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The labor supply consequences of perceptions of employer discrimination during search and on-the-job: Integrating neoclassical theory and cognitive dissonance

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Abstract

This paper offers a theory of how a person's perception that they face discrimination during job search influences their labor supply, and provides evidence on the relation between this form of perceived discrimination and subsequent labor supply. The theory is developed by extending the neoclassical theory of labor supply to incorporate the insights of Festinger's theory of cognitive dissonance. A unique feature of our theory is that a person seeks simultaneously both an economic objective – utility maximization – and psychological balance.

The theory we advance predicts that a person who faces job search discrimination is thrust into an unbalanced psychological state. This person will make cognitive adjustments to renew psychological balance. They are likely to change their beliefs about the quality of the job that

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they can expect to attain, which provides an incentive to reduce their labor supply. Alternatively, they may decide that a resume with more work experience is a superior way to restore cognitive consistency. This resume-based strategy generates an impulse to enhance labor supply. Therefore, efforts to restore psychological balance after exposure to job search discrimination may, on net, affect labor supply. Using data drawn from the Multi-City Study of Urban Inequality (MCSUI) this paper offers estimates of the impact on subsequent labor supply of perceived discrimination due to race, ethnicity, or gender while seeking a job and while on-the-job.

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1. Introduction

This paper offers a theory of how a person's perception that they face discrimination during job search influences their labor supply and provides evidence on the relation between this form of perceived discrimination and subsequent labor supply. The theory is developed by extending the neoclassical theory of labor supply to incorporate the insights of Festinger's (1957) theory of cognitive dissonance – one of the most innovative and prominent theories of behavior in social psychology. [4] Our model generates two new insights into the connection between labor supply and perceived job search discrimination. First, we offer an alternative explanation for why a person facing discrimination that reduces the wage they are offered will respond by cutting back on their labor supply. The reservation wage falls as a strategy to eliminate cognitive dissonance, rather than enhance the likelihood of receiving an acceptable job offer. Second, we present a rationale for why those who believe they confront discrimination while job hunting may alter their tastes for work and non-market activities. Economic models typically treat tastes as exogenous or given. However, another approach to eliminating cognitive dissonance entails a change in preferences leading to greater labor supply, an outcome not predicted by orthodox models of the impact of job search discrimination on labor supply. In this paper, we explore empirically the link between a person's belief they have been exposed to discrimination during job search since our theory suggests that they might in-

[4] Economists previously have used cognitive dissonance theory to explain economic development (Hirschman, 1965), the accumulation of debt (Maital, 1982), and job choice over safe and hazardous employment (Akerlof & Dickens, 1982). Akerlof and Dickens (1982) formally merge neoclassical theory and cognitive dissonance theory rather than present cognitive dissonance theory as an alternative explanation for behavior. See Earl (1992) for a review of the literature in which economists make use of cognitive dissonance theory, and Earl and Wicklund (1999) for a brief discussion of rational decision making and cognitive dissonance.

crease or decrease their subsequent labor supply if they think they have been treated unfairly while job hunting.

A unique feature of our theory is that a person seeks simultaneously both an economic objective – utility maximization – and psychological balance. We interpret Festinger as asserting that thoughts or cognitions that do not "fit" together, result in dissonance and that thoughts must be largely consistent for a person to attain psychological balance. In our view, events that destroy psychological balance foster changes in beliefs that simultaneously restore psychological balance and alter a person's optimal economic behavior. [5]

The theory we advance predicts that a person who faces job search discrimination is thrust into an unbalanced psychological state. This person will make cognitive adjustments to renew psychological balance. They are likely to change their beliefs about the quality of the job that they can expect to attain, which provides an incentive to reduce their labor supply. Alternatively, they may decide that a resume with more work experience is a better way to restore cognitive consistency. This resume-based strategy generates an impulse to enhance labor supply. Therefore, efforts to restore psychological balance after exposure to job search discrimination may, on net, affect labor supply.

There is an emerging literature exploring the influence of perceived discrimination at work on actual labor supply. [6] Conspicuously absent from this literature are studies that document whether individuals who believe they were faced with discrimination during job search based on race or on gender exhibit different levels of labor supply than persons who believe they did not confront such discrimination while hunting for work. [7] Our empirical work addresses this shortcoming. Measures of perceived discrimination during job search, as well as perceptions of exposure to discrimination once on-the-job, are available in the Multi City Study of Urban Inequality (MCSUI) that began in 1992. Using data drawn from the MCSUI this paper offers estimates of the impact on subsequent labor supply of perceived discrimination due to race/ethnicity or gender while seeking a job, and while on-the-job.

[5] Akerlof and Dickens (1982) assume that dissonance will persist unless the benefits of altering beliefs exceed the costs. In our terminology, they are suggesting that an unbalanced psychological state can coexist with an allocation of time that maximizes utility. If we were to adopt the economic theory of beliefs posited by Akerlof and Dickens, then we interpret Festinger as presuming that the psychic costs of dissonance are so unsettling and salient that they are always sufficient to motivate a change in beliefs. The adjustment in beliefs, in turn, alters a person's optimal allocation of time.

[6] Kuhn (1987), Hallock, Hendricks, and Broadbent (1998), and Neumark and McLennan (1995) also have explored the relation between self-reports of discrimination at work and statistical measures of wage discrimination.

[7] Neumark and McLennan (1995) use data on self-reported discrimination due to race or gender on leaving one's employer, available on routines of both the Longitudinal Survey of Young Women and of Young Men during selected years in the 1970's, to explain employer change. They find that women who believe they face gender discrimination as well as blacks that think they face race discrimination exhibit greater employer turnover. However, they did not explore whether reported gender and race discrimination at the time of separation changed employment status or labor supply.

This paper is organized as follows. In Section 2, we present Festinger's theory of cognitive dissonance. In Section 3, we set out the neoclassical theory of labor supply, but with a slight modification, to facilitate integration of these two theories. In addition, we discuss how a perception of discrimination during job search may lead to cognitive dissonance that destroys psychological balance. Strategies for restoring psychological balance are identified and linked to changes in tastes for leisure and in turn an adjustment in labor supply. Section 4 documents the frequencies of perceptions of discrimination because of race and because of gender during job search and when on-the-job for the sample drawn from the MCSUI. The data are described in this section along with our empirical procedures. We present estimates of the influence of perceived discrimination during job search on labor supply and explore the robustness of our findings in Section 5.

2. Cognitive dissonance and psychological balance

2.1. Cognitive dissonance theory

Festinger's theory of cognitive dissonance posits a link between attitudes and cognitive processes that may lead to behavioral change. [8] His theory suggests that individuals seek harmony between their cognitions or thoughts. Festinger hypothesized that disharmony makes a person uncomfortable and tense. The discomfort fostered by dissonance motivates cognitive changes designed to restore harmony.

Festinger (1957, p. 9) defined anything a person perceives to "*know*" about themselves, others, and their environment as a cognitive element. The relation between any two cognitive elements may be dissonant, consonant, or irrelevant. A dissonant relation exists between two cognitive elements when, in the perceiver's mind, they do not seem to "*fit*" together (1957, p. 13). Festinger proposed that the amount of dissonance associated with any two inconsistent cognitive elements grows with the importance of these elements to the perceiver. He expects the importance of a cognitive element to depend on two factors, the intensity with which an attitude or belief is held and the proximity of the element to the individual's self-perception. Finally, as the magnitude of the inconsistency rises so does the pressure to eliminate or, at least, to reduce it. Festinger believed that dissonance is typically resolved by altering an inconsistent cognition, reducing its importance, or through the availability of new information. Earl and Wicklund (1999) argue that discarding beliefs to reduce dissonance is mentally costly and may call into question a person's capacity to make effective decisions, which may account for resistance to change behavior in favor of reappraising information or locating new information to rationalize an outcome.

[8] There is a substantial body of empirical research showing that people who behave in different ways also vary predictably in their attitudes, which are thoughts or cognitions. For a review of the empirical literature on the relationship between attitudes and behavior see Ajzen and Fishbein (1980).

Festinger, Riecken, and Schacter's (1956) study of a sect that was awaiting the end of the world on a particular day (due to a message their founder had received from the "Guardians" of outer space) provides an example of the usefulness of cognitive dissonance theory for understanding behavior. Members of the sect felt that only true believers in their faith would be saved by being picked up at midnight of the appointed day. However, the flying saucers failed to arrive at midnight.

Disconfirmation of the predicted event would have led members of the sect to abandon their belief that the world was near its end according to conventional thinking in psychology prior to Festinger's work on cognitive dissonance. Abandoning their belief in "Guardians" would have fostered a painful dissonance between their prior belief in Guardians and their present situation. Instead, the members of the sect came to believe that the world was saved as a reward for their faith, so the flying saucers were not needed, dissonance was averted, and their belief in Guardians was maintained.

The next section explores whether Festinger's theory of cognitive dissonance offers new insights into the labor supply behavior of person's that believe they face discrimination during job search.

2.2. Discrimination during job search and cognitive dissonance

Psychologists Carver and Scheier (1981, p. 186) argue that individuals establish a target or goal called a "standard" to guide their behavior. In our view, the typical person who enters the labor market establishes a standard of finding and securing a "*good job*". A job contains a package of wages, fringe benefits, and opportunities for skill accumulation through formal on-the-job training and learning by doing. A "*good job*" from the workers' perspective is one where monetary and non-monetary compensation are at least equivalent to their perceived value as an employee. [9]

A person searching for a *good job* will have an a priori cognition about how they will be treated by perspective employers. If a person expects to be "*treated fairly*" they anticipate being offered a *good job*, one that compensates them adequately for the skills they bring to the firm. [10] During their job search a person may come to believe they face discrimination preventing them from being offered a *good job*. This judgment leads to dissonance since their a priori goal of securing a *good job* and the newly acquired belief that they face discrimination are cognitions that do not match; unfair treatment prevents them from acquiring a *good job*.

Is there a theoretical link between a person's judgment that they faced discrimination while searching for work and their subsequent labor supply? This question is explored in the next section. Before proceeding to this discussion it is important to address the question of whether racial and ethnic minorities or women – groups who may believe they face discrimination in a number of contexts and hence may

[9] The wage and non-wage benefits associated with a *good job* will vary directly with a person's perception of their productivity-based characteristics or skills such as workplace experience and formal education.

[10] Lazonick (1990) offers an alternative perspective on what constitutes a "good job". In his view, good jobs are characterized by stability and opportunities for promotion.

come to expect unfair treatment – who are searching for work may be surprised to learn they are discriminated against in the workplace opening the door for them to experience cognitive dissonance when they become aware of the situation they face.

Coleman and Sharpe (2001) provide evidence consistent with the view that black persons who participate in the labor force expect to be treated fairly. They identify black employees that earn less than comparable whites. However, they find that when these persons are asked, "if they face discrimination" they have a low probability of saying yes – they do not believe they face discrimination in spite of objective evidence to the contrary. One explanation for their inability to recognize their poor treatment is that they expected to be treated fairly. [11]

3. Discrimination during job search, cognitive dissonance, and labor supply

The conventional neoclassical theory of labor supply can be extended to account for the influence of cognitive dissonance generated by a person's belief they face discrimination when seeking employment. The first step is to set out the orthodox theory of labor supply and to identify how this theory can be adjusted to account for the influence of cognitive dissonance produced during job search.

3.1. Neoclassical theory of labor supply revisited

Neoclassical consumer theory argues that a person attempts to maximize utility from the consumption of a composite good, X, and non-market time, t_{nm}. The marginal utility gained by allocating additional time for non-market activities depends on a person's subjective taste for non-market time. Let β be an index or weight that reflects the intensity of feelings a person holds about non-market time. Factors that characterize a person's work environment such as work place autonomy and training, along with features associated with non-market time including family composition will influence β. Following the conventional neoclassical approach we assume that a person's tastes for non-market time – β – is independent of their wage rate or level of monetary compensation.

In standard neoclassical analysis the convention is to treat β as an implicit determinant of the marginal utility of non-market time – $MU_{t_{\mathrm{nm}}}(\beta)$. We treat β as an explicit determinant of the subjective value of non-market time, $\beta * MU_{t_{nm}}$, to highlight the influence of factors affecting β on labor supply. We adopt this approach since we will present a theory in which the neoclassical theory of labor supply is connected to Festinger's theory of cognitive dissonance through β. The term $\beta * MU_{t_{\mathrm{nm}}}$ is called the weighted marginal utility of non-market time. [12]

[11] Persons who expect to be treated unfairly are more likely to recognize when they are treated unjustly than individuals who anticipate fair treatment.

[12] The weighted marginal utility of non-market time, $\beta * MU_{t_{\mathrm{nm}}}$, is simply a specific functional form of a theory that the marginal utility of non-market time depends on a person's taste for non-market time.

A person will maximize utility if they allocate time and earnings so that their subjective assessment of the additional utility per dollar provided by non-market time and goods is equivalent. This condition is met when the slope of a person's indifference curve, the weighted marginal utility of non-market time relative to the marginal utility of consumption ($\beta_0 * MU_{t_{\mathrm{nm}}}/MU_x$), equals the absolute value of the slope of their budget constraint (w_0/P_0^x):

$$\left(\frac{\beta_0 * MU_{t_{nm}}}{MU_x}\right) = \left(\frac{w_0}{P_0^x}\right).$$

In Fig. 1, the condition for utility maximization is met at point A.

Standard assumptions are that consumption and leisure are normal goods, and that a decline in the wage to $w_1 < w_0$, ceteris paribus, prompts a person to re-optimize at point B in Fig. 1 which is characterized by an increase in optimal non-market time, $t_{\mathrm{nm}}^B > t_{\mathrm{nm}}^A$, and a reduction in optimal market (m) or work time, $t_{\mathrm{m}}^B < t_{\mathrm{m}}^A$. Therefore, a decline in the wage leads to a movement down the labor supply curve, N_{S}, from point A to point B in Fig. 2.

An individual's subjective assessment of the features of work and non-market activities influence β, which affects the weighted marginal utility of non-market time,

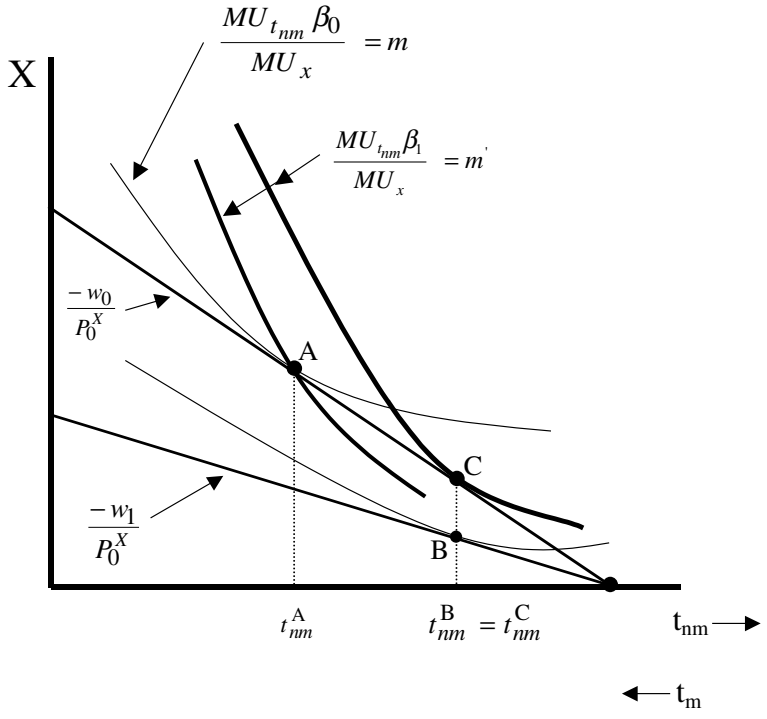

Fig. 1. Perceptions of discrimination, poor jobs, and changing tastes for leisure: Impact on utility maximization.

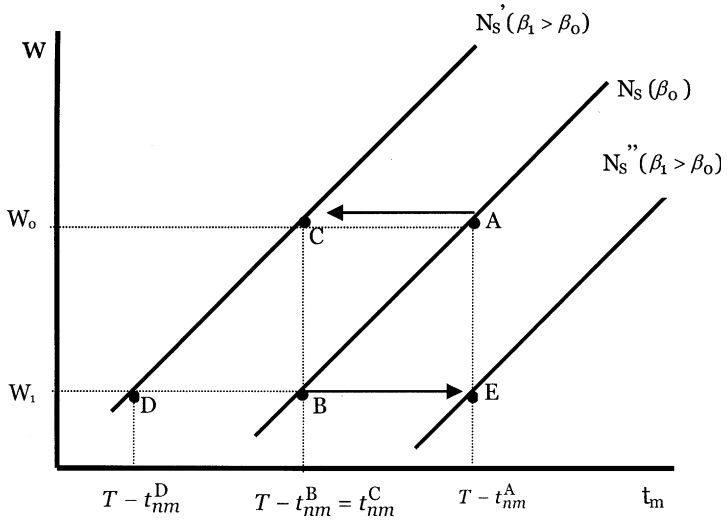

Fig. 2. Perceptions of discrimination, poor jobs, and changing tastes for leisure: Impact on labor supply.

$\beta * MU_{t_{nm}}$, and hence labor supply. Other factors influence β including a person's age, their marital status, and whether they have dependent children; however, our discussion will focus on how cognitive dissonance may lead to adjustments in β. Therefore, a unique feature of our theory is that β is no longer fixed – it is endogenous or depends on perceptions of treatment in the labor market.

A person who believes they face discrimination during job search, who previously thought they would be treated fairly, experiences dissonance. Cognitive adjustments aimed at reducing the dissonance may alter the intensity of a person's feelings about time spent outside of work, β, and hence the weighted marginal utility of non-market time, $\beta * MU_{t_{nm}}$. Therefore, the theory of cognitive dissonance can be integrated into the neoclassical theory of labor supply to explain how a person's labor supply will respond to exposure to discrimination during job search. The task of formally combining these two theories is addressed in the next section of the paper.

3.2. Discrimination, return to psychological balance, and labor supply

3.2.1. The adjustment approach

How does a job searcher facing discrimination attain harmony of their search-related cognitions? A person simultaneously could adjust their view of how the labor market operates and their perception of the quality of work available to them to restore the psychological balance they enjoyed prior to forming the opinion that they face job search discrimination. This person would discard their primary goal of obtaining a "*good job*" and replace it with a less ambitious target of acquiring the "*best job available*" under the circumstances. This is akin to giving up on the notion of being "treated fairly". Now they would seek a "*poor job*", a job with inferior characteristics relative to those offered by a *good job*, given their talents.

Reducing the stature of the jobs sought to match the quality of the job offers expected will re-establish cognitive consistency. We refer to this method of restoring psychological balance when exposed to discrimination during job search as the "*adjustment approach*". Below we describe the link between the adjustment approach and labor supply.

Searching over *poor jobs* may induce a person to assign more satisfaction to non-market time, lifting β to $\beta_1 > \beta_0$, in an effort to eliminate cognitive dissonance. A rise in the pleasure of spending time in non-market activities, due to the prospect of having to work in a less attractive job, increases the slope of a person's indifference curve to $(\beta_1 * MU_{t_{nm}}/MU_x) > (\beta_0 * MU_{t_{nm}}/MU_x)$ so point A in Fig. 1 is no longer optimal. The optimal allocation of time to non-market activities now occurs at point C where optimal non-market time has increased, $t^C_{nm} > t^A_{nm}$, and optimal work time has declined to $t^C_m < t^A_m$.

Therefore, a person facing discrimination during job search who restores psychological balance by adjusting downward their job offer expectations and by searching for a poor job relative to their talents, raises β and experiences an inward shift of their labor supply curve to $N'_S < N_S$ in Fig. 2, which results in more time for home and family life. The decline in labor supply from point A to point C caused by this shift is called the "*adjustment effect*". Their supply of labor is expected to fall further once the decline in the quality of the target job on a person's wage rate is accounted for.

Individual's searching over *poor jobs* will expect to earn w_1 which is less than they would earn if employed in a good job $(w_1 < w_0)$. This causes them to move down their new labor supply curve, N'_S, from point C to point D in Fig. 2.

In summary, a person who believes they were treated unfairly when job hunting will experience cognitive dissonance, since they come to realize that the quality of jobs they are offered fall short of the jobs they qualify for given their skills. If they restore psychological consistency by seeking lower stature jobs they are expected to supply less labor due to the adjustment effect (inward shift of labor supply from point A to point C) and due to the effect of a falling wage rate (movement from point C to point D).

3.2.2. Resume approach

Another means exists for eliminating the dissonance caused by seeking a *good job* and finding only *poor jobs* available. A person facing job search discrimination could take actions intended to alter the cognitions or beliefs of employers that led to the disparate treatment they face. During job search a person may form an opinion that employers have engaged in statistical discrimination, ascribing perceived characteristics of a group to them. The group, from the employer's perspective, is inferior. For instance, employers may believe, without supporting evidence, that women and minorities have inferior "*soft skills*" – are less motivated, committed to work, and responsible – than comparable white males. [13] In this case the employer is

[13] Duncan and Dunifon (1998) used the term "*soft skills*" to account for factors such as motivation and social traits (i.e. the ability to work in-groups) that influence personal productivity other than formal education.

engaging in statistical discrimination while evaluating job seekers. Unless a person exposed to statistical discrimination can convince employers to assign their own productivity related traits, rather than group traits, they will continue to face such discrimination throughout their working life cycle.

Workplace experience may provide a person with the "*soft skills*" employers believe they lack and thereby send a signal to employers that frees them from the disparate treatment they currently face. Thus, individual's facing job search discrimination may strive to develop a resume that changes the perspective of employers. We refer to this strategy for producing psychological harmony after exposure to discrimination as the "*resume approach*".

The *resume approach* to dissonance reduction allows a person to maintain the goal of a good job. However, access to *good jobs* will only replace the *poor jobs* currently available to them when their work experience exceeds some threshold. To build a resume capable of eliminating the job search discrimination a person faces they first must be willing to accept a "*poor job*". Accepting a *poor job* means working for a lower wage, which induces a decline in labor supply from point A to point B on N_S in Fig. 2. However, there is an additional effect on labor supply if the resume approach is adopted to restore cognitive consistency when exposed to job search discrimination.

Placing greater value on workplace experience is equivalent to placing less value on non-market time, leading to a decline in β and a reduction in the weighted marginal utility of non-market time. This creates an impulse to increase labor supply or shift labor supply outward, N_S'' in Fig. 2, which we call *resume effect*. Labor supply will increase if the *resume effect* is large enough to overcome the reduction in labor supply that accompanies the lower wage needed to secure work (if the *resume effect* shifts labor supply N_S'' to the right of point E on Fig. 2). [14]

Therefore, the combination of the adjustment effect and the resume effect to restoring cognitive balance for persons who believe they face job search discrimination has an ambiguous impact on labor supply. The change in tastes away from leisure and toward work promotes greater labor supply, but it is countered by a decline in the wage rate available due to discrimination.

Incorporating psychological factors into economic models is capable of providing new insights into the causes and consequences of economic behavior. Elster (1999) expects these more interdisciplinary models to generate hypotheses about behavior that are more complex and that lead to ambiguous predictions about how individuals will respond to events and incentives. Elster believes that characterizations of behavior are best offered as "mechanisms" rather than law-like explanations with unambiguous predictions. Elster (1999, p. 1) defines mechanisms as "frequently occurring and easily recognizable causal patterns that are triggered under generally unknown conditions or with indeterminate consequences".

[14] Experience accumulates slowly. Therefore, if the *resume approach* is adopted rather than the *adjustment approach* it will take longer to remove the cognitive dissonance caused by job search discrimination and longer to restore psychological balance.

A situation in which the investigator can predict the triggering of two causal chains that affect an outcome in opposite directions, leaving the net effect indeterminate, is referred to as a "type B mechanism". Exposure to discrimination during job search is an example of a type B mechanism, since the exposure leads to cognitive dissonance that is likely to set off impulses in which some persons will be characterized by *adjustment* and wage effects – that diminishes labor supply – while others exhibit a *resume effect* – that enhances labor supply, in conjunction with a wage effect that reduces labor supply. For this latter group of person the net effect on labor supply of exposure to job search discrimination is unclear. The indeterminate link between job search discrimination and subsequent labor supply for these people is an example of a type B mechanism.

3.2.3. Can job search discrimination cause cognitive dissonance?

The greater the degree of psychological imbalance caused by cognitive dissonance, the stronger the impulse to restore psychological harmony. Festinger (1957) claims that cognitive dissonance is more pronounced when thoughts about self and other strongly held beliefs are inconsistent with other cognitions. The desire to secure a *good job* is an important, highly valued, cognitive element. In addition, race, ethnicity, and gender are fundamental components of self-concept. Therefore, the notion that a *good job* is out of a person's reach because of unfair treatment based on race, ethnicity, or gender is likely to cause substantial dissonance. This dissonance may lead a person to adjust their taste for work and to alter their reservation wage in order to restore cognitive consistency and psychological balance if they face discrimination while job hunting. Thus, persons suffering from cognitive inconsistency due to discrimination while searching for work may change their labor supply behavior.

3.3. Discrimination anticipation

A person who reports facing discrimination while job hunting may have anticipated this development. Would they experience cognitive dissonance and have incentives to adjust their labor supply?

Persons who believe they have faced discrimination throughout their life in a myriad of settings may expect to be treated badly when searching for a job. For them, exposure to discrimination while job hunting may not cause contemporaneous cognitive dissonance or psychological imbalance. Their exposure to discrimination prior to entering the labor force is likely to have produced earlier bouts of cognitive dissonance. These prior bouts of disparate treatment may lead them to join the labor force seeking the best job available under the circumstances, a *poor job*. These people begin the job search process with a larger β than if they had anticipated fair treatment. They are in psychological balance while job hunting, but their labor supply curve has shifted inward due to the *adjustment* effect.

Alternatively, their expectation of poor work may have been accompanied by a resume building strategy, rather than a re-targeting strategy. Attaching less value to non-market time promotes a smaller value of β leading to an outward shift of their labor supply owing to the *resume* effect.

The next section describes the data and the empirical methodology we use to explore the impact of perceived discrimination while pursuing a job on labor supply behavior. The link between labor supply and perceptions of discrimination (due to race, ethnicity, and gender) while on-the-job are examined as well. Thus, we are able to disentangle the labor supply effects of discrimination during job search from the impact of disparate treatment once at work. We provide evidence on the extent to which individuals believe they have faced discrimination due to their race, their ethnicity, or their gender while job searching and on-the-job, and we offer evidence on the connection between such perceptions and subsequent labor supply.

4. Empirical strategy

4.1. Data

The data used in this study are from the Multi City Study of Urban Inequality (MCSUI) that began in 1992. The survey was administered in Los Angeles, Boston, Atlanta, and Detroit. The MCSUI was designed as an interdisciplinary approach to address urban inequality. The MCSUI is a data set rich in economic and demographic information including labor supply behavior. A striking feature of the MCSUI is that it collected information on perceptions of exposure to discrimination while searching for work and while at work, in both Los Angeles and in Boston. [15]

In conducting the MCSUI there were attempts to "race match", assigning interviewers of a certain ethnicity/race to respondents of that same ethnicity/race. The matching was initiated to solicit more honest and accurate answers to sensitive questions regarding urban inequality and perceptions of treatment. In addition, MCSUI employed a multi-stage probability sampling procedure in order to attain a substantive number of observations on persons in different ethnic groups and socioeconomic classes. Therefore, after we separate the data into female and male groups to explore the influence on labor supply of perceived exposure to discrimination when pursuing a job and at the person's current job, we are subsequently able to stratify each of these data sets by race or ethnicity to explore the robustness of our findings. [16]

[15] Because data on perceptions of discrimination were not collected in Atlanta and Detroit, respondents from these cities were eliminated from the study.

[16] Information was not collected on which year exposure to job search discrimination occurred for those who believe they have faced discrimination. Hence, we are unable to investigate whether the impact of discrimination on labor supply diminishes as the length of time following exposure advances. In addition, individuals exposed to multiple bouts of search discrimination may choose alternative strategies to restore psychological balance, leading to different labor supply responses. However, we are unable to test whether such a threshold effect exists, since data on the number of perceived bouts of discrimination during job search are unavailable.

4.2. Descriptive statistics

The questions in the MCSUI that identify individuals who believe they have faced discrimination when searching for work or on-the-job are used to determine if these beliefs are widespread. These questions are presented in Appendix A. For each gender–race/ethnic group the share of the group that believed it has faced a particular type of discrimination was calculated. These frequencies are presented in Table 1. Heretofore, information on perceived exposure to discrimination while searching for work was unavailable in the economics literature. Moreover, although some studies (Hallock et al., 1998; Neumark & McLennan, 1995) report frequencies for perceived exposure to discrimination while on the job, they are not broken down by gender–race or gender–ethnicity groups.

Reported exposure to job search discrimination is greater than exposure to work place discrimination of the same type (i.e., gender) for each sub-group. For instance 47% of black males (20% of Hispanic males) reported having faced racial or ethnic discrimination while job hunting and 17% (8%) reported having faced racial or ethnic discrimination at work. Males report less gender discrimination than females while searching for work for each of the groups and for three of the four groups this was also the case for discrimination at work. However, a greater percent of males believe they have encountered racial or ethnic discrimination while searching for work than females. There does not appear to be a difference between men and women in exposure to racial or ethnic discrimination at work.

Women who are members of minority groups believe they face higher levels of racial and ethnic discrimination than gender discrimination, especially when job hunting. In addition, women report being exposed to sexual harassment at work to a greater extent than men. It is interesting to note that 12% of white males and 6% of white females reported they faced race discrimination when searching for work. [17]

Table 2 provides summary statistics for the typical male or female in the sample. The average person is in their late 30s. Two-thirds of the persons in the sample are married. About 40% completed their formal education with a high school degree. Approximately 20% finished college and did not complete additional schooling. A quarter of the sample were living outside the United States when they were 16 years old, and a third of the persons in the sample were strong high school students, having earned an average grade of B or better. Whites comprise half of the sample, while

[17] The National Longitudinal Survey of Youth (NLSY) provides information on perceptions of having faced job search discrimination, but not discrimination at work, for whites and blacks. The response rates for exposure to gender discrimination are almost identical for the MCSUI and for the NLSY. For instance, using the MCSI data 28% of black females and 14% of black males report facing gender discrimination. The corresponding rates using the NLSY are 27% for black females and 11% for black males. Blacks and whites report much higher levels of exposure to racial or ethnic discrimination during job search in the MCSUI data than in the NLSY. Unfortunately, the NLSY does not provide information on perceptions of exposure to discrimination at work. Since we would not be able to control for this likely determinant of labor supply, we decided not to use the NLSY in our empirical work.

Table 1
Percent of the sub-group who perceived exposure to discrimination during job search and while on-the-job: MCSUI data

Group of respondents (number of observations)	Type of perceived discrimination				
	Search Disc Race/Ethnicity	Search Disc Gender	Work Disc Race/Ethnicity	Work Disc Gender	Work Disc Sex Harass
Black males (328)	47	14	17	3	2
Black females (583)	46	28	16	13	9
Hispanic males (433)	20	4	8	14	2
Hispanic females (337)	13	10	7	6	6
Asian males (311)	18	1	3	1	1
Asian females (291)	5	2	3	2	1
White males (434)	12	6	3	1	4
White females (429)	6	14	5	15	7

blacks account for about 10% of the sample. Almost a third of those sampled were Hispanic, and 5% were Asian.

4.3. Model specification and estimation

In this section, we discusses the empirical strategy we adopt to estimate the influence of perceived job search discrimination on labor supply. Our results on the influence on labor supply of perceived job search and work place discrimination are obtained by estimating a Tobit model. Tobin (1958) proposed this estimation technique for situations when, for a large portion of the sample, the dependent variable is censored and clusters around a particular value. In our case, the dependent variable (labor supply) is left-censored – observations cluster at zero – since observed labor supply is zero for those persons who do not work. [18]

We assume that each individual has an underlying propensity and intensity to work, which we model as a function of their perceived exposure to discrimination based on race, ethnicity, or gender during job search and while employed. Sociodemographic variables are also expected to influence labor supply. The wage is also clearly an important determinant of labor supply behavior. In our empirical work

[18] An alternative approach to estimating labor supply was proposed by Heckman (1979). His two-step approach entails recursive estimation of a system of equations; one for working, and another for the extent of working for those who work. The central idea is that these are separate decisions and that persons who choose not to work are different in some dimension from those who work. Heckman's approach entails estimating the model of hours of work controlling for the decision to work. In practice it has proved difficult to identify factors that influence a person's decision to work that do not also influence the amount they work. Thus, investigators who adopt this estimation technique have been forced to estimate the employment status decision and the hours-worked decision as depending on the same set of variables and to rely on nonlinearity or functional form to identify the equations. The strong assumption for identification has led many researches, including us, to adopt the Tobit method for labor supply estimation.

Table 2
Variables used in labor supply regressions: definitions, means and (standard deviations) for men and for women[a]

Variable	Definition	Males	Females
Weeks worked[b]	Total weeks worked in 1991	45.6 (11.7)	45.01 (11.9)
Search Disc Race	= 1 if in the past believe you were refused a job because of race or ethnicity, 0 otherwise	0.18 (0.38)	0.12 (0.32)
Search Disc Gender	= 1 if in the past believe you were refused a job because of gender, 0 otherwise	0.06 (0.24)	0.13 (0.35)
Work Disc Race	= 1 if believe that in past year you faced discrimination at work because of race or ethnicity, 0 otherwise	0.06 (0.25)	0.07 (0.25)
Work Disc Gender	= 1 if believe that in the past you received promotions and pay raises more slowly because of gender, 0 otherwise	0.04 (0.20)	0.12 (0.33)
Work Disc Sex Harass	= 1 if believe that in past year you were sexually harassed at work, 0 otherwise	0.03 (0.16)	0.07 (0.25)
Age	Respondent age	36.7 (10.5)	37.7 (10.6)
Married	= 1 if respondent is married, 0 otherwise	0.65 (0.48)	0.64 (0.48)
Number of dependents	Number of the respondent's children less than 18 living with respondent	0.93 (1.2)	1.08 (1.21)
High school drop out	= 1 if respondent did not complete high school, 0 otherwise	0.16 (0.36)	0.16 (0.36)
High school	= 1 if respondents highest level of education is a high school diploma, 0 otherwise	0.40 (0.49)	0.37 (0.48)
Community college degree	= 1 if highest degree earned by the respondent is a community college certificate, 0 otherwise	0.12 (0.32)	0.20 (0.40)
College degree	= 1 if highest degree earned by the respondent is a college degree, 0 otherwise	0.21 (0.41)	0.19 (0.39)
More than college	= 1 if respondent completed college and obtained further education, 0 otherwise	0.12 (0.33)	0.08 (0.28)
Ability	= 1 if respondents average grade in high school was at least a B, 0 otherwise	0.28 (0.45)	0.29 (0.45)
Self-esteem	Aggregate score on an abbreviated Rotter Scale ranging from 0 (low self-esteem) to 4 (high self-esteem)	3.2 (1.4)	3.3 (1.4)
Foreign resident at 16	= 1 if respondent lived outside the U.S. at 16 years of age, 0 otherwise	0.27 (0.44)	0.23 (0.42)
Speaks good English	= 1 if interviewer believed the respondent speaks English well or very well, 0 otherwise	0.90 (0.30)	0.93 (0.25)
Self-employed	= 1 if the respondent was self-employed at their primary job in 1991, 0 otherwise	0.15 (0.36)	0.11 (0.32)
Resides in Boston	= 1 if the respondent resides in Boston, 0 otherwise (live in Los Angeles)	0.28 (0.45)	0.34 (0.47)
White	= 1 if the respondent is Caucasian, 0 otherwise	0.52 (0.50)	0.57 (0.50)
Black	= 1 if the respondent is African American, 0 otherwise	0.09 (0.29)	0.10 (0.30)
Hispanic	= 1 if the respondent is Hispanic, 0 otherwise	0.32 (0.47)	0.27 (0.44)
Asian	= 1 if the respondent is Asian, 0 otherwise	0.05 (0.23)	0.06 (0.23)
Other	= 1 if the respondent is not African American, Hispanic, Asian, or Caucasian, 0 otherwise	0.01 (0.09)	0.01 (0.09)
Number of observations		1685	1914

[a] Weighted means and standard deviations are reported. Reported means are for all observations.
[b] The mean for weeks worked is calculated using only persons with positive weeks worked (1558 female observations, 1535 male observations).

exogenous determinants of the wage and those individual level variables which affect labor supply directly are included in $X_{i,t}$, a vector of individual-specific sociodemographic variables. [19]

For the ith individual the standard model of labor supply during period t is specified as follows:

$$\begin{aligned}(N^{S}_{i,t}) = {} & \alpha + \theta(\text{Search Disc Race}) + \phi(\text{Search Disc Gender}) \\ & + \varphi(\text{Work Disc Race}) + \psi(\text{Work Disc Gender}) \\ & + v(\text{Work Sex Harass}) + (X_{i,t})\lambda + \rho(\text{Black}) + \delta(\text{Hispanic}) \\ & + \omega(\text{Asian}) + \eta_{i,t}, \end{aligned} \tag{1}$$

$$(N^{S}_{i,t}) = (N^{S}_{i,t})^{*} \quad \text{if } (N^{S}_{i,t})^{*} > 0, \quad \text{otherwise} \quad (N^{S}_{i,t}) = 0,$$

where $(N^{S}_{i,t})^{*}$ refers to desired hours and $N^{S}_{i,t}$ refers to observed annual hours worked in period t. Assuming $\eta_{i,t}$ is distributed as $N(0, \sigma^{2}_{\eta})$, parameter estimates of the variables in Eq. (1) are obtained by maximizing a Tobit likelihood function with respect to the parameter vector which yields asymptotically consistent coefficient estimates. [20]

In our empirical analysis t is the year leading up to the MCSUI survey date. The variable (Search Disc Race) identifies those persons who believe they have faced race or ethnicity discrimination while searching for a job by τ, the beginning of period t. [21] Individuals who hold the judgement that by τ they have been exposed to gender discrimination while job hunting are singled out by the variable (Search Disc Gender).

Persons who believe that they faced racial/ethnic discrimination or gender discrimination while working during period t are identified by the dummy variables (Work Disc Race) and (Work Disc Gender). Those workers who believe they have faced sexual harassment while on-the-job during period t are represented by the variable (Work Sexual Harass).

If persons are unable to separate their perceptions of exposure to discrimination when searching from work from that encountered in the workplace, then (Search Disc Race) and (Work Disc Race) would be capturing the same perception making it impossible to disentangle the separate influences of perceptions of search discrimination and perceptions of work place discrimination on labor supply. To explore whether individuals see search and work place discrimination as separate experi-

[19] Economic theory suggests that wages and labor supply are jointly determined. However, the convention in the literature is to estimate reduced form models of labor supply rather than structural models of labor supply and wages because it is difficult to identify each of these equations.

[20] In order to compensate for the multi-stage sampling procedure, the descriptive statistics and Tobit estimation results are weighted.

[21] Therefore, we measure exposure to discrimination while job-hunting prior to the time at which a subsequent labor supply decision is made.

ences, we examine the degree of concordance between responses for exposure to each of these forms of discrimination. The greater the percentage of persons in a gender-race group who report facing either search discrimination but no work discrimination or work discrimination but no search discrimination, the lower the concordance. Correspondingly, that would make the argument stronger for including both forms of perceived discrimination – search and work – in an empirical model of labor supply. Concordance frequencies for racial discrimination and for gender discrimination are presented in Tables 3 and 4, respectively.

The evidence suggests a lack of concordance for perceptions of racial discrimination while job hunting and while on-the-job. For instance, 38% of African American males, and 34% of African American females believe that they faced either job search or work place racial discrimination due to race. There is a much greater degree of gender discrimination concordance, but again the correspondence is not complete; for instance, 19% of African American females felt they faced gender discrimination either while seeking work or at work. Therefore, we include measures of perceived exposure to discrimination both during job search and once on-the-job in the labor supply function.

The vector $X_{i,t}$ contains exogenous individual-specific sociodemographic variables expected to influence labor supply. Measures of a person's age, level of schooling, marital status, academic talent, perception of self, ability to speak English, and country of their youth are included in $X_{i,t}$. Persons who are older, married, more educated, more academically talented, and self-employed are expected to exhibit greater labor supply, ceteris paribus. Women with a greater number of dependents are likely to provide less labor to the market.

Table 3
Concordance and discordance of perceived racial discrimination while searching for work versus working on a job: MCSUI data[a]

Group of respondents	Type of perceived racial discrimination			
	No search no work	No search yes work	Yes search no work	Yes search yes work
Black males [328]	161 (49)[b]	23 (7)	102 (31)	42 (13)
Black females [583]	323 (55)	45 (8)	151 (26)	64 (11)
Hispanic males [433]	315 (73)	27 (6)	73 (17)	18 (4)
Hispanic females [337]	268 (80)	16 (5)	42 (12)	11 (3)
Asian males [311]	265 (85)	12 (4)	30 (10)	4 (1)
Asian females [291]	249 (86)	11 (4)	27 (9)	4 (1)
White males [434]	374 (86)	15 (4)	40 (9)	5 (1)
White females [429]	375 (87)	21 (5)	29 (7)	4 (1)

[a] Number of observations each group is presented in square brackets. Column head abbreviations follow the nomenclature that exposure to search discrimination due to race is referred to as "yes search". The distribution of persons to each of the possible cells is reported.

[b] For each row or group, the percent of the total group that fits into each of the cells is reported in parenthesis.

Table 4
Concordance and discordance of perceived gender discrimination while searching for work versus working on a job: MCSUI data[a]

Ethnic and gender groups	Perceived gender discrimination			
	No search no work	No search yes work	Yes search no work	Yes search yes work
Black males [328]	283 (86)[b]	9 (3)	27 (8)	9 (3)
Black females [583]	436 (75)	26 (4)	87 (15)	34 (6)
Hispanic males [433]	404 (93)	13 (3)	14 (3)	2 (1)
Hispanic females [337]	294 (87)	12 (4)	23 (7)	8 (2)
Asian males [311]	307 (99)	2 (0.5)	2 (0.5)	0 (0)
Asian females [291]	271 (93)	9 (3)	5 (2)	6 (2)
White males [434]	388 (89)	12 (3)	22 (5)	12 (3)
White females [429]	323 (75)	30 (7)	53 (12)	23 (5)

[a] Number of observations each group is presented in square brackets. Column head abbreviations follow the nomenclature that exposure to search discrimination due to gender is referred to as "yes search".

[b] The distribution of persons to each of the possible cells is reported as well as row percents in parenthesis.

5. Results

Estimates of the relation between labor supply and perceived exposure to discrimination (based on race, or on ethnicity, or on gender) when job hunting and when on-the job are presented in Table 5. Findings for women appear in column 2 and male findings are presented in column 3. Table 5 is a summary table where the results reported focus on the estimated influence of perceived discrimination on labor supply. The influences on labor supply of factors other than perceptions of discrimination (the control variables) are not reported in Table 5. Table 8 presents the full set of estimated coefficients for Eq. (1).

5.1. Discrimination while searching for work: Standard model

Women who believed they faced racial or ethnic discrimination while searching for work in their past supplied the market with significantly less labor than women who believe they had not been subjected to such discrimination, ceteris paribus. The coefficient estimate on the dummy variable for exposure to search discrimination based on race/ethnicity also was but was insignificant for males.

There is a negative relation between labor supply and perceived exposure to gender discrimination when job hunting for both women and men. However, the coefficients are not estimated with precision. Thus, labor supply is statistically equivalent at conventional confidence levels for persons who think they confronted gender discrimination when searching for work and comparable persons who believe they were treated fairly with regard to gender when job hunting.

Table 5
Impact on labor supply of perceived discrimination during job search and while on-the-job: Summary table of Tobit estimates for females and for males[a]

Type of perceived discrimination	Standard model		Interaction model	
	Females	Males	Females	Males
Search Disc Race	−9.04** (3.49)	−3.28 (2.59)	−6.28 (4.23)	−4.60 (3.59)
Search Disc Gender	−2.67 (3.22)	−4.28 (2.89)	−4.28 (3.82)	−1.24 (3.61)
Search Disc Race * Young			−9.55** (5.90)	3.00 (4.11)
Search Disc Gender * Young			6.73 (6.08)	−8.67 (6.52)
Work Disc Race	6.23* (3.71)	4.26 (2.65)	6.39* (3.65)	3.86 (2.56)
Work Disc Gender	−2.24 (3.54)	−4.59 (3.84)	−2.47 (3.51)	−3.68 (3.51)
Work Disc Sex Harass	7.79*** (2.47)	4.40 (3.33)	8.04*** (2.56)	4.26 (3.43)
H_0 : Search Disc Race + Search Disc Race * Young = 0			−11.41*** [0.001]	−0.38 [0.54]
H_0 : Search Disc Gender + Search Disc Gender * Young = 0			0.26 [0.612]	−3.83* [0.050]
Black	5.00** (2.49)	−2.50 (2.30)	−0.87 (4.19)	−2.44 (2.30)
Hispanic	2.68 (2.89)	0.61 (1.79)	7.17 (9.18)	0.60 (1.78)
Asian	0.70 (4.06)	−1.42 (3.66)	6.02 (4.73)	−1.34 (3.67)
Wald Chi-squared	61***	63***	71***	67***
n (left censored observations)	1914 (356)	1685 (150)	1914 (356)	1685 (150)

*, **, *** Statistically significant at the 90%, 95%, and 99% level of confidence, respectively. Regression equations include controls for: age, marital status, dependents, education, ability, self-esteem, language skills, immigrant status, and self-employment.

[a] Dependent variable is weeks worked in 1992. Coefficients and (standard errors) reported. F-statistics and their associated p-values are shown in square brackets.

Table 6
Impact on female labor supply of perceived discrimination during job search and while on-the-job: Summary table of Tobit estimates for racial and ethnic groups[a]

Type of perceived discrimination	White	Black	Hispanic	Asian
Search Disc Race	−14.78** (6.86)	−1.51 (2.97)	−13.60*** (5.18)	−0.01 (5.01)
Search Disc Gender	−6.37 (4.55)	−2.48 (3.31)	9.72** (3.91)	−16.58* (9.41)
Work Disc Race	9.15 (5.71)	−2.33 (2.41)	4.08 (7.46)	4.23 (4.33)
Work Disc Gender	−2.17 (4.26)	10.34*** (2.15)	−8.01 (6.58)	4.11 (6.07)
Work Disc Sex Harass	11.05* (2.82)	1.91 (3.23)	−1.97 (5.27)	−12.72 (9.32)
Wald chi-squared	95***	242**	61***	37**
n (left censored observations)	429 (56)	583 (94)	337 (75)	323 (19)

*, **, *** Statistically significant at the 90%, 95%, and 99% level of confidence, respectively. Regression equations include controls for: age, marital status, dependents, education, ability, self-esteem, language skills, immigrant status, and self-employment.

[a] Dependent variable is weeks worked in 1992. Coefficients and (standard errors) reported. F-statistics and their associated p-values are shown in square brackets.

5.2. Discrimination while on-the-job: Standard model

Women who report having been sexually harassed on their job and women who think they have confronted racial or ethnic discrimination at their current place of

Table 7
Impact on male labor supply of perceived discrimination during job search and while on-the-job: Summary table of Tobit estimates for racial and ethnic groups[a]

Type of perceived discrimination	White	Black	Hispanic	Asian
Search Disc Race	−8.81 (5.42)	−1.86 (2.90)	2.12 (2.60)	−1.44 (3.42)
Search Disc Gender	−4.53 (3.89)	−0.94 (3.71)	−2.73 (4.40)	7.72** (3.78)
Work Disc Race	13.15*** (4.33)	5.80** (2.69)	−3.95 (4.92)	2.76 (2.17)
Work Disc Gender	−7.47* (3.92)	5.19 (3.41)	5.96 (6.01)	4.17 (7.04)
Work Disc Sex Harass	3.63 (3.92)	3.91 (3.25)	5.03* (2.97)	−17.85 (16.62)
Wald chi-squared	43***	44***	38***	30**
n (left censored observations)	434 (35)	328 (42)	433 (26)	311 (18)

*, **, *** Statistically significant at the 90%, 95%, and 99% level of confidence, respectively. Regression equations include controls for: age, marital status, dependents, education, ability, self-esteem, language skills, immigrant status, and self-employment.

[a] All of the Hispanic and Asian Respondents are from Los Angeles. Dependent variable is weeks worked in 1992. Coefficients and (standard errors) reported. *F*-statistics and their associated *p*-values are shown in square brackets.

work have significantly greater labor supply than women who think they have been treated fairly along these lines at their current job. Labor supply for males is statistically independent of exposure to discrimination on-the-job. At first glance, the finding that women who think they are being sexually harassed at work actually work more hours than comparable women who do not face such treatment is puzzling. One explanation is that women who are sexually harassed are required or persuaded to work more than they would like, more than a typical woman with their characteristics. Moreover, we find a positive relation between perceived exposure to sexual harassment and labor supply for males, and it is close to statistical significance at conventional confidence levels.

5.3. Robustness of the findings

To explore the robustness or generality of our findings we conducted two separate exercises. First, we examined whether young persons respond differently than older individuals to the belief that they had been exposed to discriminatory treatment when they were job hunting. Next we separated the male and female data sets into sub-groups based on race or ethnicity to determine if the labor supply response to perceived exposure to discrimination was consistent across the groups.

5.3.1. Age effects: The interaction term model

To investigate whether a person's age influences their labor supply response to perceived exposure to discrimination during job search we estimated an interaction model in which the measures of exposure to job search discrimination are interacted with a dummy variable, Young, that identifies individuals who were 30 years old or younger in 1991:

Table 8
Impact on labor supply of perceived discrimination during job search and while on-the-job: Tobit estimates for males and for females[a]

Variable	Males	Females
Search Dis. Race	−3.28 (2.59)	−9.04** (3.49)
Search Dis. Gender	−4.28 (2.89)	−2.67 (3.22)
Work Dis Race	4.26 (2.65)	6.23* (3.71)
Work Dis Gender	−4.59 (3.84)	−2.24 (3.54)
Work Dis Sex Haras	4.40 (3.33)	7.79*** (2.47)
Age	0.21 (0.54)	0.46 (0.65)
Age Squared	−0.50e−02 (0.71e−02)	−0.41e−02 (0.79e−02)
Married	5.08*** (1.66)	−1.18*** (1.98)
Number of dependents	−0.10 (0.69)	−3.48*** (0.86)
High school drop out	−5.39** (2.20)	−4.12 (3.90)
Community college degree	0.87 (1.98)	4.31* (2.52)
College degree	−0.15 (1.96)	2.41 (2.70)
More than college	1.37 (2.91)	3.85 (3.11)
Perceived high ability	0.98 (1.57)	1.27 (2.70)
Self-esteem	−0.79* (0.47)	−0.67 (0.64)
Foreign resident at 16	1.28 (1.85)	−1.65 (2.85)
Speaks good English	−0.72 (2.15)	−1.49 (3.61)
Self-employed	2.33 (1.94)	0.05 (2.98)
Resides in Boston	−1.82 (2.05)	2.30 (2.29)
Black	−2.50 (2.30)	5.00** (2.49)
Hispanic	0.61 (1.79)	2.68 (2.89)
Asian	−1.42 (3.66)	0.70 (4.06)
Other ethnic group	−2.74 (6.47)	−10.65 (15.53)
Constant	43.41*** (9.71)	33.01** (13.56)
Wald chi-squared	63***	61**
N (left censored observations)	1685 (150)	1914 (356)

***Statistically significant at the 99% confidence level;
**, ***significant at the 10%, 5%, and 1% level of confidence, respectively.
**Statistically significant at the 95% confidence level;
*statistically significant at the 90% level. Regression equations include controls for: age, marital status, dependents, education, ability, self-esteem, language skills, immigrant status, and self-employment.

[a] White and Black respondents reside in Boston and Los Angeles, while Hispanic and Asian respondents are from Los Angeles. Dependent variable is weeks worked in 1992. Coefficients and (standard errors) reported.

$$
\begin{aligned}
(N^{S}_{i,t})^{*} = {} & \alpha + \theta(\text{Search Disc Race}) + \phi(\text{Search Disc Gender}) \\
& + \kappa(\text{Search Disc Race} * \text{Young}) \\
& + \pi(\text{Search Disc Gender} * \text{Young}) + \varphi(\text{Work Disc Race}) \\
& + \psi(\text{Work Disc Gender}) + \nu(\text{Work Sex Harass}) + (X_{i,t})\lambda \\
& + \rho(\text{Black}) + \delta(\text{Hispanic}) + \omega(\text{Asian}) + \eta_{i,t} \qquad (2)
\end{aligned}
$$

To interpret the results from estimating Eq. (2) it is important to recognize that the impact of perceived exposure to gender discrimination while searching for work

relative to not being exposed to this form of discrimination is $\partial(N_{i,t}^{S})/\partial(\text{Search Disc Gender}) = (\hat{\phi} + \hat{\pi}(\text{Young}))$. The impact on labor supply for older person (i.e., when the variable Young = 0) who think they confronted gender discrimination when searching for work relative to the typical person who believes they were treated fairly is $\hat{\phi}$. The estimated coefficient $\hat{\pi}$ reveals whether there is a difference in the labor supply response of young people who think they faced gender discrimination when searching for work compared to older people who also think they faced such discrimination.

Estimates of Eq. (1), the interaction term model, are presented in columns 4 and 5 of Table 5. Once again we find that women who believe they faced racial or ethnic discrimination during job search supply significantly less labor than women who believe they were treated fairly, while male labor supply is statistically independent of this form of perceived discrimination. We also find that young women who think they faced racial discrimination while searching for work significantly lower their labor supply relative to older women who also believe they faced such discrimination.

In the interaction model we continue to find that female labor supply is unrelated to exposure to gender discrimination when job hunting. However, we now find that the typical male in the sample who thinks they faced gender discrimination when searching for work provides the market with significantly less labor than males who believe they were treated fairly with respect to gender when seeking work.

5.3.2. Sub-group models

Estimates of Eq. (2), the standard model specification for labor supply, for racial and ethnic sub-groups of females and males are presented in Tables 6 and 7, respectively. [22]

The finding that women who think they face racial discrimination when searching for work subsequently supply significantly less labor to the market appears to be robust. This is the case for white women and for Hispanic women. Furthermore, the estimated coefficient on the dummy variable (Search Disc Race) is negative for black women and Asian women although it is not significant for the latter two groups.

A general pattern of labor supply behavior across the sub-groups does not emerge with respect to the response to perceived exposure to gender discrimination during job search. For the population of women there is no significant link between facing this type of discrimination and labor supply, which is also the case for white women and for black women. However, Hispanic (Asian) women who believe they faced gender discrimination while job hunting work significantly more (less) than Hispanic (Asian) women who believe they avoided such unfair treatment.

The finding that male labor supply is statistically equivalent for those who think they faced job search discrimination and those who believe they were treated fairly when job hunting holds for virtually each of the racial/ethnic sub-groups. The lone

[22] Very few of the Asian and Hispanic respondents reside in Boston. Moreover, the work environment for Hispanic and Asian individuals is likely to be very different in California where there is a much larger population of Hispanic and Asian persons. Therefore, the analysis of these two sub-groups is performed only on data for persons who reside in Los Angeles.

exception is Asian men; if they think they faced gender discrimination when searching for work they provide the market with significantly more labor than comparable Asian men who think they are treated fairly.

6. Summary and conclusions

Previous researchers have found that African Americans supply less labor than comparable whites and that females offer less labor to the market than similar males. [23] One possible explanation for this finding is that black men and women and white women may have confronted discrimination during job search that damages their desire to supply labor. This paper offers a theory of how a person's perception that they face discrimination during job search influences labor supply, to identify the conditions under which discrimination during job hunting can reduce labor supply. Guided by this theory, we then specify and estimate reduced form models of labor supply to provide evidence on the relation between a person's belief they have been exposed to discrimination while job hunting and their subsequent labor supply. In these models we also control for perceived exposure to discrimination due to race, ethnicity, and gender while at a person's place of work. A striking finding is that blacks do not exhibit comparatively reduced labor supply when beliefs about exposure to discrimination during job search and on-the-job are taken into account. One explanation for the finding that black women work more than white women with similar skills is that blacks have fewer assets (Chiteji & Hamilton, 2002). Thus, if black and white women established the same target income level, then black women will have to work more hours than white women to reach their income goal.

The theory we advance is developed by combining insights from neoclassical economics and from Festinger's (1957) theory of cognitive dissonance. Persons who believe they are being discriminated against while searching for work may be thrown into an unbalanced psychological state because their desire to secure a *good job* does not fit with their perception that such jobs are currently unattainable due to unfair treatment. To restore psychological consistency they may downgrade the value of leisure (i.e., resume effect) and enlarge their supply of labor, or, if their job search is restricted to inferior jobs relative to their skills they may see leisure as more attractive (i.e., adjustment effect) leading to a decline in labor supply.

Having to accept employment in a poorer job means earning a lower wage. The lower wage further will reduce a person's supply of labor if they adjust their target job to re-establish psychological balance. The lower wage acts to offsets the outward shift of labor supply for persons who want to address the discrimination they face by acquiring additional work experience. Thus, the effect on a person's labor supply of

[23] Altonji and Blank (1999) using data drawn from the 1996 Current Population Survey report that white males work an average of 42.3 weeks per year while black males worked 34.1 They also find that white females work virtually the same number of weeks per year as black males while black females work only 31.3 weeks per year.

believing they face discrimination while job hunting depends on how they intend to restore psychological consistency and the strength of the change in tastes for non-market time relative to the influence of a change in wages.

We find that male labor supply is independent of exposure to job search discrimination, while females work significantly less when confronted with racial or ethnic discrimination when job hunting. Moreover, these findings are robust. In addition, we find that women who think they are discriminated against at their job due to race or ethnicity, or who think they are sexually harassed at their place of work exhibit significantly greater labor supply. For males, the belief that they face discrimination on-the-job does not significantly alter their labor supply.

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Appendix A

Have you ever felt at any time in the past that you were refused a job because of your race/ethnicity? (Search Disc Race).

Have you ever felt at any time in the past that you were refused a job because of your gender? (Search Disc Gender).

During the past year were you discriminated against at your work because of your race/ethnicity? (Work Disc Race).

Have you ever felt at any time in the past that others at your place of employment got promotions or pay raises faster than you did because of your gender? (Work Disc Gender).

During the past year were you sexually harassed at your place of work? (Work Disc Sex Harass).

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