	0.0%	0.0%	-3.8%	-1.1%	-0.2%	-0.4%	0.9%	2.2%
ADULTS								
1982	-0.1%	0.2%	-0.2%	-0.4%	0.3%	-0.1%	0.4%	0.2%
1988(a)	0.0%	0.0%	0.6%	-0.7%	0.0%	-0.1%	-1.1%	0.3%
1988(b)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

a. Proxy status determined by interviewer code method.
 b. Proxy status determined by line number match method.

DISCUSSION

We have so far examined whether any systematic artifact in youth unemployment rate was created by proxy reporting using two CPS data sets. Overall, empirical results from the logistic regression models support our argument that youths and adults may be different in conceptualizing what is considered as a proper job search.

To recapitulate the empirical results; youth models (in tables 2, 3, and 4) demonstrate that proxy status -- either as a main effect or through interaction with sex,

or both -- significantly affects the unemployment rates for youths, with a minor exception (elaborated model in table 3). When the main effect of proxy reporting reduces the probability of unemployment for youths (negative coefficients in elaborated models), its interaction effect with sex (positive coefficients) compensates for the loss for male youth. On the other hand, when the main effect is not statistically significant (in the reduced models), the interaction of proxy status with sex increases the probability for male youths (positive coefficient).

Concluding this discussion, we pay special notice to a pattern that seems consistent in these data, only for male youth are proxy reports of unemployment higher than self reports. Perhaps proxies, when faced with an ambiguous situation for young men, assume that if they are not working they are surely looking for work. Although our data do not provide any measures to test any speculations about this pattern, it may be attributable to a general trend of our society that parents, or society in general, expect boys to be more serious about their lives than girls.

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