2011

The Happiness of Single Mothers after Welfare Reform

John Ifcher
Santa Clara University, jifcher@scu.edu

The B.E. Journal of Economic Analysis & Policy

Topics

Volume 11, *Issue* 1 2011 *Article* 60

The Happiness of Single Mothers after Welfare Reform

John Ifcher*

*Santa Clara University, jifcher@scu.edu

Recommended Citation
John Ifcher (2011) "The Happiness of Single Mothers after Welfare Reform," *The B.E. Journal of Economic Analysis & Policy*: Vol. 11: Iss. 1 (Topics), Article 60.

The Happiness of Single Mothers after Welfare Reform*

John Ifcher

Abstract

U.S. welfare and tax policies targeting single mothers were transformed over a decade ago. What was the impact on single mothers' happiness? Using data from the General Social Survey, difference in difference estimators are calculated. The results appear to indicate that the package of welfare and tax policy changes increased happiness. The results are largely consistent across three comparison groups and robust to various specification checks. This research nicely complements the literature by examining the impact of the welfare and tax policy changes on a novel outcome measure, self-reported happiness.

KEYWORDS: single mothers, happiness, welfare reform, difference-in-difference, subjective well-being

*I wish to thank Homa Zarghamee, two anonymous referees, and numerous unnamed conference participants for their valuable suggestions. This research was supported by a grant from the Markkula Center for Applied Ethics at Santa Clara University. All opinions and errors are my own.

I. INTRODUCTION

U.S. welfare and tax policies that target single mothers have been profoundly altered over the last two decades. The changes have been fundamental and presumably life altering for poor single mothers. A substantial empirical literature has developed to investigate the resulting changes in welfare use, employment, earnings, consumption, family structure, health, and child welfare (for example, Bitler and Hoynes, 2007; Blank, 2002; Grogger and Karoly, 2005; Meyer and Rosenbaum 2001; Meyer and Sullivan, 2008; and Moffitt, 2003).

One important outcome, however, has not been studied—the impact on *subjective* well-being (SWB). Prior to the changes, single mothers consistently reported below average happiness. Moreover, there are reasons to believe the changes may have affected single mothers' SWB. For example, basic microeconomic theory predicts that work requirements and time limits, key components of welfare reform, should reduce the utility of those on welfare since (i) hours worked generally enters one's utility function negatively and (ii) time limits reduce one's choice set. Thus, without an offsetting increase in consumption, the changes may have reduced the utility of an already unhappy group.

Meyer and Sullivan (2008) study the *material* well-being of single mothers before and after welfare reform. They find that total consumption increased between 1993 and 2003 for single mothers in the bottom consumption quintiles with housing and transportation spending accounting for most of the increase. Meyer and Sullivan also find that the consumption of leisure fell sharply for single mothers in the bottom half of the consumption distribution. They estimate that for each hour of lost leisure time, non-leisure-time consumption increased by an average of three dollars. Meyer and Sullivan posit that welfare reform reduced well-being if the value of lost leisure time is greater than three dollars per hour.

Importantly, Meyer and Sullivan are limited to estimating the reform's impact on an economic indicator—consumption—and extrapolating a conditional argument regarding its impact on *overall* well-being. Further, recent research has shown that material well-being may not be a good measure of overall well-being. Diener and Seligman (2008) report that, "there are distressingly large, measurable slippages between economic indicators and well-being." Thus, the impact of the welfare and tax policy changes on SWB cannot necessarily be discerned from the extant literature.

An alternative measure of well-being increasingly used by economists is self-reported happiness (Kahneman and Krueger, 2006). In this paper, the use of such measures is extended to the evaluation of welfare and tax policy changes. Specifically, the impact of the changes on self-reported happiness is estimated

using a difference-in-difference estimator and data from the General Social Survey. The results appear to indicate that the changes increased—and certainly did not decrease—happiness. The paper unfolds as follows: the next section provides a brief overview of the relevant literature; the third section discusses the empirical implementation; and the fourth and fifth sections present and discuss the results.

II. BACKGROUND

The first federally funded welfare program—initially known as the Aid to Dependent Children program and subsequently renamed the Aid to Families with Dependent Children (AFDC) program—was established as part of the Social Security Act of 1935. The initial objective was to support single mothers so that they did not have to work outside the home (Grogger and Karoly, 2005). In the ensuing decades, as the labor force participation rate of mothers dramatically increased, the initial objective became obsolete. This change in conjunction with ballooning caseloads led to the establishment of the welfare reform movement in the 1960s. A primary goal was to move recipients from welfare to work.

In 1962, the federal government was given authority to *waive* AFDC policies so states could implement pilot projects intended to make welfare programs more effective (Grogger and Karoly, 2005). Pilot projects had to be cost neutral and rigorously evaluated. At first, few states implemented "waiver" reforms. However, starting in 1987, the number of waiver reforms began to increase. For example, 30 waiver reforms were approved between 1987 and 1992, and 83 were approved between 1992 and 1996. In the latter period, 43 states plus the District of Columbia received approval for one or more reforms; 29 of these reforms were statewide (no statewide reforms were approved in the prior period). The reforms included a wide range of AFDC program changes, for example, financial work incentives, work requirements, sanctions for non-compliance with program requirements, time limits, and transitional Medicaid and childcare benefits.

This period of policy experimentation culminated in 1996 with the passage of The Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA). PRWORA eliminated the AFDC program and replaced it with the Temporary Assistance for Needy Family (TANF) program. In contrast to AFDC, TANF included work requirements, a five-year lifetime time limit, and incentives to reduce illegitimate births and single-parent households (Blank, 2002). PRWORA also increased the availability of work supports, increasing childcare subsidies and transitional Medicaid benefits.[1]

---

1 For a more detailed discussion of welfare reform see Grogger and Karoly (2005).

DOI: 10.2202/1935-1682.2727

During the same period, additional important changes were made to programs that target poor single mothers: the Earned Income Tax Credit (EITC), Medicaid, job training, and subsidized childcare. For example, the EITC was increased repeatedly between 1984 and 1996 with the largest increases occurring between 1993 and 1996. Specifically, the phase-in rate, phase-in range, and phase-out range were increased in 1985, 1987, and in each year between 1991 and 1996 (Holz and Schulz, 2003). During this period the maximum credit that a single mother with two children could receive increased from $500 in 1984 to $3,556 in 1996. In total, EITC credits grew fifteen-fold during this period, from $1.6 billion in 1984 to $25.1 billion in 1996 (Meyer and Rosenbaum, 2000).

Medicaid eligibility was expanded during this period as well. It was delinked from AFDC eligibility and progressively extended to low-income pregnant women and children (Meyer and Rosenbaum, 2000). For example, states were permitted to cover children ages two and under in families with income below the federal poverty line starting in 1987; and states were required to cover all children ages five and under in families with income below 133% of the federal poverty line starting in 1990. Additionally, some states extended coverage further using their own funds. In 1997, the State Children's Health Insurance Program (SCHIP) was created, providing medical coverage for pregnant women and children in families with income too high to qualify for Medicaid, but too low to purchase private medical insurance (Center for Medicare and Medicaid, 2011). By 2008, there were over 7 million children covered by CHIP (SCHIP was renamed CHIP, the Children's Health Insurance Program). Finally, expenditures on job training and childcare grew dramatically during this period, from a little over $100 million (combined) in 1984 to over $650 million in 1996 (Meyer and Rosenbaum, 2000).[2]

In summary, the welfare and tax policy changes described above were largely designed to increase the labor force participation of single mothers. A vast literature developed to identify the resulting changes in welfare use, employment, earnings, consumption, health, family structure, and child welfare (for example, Blank, 2002; Eissa and Liebman, 1996; Grogger and Karoly, 2005; Moffitt, 2003; and Meyer and Sullivan, 2000). The findings appear to indicate that, at least in the short run, the changes had the intended effect, reducing welfare use and increasing employment. Further, single mothers' consumption and health do not appear to have been compromised in the process (Meyer and Sullivan, 2008; and Kaestner and Tarlov, 2006). While some questions remain, including what role the robust economy played (Blank, 2002), it appears that the changes were successful, at least from the government's perspective.

---

2 For a detailed discussion of the changes between 1984 and 1996 see Meyer and Rosenbaum (2000).

In contrast, the situation may appear quite different to single mothers. For example, there are several reasons to believe the changes reduced single mothers' SWB. As discussed previously, the imposition of work requirements and time limits should reduce a recipient's utility. Further, having to work when one is a single mother presumably creates additional life stressors that may reduce well-being—arranging childcare and managing a household solo while working. Conversely, there are reasons to believe the changes may have increased single mothers' SWB. For example, it has been shown that individuals take pleasure from working even in mundane jobs (Diener and Seligman, 2008). Further, there is a stigma (cost) associated with being on welfare (Moffitt, 1983). This cost is presumably mitigated or eliminated if one exits welfare. Finally, time limits may act as a commitment device that help individuals with self-control problems exit welfare (for a discussion of commitment devices see DellaVigna, 2009).

In summary, one cannot exclude *a priori* either of the following: (i) that the changes decreased SWB, or (ii) that they increased it. Thus, one is left with an empirical question, about which the literature has been interestingly silent. For example, of the cited reviews, only Grogger and Karoly (2005) vaguely suggests such an investigation: the last sentence of chapter seven states, "further research on broader measures of well-being would usefully complement efforts that have focused on traditional, if limited, measures of income."

A growing body of research, however, suggests that it would be valuable and feasible to conduct such an investigation. Four reasons that it is worthwhile follow. First, economists are concerned about well-being. Second, as was discussed previously, well-being cannot necessarily be measured using economic indicators alone. Third, SWB is positively correlated with other beneficial outcomes, for example, happy individuals are healthier and more productive at work than are unhappy individuals (Diener and Seligman, 2008). Fourth, this study enables one to consider a potential ethical concern: was welfare "fixed" at the expense of a subpopulation—single mothers—that already reported below average happiness.

Further, this investigation appears feasible. A growing number of economists have been using happiness data in their research (Kahneman and Kreuger, 2006). Such data has been shown to provide information about a respondent's well-being (Gruber and Mullainathan, 2005). For example, many objective measures of well-being are positively correlated with self-reported happiness. Individuals who report being happier are rated to be happier by others (spouses, family members, friends, and associates); absent from work less; more optimistic about the future; more energetic, flexible, and creative; and less likely to need psychological counseling (Frey and Stutzer, 2002). Moreover, Krueger and Schkade (2008) report that the reliability of SWB data is high enough to warrant its use in across-group comparisons.

DOI: 10.2202/1935-1682.2727

Two recent papers have started to explore the effect of welfare and tax policy changes on SWB. Gregg et al (2009) examine the impact of a series of welfare and tax policy changes in the United Kingdom (U.K.) that were intended to help low-income families with children. The changes included tax credits for low-income working families, active welfare case management, welfare-to-work programs, and increased welfare benefits. In contrast to the changes in the U.S., the changes in the U.K. did not include punitive sanctions for failing to comply with the welfare-to-work program requirements. The outcomes examined include those that one would typically find in such research, for example, employment, as well as SWB. The authors find that the changes significantly increased self-reported life satisfaction and mental health. In a working paper, Herbst (2010) examines the effect of welfare reform on SWB. To do so, the author uses across-state variation in the timing of waiver reforms and PRWORA implementation and an alternative dataset, the DDB Needham Life Style Survey (the GSS—and its self-reported happiness measure—are the most commonly used data for studying SWB in the U.S.). The Life Style Survey does not include a self-reported happiness question but does include a self-reported life satisfaction question as well as measures of physical and mental health. Herbst finds that PRWORA appears to have increased SWB and that the waiver reforms had a more mixed impact on SWB.

The current paper adds to the literature by studying the impact of welfare and tax policy changes on SWB in the U.S. This nicely complements the existing literature, which examines various other outcome measures, including more conventional measures of well-being, such as, consumption and health.

III. Empirical implementation

A. The data

Single mothers' happiness is examined using the General Social Survey (GSS), a standard data source for studying self-reported happiness in the U.S. The GSS was administered annually to approximately 1,500 individuals between 1972 and 1993 (with the exception of 1979, 1981, and 1992) and was administered biennially to approximately 4,500 individuals thereafter. The GSS is designed to include a representative sample of U.S. households. The sample is created using multi-stage area probability sampling except at the block level where quota sampling is used with quotas for sex, age, and employment status (GSS, 1972-2010: Cumulative Codebook, 2011).[3] The National Opinion Research Center, which

3 The first stage selects primary sampling units (standard metropolitan statistical areas or non-metropolitan counties) and is stratified by region, age, and race; the second stage selects block

administers the GSS, states that, "In general, the GSS samples closely resemble distributions reported in the Census and other authoritative sources."

In addition to the detailed demographic and labor market questions included in the GSS, there is a standard question about global happiness. Specifically, it asks respondents "Taken all together, how would you say things are these days–would you say that you are very happy, pretty happy, or not too happy?" Since the current study is primarily focused on single mothers' happiness after welfare reform, the analysis is limited to the period immediately preceding and succeeding PRWORA's implementation; PRWORA was implemented nationwide during a 17-month period—from September 1996 to January 1998 (Grogger and Karoly, 2005). Given that the GSS is administered in February, March, and April, the before-reform period includes data from the 1988, 1989, 1990, 1991, 1993, 1994, and 1996 GSS and the after-reform period includes data from the 1998, 2000, 2002, 2004, and 2006 GSS.[4]

Importantly, the happiness question has remained intact during this period. However, there have been two changes to the survey and sampling that might impact self-reported happiness trends during this period: (i) surveys were conducted in Spanish that could not have been completed if English was the only language in which the survey was offered in 2006; and (ii) non-responsive sub-sampling was introduced in 2004. To create a consistent measure of self-reported happiness: (i) the surveys that were conducted in Spanish that could not have been completed in English are dropped; and (ii) phase weights are used with the 2004 and 2006 GSS.

After those over the age of 45 are dropped, there are 15,713 respondents.[5] Their average happiness is 2.19 where "not too happy" (10.9 percent of responses), "pretty happy" (59.2 percent of responses), and "very happy" (29.9 percent of responses) are coded as one, two, and three, respectively [see Column (1) of Table I]. Respondents are likely to be high school graduates, white, in good or excellent health, and employed.

---

groups or enumeration districts and is stratified by race and income; the third stage selects blocks with probabilities proportional to size; and finally, interviewers proceed along a prescribed route conducting face-to-face interviews until their quota is fulfilled (interviews are conducted after 3 p.m. on weekdays and during the weekend in an attempt to limit not-at-home bias). For additional details regarding the GSS sample see Appendix A of the GSS, 1972-2010: Cumulative Codebook (2011).

4 As is discussed in the robustness section, the main results are robust to excluding the 1996 and or 1998 GSS.

5 Respondents over the age of 45 are dropped since they are less likely to be affected by welfare and tax policy changes targeting poor single mothers.

DOI: 10.2202/1935-1682.2727

Table I
Demographic characteristics

Variable	All (1)	Single Mothers (2)	All except Single Mothers (3)	Single Childless Women (4)	Single Childless Men (5)	Married Mothers (6)
Subjective well-being						
Average happiness[+]	2.190 (0.005)	1.963 (0.015)	2.221 (0.006) ***	2.155 (0.015) ***	2.095 (0.013) ***	2.337 (0.012) ***
Very happy	0.299 (0.004)	0.166 (0.009)	0.317 (0.004) ***	0.259 (0.011) ***	0.220 (0.009) ***	0.397 (0.010) ***
Pretty happy	0.592 (0.004)	0.631 (0.012)	0.587 (0.005) ***	0.637 (0.012)	0.655 (0.011)	0.542 (0.010) ***
Not too happy	0.109 (0.003)	0.203 (0.010)	0.096 (0.003) ***	0.104 (0.008) ***	0.125 (0.007) ***	0.061 (0.005) ***
Education						
Less than high school	0.113 (0.003)	0.187 (0.187)	0.102 (0.003) ***	0.059 (0.006) ***	0.086 (0.006) ***	0.080 (0.005) ***
High school	0.553 (0.004)	0.614 (0.011)	0.546 (0.004) ***	0.495 (0.012) ***	0.544 (0.010) ***	0.575 (0.009) ***
Some college	0.083 (0.002)	0.094 (0.007)	0.082 (0.002) *	0.077 (0.006) *	0.085 (0.006)	0.089 (0.005)
College	0.182 (0.003)	0.081 (0.006)	0.196 (0.003) ***	0.287 (0.011) ***	0.215 (0.009) ***	0.195 (0.008) ***
More than college	0.066 (0.002)	0.022 (0.003)	0.072 (0.002) ***	0.079 (0.006) ***	0.069 (0.005) ***	0.061 (0.005) ***
Race						
Black	0.151 (0.003)	0.350 (0.011)	0.123 (0.003) ***	0.131 (0.008) ***	0.098 (0.006) ***	0.094 (0.006) ***
White	0.768 (0.003)	0.566 (0.011)	0.797 (0.004) ***	0.791 (0.010) ***	0.821 (0.008) ***	0.829 (0.007) ***
Other race	0.082 (0.00)	0.083 (0.006)	0.080 (0.002)	0.078 (0.007)	0.081 (0.006)	0.077 (0.005)
Health						
Poor	0.014 (0.001)	0.022 (0.003)	0.013 (0.001) ***	0.016 (0.003)	0.008 (0.002) ***	0.011 (0.002) ***
Fair	0.096 (0.002)	0.144 (0.008)	0.090 (0.002) ***	0.087 (0.007) ***	0.092 (0.006) ***	0.082 (0.005) ***
Good	0.358 (0.004)	0.376 (0.011)	0.356 (0.004) *	0.348 (0.012) *	0.372 (0.010)	0.348 (0.009) *
Excellent	0.261 (0.004)	0.188 (0.009)	0.270 (0.004) ***	0.284 (0.011) ***	0.277 (0.009) ***	0.272 (0.009) ***
Employment status						
Employed	0.763 (0.003)	0.656 (0.011)	0.777 (0.004) ***	0.781 (0.010) ***	0.788 (0.009) ***	0.639 (0.009)
Unemployed	0.036 (0.002)	0.043 (0.005)	0.035 (0.002)	0.038 (0.005)	0.054 (0.005)	0.011 (0.002) ***
Other						
Age	32.80 (0.060)	32.98 (0.159)	32.75 (0.065)	29.10 (0.179) ***	29.35 (0.152) ***	34.68 (0.116) ***
Number of children residing in household	1.005 (0.010)	1.914 (0.024)	0.878 (0.010) ***	0.000 (0.000) ***	0.000 (0.000) ***	2.048 (0.019) ***
Family income (in 1986 dollars)	$29,536 (237)	$14,342 (343)	$31,605 (262) ***	$21,127 (572) ***	$25,015 (578) ***	$38,880 (607) ***
Female	0.549 (0.004)	1.000 (0.000)	0.486 (0.004) ***	1.000 (0.000)	0.000 (0.000) ***	1.000 (0.000)
Single	0.527 (0.004)	1.000 (0.000)	0.464 (0.004) ***	1.000 (0.000)	1.000 (0.000)	0.000 (0.000) ***
Observations[++]	15,713	1,942	13,588	1,775	2,352	2,829

*, **, and *** signify that the mean is significantly different than the mean for single mothers with a p-value < 0.10, 0.05, and 0.01, respectively.

[+] where 1 = "not too happy," 2 = "pretty happy," and 3 = "very happy."

[++] happiness data is missing for approximately 15% of respondents, health status is missing for approximately 25% of respondents, and parental status is missing for approximately 1% of respondents.

B. THE UNHAPPINESS OF SINGLE MOTHERS

Single mothers are an unhappy group. Their average happiness is 1.96, which is 0.26 *happiness points* less than the average for "non-single-mothers" (all respondents except single mothers). This *happiness gap* is the result of being less likely to report high levels of happiness and more likely to report low levels of happiness. In particular, single mothers are 15 percentage points less likely to report being "very happy" and 11 percentage points more likely to report being "not too happy" than are non-single-mothers [compare Columns (2) and (3) of

Table I]. A difference of means test reveals that each of these differences is statistically significant. Moreover, the happiness gap is quite large. For example, the gap is equivalent to the decrease in average happiness that would be generated by a ten plus percentage point increase in the unemployment rate (Stevenson and Wolfers, 2009).

The happiness gap is perhaps not surprising given single mothers' demographic characteristics. That is, single mothers are significantly more likely to have characteristics associated with low levels of happiness (for a discussion of characteristics that are associated with low levels of happiness see Frey and Stutzer, 2002). For example, single mothers are significantly more likely to be nonwhite, single, and in poor or fair health than are non-single-mothers; their average family income is also half that of non-single-mothers. To test whether one can eliminate the happiness gap by controlling for single mothers' demographic characteristics, an equation of the following form is estimated:

$$Happiness_i = \alpha \cdot SM_i + \beta \cdot X_i + \varepsilon_i \quad (1)$$

where SM_i is a dummy variable that equals one if individual i is a single mother and zero otherwise, and X_i is a vector of demographic characteristics for individual i including gender, age, race, native born, marital status, education, self-reported health, income, and region.[6] Equation (1) is estimated using an ordered probit.[7]

Estimating equation (1) without covariates, the coefficient on *SM* is negative, large, and highly statistically significant [see Column (1) of Table II]. This indicates that single mothers are significantly less happy than non-single-mothers. Adding controls for demographic characteristics that are exogenous (gender, age, race, and native born) as well as for region and year do not affect the results [see Columns (2) and (3) of Table II].

---

6 To be identified as a single mother in this study, a respondent has to (i) be female and single (widowed, divorced, separated, or never married), (ii) have children, and (iii) report that at least one child ages 17 or under lives in the household.

7 Some researchers who study SWB trends cluster the observations by year when calculating standard errors, for example, Stevenson and Wolfers (2009). The results are robust to doing so.

DOI: 10.2202/1935-1682.2727

Table II
Coefficients from estimating equation (1)

Variables	Ordered probit (1)	Ordered probit (2)	Ordered probit (3)	Ordered probit (4)
Single mother	-0.4838 (0.0301) ***	-0.5046 (0.0331) ***	-0.5046 (0.0332) ***	-0.0558 (0.0390)
Female		0.1555 (0.0216) ***	0.1567 (0.0216) ***	0.0761 (0.0223) ***
Age (reference group is between 28 and 36 years old)				
< 28 years old		-0.1129 (0.0251) ***	-0.1186 (0.0252) ***	0.0453 (0.0283)
> 36 years old		-0.0792 (0.0239) ***	-0.0810 (0.0240) ***	-0.0831 (0.0248) ***
Race (reference group is white)				
Black		-0.2964 (0.0304) ***	-0.3100 (0.0310) ***	-0.2032 (0.0328) ***
Other		-0.1485 (0.0424) ***	-0.1425 (0.0430) ***	-0.0698 (0.0443)
Not native born		-0.0116 (0.0398)	-0.0091 (0.0401)	-0.0539 (0.0413)
Marital status (reference group is married)				
Widowed				-0.4865 (0.1140) ***
Divorced				-0.4905 (0.0350) ***
Separated				-0.6982 (0.0591) ***
Never married				-0.4499 (0.0276) ***
Education (reference group is some college)				
Less than high school				-0.1821 (0.0357) ***
High school				-0.0915 (0.0263) ***
College				0.0582 (0.0322) *
More than college				0.0332 (0.0368)
Health (reference group is good health)				
Poor health				-0.5408 (0.1043) ***
Fair health				-0.3972 (0.0370) ***
Excellent health				0.4107 (0.0268) ***
Log real income				0.0876 (0.0131) ***
Region and year dummies	No	No	Yes	Yes
Observations	13,296	13,296	13,296	13,296

standard errors in parenthesis.
*, **, and *** signify that the coefficient is significantly different than zero with a p-value < 0.10, 0.05, and 0.01, respectively.

The results materially change, however, when one adds controls for demographic characteristics that are *not* exogenous (marital status, education, self-reported health, and income).[8] Now, the coefficient on *SM* is indistinguishable from zero [see Column (4) of Table II]. Thus, it appears that the unhappiness of single mothers can be explained by life circumstances. The coefficients on income, marital status, and health indicate that low-income, being single, and being in poor or fair health are each associated with low levels of happiness. Care must be taken, however, when interpreting this result, since education, health, income, and marital status are not exogenous. Thus, one should

8 This distinction between exogenous and endogenous demographic characteristics follows the approach used by Stevenson and Wolfers (2009).

not claim that these life circumstances cause single mothers to be unhappy or vice versa.

C. THE IDENTIFICATION STRATEGY: DIFFERENCE-IN-DIFFERENCE ESTIMATOR

Given that the welfare and tax policy changes target single mothers, this research focuses on their SWB. Specifically, the "first difference" is the change in happiness of single mothers before and after PRWORA. Identifying those likely to be affected by welfare and tax policy changes based on demographic characteristics is an approach that was pioneered two decades ago by Ellwood and Bane (1985) and has been used repeatedly since (Gruber and Mullainathan, 2005). This approach is required since survey respondents were not asked about their participation in programs that target single mothers. Further, it has two distinct advantages over directly identifying beneficiaries of such programs. First, it eliminates any concerns one might have regarding endogeneity between happiness and participation in such programs. Second, it captures both the "entry" and "exit" effects of the welfare and tax policy changes. For example, the same single mother might have chosen to receive welfare prior to PRWORA but not after, perhaps, due to the work requirement. The impact of the changes on such "non-entrants" will be captured in the first difference. If beneficiaries were identified directly, however, the impact on non-entrants would not be captured.[9]

Causation cannot be demonstrated using the first difference alone, since there are numerous alternate explanations for any observed difference. To isolate the impact of the welfare and tax policy changes, comparison groups must be used. For a comparison group to effectively control for underlying trends in SWB, members must share some characteristics with single mothers, but must not be affected by the welfare and tax policy changes. Three comparison groups are used: single childless women, single childless men, and married mothers. While none of the comparison groups is perfect, each appears to satisfy—at least partially—the criterion and has been used previously (Bitler and Hoynes, 2007).[10]

---

9 For a discussion of entry and exit effects see Moffitt (1996).

10 In addition to controlling for underlying trends in SWB, the comparison groups should also help control for local economic conditions (the analysis does not directly control for them), since men and women's labor market outcomes are roughly equally sensitive to local economic conditions and business cycles (Hoynes, 1999). Further, less-educated individuals across all groups are more sensitive than are more-educated individuals; and both less-educated men and women are highly sensitive to local economic conditions and business cycles. Thus, single childless men should be a valid comparison group. In contrast, highly-educated single mothers are not a valid comparison group (even though they have been used previously), as highly-educated women are significantly less sensitive to local economic conditions and business cycles than are less-educated women.

DOI: 10.2202/1935-1682.2727

Specifically, the "second difference" is the change in happiness of members of the comparison group before and after the reforms; thus, the Difference-in-Difference (DD) estimator is:

$$(Happiness_{Aftert}^{SingleMothers} - Happiness_{Before}^{SingleMothers}) - (Happiness_{After}^{Comparison\ Group} - Happiness_{Before}^{Comparison\ Group}) \quad (2)$$

For the DD estimator to be unbiased two identifying assumptions are necessary. First, there are no underlying trends in happiness that differ between single mothers and members of the comparison groups. Second, there are no additional contemporaneous shocks, other than the welfare and tax policy changes, to the happiness of single mothers or members of the comparison groups during the period of study. It should be noted that DD estimators cannot identify individual policy effects when more than one policy is changed contemporaneously. Thus, the DD estimator will capture the combined impact of the package of welfare and tax policy changes.[11] The validity of the two identifying assumptions is discussed in the results section.

Two-by-two DD estimators are commonly estimated using a regression of the following form:

$$Happiness_i = \alpha^{After} After_i + \alpha^{SM} SM_i + \alpha^{After-SM}(After_i * SM_i) + \beta \bullet X_i + \varepsilon_i \quad (3)$$

where $After_i$ is an after-reform dummy variable that equals one if individual i completed the survey in the after-reform period and zero otherwise; and SM_i and X_i are defined as before. The coefficient $\alpha^{After-SM}$ is the DD estimator. Donald and Lang (2007), however, show that the standard errors from estimating such an equation can be negatively biased due to common group effects. Furthermore, they show that this is the case even if a researcher uses one of three standard techniques to control for common group effects, for example, clustering the observations when calculating the standard errors.

11 This is a known weakness of two-by-two DD estimators. To isolate the effect of welfare reform from the effect of the other welfare and tax policy changes discussed in the background section of the paper, a researcher could use cross-state variance in welfare-reform implementation dates (for example, Bitler et al, 2005). The GSS, however, does not contain enough observations to conduct such an analysis. There are only 935 single mothers in the 1990s in the GSS; that is less than two observations per year per state.

Following Donald and Lang (2007), the DD estimators in this paper are computed using a two-step procedure, which Donald and Lang illustrate results in an efficient estimator. In the first step, an equation of the following form is estimated:

$$\begin{aligned} Happiness_i = {} & \alpha_{88} \cdot SM_i \cdot Y_{i,88} + \alpha_{89} \cdot SM_i \cdot Y_{i,89} + \ldots + \alpha_{06} \cdot SM_i \cdot Y_{i,06} + \\ & \beta_{89} \cdot Y_{i,89} + \beta_{90} \cdot Y_{i,90} + \ldots + \beta_{06} \cdot Y_{i,06} + \\ & \gamma \cdot X_i + \varepsilon_i \end{aligned} \quad (4)$$

where $Y_{i,t}$ is a year dummy variable that equals one if individual i completed the survey in year t and zero otherwise; X_i is a vector of demographic characteristics for individual i including gender, age, race, native born, marital status, education, and region; and SM_i is defined as before.[12] The coefficient α_t is the happiness gap estimator for year t, that is, the difference in happiness between single mothers and members of the comparison group in year t. The 1988 year-effect is dropped to avoid perfect collinearity and is captured in the constant.

In the second step, the happiness gap estimators are regressed on a constant and an after-reform dummy variable. That is, an equation of the following form is estimated:

$$\alpha_t = \theta_0 + \theta_1 \cdot After_t \quad (5)$$

where $After_t$ is an after-reform dummy variable that equals one if the year t is in the after-reform period and zero otherwise, and α_t are the happiness gap estimators from step one; there are 12 happiness gap estimators (α_t), one per GSS wave used. The coefficient θ_1 is the DD estimator. Equations (4) and (5) are estimated using ordered probit and Ordinary Least Squares (OLS), respectively.

IV. RESULTS

A. FIRST STEP: HAPPINESS GAP ESTIMATORS

Estimating equation (4) with the first comparison group—single childless women—one finds that all the happiness gap estimators are negative, confirming

12 Income is not used as a covariate because it is likely affected by the welfare and tax policy changes. Self-reported health is not used as a covariate because it is a measure of subjective well-being.

DOI: 10.2202/1935-1682.2727

that single mothers are less happy, on average, than single childless women in each year. As illustrated in Figure I, this holds regardless of which covariates are used in the analysis. Moreover, Figure I appears to illustrate that the happiness gap estimators are less negative, on average, after 1997 than before. If this were the case, it would indicate that single mothers are happier after the reforms relative to single childless women. The second step of the two-step procedure will test whether this is the case.

Figure I
The happiness gap estimators from estimating equation (4) with single childless women as the comparison group

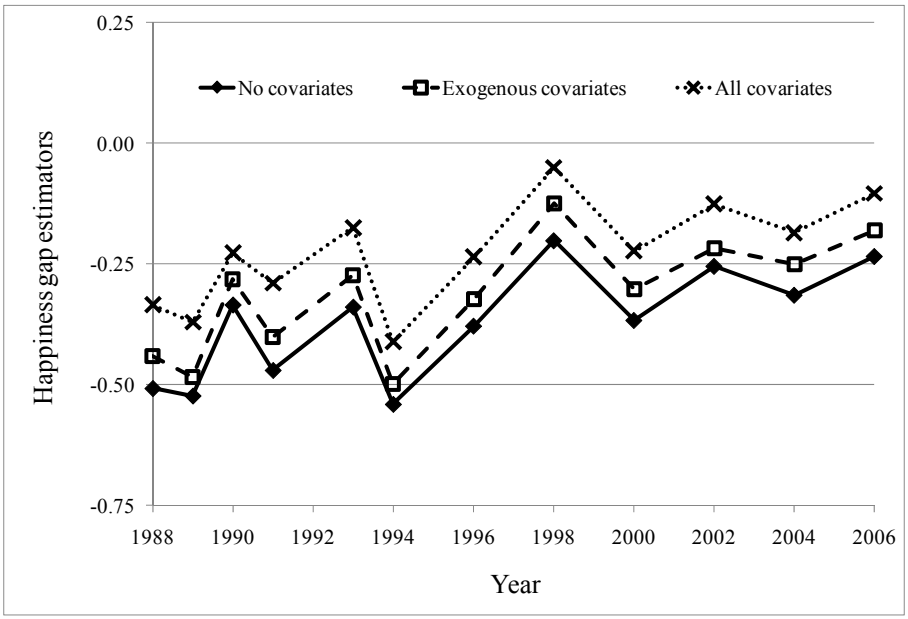


Figure II is analogous to Figure I except that the second comparison group is used—single childless men. Again, it appears that the happiness gap estimators are smaller after 1997. Finally, Figure III illustrates the happiness gap estimators when the third comparison group is used—married mothers. Here, the pattern of happiness gap estimators is less clear. In particular, the happiness gap estimators between 1988 and 1994 vary dramatically from year to year. However, between 1998 and 2004—the years immediately succeeding the reforms—there is a clear pattern of increasing happiness among single mothers relative to married mothers.

Figure II
The happiness gap estimators from estimating equation (4) with single childless men as the comparison group

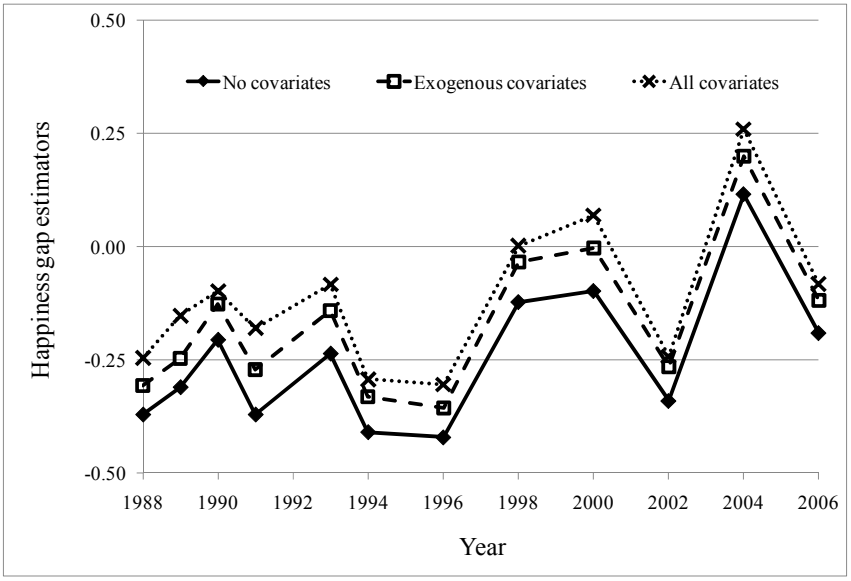
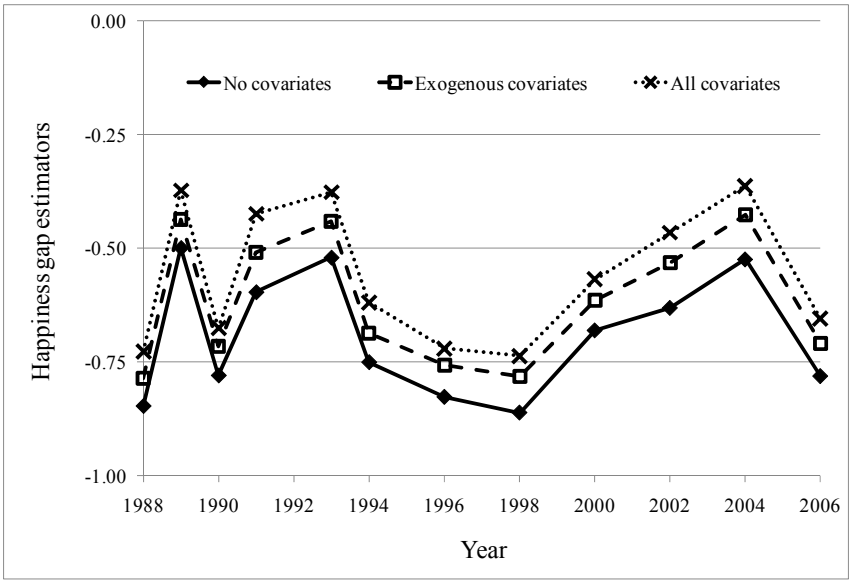


Figure III
The happiness gap estimators from estimating equation (4) with married mothers as the comparison group



DOI: 10.2202/1935-1682.2727

Finally, examining other coefficients from estimating equation (4), the results are unsurprising. Table III presents the results of estimating equation (4) with single childless women as the comparison group. The results indicate that being black, non-native, and less educated are each associated with being less happy.

Table III
Other coefficients from estimating equation (4) with single childless women as the comparison group

Variables	Ordered probit (1)	Ordered probit (2)
Age (reference group is between 28 and 36 years old)		
< 28 years old	0.0504 (0.0500)	0.0888 (0.0522) *
> 36 years old	-0.0630 (0.0527)	-0.0865 (0.0542)
Race (reference group is white)		
Black	-0.1632 (0.0526) ***	-0.1344 (0.0569) **
Other	-0.1057 (0.0833)	-0.0877 (0.0848)
Not native born	-0.1975 (0.0904) **	-0.1817 (0.0924) **
Marital status (reference group is widowed)		
Divorced		0.0035 (0.1576)
Separated		-0.1477 (0.1670)
Never married		-0.0442 (0.1586)
Education (reference group is less than high school)		
High school		0.1275 (0.0714) *
Some college		0.1837 (0.0705) ***
College		0.3191 (0.0839) ***
More than college		0.3190 (0.0894) ***
Region and year dummies	No	No
Observations	3,182	3,182

standard errors in parenthesis.
*, **, and *** signify that the coefficient is significantly different than zero with a p-value < 0.10, 0.05, and 0.01, respectively.

B. SECOND STEP: DD ESTIMATORS

Estimating equation (5) with the first comparison group—single childless women—one finds that the DD estimators are positive and highly statistically significant. The positive sign indicates that single mothers' happiness increased after the reforms relative to single childless women. This results hold regardless of which covariates are used in the analysis [see Columns (1) to (3) of Panel A in Table IV]. To assess the magnitude of the observed effect, equation (4) is re-

estimated using OLS. Now the happiness gap estimators can be roughly interpreted as being measured in happiness points.[13] Re-estimating equation (5) with these happiness gap estimators, the DD estimator ranges from 0.079 to 0.088 depending on which covariates are used. This indicates that single mothers' happiness increased by roughly 0.08 happiness points after the reforms relative to single childless women. This increase is almost half the size of the happiness gap between single mothers and single childless women, 0.19, over the study period.

Table IV
DD estimators from estimating equation (5) with single childless women children as the comparison group

	Ordered probit (happy) (1)	Ordered probit (happy) (2)	Ordered probit (happy) (3)	Probit (very happy) (4)	Probit (very happy) (5)	Probit (very happy) (6)	Probit (not too happy) (7)	Probit (not too happy) (8)	Probit (not too happy) (9)
Panel A: unrestricted sample									
DD estimator	0.1675 ***	0.1713 ***	0.1544 ***	0.2255 **	0.2301 **	0.2223 *	-0.1182	-0.1131	-0.0832
	(0.047)	(0.049)	(0.046)	(0.098)	(0.101)	(0.101)	(0.082)	(0.079)	(0.073)
	{0.086} ***	{0.088} ***	{0.079} ***	{0.047} **	{0.050} **	{0.050} *	-{0.038}	-{0.035}	-{0.023}
First-stage observations	12	12	12	12	12	12	12	12	12
Panel B: sample restricted to respondents who completed high school (at most)									
DD estimator	0.2275	0.2363	0.2286	0.2316	0.2436	0.2427	-0.7117	-0.7983	-0.8594
	(0.137)	(0.149)	(0.152)	(0.178)	(0.189)	(0.186)	(0.689)	(0.794)	(0.900)
	{0.121}	{0.124}	{0.120}	{0.040}	{0.042}	{0.041}	-{0.161}	-{0.165}	-{0.158}
First-stage observations	12	12	12	12	12	12	12	12	12
Panel C: sample restricted to respondents who did not complete high school									
DD estimator	0.2475	0.2391	0.2297	-1.3643	-1.3784	-1.4057	-1.9066	-2.7130	-2.7077
	(0.409)	(0.423)	(0.444)	(1.454)	(1.465)	(2.385)	(1.253)	(1.882)	(1.890)
	{0.134}	{0.127}	{0.116}	-{0.307}	-{0.301}	-{0.294}	-{0.337}	-{0.351}	-{0.336}
First-stage observations	12	12	12	12	12	12	12	12	12
Control variables									
Age, gender, native-born, and race	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Education, marital status, and region	No	No	Yes	No	No	Yes	No	No	Yes

standard errors in parenthesis; average "happiness points" in brackets in Columns (1) - (3) and average marginal effects in brackets in columns (4) - (9)
*, **, and *** signify that the coefficient is significantly different than zero with a p-value < 0.10, 0.05, and 0.01, respectively.

The observed increase in single mothers' happiness could have been caused by an increase in reports of being "very happy," a decrease in reports of

13 This interpretation is "rough" since the happiness measure is ordinal.

DOI: 10.2202/1935-1682.2727

being "not too happy," or both. To investigate, equation (4) is estimated using a probit regression in which the dependent variable indicates whether a respondent reports being "very happy" or "not too happy." Then the resulting "very happy" or "not too happy" gap estimators are used when estimating equation (5). The "very happy" DD estimators are positive and statistically significant, indicating that single mothers became significantly more likely to report being "very happy" after the reforms relative to single childless women. Again, this result is consistent regardless of which covariates are used [see Columns (4) to (6) of Panel A in Table IV]. Calculating the marginal effects for the "very happy" gap estimators, and then using these when estimating equation (5), it appears that single mothers became approximately 5 percentage points more likely to report being "very happy" after the reforms relative to single childless women. This is a 30 percent increase relative to the percent of single mothers who report being "very happy" over the study period (5 percent / 16.6 percent). Finally, the "not too happy" DD estimators are negative but not statistically significant, suggesting that single mothers became less likely to report being "not too happy" after the reforms relative to single childless women [see Columns (7) to (9) of Panel A in Table IV]. In summary, it appears that the increase in single mothers' happiness is evident at each end of the happiness distribution.

Switching to the second comparison group—single childless men—one finds further evidence that single mothers' happiness increased after the reforms. Specifically, the DD estimators are all positive and statistically significant, the "not too happy" DD estimators are all negative and statistically significant, and the "very happy" DD estimators are all positive but generally not statistically significant [see Columns (1) to (9) of Panel A in Table V]. These results indicate that single mothers' happiness increased after welfare reform relative to single childless men, and that the increase is evident at each end of the happiness distribution. Furthermore, the magnitude of the effect appears similar regardless of whether one uses single childless women or men as the comparison group.

In an attempt to focus the analysis on those single mothers who are most likely to be affected by the welfare and tax policy changes, the sample is restricted, first, to respondents who have at most completed high school ($\leq$ 12 years of education) and, second, to respondents who did not complete high school ($\leq$ 11 years of education). These restrictions should incrementally increase the likelihood that single mothers in the sample were affected by the welfare and tax policy changes, since education is a proxy for earning potential and eligibility for the programs in question is restricted to those with low-income.[14]

14 Similar restrictions have been used in the literature (for example, Kaestner and Tarlov, 2006). Restricting the sample by income is not appropriate as the reforms presumably affected the income of poor single mothers.

Estimating equations (4) and (5) with the restricted samples, the DD estimators generally increase in magnitude as the restriction on education becomes stronger. This is the pattern one would expect if the welfare and tax policy changes caused the increase in happiness, since less educated single mothers are presumably more likely to be affected by the welfare and tax policy changes. This pattern is clearest and most consistent when single childless men are used as the comparison group. In this case, all the DD estimators increase monotonically as the restriction becomes stronger [compare Panels A, B, and C in Table V]. For example, the DD estimator grows from 0.1945 to 0.3321, and finally to 0.5039, as the restriction on the sample is strengthened [see Column (3)]. Measured roughly in happiness points, the DD estimators using the most restricted sample implies that single mothers' happiness increased by approximately 0.28 happiness points after welfare reform relative to single childless men.

Table V
DD estimators from estimating equation (5) with single childless men children as the comparison group

	Ordered probit (happy) (1)	Ordered probit (happy) (2)	Ordered probit (happy) (3)	Probit (very happy) (4)	Probit (very happy) (5)	Probit (very happy) (6)	Probit (not too happy) (7)	Probit (not too happy) (8)	Probit (not too happy) (9)
Panel A: unrestricted sample									
DD estimator	0.2042 **	0.2102 **	0.1945 **	0.1948 *	0.1934	0.1852	-0.2715 **	-0.2795 **	-0.2663 **
	(0.072)	(0.075)	(0.080)	(0.107)	(0.109)	(0.117)	(0.096)	(0.091)	(0.089)
	{0.104} **	{0.075} **	{0.065} *	{0.047} *	{0.086} **	{0.088} **	-{0.081} **	-{0.059} **	-{0.073} **
First-stage observations	12	12	12	12	12	12	12	12	12
Panel B: sample restricted to respondents who completed high school (at most)									
DD estimator	0.3270 **	0.3334 **	0.3321 **	0.2355	0.2329	0.2385	-0.4817 ***	-0.4926 ***	-0.4855 ***
	(0.117)	(0.118)	(0.115)	(0.202)	(0.203)	(0.200)	(0.124)	(0.123)	(0.124)
	{0.174} **	{0.205} **	{0.204} **	{0.054}	{0.078}	{0.078}	-{0.157} ***	-{0.148} ***	-{0.154} ***
First-stage observations	12	12	12	12	12	12	12	12	12
Panel C: sample restricted to respondents who did not complete high school									
DD estimator	0.5198 **	0.5259 **	0.5039 *	0.4261	0.4278	0.3802	-0.5829 *	-0.5827 *	-0.6024 *
	(0.221)	(0.223)	(0.232)	(0.354)	(0.355)	(0.365)	(0.296)	(0.294)	(0.300)
	{0.293} **	{0.287} *	{0.279} *	{0.080}	{0.072}	{0.051}	-{0.210} *	-{0.085}	-{0.103}
First-stage observations	12	12	12	12	12	12	12	12	12
Control variables									
Age, gender, native-born, and race	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Education, marital status, and region	No	No	Yes	No	No	Yes	No	No	Yes

standard errors in parenthesis; "happiness points" in brackets in Columns (1) - (3) and marginal effects in brackets in columns (4) - (9)
*, **, and *** signify that the coefficient is significantly different than zero with a p-value < 0.10, 0.05, and 0.01, respectively.

DOI: 10.2202/1935-1682.2727

The pattern is also apparent using single childless women as the comparison group. The DD estimators increase monotonically as the restriction is strengthened. However, the DD estimators increase by very little switching from the first to the second restriction [compare Columns (1) to (3) of Panels B and C in Table IV]. Interestingly, the "very happy" DD estimators become negative and large (but not statistically significant) when the second restriction is used; in contrast, the "not too happy" DD estimators follow the "expected" pattern, becoming more negative when the second restriction is used [compare Columns (4) to (9) of Panels B and C in Table IV]. This suggests that single mothers who did not complete high school became less likely to report being "very happy" and "not too happy" after the reforms relative to single childless women.

Finally, when using the third comparison group—married mothers—the "standard" results do not emerge. Specifically, the DD estimators are approximately zero when the unrestricted sample is used [see columns (1) to (3) of Panel A in Table VI]. This is not surprising given the happiness gap estimators illustrated in Figure III and discussed previously. Specifically, the happiness gap estimators vary dramatically between 1988 and 1994. In contrast, single mothers' happiness appears to have increased relative to married mothers between 1998 and 2004, the six years immediately following PRWORA. Further, the DD estimators grow in size as the restriction on education is strengthened. When the sample is restricted to respondents who did not complete high school, the DD estimators are all large and positive but not statistically significant, suggesting that less-educated single mothers' happiness increased after welfare reform relative to less-educated married mothers [see columns (1) to (3) of Panel C in Table VI].

C. Robustness

To further test the robustness of the results, and to examine the validity of the two identifying assumptions, the following three checks are performed: First, data collected in close proximity to the implementation of PRWORA is dropped. Specifically, the data from the 1996 GSS is dropped, then the data from the 1998 GSS is dropped, and finally, data from both the 1996 and 1998 GSS are dropped. The DD estimators are unaffected; their sign, magnitude, and statistical significance remain largely unchanged. Appendix Table AI presents the DD estimators when all covariates are used; the results are largely the same if no covariates or only the exogenous covariates are used. Thus, the results are not dependent on the exact definition of the before- and after-reform periods.

Second, the happiness gap estimators are not increasing in the before-reform period. Visual inspection of Figures I to III appears to confirm this. To formally test whether this is the case, the happiness gap estimators are regressed on a time trend variable (=year of survey – 1988) for the before-reform period,

1988 - 1996. All time trend coefficients are indistinguishable from zero and half have a negative sign. Appendix Table AII presents the time trend coefficients. Thus, there is no indication that single mothers' happiness is increasing or decreasing in the before-reform period relative to each comparison group. Thus, it appears that the first identifying assumption is likely to hold—that there are no underlying trends in happiness that differ between single mothers and members of the comparison groups.

Table VI
DD estimators from estimating equation (5) with single childless women children as the comparison group

	Ordered probit (happy) (1)	Ordered probit (happy) (2)	Ordered probit (happy) (3)	Probit (very happy) (4)	Probit (very happy) (5)	Probit (very happy) (6)	Probit (not too happy) (7)	Probit (not too happy) (8)	Probit (not too happy) (9)
Panel A: unrestricted sample									
DD estimator	-0.0071	0.0062	0.0015	0.0689	0.0817	0.0631	0.1318	0.1273	0.1335
	(0.082)	(0.086)	(0.092)	(0.113)	(0.117)	(0.120)	(0.136)	(0.137)	(0.144)
	-{0.002}	{0.005}	-{0.008}	{0.009}	{0.013}	{0.003}	{0.050}	{0.046}	{0.014}
First-stage observations	12	12	12	12	12	12	12	12	12
Panel B: sample restricted to respondents who completed high school (at most)									
DD estimator	0.0215	0.0324	0.0357	0.0883	0.1004	0.0901	0.0663	0.0663	0.0568
	(0.068)	(0.071)	(0.067)	(0.126)	(0.131)	(0.128)	(0.125)	(0.127)	(0.129)
	{0.012}	{0.018}	{0.009}	{0.018}	{0.020}	{0.003}	{0.024}	{0.023}	{0.015}
First-stage observations	12	12	12	12	12	12	12	12	12
Panel C: sample restricted to respondents who did not complete high school									
DD estimator	0.3220	0.2898	0.3092	0.8904	0.8314	0.7874	-0.4004	-0.3991	-0.4533
	(0.283)	(0.278)	(0.288)	(0.810)	(0.792)	(0.786)	(0.307)	(0.303)	(0.309)
	{0.183}	{0.164}	{0.000}	{0.177}	{0.167}	-{0.008}	-{0.108}	-{0.107}	-{0.049}
First-stage observations	12	12	12	12	12	12	12	12	12
Control variables									
Age, gender, native-born, and race	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Education, marital status, and region	No	No	Yes	No	No	Yes	No	No	Yes

standard errors in parenthesis; "happiness points" in brackets in Columns (1) - (3) and marginal effects in brackets in columns (4) - (9)
*, **, and *** signify that the coefficient is significantly different than zero with a p-value < 0.10, 0.05, and 0.01, respectively.

Lastly, to confirm the validity of the second identifying assumption—that there are no additional contemporaneous happiness shocks, other than the welfare and tax policy changes, that differ between single mothers and members of the comparison groups—the following assertions must hold: (i) that the welfare and tax policy changes likely caused the observed increase in happiness, and (ii) that

there are no other plausible explanations for the increase. Three facts help corroborate the first assertion. First, PWRORA was implemented nationwide between September 1996 and January 1998. This corresponds to the timing of the observed increase in happiness. Further, the results are robust to dropping the 1996 and or 1998 GSS, and there is no evidence that single mothers' happiness was increasing between 1988 and 1996 relative to each comparison group. Second, the magnitude of the DD estimator increases when the sample is restricted to less-educated respondents. This is the pattern one would expect if the observed increase in happiness is caused by the welfare and tax policy changes, since less-educated single mothers are more likely to be affected by the changes. Third, the DD estimators are largely consistent across three mutually exclusive comparison groups. This implies that single mothers' happiness must have increased after the reforms relative to each comparison group. Since members of each comparison group are less likely to be affected by the welfare and tax policy changes than are single mothers, the changes are a likely cause for the observed increase in happiness. Finally, in terms of the second assertion, there were no additional national policy changes—other than the discussed welfare and tax policy changes—that targeted poor single mothers during this period.

V. Discussion

The results appear to indicate that the package of welfare and tax policies changes targeting single mothers, and generally promoting work, increased single mothers' happiness. Further, there is no evidence to suggest that the changes reduced happiness. The observed increase in happiness appears to result from both an increase in single mothers reporting a high level of happiness ("very happy") and a decrease in single mothers reporting a low level of happiness ("not too happy"). The magnitude of the effect appears quite large. The average of the DD estimators (measured roughly in happiness points) is 0.11 (across all comparison groups, restrictions on education, and sets of covariates). This is over a third of the happiness gap between single mothers and all other respondents.

Interestingly, these results appear to indicate that for single mothers the cost of working in terms of lost leisure time and additional life stressors was more than offset by the benefits. Recall that Meyer and Sullivan (2008) estimate that single mothers' consumption increased by an average of three dollars for each hour of lost leisure time. Thus, the current results appear to indicate that the value of an hour of leisure is less than three dollars, or that there must be positive non-pecuniary benefits of working. The latter may at first appear surprising given conventional economic theory. However, if one believes the findings from happiness research, it is not surprising. For example, it has been shown that individuals take pleasure from working even in mundane jobs, that in many cases

work activities are more enjoyable than leisure activities, and that unemployment adversely affects well-being (Diener and Seligman, 2008). Apparently, these finding may also hold for single mothers.

Further, it is important to recognize that some of the welfare and tax policy changes used incentives rather than penalties to promote work. For example, the EITC expansion and the introduction of transitional Medicaid benefits should have increased the benefit, and reduced the cost, of working for single mothers. Unfortunately, however, the two-by-two DD estimators used in this paper do not provide any information regarding the effect of individual policy changes; rather, they estimate the net effect of the package of welfare and tax policy changes. To better understand which components of the package increased single mothers' happiness, it would be useful in the future to identify the effect of individual policy changes on SWB.

Finally, this research adds to the literature that examines the impact of social welfare programs by estimating the impact of the welfare and tax policy changes on self-reported happiness, demonstrating the feasibility of incorporating such measures into future evaluations of social welfare programs.

DOI: 10.2202/1935-1682.2727

Table AI
DD estimators from estimating equation (5) with the 1996 and or 1998 GSS dropped

	Single Childless Women				Single Childless Men				Married mothers			
	All years (ordered probit) (1)	Drop 1996 GSS (ordered probit) (2)	Drop 1998 GSS (ordered probit) (3)	Drop 1996 & 1998 GSS (ordered probit) (4)	All years (ordered probit) (5)	Drop 1996 GSS (ordered probit) (6)	Drop 1998 GSS (ordered probit) (7)	Drop 1996 & 1998 GSS (ordered probit) (8)	All years (ordered probit) (9)	Drop 1996 GSS (ordered probit) (10)	Drop 1998 GSS (ordered probit) (11)	Drop 1996 & 1998 GSS (ordered probit) (12)
Panel A: unrestricted sample												
DD estimator	0.1544 ***	0.1638 ***	0.1325 **	0.1419 **	0.1945 **	0.1761 *	0.1943 *	0.1759	0.0015	-0.0253	0.0463	0.0196
	(0.046)	(0.049)	(0.048)	(0.050)	(0.080)	(0.084)	(0.090)	(0.095)	(0.092)	(0.094)	(0.095)	(0.096)
Panel B: sample restricted to respondents who completed high school (at most)												
DD estimator	0.2286	0.2672	0.1785	0.2171	0.3321 **	0.3269 **	0.3034 **	0.2982 *	0.0357	0.0252	0.0780	0.0675
	(0.152)	(0.157)	(0.165)	(0.171)	(0.115)	(0.126)	(0.127)	(0.139)	(0.067)	(0.072)	(0.064)	(0.069)
Panel C: sample restricted to respondents who did not complete high school												
DD estimator	0.2297	0.3274	0.1821	0.2798	0.5039 *	0.5279 *	0.4379	0.4619	0.3092	0.2963	0.3533	0.3404
	(0.444)	(0.467)	(0.499)	(0.526)	(0.232)	(0.251)	(0.254)	(0.275)	(0.288)	(0.313)	(0.322)	(0.351)
Control variables												
Age, gender, native-born, and race	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Education, marital status, and region	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

standard errors in parenthesis.
*, **, and *** signify that the coefficient is significantly different than zero with a p-value < 0.10, 0.05, and 0.01, respectively.

Table AII
Time trend estimates for the before-reform period, 1988 - 1996

	Single Childless Women			Single Childless Women			Single Childless Women		
	Ordered probit (1)	Ordered probit (2)	Ordered probit (3)	Ordered probit (1)	Ordered probit (2)	Ordered probit (3)	Ordered probit (1)	Ordered probit (2)	Ordered probit (3)
Panel A: unrestricted sample									
Time trend	0.0096	0.0091	0.0076	-0.0109	-0.0101	-0.0131	-0.0071	-0.0062	-0.0075
	(0.013)	(0.014)	(0.013)	-(0.011)	(0.013)	(0.013)	(0.023)	(0.023)	(0.025)
Panel B: sample restricted to respondents who completed high school (at most)									
Time trend	0.0189	0.0252	0.0211	0.0083	0.0085	0.0068	-0.0044	-0.0058	-0.0083
	(0.042)	(0.046)	(0.047)	(0.032)	(0.032)	(0.032)	(0.017)	(0.018)	(0.016)
Panel C: sample restricted to respondents who did not complete high school									
Time trend	-0.0924	-0.0818	-0.0896	0.0539	0.0573	0.0654	-0.0279	-0.0315	-0.0287
	(0.129)	(0.136)	(0.141)	(0.066)	(0.065)	(0.066)	(0.035)	(0.037)	(0.032)
Control variables									
Age, gender, native-born, and race	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Education, marital status, and region	No	No	Yes	No	No	Yes	No	No	Yes

standard errors in parenthesis.
*, **, and *** signify that the coefficient is significantly different than zero with a p-value < 0.10, 0.05, and 0.01, respectively.

DOI: 10.2202/1935-1682.2727

REFERENCES

Bilter, Marianne P., Jonah B. Gelbach, and Hilary W. Hoynes. 2005. "Welfare Reform and Health." *The Journal of Human Resources*, 40(2): 309-334.

Bitler, Marianne, and Hilary W. Hoynes. 2007. "Welfare Reform and Indirect Impacts on Health." NBER Working Paper Number 12642. Cambridge, MA: The National Bureau of Economic Research.

Blank, Rebecca. 2002. "Evaluating Welfare Reform in the United States." *Journal of Economic Literature*, 40(4): 1105-1166.

Center for Medicare and Medicaid (CMS). 2011. "Overview of the Children's Health Insurance Program (CHIP)." http://www.cms.gov/LowCostHealthInsFamChild/.

DellaVigna, Stefano. 2009. "Psychology and Economics: Evidence from the Field." *Journal of Economic Literature*, 47(2): 315-72.

Diener, Ed, and Martin E. P. Seligman. 2008. "Beyond Money: Toward an Economy of Well-Being." *Psychological Science In The Public Interest*, 5(1): 1-31.

Donald, Stephen G., and Kevin Lang. 2007. "Inference with Difference-in-Differences and Other Panel Data." *The Review of Economics and Statistics*, 89(2): 221-233.

Ellwood, David T., and Mary Jo Bane. 1985. "The impact of AFDC on family structure and living arrangements." In *Research in Labor Economics 7*, ed. R. Ehrenberg. Greenwich, Conn.: JAI Press.

Eissa, Nada, and Jeffrey B. Liebman. 1996. "Labor Supply Response to the Earned Income Tax Credit." *The Quarterly Journal of Economics*, 111(2): 605-637.

Frey, Bruno S, and Alois Stutzer. 2002. *Happiness and Economics*. Princeton, NJ: Princeton University Press.

Gregg, Paul, Susan Harkness, and Sarah Smith. 2009. "Welfare Reform and Lone Parents in the UK." *The Economic Journal*, 119(535): F38-F65.

Grogger, Jeffrey, and Lynn A. Karoly. 2005. *Welfare Reform: Effects of a Decade of Change*. Cambridge, Massachusetts: Harvard University Press.

Gruber, Jonathan H., and Sendhil Mullainathan. 2005. "Do Cigarette Taxes Make Smokers Happier?" *Advances in Economic Analysis & Policy*, 5(1): Article 4.

GSS, 1972-2010: Cumulative Codebook. 2011. National Opinion Research Center. Chicago, IL: The University of Chicago.

Herbst, Chris. 2010. "Welfare Reform and the Subjective Well-Being of Single Mothers." Working Paper.

Hoynes, Hilary. 1999. "The Employment, Earnings, and Income of Less Skilled Workers Over the Business Cycle." NBER Working Paper 7188. Cambridge, MA: The National Bureau of Economic Research.

Hotz, V. Joseph, and John Karl Scholz. 2003. "The Earned Income Tax Credit." In *Means-Tested Transfer Programs in the United States*, ed. Robert A. Moffit, 144-198. Chicago, IL: The University of Chicago Press.

Kaestner, Robert, and Elizabeth Tarlov. 2003. "Changes in the Welfare Caseload and the Health of Low-Educated Mothers." *Journal of Public Analysis and Management*, 25(3): 623-643.

Kahneman, Daniel, and Alan B. Krueger. 2006. "Developments in the Measurement of Subjective Well-Being." *Journal of Economic Perspectives*, 20(1): 3-24.

Krueger, Alan B., and David A. Schkade. 2008. "The Reliability of Subjective Well-Being Measures." *Journal of Public Economics*, 92(8-9): 1833-1845.

Meyer, Bruce D., and Dan T. Rosenbaum. 2000. "Making Single Mothers Work: Recent Tax and Welfare Policy and its Effects." NBER Working Paper 7491. Cambridge, MA: The National Bureau of Economic Research.

Meyer, Bruce D., and Dan T. Rosenbaum. 2001. "Welfare, the Earned Income Tax Credit, and the Labor Supply of Single Mothers." *The Quarterly Journal of Economics*, 116(3): 1063-1114.

Meyer, Bruce D., and James X. Sullivan. 2008. "Changes in the Consumption, Income, and Well-Being of Single Mother Headed Families." *The American Economic Review*, 98*(*5): 2221-41.

Moffitt, Robert A. 1983. "An Economic Model of Welfare Stigma." *The American Economic Review*, 73(5): 1023-35.

Moffitt, Robert A. 1996. "The Effect of Employment and Training Programs on Entry and Exit from the Welfare Caseload." *Journal of Policy Analysis and Management*, 15(1): 32-50.

Moffitt, Robert A. 2003. *Means-Tested Transfer Programs in the United States*. Chicago, IL: The University of Chicago Press.

DOI: 10.2202/1935-1682.2727

Stevenson, Betsey, and Justin Wolfers. 2009. "The Paradox of Declining Female Happiness." *American Economic Journal: Economic Policy*, 1(2): 190-225.

Smith, Tom W, Marsden, Peter V, Hout, Michael, and Kim, Jibum, General Social Surveys, 1972-2010 [machine-readable data file] /Principal Investigator, Smith, Tom W.; Co-Principal Investigators, Peter V. Marsden and Michael Hout; Sponsored by National Science Foundation. -- NORC ed.-- Chicago: National Opinion Research Center [producer]; Storrs, CT: The Roper Center for Public Opinion Research, University of Connecticut [distributor], 2011.