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Before and After: Gender Transitions, Human Capital, and Workplace Experiences*

Kristen Schilt and Matthew Wiswall

Abstract

We use the workplace experiences of transgender people – individuals who change their gender typically with hormone therapy and surgery – to provide new insights into the long-standing question of what role gender plays in shaping workplace outcomes. Using an original survey of male-to-female and female-to-male transgender people, we document the earnings and employment experiences of transgender people before and after their gender transitions. We find that while transgender people have the same human capital after their transitions, their workplace experiences often change radically. We estimate that average earnings for female-to-male transgender workers increase slightly following their gender transitions, while average earnings for male-to-female transgender workers fall by nearly 1/3. This finding is consistent with qualitative evidence that for many male-to-female workers, becoming a woman often brings a loss of authority, harassment, and termination, but that for many female-to-male workers, becoming a man often brings an increase in respect and authority. These findings challenge the omitted variables explanations for the gender pay gap and illustrate the often hidden and subtle processes that produce gender inequality in workplace outcomes.

KEYWORDS: gender, labor market discrimination

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1) Introduction

When economics professor Donald McCloskey announced he was becoming Deirdre, the chair of his department joked that working as a woman would mean getting a pay cut (McCloskey 1999). While the chair's comment was made in jest, it speaks to a larger and long-standing question of what role gender plays in workplace outcomes. Social scientists have long documented the relationship between an employee's gender and his or her opportunities for advancement in pay and authority. While the gender gap in earnings has narrowed for men and women in comparable occupations, men continue to outpace women in salaries, promotions, and workplace authority (Valian 1999; Padavic and Reskin 2002, Blau and Kahn 2006). Yet, as existing surveys cannot measure gender bias directly or capture all the relevant characteristics of men and women, the source of these workplace disparities remains unknown.

As McCloskey's story illustrates, the workplace experiences of transgender people – individuals who transition from one recognized gender category to another – offer an innovative way to explore the importance of gender in the workplace.¹ People who undergo gender transitions are estimated to make up only .01% of the United States population, with equal numbers of men becoming women – a group we refer to as MTFs (male-to-female) – and women becoming men – a group we refer to as FTMs (female to male).² Yet, we argue that the experience of a person who works both as a man and as a woman can illuminate the subtle ways that gender inequality is socially produced in the workplace. While transgender people have the same human capital and pre-labor market gender socialization after their gender transitions, their workplace experiences often change radically. Existing autobiographical and scholarly research demonstrates that for many MTFs, becoming women brings a loss of

¹ “Transgender” is an umbrella term that encompasses a wide variety of people who cross socially constructed gender boundaries in some way (Meyerowitz 2002). For instance, people who choose to undergo gender transitions via hormone therapy and genital surgery can be referred to as transgender, as can individuals who cross-dress on occasion. For the purposes of our paper, we are using the term “transgender” to refer to individuals who are working in a gender other than that which they were assigned at birth. Some of our respondents transition medically using hormones and surgical body modifications, while others do not. We discuss this further in the section on appearance discrimination and workplace outcomes.

² The total percentage of transgender people and the gender breakdown of that percentage are widely contested. The .01% was estimated by the number of people seeking genital surgery. This estimation is flawed, however, as many FTMs and MTFs do not undergo genital surgery (Meyerowitz 2002; Green 2004). Additionally, as MTFs have sought out institutionalized services more frequently than FTMs, there long has been an assumption that there are more men becoming women than vice versa. Transgender community estimates, however, place the percentage as much higher (see Conway 2001 for a discussion of this percentage) and argue for a more equal gender breakdown (Califia 1998; Meyerowitz 2003).

authority and pay, as well as workplace harassment and, in many cases, termination (Bolin 1988; Griggs 1998; McCloskey 1999; Schilt 2006a). On the other hand, for many FTMs, becoming men can bring an increase in workplace authority, reward, and respect, as well as new job opportunities and promotions (Griggs 1998; Schilt 2006b). The *before* and *after* workplace experiences of transgender people, then, can make visible the hidden processes that produce workplace gender inequality.

In this article, we use the pre- and post-gender transition workplace experiences of MTFs and FTMs to examine the persistence of gendered workplace disparities. Drawing on survey data about transgender employment experiences, we demonstrate that gender transitions bring important changes in workplace outcomes. In becoming women, MTFs experience significant losses in hourly earnings. In contrast, FTMs experience no change in earnings or small positive increases in earnings from becoming men. These findings suggest that regardless of childhood gender socialization and prior human capital accumulation, becoming women for MTFs creates a workplace penalty that FTMs do not generally encounter when they become men. And, while MTFs may benefit from being men at work before their gender change, they cannot always take this gender advantage with them into womanhood. We view these findings as evidence that the gender gap in workplace outcomes does not entirely reflect omitted variables, such as unobserved human capital. Rather, the change in post-transition MTFs' earnings suggests that the labor market is not gender neutral.

Theories of Workplace Gender Inequality

A fundamental question in the social sciences is why women continue to lag behind men in salary, promotion, and authority. Although prior research attributes much of the gender wage gap to measurable differences in education, occupations, and labor force attachment, these factors still do not entirely explain all of the gender gap in earnings (Goldin 1990; Paglin and Rufolo 1990; Fuller and Schoenberger 1991; Groshen 1991; Wood, Corcoran and Courant 1993; Brown and Corcoran 1997; Altonji and Blank 1999; Blau and Kahn 2006). Although white-collar men and women with equal qualifications can begin their careers in similar positions in the workplace, men tend to advance faster, creating a gendered promotion gap (Valian 1999; Padavic and Reskin 2002). Even in female-dominated professions, such as nursing and teaching, men outpace women in advancement to positions of authority (Williams 1995). Similar patterns exist among blue-collar professions, as women are often denied sufficient training for advancement in manual trades, passed over for promotions, or subjected to sexual harassment (Miller 1997; Yoder and Aniakudo 1997; Byrd 1999).

There are several conflicting theories to explain these remaining gender gaps.³ “Omitted variables” theories argue that differences in the types of unobserved human capital accumulated by men and women and/or differences in preferences for certain types of occupations and work settings account for the workplace gender gap. To the extent these differences are not measured in our data, we cannot control for these factors and the currently estimated gender gaps in earnings suffer from omitted variable bias. “Discrimination theories,” in contrast, posit that women and men with the same levels of human capital and who hold equivalent jobs or occupations experience different labor market outcomes due to gender discrimination on the part of employers.

Omitted Variable Theories

Omitted variables theories argue that observed differences in workplace outcomes are due to gender differences in human capital accumulation and childhood socialization. As women are more likely to take time off from work for childrearing and family obligations, they obtain less education and work experience on average than men. Men, in contrast, invest much more in their job training and education, giving them more human capital on average than women. Observed differences in labor market outcomes by gender therefore stem at least partly from these disparities in skills and experience. Men are rewarded more than women because they have more human capital.

The patterns of these gender differences in human capital accumulation can be shaped by childhood gender socialization. Children receive messages from a variety of socialization agents – parents, peers, teachers, the media – about what types of behaviors are appropriate for boys and girls (Marini 1989; Subich et al. 1989; Kimmel 2000). This pre-labor market socialization can affect human capital accumulation before men and women even enter the labor force by creating gender-specific preferences for types of occupations (Corcoran and Corcoran 1985). Women learn that feminine traits include caring and nurturing. They then are more likely to see out jobs that reinforce these traits, explaining their predominance in the “helping” professions, such as nursing and elementary school teaching. Men, on the other hand, are socialized to seek out high paying jobs that carry a great deal of authority to reinforce their sense of masculinity (Gould 1974; Kimmel 2000). This masculine socialization accounts for the predominance of men in blue-collar occupations, as well as high-powered professional occupations. As women are socialized to put family obligations first, women workers are more likely than men to seek out jobs that provide more flexibility for family schedules, but carry lower earnings and fewer opportunities

³ Blau, Brinton, and Grusky (2006) provide a recent review of some of the major theories.

for advancement. Women may also avoid higher paying blue-collar jobs, as these types of occupations as generally viewed as “unfeminine” (Paap 2005).

Discrimination Theories

Discrimination theories point to employer discrimination as the cause of the observed gender differences in workplace outcomes. Taste discrimination, originally formulated in the context of racial discrimination (Becker 1971), posits that employers have explicit preferences for hiring workers that have characteristics with no relation to worker productivity. Employers may engage in what has been termed “homosocial reproduction,” hiring workers who reflect their own identities and characteristics (Bird 1996). As white men are more likely to be in control of the hiring process, this means a preference for other white men (Williams 1995; Bird 1996; Padavic and Reskin 2002). Another more widely cited form of discrimination, statistical discrimination, occurs when employers base hiring, promotion, and compensation on worker stereotypes because of incomplete information about worker productivity (Phelps 1972; Arrow 1973; Bowlus and Eckstein 2002; Moro and Norman 2004).

An extensive empirical literature documents that employers have preconceptions as to what types of characteristics the workers who fill specific jobs should carry (Acker 1990; Williams 1995; Moss and Tilly 2001; Padavic and Reskin 2002; Martin 2003). “Feminine” characteristics, such as caring and sympathy, are typically preferred for jobs that involve a large amount of customer service interaction (Hochschild 1983; Leidner 1993). “Masculine” characteristics, such as rationality and competitiveness, are typically preferred for managerial positions (Kanter 1977; Acker 1990), even within female-dominated professions (Williams 1995). These same general patterns of gender segregation in work tasks are also found in high paying professions, such as in the legal profession (Wood et al. 1993; Valian 1999). This attribution of gender to jobs reproduces sex segregation so that, within the same work settings, women tend to be clustered with other women in lower paying jobs, while men are clustered at the top with greater pay, authority, and autonomy (Padavic and Reskin 2002).

While these gender stereotypes have important repercussions for men and women’s labor market outcomes, it is difficult to quantify their importance for several reasons. First, while men and women with similar measured education and workplace experiences can be compared in a multivariate analysis, differences in outcomes can be attributed to unmeasured characteristics of workers rather than to systematic gender bias. Second, gendered expectations about what types of jobs women and men are suited for are strengthened by existing occupational segregation. The fact that there are more women nurses and more men doctors comes to be seen as proof that women are better suited for

“helping” professions and men for “rational” professions. The normalization of these disparities as inevitable differences obscures the actual operation of men’s advantages and therefore makes it difficult to document them empirically. Finally, men’s advantages in the workplace are not a function of one simple process but rather a complex interplay between many factors, such as human capital differences, differences in employers’ expectations about skills and abilities by gender, and differences between men and women in family and childcare obligations. It may be difficult to understand the interplay of these multiple factors by merely examining existing observed workplace outcomes.

Using Gender Transitions to Study the Workplace Gender Gap

In this article we propose a unique test of the role of gender in the workplace. Consider an idealized experiment in which a random sample of adults wake up and have unexpectedly undergone a gender transition overnight. Omitted variable theories predict that there should be no change in labor market outcomes, as the skills and backgrounds of the workers remain the same. Discrimination theories, on the other hand, predict that these workers would experience a reversal in labor market outcomes. To test these theories, we designed a before and after panel study that uses the experiences of transgender workers as an approximation to this idealized experiment. With this unique panel data, we can net out the unobserved differences along with observed differences. We would predict that, even after controlling for observed and unobserved differences, women who become men (FTMs) would experience a gain in earnings in relative to men who become women (MTFs). This method is a natural extension of previous methods that use panel data to eliminate time invariant unobservable variables in earnings models. The main innovation of our article is that by focusing on gender transitions, we take a variable of interest that is typically considered invariant – gender – and make it time varying in a within-person panel.

The remainder of this article is organized as follows. The next section provides a brief overview of the existing scholarly research on the before and after workplace experiences of transgender people. Next, we outline the survey design and our original data collection. We then discuss the econometric specifications and results. We conclude with a discussion of the results that puts the quantitative findings in a fuller context by using related qualitative research.

2) The Gender Transition Process and Workplace Outcomes

A set of guidelines developed in 1979 by the Harry Benjamin International Gender Dysphoria Association – now known as the World Professional Association for Transgender Health (WPATH) – regulates the medicalized

process of transitioning from one gender to another. The guidelines, referred to as the Standards of Care, stipulate a set path for a client seeking to change his or her gender.⁴ First, this client is instructed to undergo a minimum of three months of therapy (though the time limit is at the discretion of the therapist). If the therapist agrees that medical transition is the appropriate pathway, an open letter to medical personnel is written that recommends this client for hormone treatment – estrogen for MTFs and testosterone for FTMs. Some clients, however, choose not to take hormones for a variety of personal, cultural, and health-related reasons. Therapists also can write a second letter addressed to surgeons that recommends their client for surgical interventions. For MTFs, these interventions can include facial feminizing surgery, vaginoplasty (genital surgery), breast augmentation, and tracheal shaves. For FTMs, these interventions can include chest reconstruction surgery, phalloplasty or metadioplasty (genital surgeries), and hysterectomy (see Griggs 1998 and Green 2004 for more detail on surgeries). While a gender transition often is synonymous with “sexual reassignment surgery” or genital surgery in popular conceptions, however, there is a great deal of variation in which surgeries, if any, transgender people choose to adopt during their transitions (see Griggs 1998; Rubin 2003; Green 2004).

While there is little historical data on gender transitions and workplace outcomes, some information on occupations before and after transitions can be gleaned from the first wave of research on transgender people that emerged in the social sciences in the 1970s and 1980s. In that time period, both MTFs and FTMs tended to be in their twenties, as older clients were viewed as bad candidates for transition as they were already too established in their work and personal lives (Kando 1973; Lothstein 1983). Many pre-transition FTMs worked in male-dominated fields, such as construction, or more gender-neutral fields, such as retail (Feinbloom 1976; Sorensen 1981; Lothstein 1983). In contrast, many pre-transition MTFs worked in female-dominated fields, such as modeling, hairdressing, and secretarial work (Benjamin 1966; Hore, Nicolle, and Calnan 1975; Perkins 1983; Rakic, Starcevic, Maric, and Kelin 1996). MTFs who did work in professional jobs as men were encouraged to move into more “feminine” careers post-transition that were seen as better suited for their new gender. Executives, then, became secretaries – a change that resulted in a large pay cut (Bolin 1988). In the 1990s, however, the demographics of people seeking gender transitions shifted somewhat, as more middle-aged MTFs who were already established in professional careers began seeking access to gender transitions (Lawrence 2003). And, with the aid of the growing transgender rights movement (Frye 2000), FTMs and MTFs increasingly started to make the choice to openly

⁴ The actual text of these standards is available at <http://wpath.org/Documents2/socv6.pdf>.

transition and remain in the same job – regardless of the gender stereotyping of their occupations (Schafer 2001).

Researchers who followed up with post-transition individuals reported mixed success for MTFs in the labor market. In one of the earliest studies, Laub and Fisk (1974) – a plastic surgeon and psychiatrist who operated the Stanford Gender Clinic – rated post-operative MTFs on their "economic adjustment" using a four point grading scale. They found that 10 of 18 MTFs interviewed had improved scores following their surgery. Other researchers, however, found an increase in the numbers of MTFs who went on disability after their transition, and who had difficulty maintaining employment (Sorensen 1981a; Lindemalm, Korlin, and Uddenberg 1986). FTMs also reported mixed workplace outcomes. While many of them remained in the same jobs post-transition, there were problems with acceptance, particularly if they were not on hormones and thus did not have an undisputed masculine appearance (Sorensen 1981b). Other studies, however, described FTMs as more satisfied with their work lives post-transition than their MTF counterparts (Kuiper and Cohen-Kettenis 1988). More recent qualitative data suggests that some MTFs leave high-paying professional jobs for lower-paying retail jobs because of employment discrimination (Griggs 1998). When they do remain in “masculine” professions, some MTFs report a devaluation of their skills and abilities by co-workers and employers (Schilt and Connell 2007). Many FTMs, in contrast, report gaining authority and respect at work once they look like men, even when they remain in the same jobs (Griggs 1998; Schilt 2006). To date, however, there still is little information on how gender transitions impact the before and after salaries of transgender people.

3) Data Collection

Survey Design and Administration

This article draws on survey data from a sample of transgender workers collected in 2004-2005 by the authors. To allow for comparability between the data on the general population and this transgender population, survey questions were modeled after the 2002 Current Population Survey (CPS). Our transgender survey was constructed as a three period panel. The survey asked respondents to provide hours, occupation, industry, and earnings information for jobs held at three distinct points in their lives: the last job held before they underwent any procedures to change their gender, the first job held after their gender transition, and their most recent job. For the last job held before their gender transition, respondents were asked, “Please think back to the last time you worked for pay (full or part time) BEFORE you underwent any procedures to change your gender

that would have been noticeable to your supervisors or co-workers.”⁵ For the second period of the panel, respondents were asked about their workplace experiences immediately after their transition. Specifically, we asked, “Please answer these questions thinking about the first job you held for pay (part or full time) in which you were hired in your current gender.” For the third period, respondents answered a similar question about their current main job.

Respondents were asked to self-report a date for each of these time periods (e.g. the last day worked before their transition), and retrospectively report their employment and earnings information as of that date. For most respondents, there was little (less than 1 year) or no gap between their report for the “immediately after” and “most recent” job. Because there is less non-response for the questions corresponding to the job held immediately *after* the gender change, we use this information to contrast to the period *before* the gender change.⁶

For each period, respondents were asked to report how much they “usually earn” at their “main job.” We constructed an hourly earnings variable based on reported earnings and the number of weeks and hours the respondent reported that he or she usually worked at this main job. Because earnings were reported for several different calendar periods, the hourly earnings are adjusted for inflation using the Consumer Price Index (CPI-U series). All earnings in the paper are reported in 2004 dollars.

Our survey supplemented the earnings and employment questions with a battery of questions specific to the transgender population. Respondents were asked about their decisions regarding the use of surgical and hormonal treatments to change their gender, their beliefs about how well they passed in their new gender, and how much face-to-face contact they had with co-workers and customers.

Collecting a random sample of transgender people is not possible, as the population is small, widely dispersed, and often hidden. Additionally, there is no way to gather a random sample of the population of transgender people through traditional means (mailings, telephone calls, etc.). Instead, the survey was handed out at transgender conferences – conferences organized by transgender people around transgender issues – and made available on-line through a website advertisement. As most transgender conferences charge a registration fee, our sample is skewed more toward the middle-class. However, we purposefully

⁵ Measuring the start of a gender transition is difficult. Many transgender people feel that they have been in the process of transitioning since childhood, as they might adopt appearance and behavior cues of their destination gender long before they decide to undergo any physical body modifications. The phrasing of this question was designed to create a uniform starting point for transition, i.e. the point at which transgender people seek to have their new gender recognized by their co-workers and employers.

⁶ Although recall bias for past earnings is a concern, it is not clear that this would bias the results in terms of the differences between FTMs and MTFs in any particular direction.

included one conference that was free to the public to try to obtain a broader class representation.

The survey was handed out to voluntary participants at three transgender conferences: Transunity in Los Angeles, California in June 2004, Gender Odyssey in Seattle, Washington in September 2004, and the International Foundation for Gender Education in Austin, Texas in April 2005. Most of the respondents completed the survey on site, but a few of them mailed the survey to the authors later. In addition, the survey was posted online at the website *transacademics.org*, and readers were asked to email or mail completed surveys to the authors.

Transgender Sample

Of the 64 returned surveys, 54 were from respondents who attended one of the three conferences. The remaining ten surveys were obtained by email or mail from non-conference attendees. Because we are concerned with changes in workplace experiences before and after gender transitions, we included only respondents who were employed and reported positive earnings before and after their gender change in the analysis. This excludes all individuals who never held a job before their gender transition and individuals who were employed before their gender transition but were now unemployed.

Including only individuals who were employed before and after limits the final sample to 43 respondents: 16 MTFs and 27 FTMs. The original MTF and FTM composition among all of the 64 returned surveys was similar (27 MTF and 37 FTM). The higher proportion of FTMs is due to the conferences we attended. The Gender Odyssey conference at which 25 surveys were completed is almost exclusively a conference for FTMs.

Descriptive Statistics

Table 1 shows descriptive statistics for our transgender sample. To provide a comparison to the general population, we also report the same descriptive statistics for a sample of the general population taken from the March 2003 Current Population Survey (CPS).⁷ Examining Table 1, two important differences between the CPS sample and our pre-transition transgender sample stand out.

⁷ Our CPS sample includes all adults age 18 or older who report working at least 1 hour the past year for pay. The demographic, education, occupation, and industry questions in this survey are nearly identical to those in our transgender survey. For the CPS data, we construct as closely as possible an equivalent measure of hourly earnings using reported hours worked during the year and usual hours worked per week. Earnings for the CPS comparison sample are adjusted for inflation and expressed in 2004 dollars.

First, while MTFs are on average about the same age as the general male population, FTMs are on average about 10 years younger than the general female population and 10 years younger on average than MTFs. As discussed below, we interpret this as evidence that MTFs attempt to preserve their male advantage at work for as long as possible, whereas FTMs may seek to shed their female gender identity more quickly. A second important difference is that both MTFs and FTMs are twice as likely to have a college degree as the general population. This difference likely reflects that our sample was collected from transgender conference attendees. Being alerted to these conferences means having internet access, as well as the means to travel – all indicators of a higher socio-economic class associated with higher levels of education.

On other dimensions, the transgender sample and general population sample are more comparable. Both populations are between 70-80 percent white. The composition of types of employment (private, government, and self-employment) for pre-transition MTFs is similar to that of all men. Reflecting the higher level of education among the MTF sample, more MTFs are employed in white-collar occupations than the general male population. There are a higher proportion of pre-transition FTMs employed in the government sector than in the general female population.

The bottom rows of Table 1 compare mean hourly earnings for the pre-transition transgender sample with earnings for the general population, conditional on education.⁸ College educated MTFs earn on average \$31.88 per hour before their gender transitions, compared to \$35.67 for all college educated males. College educated FTMs earn \$22.38 per hour before their gender transitions, compared to \$24.33 for all college educated females. Non-college educated MTFs earn on average \$21.87 before their gender transitions, compared to \$18.47 for all non-college educated males. For non-college educated FTMs, mean hourly wages are \$12.59 before transition, compared to \$13.89 for all non-college educated females.

4) Econometric Specification

This section describes how our transgender data can be used to examine the long-standing issue of gender differences in earnings. Below, we interpret the earnings

⁸ To address the difference in the distribution of ages in the transgender sample relative to the general population, we calculate average hourly earnings using the distribution of ages in the CPS data to weight the transgender sample to be representative of the general population. In results available on request, we find that mean hourly earnings for the transgender sample change only slightly using the age-weighted sample.

results in more detail and examine these results in the context of other employment outcomes.

Given the structure of our data collection, we consider a two period model in which the first period, denoted $t = b$, is the period at which the respondent was last employed before his or her gender transition. The second period $t = a$ is the period in which earnings are observed after the gender transition. Note that each survey respondent potentially can provide a different calendar time for the before and after periods. Wages are deflated for each of these different calendar times and we include an indicator of the number of years between the before and after periods in the regression models.

Log hourly earnings for individual i in each of the two periods ($t = b, a$) are assumed to take the following form:

$$\ln W_{it} = \gamma_t + \delta \text{male}_{it} + X_{it}'\beta + \alpha_i + \varepsilon_{it}, \quad (1)$$

where γ_t is the intercept for the log earnings before and after the gender transition, male_{it} is a dummy variable for whether the individual is male in gender in period t , X_{it} is a vector of time varying observable characteristics, such as age and education, α_i is an individual specific fixed effect reflecting the remaining unobserved differences across individuals, and ε_{it} represents the remaining residual error.

We take the difference in earnings between the after period ($t = a$) and before period ($t = b$) in (1) to eliminate the α_i fixed effects:

$$\Delta \ln W_i = \Delta \gamma + \delta \Delta \text{male}_i + \Delta X_i' \beta + \Delta \varepsilon_i, \quad (2)$$

where $\Delta \ln W_i = \ln W_{ia} - \ln W_{ib}$ is the change in log earnings between the after and before periods. $\Delta \gamma = \gamma_a - \gamma_b$ is the intercept for the first difference and indicates the change in log earnings following the gender transition. As we discuss in more detail below, if there is an earnings penalty related to non-normative appearance for transgender people, then we expect $\Delta \gamma$ to be negative. $\Delta X_i = X_{ia} - X_{ib}$ is the change in the vector of time varying observable variables, such as the increase in age between the two periods.

$\Delta \text{male}_i = \text{male}_{ia} - \text{male}_{ib}$ is the difference in gender following the gender transition, where $\Delta \text{male}_i = +1$ for FTMs, and $\Delta \text{male}_i = -1$ for MTFs. We take a positive value for δ to indicate an earnings premium for male gender. The unique feature of our transgender data is that there is within person variation in gender that can be separately identified from the individual specific fixed effect. In traditional panel data, where $\Delta \text{male}_i = 0$ for all i , the effect of gender and unobservable characteristics correlated with gender represented by α_i cannot be separately identified.

5) Results

Table 2 reports the results from estimating (2) using OLS where the dependent variable is the difference in log hourly earnings before and after the gender transition. The first model includes only an intercept $\Delta\gamma$ and the change-to-male variable Δmale_i . In this specification, the intercept $\Delta\gamma$ is estimated at -0.107 (with a p-value of 0.08), and the coefficient on the change-to-male variable is estimated at 0.206 (with a p-value of 0.001). These estimates imply that male-to-female respondents ($\Delta\text{male}_i = -1$) lose about 31 percent of their earnings after their gender transition ($-0.107 - 0.206 = 0.313$). Female-to-male respondents ($\Delta\text{male}_i = +1$) are estimated to gain about 10 percent in earnings following their gender transition ($-0.107 + 0.206 = 0.099$).

Model 2 in Table 2 adds the number of years between the self-reported before and after earnings observations. The average number of years between these two periods was 2.8 years, with a median of 2 years and a standard deviation of 4.1 years. The main effect of this variable is small and not statistically significant at the 10 percent level. Including this variable reduces the intercept and the change-to-male variables only slightly.

Model 3 in Table 2 adds three time varying covariates to the specification: i) a variable for whether a respondent reports obtaining a college degree (0 if no change, 1 if no college degree before but a college degree after), ii) a variable indicating that the respondent changed to a white collar job from a blue collar job (-1 if white collar before and blue collar after, 0 if no change, 1 if blue collar before and white collar after), and iii) a variable for whether the respondent changed to a private sector job from a public sector job (-1 if private before and public after, 0 if no change, 1 if public before and private after). This specification also includes three missing variable flags, one for each of the included additional variables.⁹ Of the three additional variables included in Model 3, only the change to a private sector job is statistically significant from zero at the 10 percent level. The coefficient estimate indicates that transgender people who switched to private sector jobs lost 25.8 percent of their previous earnings. Given the selection into job types, it is unclear how to interpret this finding.

Including these additional control variables in Model 3 increases the estimated transgender wage penalty ($\Delta\gamma$) from a loss of 9.7 percent of hourly earnings in Model 2 to 15.4 percent in Model 3. This may indicate that transgender people are adapting to workplace appearance discrimination by

⁹ Sample distribution of these variables: gain degree (3 gain degree, 39 no change, 1 missing), change to white collar (4 change to white collar, 36 no change, 2 change to blue collar, 1 missing), change to private sector (2 change to private sector, 34 no change, 6 change to public sector, 1 missing).

switching to job types that are less discriminatory. Not controlling for these characteristics in Models 1 and 2 masks the larger transgender earnings penalty that is revealed in Model 3. In addition, the gain to becoming male (the coefficient on Δmale_i) is estimated to be 16.9 percent in Model 3. This is still large and statistically significant (p-value 0.020), but is smaller than the gain estimated in Models 1 and 2. In Model 3, becoming men for FTMs brings a small increase in overall earnings ($-0.154 + 0.169 = 0.015$), while becoming women for MTFs brings a large reduction in earnings of about 32 percent ($-0.154 - 0.169 = -0.323$).

It is important to note that for most of the sample these multivariate regressions only capture the immediate change in earnings following a gender transition. A longitudinal study of transgender employment over a longer period may reveal more substantial changes. As we discuss in the next section, interview evidence indicates that FTMs experience more subtle changes in their labor market opportunities after becoming men as they gain increased authority and respect in the workplace. MTFs on the other hand experience a decline in these same areas, and more MTFs than FTMs report experiencing harassment and discriminatory promotion and retention decisions (Griggs 1998; Schilt 2006a; Schilt and Connell 2007). We suspect that over time these changes would affect earnings even more substantially than we are able to document here.

6) Discussion

Although our sample of transgender people is not a random sample from the general population, we argue that studying gender transitions leads to important insights into how gender impacts workplace outcomes. While MTFs and FTMs change their outward gender, their skills, abilities, and gender socialization remain the same.¹⁰ The substantial loss of earnings experienced by MTFs, but not FTMs, suggests that omitted variables theories do not fully account for the role of gender in the workplace.

¹⁰ In some cases, transgender people lose some of their human capital, as they cannot always take their work and education history with them into their new gender if they intend to successfully pass. However, as more transgender people are openly identifying as transgender, this has become less of an issue. Additionally, FTMs might be expected to suffer most from this, as they can more easily find jobs as “just men” because they pass more successfully in their new gender than MTFs (Griggs 1998; Schilt 2006a). Yet, as we show in this study, even if this is occurring, FTMs experience a gain in earnings relative to MTFs.

Endogenous Gender Transitions

An issue with interpreting the identification of the earnings gains to becoming men is that people considering gender transitions may endogenously choose whether or not to transition based on their anticipated earnings from this change. For example, MTFs who expect to experience economic losses due to working as women may be less likely to make this transition. On the other hand, FTMs who expect to gain from working as men may be more likely to make this transition. This implies that the transgender population we surveyed is not representative of the actual population of all potential transgender people, as it does not include individuals who want to change their gender but do not because the labor market penalty is too high. If gender transitions are endogenous, this would bias downward the transgender penalty (the intercept $\Delta\gamma$ estimated in (2)) and bias upward the earnings gains to becoming men (the δ parameter in (2)).

Speaking to this potential bias, we find evidence, documented below, that suggests that the age at transition is influenced by earnings considerations, as MTFs are considerably older on average at the time of their transitions than FTMs. Thus, it may be that MTFs are waiting to transition at a later age because they want to maintain “male” earnings for as long as possible. FTMs, in contrast, may be transitioning earlier because they anticipate they will earn more once they enter the workforce as men. There is some evidence to support this interpretation. Bolin (1988) and Griggs (1998) find, for example, that some MTFs live as women but continue to work as men because they do not want to move to “women’s work” or experience employment discrimination. Most of them do eventually make the workplace transition, however, as their increasingly feminized appearance becomes harder to account for at work. In a follow-up study of transgender people who have been accepted for surgery but have not yet undergone a transition, “hesitating” MTFs cite economic concerns, along with health concerns and family concerns, as a justification for their delay (Kockott and Fahrner 1987). This group, however, also is identified as the least psychologically adjusted (compared to those who do transition or to those who still plan to in the near future), suggesting this hesitation is not a tenable position over time.

The importance of living in their desired gender is underscored by the findings that on average both MTFs and FTMs who do transition sacrifice substantial earnings. In Table 2, the transgender penalty (the intercept) is estimated to be large for both MTFs and FTMs. The penalty for the gender transition is large enough that it nearly offsets the gains to becoming men for FTMs, so that for FTMs there is essentially no change in earnings on average after their transitions. This willingness to give up earnings in order to live in their desired gender is supported by qualitative data in which interviewed FTMs expect

employment discrimination but decide to transition anyway (Schilt 2006a). We interpret this evidence as suggestive that, while there is a population of people who may not transition for a variety of reasons, most transgender people do eventually transition.

Timing of Transition

One of the more salient patterns evident in the transgender sample is the stark difference in the timing of the gender transition: MTFs transition on average 9.6 years after FTMs. As seen in Table 1, MTFs on average remain in their male gender until age 40, whereas FTMs on average transition at age 30. This later age at transition is consistent with the hypothesis that MTFs seek to preserve working as men as long as possible. We argue that this difference suggests that some MTFs anticipate that their pre-transition human capital will not receive the same value after they become women. As women workers, however, FTMs may feel that they have less to lose and potentially more to gain from making the transition to become men at work.

Table 3 explores whether this difference in age at transition is robust to the inclusion of control variables. The dependent variable for the regression models in Table 3 is the age at which the respondent was last employed before beginning his or her gender transition. The regression models are estimated on the pooled FTM and MTF samples. Model 1 includes an intercept and a dummy variable for FTMs. The estimated intercept replicates the MTF average age at gender transition reported in Table 1. The estimated coefficient on the FTM dummy variable for Model 1 is -9.60 , indicating that FTMs transition 9.6 years earlier than MTFs. This coefficient estimate is statistically significant at the 1 percent level.

Models 2-4 in Table 3 add various covariates to the regression model as controls for education, demographics, and pre-transition employment. Looking across the regression models in Table 3, the estimated coefficient on the FTM dummy variable remains statistically significant at the 5 percent level or higher. In Model 2, inclusion of dummy variables for college degree, white race, and white-collar employment before gender change increases the estimated difference between the age at gender change for FTM and MTFs to -10.36 , indicating that FTMs change their gender 10.36 years earlier than MTFs. Model 3 in Table 3 adds a dummy variable (*Same Job Before and After*), which indicates whether the respondent continued to be employed in the same job following his or her gender transition. Inclusion of this variable reduces the estimated coefficient on the FTM dummy variable to -8.91 , but it is still significantly different from 0 at the 1 percent level.

Interestingly, the estimated coefficient on the *Same Job Before and After* variable indicates that transgender people who keep the same job following their gender change wait nearly 7 additional years to change their gender than transgender people who get new jobs after transition. To see whether or not this finding reflects strategic behavior to delay a gender transition until stable employment is attained, Model 4 adds to the regression model the number of years respondents report holding their jobs before their gender transition (*Years Worked at Before Job*). The estimated coefficient on this variable is 0.67 and is statistically significant at the 5 percent level. This indicates that both MTFs and FTMs who have accumulated valuable workplace experience in a particular job choose to delay their gender transitions, possibly to avoid disruption to their employment. Taken together, Models 3 and 4 provide additional evidence that the age at gender change is strategically chosen to avoid workplace losses and employment discrimination anticipated to accompany gender transitions.

Other Employment Outcomes

Looking beyond earnings, MTFs in our sample seem to experience a wider range of workplace hardships in becoming women than FTMs experience in becoming men. Survey respondents were provided a blank space to write comments about their workplace experiences. Five FTMs elected to write comments. All five praised their workplaces for their tolerance and acceptance. One respondent in a blue-collar job wrote: "My transition went extremely smoothly. I was shocked at how smooth. No one even talks about it and it had no effect on my pay. If anything, I have been better accepted at work because people don't see me as a dyke like before." The two MTFs who wrote comments, in contrast, emphasized workplace dilemmas. One respondent who transitioned in a blue-collar job she had worked in for twenty years as a man wrote that the women's restroom she used was "booby trapped," and mean notes were left on her desk telling her to quit. Another MTF wrote: "I was 'laid off' from my 10 year management position for having a 'bad attitude.'" She noted that she was laid off the first week that she began coming to work dressed in women's clothing. These comments certainly are not a systematic sample. However, they suggest that MTFs cannot take their masculine workplace advantage with them into womanhood.

Further supporting our argument that a workplace gender penalty often accompanies the move from male-to-female, Schilt (2006a) finds that MTFs experience a much wider range of obstacles to openly transitioning and remaining in the same jobs than their FTM counterparts. In a content analysis of news stories and legal cases about transgender employment from 1977-2005, Schilt shows that many MTFs experience harassment and often termination once they begin their gender transitions, even when they transition in jobs they have held for

many years. Some of the most virulent harassment is experienced by MTFs in blue-collar occupations. This is an unsurprising finding, as blue-collar occupations are associated with homophobia and sexism (Welsh 1999). However, what is interesting about this blue-collar context is that in these news stories and legal cases, MTFs reported fitting into this masculine workplace culture prior to their gender transition. That pre-transition MTFs conformed to and benefited from masculine workplace gender norms in blue-collar occupations suggests that they have a great deal to lose when they become women, even though they retain their human capital and prior male socialization. We argue that the losses which accompany becoming women accounts for why MTFs in our sample may delay transitioning, as well as why some MTFs live full-time as women outside of the workplace but continue to work as men for as long as possible (Griggs 1998).

In contrast, Schilt (2006a) found that FTMs experience fewer obstacles to open workplace transitions than their MTF counterparts. In in-depth interviews with FTMs in California, Schilt (2006b) found that many of her respondents experienced an increase in authority, reward, and respect at work once they began working as men – even when they remained in the same jobs they had as women. While FTMs were subjected to feminine gender socialization as children, and had the same skills and abilities as they had as women workers, becoming men brought positive workplace outcomes.¹¹ Not being male-socialized may mean that FTMs benefit less than male-born men, as male-born men may be socialized to be more aggressive about seeking workplace rewards (Padavic and Reskin 2002). However, many FTMs generally are not penalized for their gender transitions, even though they, like MTFs, are making a “discredited identity” (Goffman 1963) public. Placing our survey data in context with this previous research suggests that being a man garners more workplace rewards than being a woman, even net of all other omitted variables.

Is It Gender or Appearance?

In analyzing the before and after gender change workplace experiences of transgender people, an important question is whether their workplace outcomes are due to changes in gender or changes in appearance. Prior research suggests that the appearance and attractiveness of workers does affect their labor market outcomes (Biddle and Hamermesh 1994; Biddle and Hamermesh 1998). Since transgender people can undergo a number of changes to their physical appearance in the process of their transition, they may be adversely affected by a non-normative appearance. The effects of hormone therapy, the physical structure of male bodies, and the different level of appearance scrutiny of men and women can

¹¹As some evidence on the heterogeneity of the outcomes for transgender people, Schilt (2006) shows that FTMs who were white benefited more than FTMs who were black, Latino, or Asian.

cause MTFs to face more difficulties passing in their new gender than their FTM counterparts. With the use of testosterone, many FTMs develop thicker facial and body hair, deeper voices, and male-pattern baldness (Rubin 2003; Green 2004). With these masculine appearance cues, they are read as men in interactions often within a few weeks of beginning hormone therapy. Estrogen has fewer feminizing effects on male bodies. MTFs may experience some breast growth, but they do not stop growing facial hair or develop higher voices (Griggs 1998). Estrogen cannot alter physical characteristics that are typically interpreted as masculine, such as height over six feet, visible Adam's apples, and big hands and feet. MTFs can use feminine appearance cues as passing aids, such as feminine clothing, but these often cannot override masculine body cues.

This difference in post-gender change appearance is clearly evident in our survey data. 56 percent of FTM respondents describe themselves as "always" passing as men. In contrast, 17 percent of MTFs describe themselves as "always" passing as women. Some MTFs who had been transitioned for over ten years still described themselves as only passing "sometimes." Some of the adverse employment outcomes for MTFs which we document above may be attributable to their changed appearance rather than to their changed gender.

However, we argue that gender is still likely a leading cause of the before and after differences we document for transgender workers. Ethnographic research suggests that men express concern about their MTF colleague's work abilities *as women*, not because of their appearance (Schilt and Connell 2007). Demonstrating this anxiety, one MTF who had co-owned a business with two other men was asked, post-transition, if she was still going to be able to run a company if she was always "thinking about nail polish" (Schilt and Connell 2007:606). Additionally, as many FTMs pass successfully as men within a short time of beginning hormone therapy, we can more confidently argue that the workplace benefits they experience are related to becoming men.

7) Conclusion

This study uses the pre- and post-transition experiences of transgender workers as a novel way to explore the factors that contribute to the persistence of gendered workplace disparities. As existing surveys can neither measure discrimination directly nor measure all the relevant characteristics of men and women, we use the before and after workplace outcomes for transgender people as a unique test of omitted variables theories of workplace gender inequality. The statistical analysis shows that transgender people in our sample are relatively comparable to the general population before their gender transitions in many dimensions, although, notably, transgender people are more educated. Analyzing the earnings of transgender workers before and after their gender changes, we find that MTFs

experience a substantial and statistically significant decrease in earnings while FTMs experience either no change or a slight increase. These findings suggest that the male gender carries a workplace benefit that cannot be carried over in a gender transition. That MTFs cannot take male privilege with them into womanhood may account for their significantly later age at transition than their FTM counterparts.

There are a number of limitations to this study. The small size of our sample reduces the precision of our statistical findings and precludes extensive multivariate analysis. A second limitation is our inability to control for the non-normative appearance of post-transition transgender people. Because of this limitation, the outcomes we document for gender transitions may be conflated with appearance discrimination. In an ideal experiment, we could compare a group of transgender people who definitely pass as women with a group who do not to gain a deeper understanding of how appearance interacts with gender to affect workplace outcomes. A third limitation of our study is that gender transitions do not occur overnight as in the ideal experiment, but may in fact take several years.

Future research can build upon this study in several ways. First, replicating this study with a longitudinal study of transgender workers that tracks earnings and other workplace outcomes long after initial transitions could illuminate whether these gains and losses associated with gender changes plateau or expand. Second, future studies could extend the analysis of before and after workplace outcomes beyond earnings and more traditionally measured workplace outcomes. As we discuss above, many of the forms of gender inequality are subtle, but can become apparent in an in-depth, qualitative examination of the experiences of transgender workers.

The experience of Ben Barres, an FTM neurobiology professor at Stanford, underscores the importance of these subtle forms of gender inequality. As a woman who excelled in math and science, Barres recounts constantly having her intellectual abilities questioned and undermined (Begley 2006). As a man, however, audiences who do not know about his gender change tell him that his scholarly research is much better than that of “his sister.” Barres’ experiences show how socially constructed beliefs about men and women’s natural abilities cloud perceptions and evaluations, thus producing gendered workplace disparities. Our study demonstrates that the workplace experiences of transgender people are a fruitful way to explore these long-standing debates about gender and work, as they clearly illuminate the impact of subtle assumptions about inevitable gender differences on men and women’s workplace outcomes.

Table 1: Descriptive Statistics Before Gender Change

	All Males	MTF	All Females	FTM
Mean Age (std. error)	40.0 (0.072)	39.6 (2.57)	40.2 (0.074)	30.0 (2.18)
Median Age	40	39	40	29
Percent White	83.7	72.2	80.7	72.0
Percent College Degree	28.6	50.0	28.5	64.0
Percent Private Sector Job	81.2	77.8	78.9	56.0
Percent Government Job	13.1	16.7	18.7	32.0
Percent Self Employed	5.6	5.6	2.4	12.0
Percent White Collar Occupation	47.8	61.1	72.1	64.0
Mean Hourly Earnings (Col. Deg.) (std. error)	35.67 (1.15)	31.88 (5.09)	24.33 (0.32)	22.38 (3.82)
Mean Hourly Earnings (No Col. Deg.) (std. error)	18.47 (0.48)	21.87 (5.09)	13.89 (0.18)	12.59 (5.09)
Observations	52,420	18	42,259	25

Notes: All Males and All Females refer to the sample of working adults from the 2003 Current Population Survey (CPS). CPS statistics are calculated using sample weights. Male-to-Female (MTF) and Female-to-Male (FTM) are transgender survey respondents who reported working. Data for transgender workers is for the period before their gender change. Age is the age at the time the respondent completed the survey. Hourly earnings are reported in 2004 dollars.

Table 2: Earnings Before and After Gender Change

Variables	1	2	3
Intercept	-0.107 (0.060)	-0.097 (0.073)	-0.154 (0.090)
Change-to-Male (Δmale_i)	0.206 (0.060)***	0.205 (0.061)**	0.169 (0.063)*
Difference in Years Before and After	--	-0.003 (0.014)	0.014 (0.030)
Gain College Degree	--	--	0.014 (0.265)
Change to White Collar Job	--	--	0.128 (0.184)
Change to Private Sector Job	--	--	-0.258 (0.153)
Observations	43	43	43
R-Squared	0.226	0.227	0.344
Adjusted R-Squared	0.207	0.189	0.235

Notes: Standard errors in parentheses. The dependent variable is the difference in log hourly earnings: log hourly earnings after the gender change minus log hourly earnings before the gender change. *Change to Male* (Δmale_i) equals +1 for Female-to-Male respondents and -1 for Male-to-Female. *Gain College Degree* equals 1 if the respondent earned a 4 year college degree between the before period and the after period, and 0 otherwise. *Change to White Collar Job* equals +1 for individuals who move from blue collar jobs before to white collar jobs after, 0 for those who do not change, and -1 for individuals who move from white collar to blue collar jobs. *Change to Private Sector Job* is defined similarly. Model 3 also includes missing variable flags. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$ (two-tailed tests).

Table 3: Age at Gender Change

Variables	1	2	3	4
Intercept	39.56*** (2.57)	30.68*** (3.77)	28.34*** (3.80)	28.12*** (4.33)
FTM	-9.60** (3.36)	-10.36*** (2.94)	-8.91** (2.97)	-7.74* (2.94)
College Degree	--	10.62 (3.84)	8.03 (4.04)	9.76 (3.79)
White Race	--	6.32 (3.23)	4.56 (3.25)	3.36 (3.03)
White Collar Before Job	--	-0.66 (3.97)	0.09 (4.02)	-2.07 (3.90)
Same Job Before and After	--	--	6.85* (3.15)	2.42 (3.29)
Years Worked at Before Job	--	--	--	0.67* (0.26)
Observations	43	43	43	43
R-Squared	0.166	0.414	0.482	0.585
Adjusted R-Squared	0.145	0.352	0.396	0.488

Notes: Standard errors in parentheses. FTM is Female-to-Male. The dependent variable is the age at which the transgender respondents reported completing their gender change. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$ (two-tailed tests). Models 2-4 include missing variable flags.

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