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THE HAPPINESS OF SINGLE MOTHERS AFTER WELFARE REFORM

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Abstract

U.S. welfare programs were transformed a little over a decade ago. The changes were life altering for those on welfare, or prone to be. What was the impact on subjective well-being? To investigate, I compare the happiness – and life satisfaction – of single mothers before and after welfare reform. Using data from the General Social Survey and the World Value Survey, I find that single mothers' happiness – and life satisfaction – increased. To demonstrate that the observed increase was likely the result of policy changes, I use a Difference in Difference test. Specifically, I compare the subjective well-being of single mothers to the subject well-being of four comparison groups before and after welfare reform; each comparison group is similar to the single mothers in many respects but unlikely to be affected by the policy changes. Welfare reform appears to have increased, and certainly did not decrease, subjective well-being. Alternate explanations, such as the EITC expansion, are considered.

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I. Introduction

U.S. welfare programs have been profoundly altered over the last two decades. The changes have been fundamental and presumably life altering for those on welfare or prone to be. A substantial empirical literature has developed to investigate the resulting changes in welfare use, employment, earnings, consumption, family structure, health, and child welfare (reviews include Blank, 2002; Grogger and Karoly, 2005; and Moffitt, 2003).

One important outcome, however, has not been studied – the impact of welfare reform on subjective well-being. Prior to welfare reform, those most prone to being on welfare, single mothers, consistently reported below average subjective well-being (see Figures Ia and Ib). In addition, economic theory predicts that work requirements, which were a key component of the reforms, reduce recipients' utility (well-being) since hours worked generally enters the utility function negatively (for example, Nichols and Zeckhauser, 1982; and Besley and Coate, 1992). Thus, without an offsetting increase in consumption, welfare reform may have reduced the utility (well-being) of an already unhappy group.

Meyer and Sullivan (2006) investigate single mothers' economic well-being before and after welfare reform. They find no evidence that the reforms reduced consumption. Further, Meyer and Sullivan find that single mothers' consumption increased by an average of three dollars for each hour of lost non-market time. The authors argue that welfare reform reduced single mothers' well-being if single mothers value each hour of lost non-market time more than three dollars on average. Meyer and Sullivan are limited to estimating welfare reform's impact on an economic indicator –

consumption – and extrapolating a conditional argument regarding welfare reform’s impact on single mothers’ *non-economic well-being*. Moreover, recent research has shown that economic 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.”

An alternative measure of well-being increasingly used by economists is self-reported happiness and life satisfaction (Kahneman and Krueger, 2006). In this paper, I extend the use of such measures to the evaluation of social welfare programs. Specifically, I attempt to identify welfare reform’s impact on the happiness and life satisfaction of those most likely to have been affected by the reforms, single mothers. To do so, I use a difference in difference model. Four comparison groups are used: single women without children, highly educated single mothers, married mothers, and single men without children; each group is similar in some respects to single mothers but are unlikely to be affected by welfare reform. The data for this study comes from the General Social Survey and the World Value Survey. The findings appear to indicate that welfare reform increased – and certainly did not decrease – the happiness and life satisfaction of those most likely to be affected by it.

The next section of this paper provides a brief overview of the welfare reform and happiness literature. The third section discusses the data and the identification strategy. The fourth and fifth sections present and discuss the results.

II. Background

In 1935, the Aid to Families with Dependent Children (AFDC) program was created as part of the Social Security Act; it was the nation’s first federal welfare

program. Initially, the objective of the AFDC program was to support single mothers so that they did not have to work outside the home (Grogger and Karoly, 2005). In the ensuing decades, however, this objective became outmoded, as the labor force participation rate of mothers increased dramatically. In response, the welfare reform movement was established in the 1960s. A primary goal was to move recipients from welfare to work. A 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).

A vast literature has developed to identify the resulting changes in welfare use, employment, earnings, consumption, health, family structure, and child welfare (again reviews include Blank, 2002; Grogger and Karoly, 2005; and Moffitt, 2003). The findings appear to indicate that, at least in the short run, welfare reform 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, 2006; and Kaestner and Tarlov, 2006). While some questions remain, including what role the robust economy played (Blank, 2002), it appears that welfare reform was a success, at least from the government's perspective.

In contrast, the situation may appear quite different to those directly affected by the reforms. That is, there are many reasons to believe that the reforms reduced the well-being of those on welfare, or prone to be. For example, as was discussed previously,

work requirements should reduce one's utility (well-being). Further, having to work when one is a single mother probably creates additional life stressors which may reduce well-being, for example, arranging childcare and managing a household solo while working. Finally, time limits reduce one's choice set, and therefore, presumably decrease utility (well-being) as well. Thus, it would not be surprising if those on welfare, or prone to be, were less happy after welfare reform.

Yet, there has been no discussion of such an investigation in the literature. Of the three cited reviews, only one vaguely suggests such an inquiry Grogger and Karoly's (2005). 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 diverse and growing body of research, however, suggests that it would be valuable and feasible to investigate welfare reform's impact on subjective well-being. The following are four reasons it is worthwhile: First, economists are concerned about individuals' well-being, they even assume that individuals' primary objective is to maximize their well-being. Second, as was discussed previously, well-being cannot necessarily be measured using economic indicators. Third, well-being is positively correlated with other beneficial outcomes, for example, happier individuals are healthier and more productivity at work (Diener and Seligman, 2008). Fourth, single mothers reported below average happiness before welfare reform, was it fair to have "fixed" welfare at the expense of already unhappy group?

It is also appears feasible. A growing number of economists have been using subjective well-being 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; strikingly more energetic, flexible, and creative; and less likely to need psychological counseling (Frey and Stutzer, 2002). Not surprisingly, the first question that economists attempted to answer with happiness data was, "Can happiness be bought?" Interestingly, the answer turns out to be "yes" and "no." "Yes," wealthier individuals within a country are happier, and "yes," wealthier countries as a group are happier, but "no," raising per capita income within a country does not necessarily lead to increased average national happiness; this is the now famous Easterlin Paradox (Graham, 2005). A series of other questions have also been investigated. These include how each of the following affects self-reported happiness: governance, inflation, health, and personal freedom (Frey and Stutzer, 2002).

Most relevant to this research is an innovative study by Gruber and Mullainathan (2005), which explores the impact of cigarette taxes on happiness. The authors use self-reported happiness data to determine how cigarette taxes impact smokers' well-being. To do so, they compare the happiness of those who are prone to smoking to the happiness of those who are not. Intriguingly, the results indicate that cigarette taxes increased smokers' happiness. For their findings to be valid, Gruber and Mullainathan had to assert that they were measuring a change in happiness and not a change in measurement error. They argued that the latter was unlikely since they used inter-state time variance in cigarette taxes to identify the effect; it is improbable that changes in a state's cigarette

taxes corresponded with changes in measurement error. Thus, it was valid to use self-reported happiness for interpersonal comparisons.

III. Empirical implementation

A. The data

The data for this study comes from two nationally representative surveys, the General Social Survey (GSS) and the World Value Survey (WVS). Each survey contains a set of demographic and attitudinal questions including those that would traditionally be of interest to an economist, for example, regarding income and educational attainment, as well as a range of other questions regarding religion, politics, and personal values. The GSS has been administered at least biennially since 1972; the WVS has been administered five times since 1982.

The GSS and WVS are of special interest because each contains at least one question regarding respondents' subjective well-being. For example, the GSS asks, "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?" The WVS asks a similar question but offers respondents four possible answers: "very happy," "quite happy," "not very happy," and "not at all happy." The WVS also asks, "All things considered, how satisfied are you with your life as a whole these days?" These three measures of subjective well-being are each used as a dependent variable.

After full-time students and respondents over the age of 45 are dropped from the sample, there are 26,176 GSS respondents and 3,684 WVS respondents¹. The average happiness of GSS respondents was 2.2 where "not too happy" (11.5 percent of

¹ Students and respondents over the age of 45 are dropped because they are unlikely to be on welfare and are not comparable to those likely to be on welfare. Further, for the GSS, the 1982 and 1987 Black oversamples are dropped and phase weights are used.

responses), “pretty happy” (58.3 percent of responses), and “very happy” (30.2 percent of responses) are coded as one, two, and three, respectively; the average happiness of WVS respondents was 2.3 where “not at all happy” (0.8 percent of responses), “not very happy” (6.4 percent of responses), “quite happy” (55.8 percent of responses), and “very happy” (37.0 percent of responses) are coded as zero, one, two, and three, respectively; and the average life satisfaction of WVS respondents was 7.6 on a scale from “satisfied” coded as a ten to “dissatisfied” coded as a one [see Columns (1) and (4) of Table I]. Respondents in both surveys are likely to be high school graduates, white, in good health, and employed.

To identify the determinants of happiness, I estimate a “happiness function” (Frey and Stutzer, 2002). Specifically, the following equation is estimated using an ordered logit:

$$SWB_i^* = \beta \cdot X_i + \varepsilon_i \quad (1)$$

where SWB_i^* is a continuous unmeasured latent variable that measures subjective well-being; X_i is a vector of demographic characteristics for individual i including gender, age, educational attainment, race, employment status, income, self-reported health, region dummies, and year dummies; and SWB_i is an observed cardinal variable that measures subjective well-being. The specification of SWB_i depends on which of the three measure of subjective well-being is used. For example, when using the happiness question contained in the GSS, SWB_i equals “very happy” if $SWB_i^* > \delta_2$, “pretty happy” if

$\delta_1 < SWB_i^* \leq \delta_2$, and “not too happy” if $SWB_i^* \leq \delta_1$ where δ_1 and δ_2 are parameters that must be estimated.

For both the GSS and the WVS, the results of estimating equation (1) are consistent with those that have been found previously (Frey and Stutzer, 2002). For example, the results indicate that [see Columns (1) through (3) of Tables IIa and Columns (1) and (2) of Tables IIb and IIc]:

- women are happier than men,
- whites are happier than nonwhites,
- high-income individuals are happier than low-income individuals, and
- healthier individuals are happier than less healthy individuals.

B. The happiness of single mothers

Single mothers, on average, are less happy than are respondents who are not single mothers. This differential is perhaps not surprising given the divergence in the demographic characteristics of the two groups; single mothers are more likely to have characteristics associated with low levels of subject well-being. For example, single mothers are significantly more likely to be nonwhite, unemployed, and in poor or fair health. Further, they report lower average income [compare Column (2) to (3) and (5) to (6) of Table I]. A difference of means test reveals that each of these differences is statistically significant.

To test whether one can eliminate the happiness differential by controlling for demographic characteristics, I add a *single-mother* dummy variable to equation (1). That is, the following equation is estimated using an ordered logit:

$$SWB_i^* = \alpha^{\text{single-mother}} \text{Single-mother}_i + \beta \cdot X_i + \varepsilon_i \quad (2)$$

where *single-mother*_{*i*} equals one if individual *i* is a single mother and zero otherwise, and all other variables are defined as before.

Using happiness as the dependent variable, the coefficient on *single-mother* is -0.68 (*z* = -12.34, *p* = 0) and -0.64 (*z* = -2.61, *p* = 0.009) using the GSS and WVS data, respectively. This indicates that even after controlling for demographic characteristics single mothers are significantly less happy than are respondents who are not single mothers [see Column (7) of Table IIa and Column (5) of Table IIb]; the result is similar when using life satisfaction as the dependent variable [see Column (5) of Table IIc]. As is always the case with ordered logit, the marginal effects are not directly apparent from the coefficients and must be calculated. Using the GSS data, they are as follows: Being a single mother is predicted to increase the probability of being “not too happy” by 7.2 percent (*z* = 10.3, *p* = 0), and decrease the probability of being “very happy” by 12.1 percent (*z* = -14.2, *p* = 0); the marginal effects are similar when one uses the WVS data. Thus, single mothers report being less happy even after controlling for observable characteristics.

Some GSS and WVS data was missing for a few covariates. For example, over 6,000 GSS respondents did not report their health status. To attempt to determine whether this limitation had an important effect on the results, I estimate equation (2) with a subset of covariates; I drop those covariates that have the most missing observations. For example, when health status is dropped the number of GSS observations increases from 16,812 to 22,244. The coefficients, however, are largely unaffected by this change; they all maintain the same sign, approximate magnitude, and significance level [compare

Column (6) to (7) of Table IIa]. When the log of real income is dropped, the number of GSS observations increases from 22,244 to 23,847. Now the coefficients on educational attainment become statistically significant. Greater educational attainment is now associated with greater happiness [compare Column (5) to (6) of Table IIa]. This change is presumably the result of educational attainment acting as a proxy for income. Thus, it appears that the missing data does not have an important affect on the results.

C. Difference in difference model

Given that the vast majority of welfare recipients are single mothers; this research focuses on their subjective well-being². Specifically, the “first difference” in the Difference in Difference (DD) model is the change in happiness – or life satisfaction – of single mothers before and after welfare reform. Identifying likely welfare recipients 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 GSS and WVS respondents were not asked about welfare use. It also has two distinct advantages over directly identifying respondents’ welfare use. First, it eliminates any concerns one might have regarding endogeneity between a recipient’s happiness and welfare use. Second, it captures both the “entry” and “exit” effects of welfare reform³.

Causation cannot be demonstrated using the first difference alone, since there are numerous alternate explanations for any observed difference. To attempt to isolate the impact of welfare reform, I use four comparison groups: single women without children, highly educated single mothers, married mothers, and single men without children. For a

² Women are considered single if they report being separated, divorced, widowed, or never married.

³ For a discussion of entry and exit effects see Moffitt (1996).

comparison group to effectively control for underlying trends (in subjective well-being), the members of the group must share some characteristics with single mothers, but must not be likely to have been affected by welfare reform. Each of these comparison groups appears to satisfy this criterion and has been used previously by other economists studying welfare reform (Bitler and Hoynes, 2007).

Specifically, the “second difference” is the change in happiness – or life satisfaction – of members of the comparison group before and after welfare reform; thus, the DD estimator is:

$$\begin{aligned} & (SWB_{post-welfare-reform}^{sin\ gl e-mothers} - SWB_{pre-welfare-reform}^{sin\ gl e-mothers}) - \\ & (SWB_{post-welfare-reform}^{comparison-group} - SWB_{pre-welfare-reform}^{comparison-group}) \end{aligned} \quad (3)$$

where SWB denotes subjective well-being. The DD estimator is calculated using an ordered logit⁴. This is necessary since the dependent variables, happiness and life satisfaction, are ordinal. Specifically, the following equation is estimated:

$$\begin{aligned} SWB_i^* = & \alpha^{post} post_i + \alpha^{sin\ gl e-mother} sin\ gl e - mother_i + \\ & \alpha^{post-sin\ gl e-mother} (post_i * sin\ gl e - mother_i) + \beta \bullet X_i + \varepsilon_i \end{aligned} \quad (4)$$

where $post_i$ is a post welfare reform dummy variable that equals one if the survey was administered after welfare reform was initiated and zero otherwise; $single-mother_i$ is a dummy variable that equals one if the individual i was a single mother and zero otherwise; and all other variables are defined as before. The DD estimator is

$$\alpha^{post-sin\ gl e-mother} .$$

For the DD estimator to be unbiased two identifying assumptions are necessary. First, there are no additional contemporaneous shocks, other than welfare reform, to the

⁴ I also estimated equation (4) using a logit with being “very happy” (GSS and WVS) and “not too happy” (GSS) / “not very happy or not at all happy” (WVS) as the dependent variables. The results are largely the same as those described in the text. Thus, the results are robust to such a switch of specification.

subjective well-being of single mothers and members of all the comparison groups during the period of study. Second, there are no underlying trends in subjective well-being that differ between single mothers and members of the comparison groups.

Four comparison groups and two datasets are used to increase the likelihood that these assumptions hold. Specifically, if the results are consistent across the comparison groups and datasets, then it is unlikely that contemporaneous shock, other than welfare reform, drove the results, since it is improbable that such a shock affected members of each comparison group, but did not affect single mothers. Further, it is unlikely that there would have been a change in measurement error for single mothers but not for members of all the other comparison groups; consequently, inter-group comparisons of subjective well-being should be valid.

Since this analysis is attempting to identify the impact of welfare reform, it is limited to the period immediately preceding and succeeding the implementation of welfare reform. Most prior welfare reform research focuses on two contiguous periods: the “waiver” reform period, which immediately preceded PRWORA’s implementation, and the PRWORA implementation period. The most sweeping and fundamental reforms were the result of PRWORA; these reforms were implemented nationwide during a 17 month period, between September 1996 and January 1998 (Grogger and Karoly, 2005). Thus, the pre-welfare-reform period includes data from the 1990, 1991, 1993, 1994, and 1996 GSS (and the 1990 and 1995 WVS) and the post-welfare-reform period includes data from the 1998, 2000, 2002, and 2004 GSS (and the 1999 WVS)⁵.

⁵ One might be concerned that the pre-welfare-reform period is contaminated since the “waiver” reform period immediately preceded PRWORA’s implementation. However, the “waiver” reforms were neither nationwide, nor as comprehensive as were the PRWORA reforms. Thus, I include the 1996 GSS in the pre-welfare-reform data. Further, 95 percent of the statewide “waiver” reforms were implemented after January 1995 and prior to the PRWORA reforms (Grogger and Karoly, 2005). When I exclude the 1996

Finally, in an attempt to focus the analysis on those single mothers who are most likely to be affected by welfare reform, I also estimate equation (4) with a restricted sample. Specifically, the sample is restricted to those respondents who completed high school (at most); such a restriction has been used previously in the welfare reform literature to focus the analysis on those most likely to be affected by the reforms (for example, Kaestner and Tarlov, 2006). For the highly educated single mothers' comparison group, the program group is already limited to single mothers who completed high school (at most). Alternatively, in this case, the sample is restricted by dropping all single mothers who started, but did not complete, college. Thus, the comparison, which was initially between single mothers who at most completed high school and single mothers completed more than high school, becomes a comparison between single mothers who at most completed high school and single mothers who at least completed college.

IV. Results

A. The DD estimator

Estimating equation (4) with the first comparison group (single women without children), one finds that the DD estimator is 0.337 ($z = 1.76$, $p < 0.078$) using the GSS data and happiness as the dependent variable [see Column (1) of Table IIIa]. This coefficient is marginally statistically significant. Further, its positive sign indicates that single mothers' happiness increased after welfare reform when compared to single women without children. The marginal effects imply that single mothers are 5.3 percentage points ($z = 1.68$, $p < 0.093$) more likely to report being "very happy" and 4.2

GSS data from the pre-welfare-reform period the results stay largely the same. Finally, the 1996 GSS was administered prior to September 1996 and the 1998 GSS was administered subsequent to January 1998.

percentage points ($z = 1.86, p < 0.063$) less likely to report being “not too happy” after welfare reform. Restricting the sample to respondents who completed high school (at most) increases the DD estimator to 0.461 ($z = 1.49, p < 0.137$) [see Column (2) of Table IIIa]. This increase is consistent with the argument that welfare reform increased single mothers’ happiness since the analysis is now focused on those single mothers who are most likely to have been affected by welfare reform. The coefficient, however, is not significant since the standard error grew as well.

Repeating the same analysis using WVS data and life satisfaction as the dependent variable, one finds that the DD estimator is 1.346 ($z = 2.43, p < 0.015$) [see Column (1) of Table IIIc]. This coefficient is positive and statistically significant, indicating that single mothers are more satisfied with their lives after welfare reform when compared to single women without children. The marginal effects imply that single mothers are 13.5 percentage points ($z = 1.68, p < 0.093$) more likely to report a life satisfaction of “10,” and 14.9 percentage points ($z = 2.75, p < 0.006$) more likely to report a life satisfaction of “9” (on a scale from 1 to 10 where 1 means “dissatisfied” and 10 means “satisfied”). Restricting the sample to respondents who completed high school (at most) increases the DD estimator to 1.745 ($z = 2.28, p < 0.023$) [see Column (2) of Table IIIc]. Again, this increase is consistent with the argument that welfare reform increased life satisfaction. Finally, the DD estimator is positive but not statistically significant using WVS data and happiness as the dependent variable [see Column (1) of Table IIIb]. The positive sign is consistent with the results above, but the standard error is too large for the coefficient to be statistically significant.

The results are very similar using the fourth comparison group (single men without children). The DD estimator is positive and marginally statistically significant, 0.326 ($z = 1.82$, $p < 0.068$), using the GSS data. Restricting the sample to those who completed high school increases the magnitude and significance level of the DD estimator, 0.515 ($z = 1.99$, $p < 0.047$) [see Columns (7) and (8) of Table IIIa]. The marginal effects indicate that single mothers are significantly more likely to report being “very happy” and significantly less likely to report being “not too happy” after welfare reform when compared to single men without children. Using the WVS data, the results are comparable [see Columns (7) and (8) of Tables IIIb and IIIc]. The DD estimators are positive; increase in magnitude when the sample is restricted to those who completed high school; and are either statistically significant or almost significant (the smallest z -statistic is 1.48).

The results using the second and third comparison groups are once again similar, however, with each group there is one result that is not consistent with the argument that welfare reform increased well-being. For example, using the GSS data and the second comparison group (highly educated single mothers), one finds the previous pattern. The DD estimator is positive and grows in magnitude when the sample is restricted [see Columns (3) and (4) of Table IIIa]. Using the WVS data, however, the DD estimator declines when the sample is restricted. With happiness as the dependent variable, the DD estimator is 1.370 ($z = 1.41$, $p < 0.159$) with the unrestricted sample and 0.714 ($z = 0.53$, $p < 0.594$) with the restricted sample [see Columns (3) and (4) of Table IIIb]. The pattern is the same using life satisfaction as the dependent variable [see Columns (3) and (4) of Table IIIc]. These estimates, which are not consistent with the prior findings, are

potentially the result of the small sample size. This analysis is based on 97 observations, of which only 15 are for respondents who at least completed college. Of these 15, only six are for the pre-welfare-reform period.

Finally, using the third comparison group (married mothers) and the WVS data, one finds the expected pattern. For example, the DD estimator is 1.175 ($z = 2.26$, $p < 0.024$) and 1.846 ($z = 3.07$, $p < 0.002$) using the unrestricted and restricted samples, respectively, and happiness as the dependent variable [see Columns (5) and (6) of Table IIIb]. The marginal effects indicate that single mothers are significantly more likely to report being “very happy” and significantly less likely to report being “not very happy” after welfare reform when compared to married mothers. The results are very similar when one uses life satisfaction as the dependent variable [see Columns (5) and (6) of Table IIIc]. The estimates using the GSS data, however, are not consistent with the pattern. The DD estimator is approximately zero with both the unrestricted and restricted sample for this comparison group. There is no apparent explanation for this anomaly.

B. Other coefficients

Examining the other coefficients, one finds that the coefficient on single-mother is consistently negative and often statistically significant. This corroborates the prior finding that single mothers, on average, report lower subjective well-being than do recipients who are not single mothers. The coefficients on income and health status have the same sign – and often the same significance level – as they had when equation (2), the happiness function, was estimated. That is, there is a positive relationship between a respondent’s subjective well-being and his or her income and health. Finally, the

coefficients on race and education do not appear to have a consistent pattern across comparison groups and datasets.

V. Discussion

The results appear to indicate that welfare reform increased the subjective well-being of those most likely to have been affected by the reforms, single mothers. Further, there is no evidence to suggest that welfare reform reduced the subjective well-being of single mothers. Only two of 24 DD estimators were (barely) negative; both were greater than -0.075 and one of the negative DD estimators was based on less than 100 observations. Finally, the observed increase in single mothers' subjective well-being after welfare reform appears to be the result of both a decrease in low levels of happiness – and life satisfaction – as well as an increase in high levels of happiness – and life satisfaction.

The credibility of the claimed causal relationship is bolstered if the following closely related assertions are true: First, the observed increase in subject well-being was likely caused by welfare reform; and second, there are no plausible alternate explanations for the increase, for example, the expansion of the Earned Income Tax Credit. Two facts help corroborate these assertions. First, the estimates were largely consistent across two unrelated datasets and four mutually exclusive comparison groups. This implies that the average subjective well-being of single mothers must have increased in comparison to members of each comparison groups after welfare reform. Yet, these comparison groups, which have been used in numerous previous studies, were meant to control for underlying trends in subjective well-being. Thus, welfare reform is a likely cause for the observed increase since one definitive difference between single mothers and members of each

comparison group is eligibility for welfare benefits; single mothers are potentially eligible and the others are generally not. Second, the magnitude of the DD estimator increased when the sample was restricted to those mostly likely to be affected by welfare reform, single mothers with low levels of education. Such a pattern would be expected if welfare reform was the cause of the observed increase in subjective well-being, since less educated single mothers were more likely to have been affected by the reforms.

One alternate explanation, however, does deserve special consideration, the expansion of the Earned Income Tax Credit (EITC). The Omnibus Budget Reconciliation Acts of 1990 and 1993 incrementally increased the maximum credit, the phase-in and –out rate of the credit, and the income range that was eligible for the credit between 1991 and 1996; the largest increases occurred in 1994 and 1995. Moreover, single mothers who worked were certainly eligible for the EITC. Thus, the EITC expansion must be carefully considered as an alternate explanation for the observed increase in subjective well-being.

There are, however, two reasons that the EITC expansion is not as likely an explanation for the observed increase in subjective well-being as is welfare reform. First, the EITC expansion preceded PRWORA's implementation. Most of the expansion occurred during the pre-welfare-reform period, specifically, during the administration of the 1993, 1994, and 1996 GSS. Thus, the subjective well-being of the single mothers in the pre-welfare-reform period is presumably contaminated by the EITC expansion. That is, if the EITC expansion did increase subjective well-being, then the DD estimators should be negatively biased.

Second, the EITC expansion would have potentially affected members of the second and third comparison groups (highly education single mothers and married mothers, respectively). The phase-in and –out rate, the maximum credit, and the eligible income range were increased for all adults with a qualifying child regardless of marital status. Further, over half of the highly educated single mothers (completed more than high school) had a family income that fell within the eligible range for EITC; and over one-third of the married mothers, who completed high school (at most), also fell within the eligible range. Two-third of all single mothers and approximately 80 percent of single mothers who completed high school (at most) fell within the eligible range. Thus, many members of the second and third comparison groups are eligible for EITC and should have been affected by the expansion. Thus, welfare reform appears to be the more likely explanation for the increase in single mothers’ subjective well-being than does the EITC expansion.

Interestingly, these results appear to indicate that for single mothers the cost of working – or participating in a welfare-to-work program – in terms of lost non-market time and additional life stress, was more than offset by the benefits. Recall that welfare reform did not substantially increase income or consumption. Thus, there must be positive non-pecuniary benefits from working. This 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 (Deiner and Seligman, 2008).

Apparently, these finding may also hold for single mothers as well as for the general population.

Finally, this research demonstrates the importance and feasibility of incorporating measures of well-being into the evaluation of government policies. Without such measures, one is left with only a partial picture of a policy's impact.

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Table I
Demographic characteristics

Variables	GSS			WVS		
	All (1)	Single Mothers (2)	Not Single-Mothers (3)	All (1)	Single Mothers (2)	Not Single-Mothers (3)
Subjective well-being						
Life satisfaction*	-	-	-	7.555 (0.031)	7.164 (0.088)	7.621 (0.033)
Average happiness**	2.187 (0.004)	1.951 (0.011)	2.223 (0.004)	2.289 (0.010)	2.166 (0.028)	2.309 (0.011)
Very happy	0.302 (0.003)	0.167 (0.007)	0.323 (0.003)	0.370 (0.008)	0.283 (0.020)	0.384 (0.009)
Pretty happy (GSS) / Quite happy (WVS)	0.583 (0.003)	0.617 (0.009)	0.578 (0.003)	0.558 (0.008)	0.613 (0.021)	0.548 (0.009)
Not too happy (GSS) / Not very happy (WVS)	0.115 (0.002)	0.216 (0.007)	0.100 (0.002)	0.064 (0.004)	0.091 (0.013)	0.060 (0.004)
Not at all happy (WVS)	-	-	-	0.008 (0.001)	0.013 (0.005)	0.007 (0.002)
Education						
Less than high school***	0.150 (0.002)	0.229 (0.007)	0.138 (0.002)	0.278 (0.012)	0.368 (0.042)	0.269 (0.012)
Complete high school (no additional education)***	0.562 (0.003)	0.594 (0.008)	0.557 (0.003)	0.250 (0.012)	0.338 (0.041)	0.241 (0.012)
More than high school***	0.288 (0.003)	0.177 (0.006)	0.305 (0.003)	0.472 (0.013)	0.293 (0.040)	0.490 (0.014)
Race						
Black***	0.135 (0.002)	0.330 (0.008)	0.105 (0.002)	0.159 (0.010)	0.371 (0.042)	0.137 (0.010)
White***	0.808 (0.002)	0.605 (0.008)	0.839 (0.002)	0.715 (0.012)	0.500 (0.044)	0.738 (0.012)
Health						
Excellent (GSS) / Very good (WVS)	0.371 (0.003)	0.277 (0.009)	0.385 (0.004)	0.472 (0.008)	<i>0.438</i> (0.022)	<i>0.477</i> (0.009)
Good	0.474 (0.004)	0.476 (0.010)	0.473 (0.004)	0.398 (0.008)	0.389 (0.021)	0.400 (0.009)
Fair	0.135 (0.002)	0.208 (0.008)	0.124 (0.003)	0.113 (0.005)	0.145 (0.015)	0.107 (0.006)
Poor (GSS) / Very poor or Poor (WVS)	0.020 (0.001)	0.039 (0.004)	0.018 (0.001)	0.017 (0.002)	0.029 (0.007)	0.015 (0.002)
Employment status						
Working	0.766 (0.003)	0.676 (0.008)	0.780 (0.003)	0.795 (0.007)	<i>0.765</i> (0.018)	<i>0.799</i> (0.007)
Unemployed	0.042 (0.001)	0.049 (0.004)	0.041 (0.001)	0.081 (0.005)	0.161 (0.016)	0.068 (0.004)
Other						
Children	1.496 (0.009)	2.257 (0.023)	1.378 (0.010)	1.690 (0.026)	2.273 (0.073)	1.619 (0.027)
Family income (in 2000 dollars)	\$31,911 (168.21)	\$16,124 (265.28)	\$34,353 (184.20)	-	-	-
Income in first quintile	-	-	-	0.093 (0.005)	0.222 (0.019)	0.071 (0.005)
Income in second quintile	-	-	-	0.195 (0.007)	0.263 (0.020)	0.184 (0.007)
Income in fifth quintile	-	-	-	0.197 (0.007)	0.120 (0.015)	0.210 (0.008)
Age	32.54 (0.045)	33.68 (0.119)	32.36 (0.049)	31.29 (0.130)	29.46 (0.373)	31.60 (0.138)
Observations	26,176	3,514	22,662	3,684	527	3,157

- data is not available in dataset

* where 1 = "dissatisfied" and 10 = "satisfied"

** where 1 = "not too happy," 2 = "pretty happy," and 3 = "very happy" (for GSS) and
0 = "not at all happy," 1 = "not very happy," 2 = "quite happy," and 3 = "very happy" (for WVS)

*** educational attainment and race were not collected as part of the WVS in the first two waves (1982 and 1990)

bolded implies that means are significantly different ($p < 0.05$) for single-mothers (columns 2 & 5) and not single-mother " (columns 3 and 6)

italics implies that means are marginally significantly different ($p < 0.10$) for single-mothers (columns 2 & 5) and not single-mother " (columns 3 and 6)

Table IIa

Coefficients from estimating the “happiness function” using GSS data and happiness as the dependent variable

Covariates	Dependent variable: happy (where 1 = "not too happy," 2 = "pretty happy," and 3 = "very happy")						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Single mother				-0.8904 (0.0391)	-0.9059 (0.0444)	-0.6502 (0.0477)	-0.6821 (0.0553)
Female	0.1319 (0.0260)	0.1976 (0.0273)	0.2675 (0.0316)		0.3340 (0.0278)	0.3320 (0.0290)	0.4079 (0.0336)
Age	0.0753 (0.0168)	0.0416 (0.0178)	0.0447 (0.0202)		0.0889 (0.0169)	0.0538 (0.0179)	0.0567 (0.0203)
Age squared	-0.0011 (0.0003)	-0.0008 (0.0003)	-0.0007 (0.0003)		-0.0013 (0.0003)	-0.0009 (0.0003)	-0.0008 (0.0003)
Did not complete high school	-0.3085 (0.0420)	-0.1086 (0.0447)	0.0220 (0.0512)		-0.2524 (0.0419)	-0.1014 (0.0446)	0.0274 (0.0512)
Completed more than high school	0.3010 (0.0293)	0.1758 (0.0308)	0.0559 (0.0361)		0.2625 (0.0295)	0.1678 (0.0308)	0.0507 (0.0362)
Black	-0.7443 (0.0428)	-0.5951 (0.0457)	-0.5957 (0.0532)		-0.5741 (0.0435)	-0.4978 (0.0462)	-0.4914 (0.0539)
Other nonwhite (not black)	-0.2457 (0.0660)	-0.1997 (0.0702)	-0.0630 (0.0804)		-0.2216 (0.0660)	-0.1922 (0.0701)	-0.0530 (0.0804)
Unemployed	-0.9126 (0.0728)	-0.8143 (0.0775)	-0.7952 (0.0882)		-0.8849 (0.0745)	-0.8137 (0.0784)	-0.8028 (0.0889)
Log of real income		0.4059 (0.0185)	0.3297 (0.0215)			0.3387 (0.0192)	0.2625 (0.0222)
Poor health			-1.2421 (0.1365)				-1.2321 (0.1362)
Fair health			-0.7504 (0.0519)				-0.7442 (0.0518)
Excellent health			0.6838 (0.0347)				0.6870 (0.0348)
Region dummies	Yes	Yes	Yes	No	Yes	Yes	Yes
Wave dummies	Yes	Yes	Yes	No	Yes	Yes	Yes
Observations	23,847	22,244	16,812	23,910	23,847	22,244	16,812
Marginal effect (single mother)							
P(very happy)	-	-	-	-0.1592 (0.006)	-0.1585 (0.0064)	-0.1184 (0.0076)	-0.1207 (0.0085)
P(pretty happy)	-	-	-	0.0462 (0.002)	0.0475 (0.0022)	0.0460 (0.0021)	0.0480 (0.0024)
P(not too happy)	-	-	-	0.1131 (0.006)	0.1110 (0.0068)	0.0724 (0.0063)	0.0727 (0.0071)

Bold coefficients are significantly different than zero with $p < 0.05$ *Italicized* coefficients are significantly different than zero with $p < 0.10$

Table IIb

Coefficients from estimating the “happiness function” using WVS data and happiness as the dependent variable

Covariates	Dependent variable: happy (where 0 = "not at all happy," 1 = "not very happy," = "quite happy," and 3 = "very happy")					2
	(1)	(2)	(3)	(4)	(5)	
Single mother			-0.4618 (0.0952)	-0.5103 (0.1305)	-0.6446 (0.2469)	
Female	0.1989 (0.0785)	<i>0.2406</i> (0.1250)		0.3173 (0.0844)	0.3356 (0.1298)	
Age	-0.0115 (0.0453)	-0.0282 (0.0698)		-0.0241 (0.0458)	-0.0273 (0.0702)	
Age squared	0.0002 (0.0007)	0.0006 (0.0011)		0.0004 (0.0007)	0.0006 (0.0011)	
Unemployed	<i>-0.2879</i> (0.1744)	-0.2030 (0.2678)		-0.2361 (0.1751)	-0.1835 (0.2658)	
Income in first quintile	<i>-0.2568</i> (0.1550)	-0.3854 (0.2389)		-0.1663 (0.1561)	-0.3027 (0.2431)	
Income in second quintile	-0.3116 (0.1122)	-0.5099 (0.1855)		-0.2705 (0.1130)	-0.4581 (0.1848)	
Income in fifth quintile	0.2541 (0.0984)	0.0844 (0.1495)		0.2307 (0.0989)	0.0655 (0.1498)	
Very poor or poor health	-1.5295 (0.3075)	-0.3664 (0.5517)		-1.53553 (0.3032)	-0.4461 (0.5438)	
Fair health	-0.3860 (0.1508)	<i>-0.4062</i> (0.2363)		-0.38138 (0.1510)	<i>-0.3897</i> (0.2353)	
Very good health	0.5544 (0.0833)	0.5712 (0.1304)		0.5631 (0.0836)	0.5702 (0.1307)	
Did not complete high school		-0.1244 (0.1814)			-0.1343 (0.1810)	
Completed more than high school		-0.2064 (0.1548)			-0.2231 (0.1538)	
Black		-0.0900 (0.1807)			-0.0198 (0.1829)	
Other nonwhite (not black)		0.4184 (0.2005)			0.4205 (0.2016)	
Wave dummies	Yes	Yes	No	Yes	Yes	
Observations	3,357	1,289	3,650	3,357	1,289	
Marginal effect (single mother)						
P(very happy)	-	-	-0.1020 (0.020)	-0.1115 (0.0265)	-0.1464 (0.0511)	
P(quite happy)	-	-	0.0665 (0.012)	0.0758 (0.0161)	0.1142 (0.0360)	
P(not very happy)	-	-	0.0312 (0.007)	0.0312 (0.0095)	0.0292 (0.0146)	
P(not at all happy)	-	-	0.0044 (0.001)	0.0045 (0.0017)	0.0031 (0.0021)	

Bold coefficients are significantly different than zero with $p < 0.05$ *Italicized* coefficients are significantly different than zero with $p < 0.10$

Table IIc

Coefficients from estimating the “happiness function” using WVS data and life satisfaction as the dependent variable

Covariates	Dependent variable: satisfied (on scale from "dissatisfied" = 1 to "satisfied" = 10)				
	(1)	(2)	(3)	(4)	(5)
Single mother			-0.4225 (0.0845)	-0.4288 (0.1188)	-0.4940 (0.2181)
Female	0.1929 (0.0687)	<i>0.2137</i> (0.1106)		0.2917 (0.0737)	0.2892 (0.115)
Age	-0.0598 (0.0416)	-0.1877 (0.0638)		<i>-0.0698</i> (0.0418)	-0.1865 (0.0639)
Age squared	0.0010 (0.0007)	0.0028 (0.0010)		<i>0.0011</i> (0.0007)	0.0028 (0.0010)
Unemployed	<i>-0.7567</i> (0.1518)	-0.5988 (0.2223)		-0.7248 (0.1528)	-0.6005 (0.2227)
Income in first quintile	<i>-0.4920</i> (0.1441)	-0.6645 (0.2196)		-0.4162 (0.1448)	-0.5923 (0.2251)
Income in second quintile	-0.3638 (0.0974)	-0.3876 (0.1572)		-0.3310 (0.0980)	-0.3414 (0.1581)
Income in fifth quintile	0.1986 (0.0857)	0.2646 (0.1266)		0.1810 (0.0861)	0.2495 (0.1267)
Very poor or poor health	-1.4952 (0.3652)	-0.5538 (0.5232)		-1.52377 (0.3647)	-0.6191 (0.5366)
Fair health	-0.5593 (0.1187)	-0.4142 (0.1725)		-0.56238 (0.1191)	-0.3977 (0.1709)
Very good health	0.6015 (0.0732)	0.6897 (0.1174)		0.6031 (0.0732)	0.6869 (0.1174)
Did not complete high school		-0.0988 (0.1663)			-0.1025 (0.1662)
Completed more than high school		0.0226 (0.1383)			0.0143 (0.1372)
Black		-0.2044 (0.1730)			-0.1444 (0.1768)
Other nonwhite (not black)		-0.0586 (0.1739)			-0.0603 (0.1751)
Wave dummies	Yes	Yes	No	Yes	Yes
Observations	3,377	1,293	3,650	3,377	1,293
Marginal effect (single mother)					
P(life satisfaction = 10)	-	-	-0.0466 (0.008)	-0.0424 (0.0105)	-0.0420 (0.0162)
P(life satisfaction = 9)	-	-	-0.0413 (0.008)	-0.0435 (0.0118)	-0.0511 (0.0213)
P(life satisfaction = 2)	-	-	0.0051 (0.001)	0.0042 (0.0015)	<i>0.0045</i> (0.0027)
P(life satisfaction = 1)	-	-	0.0041 (0.001)	0.0029 (0.0012)	<i>0.0034</i> (0.0020)

Bold coefficients are significantly different than zero with $p < 0.05$ *Italicized* coefficients are significantly different than zero with $p < 0.10$

Table IIIa

Coefficients from estimating equation (4) using GSS data and happiness as the dependent variable

Dependent variable: happy (where 1 = "not too happy," 2 = "pretty happy," and 3 = "very happy")								
	Comparison group 1: Single women without children		Comparison group 2: Highly educated single mothers		Comparison group 3: Married mothers		Comparison group 4: Single men without children	
	All (1)	Completed high school at most (2)	More than high school versus completed high school at most (3)	At least college versus completed high school at most (4)	All (5)	Completed high school at most (6)	All (7)	Completed high school at most (8)
Covariates								
Post Single-mother [Low-educated-single-mother for Columns (3) and (4)]	-0.3531 (0.2290) -0.3862 (0.1458)	-0.2120 (0.3690) -0.6067 (0.2166)	0.0498 (0.2934) -0.4517 (0.2216)	-0.0985 (0.4767) -0.5894 (0.4435)	0.1779 (0.1829) -0.8241 (0.1274)	0.1843 (0.2635) -0.932 (0.1773)	-0.0862 (0.2038) -0.1578 (0.1343)	-0.0535 (0.3530) -0.211 (0.1849)
DD estimator	0.3371 (0.1912) {1.76}	0.4613 (0.3099) {1.49}	0.2073 (0.2522) {0.82}	0.4746 (0.3575) {1.33}	-0.0444 (0.1651) {-0.27}	0.0165 (0.2318) {0.07}	0.3263 (0.1788) {1.82}	0.5145 (0.2589) {1.99}
Age	-0.0655 (0.0579)	0.0305 (0.0839)	-0.1133 (0.0876)	0.0369 (0.1007)	0.0379 (0.0630)	0.0898 (0.0811)	-0.0326 (0.0536)	0.0588 (0.0734)
Age squared	0.0008 (0.0009)	-0.0007 (0.0013)	0.0015 (0.0013)	-0.0009 (0.0015)	-0.0007 (0.0009)	-0.0015 (0.0012)	0.0003 (0.0008)	-0.0011 (0.0012)
Years of schooling	-0.0820 (0.1825)	-0.20948 (0.4357)	-0.1304 (0.2151)	-0.18572 (0.2440)	-0.0561 (0.1490)	0.1319 (0.3826)	-0.0303 (0.1374)	-0.01955 (0.3570)
Years of schooling squared	0.0044 (0.0064)	0.0084 (0.0219)	0.0040 (0.0075)	0.0060 (0.0097)	0.0035 (0.0053)	-0.00916 (0.0194)	0.0031 (0.0049)	-0.0013 (0.0184)
Black	-0.2174 (0.1220)	-0.1602 (0.1693)	-0.2504 (0.1403)	-0.10473 (0.1723)	-0.3769 (0.1141)	-0.21275 (0.1626)	-0.3360 (0.1253)	-0.16151 (0.1671)
Other nonwhite (not black and not white)	-0.3189 (0.2111)	-0.37247 (0.3337)	-0.5038 (0.2779)	-0.5677 (0.3379)	-0.0796 (0.1886)	-0.29259 (0.2870)	-0.4268 (0.1919)	-0.36116 (0.3022)
Poor health	-1.3456 (0.3117)	-1.69738 (0.4380)	-1.3470 (0.3386)	-1.52781 (0.4340)	-0.8805 (0.3296)	-1.13263 (0.4433)	-1.0992 (0.3068)	-1.20362 (0.4238)
Fair health	-0.6818 (0.1354)	-0.76642 (0.1858)	-0.7131 (0.1608)	-0.73078 (0.1878)	-0.7666 (0.1208)	-0.802 (0.1481)	-0.7521 (0.1251)	-0.74151 (0.1609)
Excellent health	0.6331 (0.1136)	0.5263 (0.1909)	0.5019 (0.1629)	0.5872 (0.2059)	0.6827 (0.0949)	0.7221 (0.1519)	0.6521 (0.1058)	0.6666 (0.1721)
Log of real income	0.1202 (0.0548)	0.0063 (0.0801)	0.1574 (0.0760)	0.1067 (0.0903)	0.1612 (0.0563)	0.1169 (0.0754)	0.1688 (0.0542)	0.1646 (0.0704)
Unemployed	-0.1241 (0.2513)	-0.15546 (0.3150)	-0.0750 (0.3087)	-0.17173 (0.3728)	-0.3508 (0.2564)	-0.41868 (0.3373)	-0.4536 (0.2065)	-0.28464 (0.2506)
Region dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wave dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,897	824	1,100	770	2,581	1,257	2,210	1,031
Marginal effect (single mother)								
P(very happy)	0.0532 (0.032)	0.0631 (0.0445)	0.0274 (0.035)	0.0619 (0.0489)	-0.0085 (0.032)	0.0028 (0.0395)	0.0480 (0.028)	0.0659 (0.0359)
P(pretty happy)	-0.0104 (0.009)	0.0109 (0.0071)	0.0048 (0.004)	0.0161 (0.0102)	0.0044 (0.016)	-0.0008 (0.0118)	-0.0067 (0.007)	0.0162 (0.0068)
P(not too happy)	-0.0428 (0.023)	-0.0740 (0.0479)	-0.0322 (0.038)	-0.0780 (0.0566)	0.0042 (0.016)	-0.0020 (0.0277)	-0.0413 (0.021)	-0.0820 (0.0386)

standard errors in parenthesis; z-score in brackets

bold coefficients are significantly different than zero at $p < 0.05$ **bold italicized** coefficients are significantly different than zero at $p < 0.10$

Table IIIb

Coefficients from estimating equation (4) using WVS data and happiness as the dependent variable

Dependent variable: happy (where 0 = "not at all happy," 1 = "not very happy," 2 = "quite happy," and 3 = "very happy")								
	Comparison group 1: Single women without children		Comparison group 2: Highly educated single mothers		Comparison group 3: Married mothers		Comparison group 4: Single men without children	
	All (1)	Completed high school at most (2)	More than high school versus completed high school at most (3)	At least college versus completed high school at most (4)	All (5)	Completed high school at most (6)	All (7)	Completed high school at most (8)
Covariates								
Post	-0.0256 (0.4401)	0.4018 (0.6938)	0.1271 (0.6434)	0.6156 (1.1512)	-0.2783 (0.2290)	-0.5188 (0.3214)	-0.1501 (0.3218)	-0.3163 (0.4470)
Single-mother [Low-educated-single-mother for Columns (3) and (4)]	-0.6951 (0.6425)	-0.8705 (0.8665)	-1.7955 (0.6790)	-1.6739 (0.8758)	-1.523 (0.4501)	-2.063 (0.4891)	-0.443 (0.5334)	-1.1328 (0.7162)
DD estimator	0.5991 (0.6624) {0.90}	0.5419 (0.8968) {0.60}	1.3697 (0.9729) {1.41}	0.7138 (1.3400) {0.53}	1.1749 (0.5209) {2.26}	1.8462 (0.6015) {3.07}	0.9231 (0.5731) {1.61}	1.5608 (0.7289) {2.14}
Age	0.1461 (0.1754)	0.1556 (0.2925)	0.5706 (0.3051)	0.6497 (0.3435)	-0.1857 (0.1832)	-0.0589 (0.2179)	-0.1615 (0.1467)	0.0046 (0.2097)
Age squared	-0.0017 (0.0028)	-0.0019 (0.0047)	-0.0085 (0.0047)	-0.0101 (0.0054)	0.0027 (0.0027)	0.0011 (0.0032)	0.0023 (0.0023)	-0.0003 (0.0033)
Very poor or poor health	-2.1717 (1.4227)	-4.10585 (1.7139)	-3.7049 (2.3543)	-3.3406 (2.2657)	-1.34891 (0.7547)	-0.76931 (0.8706)	-0.92652 (1.5693)	-0.8834 (1.5370)
Fair health	-0.6999 (0.5641)	-1.32994 (0.6222)	-0.8235 (0.6977)	-0.64179 (0.8176)	-1.15678 (0.3424)	-1.1290 (0.3875)	-0.40781 (0.3876)	-0.1563 (0.5571)
Very good health	0.7009 (0.3297)	0.48132 (0.4648)	0.3290 (0.4687)	0.20864 (0.5337)	0.23114 (0.2208)	0.2007 (0.2945)	0.8798 (0.2876)	0.9361 (0.3537)
Income in first quintile	-0.2364 (0.4334)	-0.04811 (0.5681)	-0.6072 (0.5950)	-0.84929 (0.6407)	0.0887 (0.3646)	0.0078 (0.4245)	-0.25032 (0.4180)	0.0189 (0.5083)
Income in second quintile	-0.6692 (0.3701)	-0.5362 (0.4956)	-0.9295 (0.5339)	-0.9874 (0.6596)	-0.63151 (0.2922)	-0.5424 (0.3245)	-0.3172 (0.3580)	-0.2270 (0.4608)
Income in fifth quintile	0.1145 (0.5178)	0.83856 (0.7863)	1.9821 (0.9413)	1.11846 (0.8724)	-0.13977 (0.2667)	-0.7709 (0.4151)	0.0022 (0.3869)	-0.1036 (0.5016)
Unemployed	-1.1204 (0.6463)	-1.04247 (0.7069)	-0.8044 (0.6915)	-0.61181 (0.6747)	-0.12849 (0.3468)	-0.43422 (0.3669)	-0.6360 (0.4088)	-0.4265 (0.4491)
Did not complete high school	1.0860 (0.4770)	0.8628 (0.4468)	1.2609 (0.6841)	1.1802 (0.6177)	-0.4756 (0.2853)	-0.4587 (0.2732)	0.8538 (0.3816)	0.7704 (0.3675)
Completed more than high school	0.5373 (0.4007)	-	-	-	-0.23459 (0.2479)	-	0.6551 (0.3583)	-
Black	0.2956 (0.4582)	0.47069 (0.6266)	0.4987 (0.5103)	0.75216 (0.6164)	-0.31029 (0.3019)	-0.3120 (0.3876)	0.2777 (0.3663)	0.1814 (0.4519)
Other nonwhite (not black)	0.9161 (0.4043)	1.23228 (0.6006)	1.2767 (0.7047)	1.57671 (0.8164)	0.5277 (0.3319)	0.4525 (0.3960)	0.75028 (0.4060)	0.6428 (0.5702)
Observations	247	129	118	97	496	283	306	178
Marginal effect (single mother)								
P(very happy)	0.1273 (0.148)	0.1070 (0.1828)	0.2525 (0.186)	0.1229 (0.2290)	0.2803 (0.1112)	0.4137 (0.1055)	0.2076 (0.1355)	0.3506 (0.1658)
P(quite happy)	-0.1038 (0.126)	-0.0699 (0.1281)	-0.2053 (0.155)	-0.0855 (0.1577)	-0.2569 (0.1035)	-0.3621 (0.0945)	-0.1763 (0.1188)	-0.2870 (0.1436)
P(not very happy)	-0.0235 (0.023)	-0.0371 (0.0566)	-0.0473 (0.037)	-0.0374 (0.0735)	-0.0220 (0.0092)	-0.0484 (0.0167)	-0.0293 (0.0178)	-0.0584 (0.0286)

standard errors in parenthesis; z-score in brackets

. means data is missing; - means that coefficient cannot be estimated because no respondents are in that category

bold coefficients are significantly different than zero at $p < 0.05$ **bold italicized** coefficients are significantly different than zero at $p < 0.10$

Table IIIc

Coefficients from estimating equation (4) using WVS data and life satisfaction as the dependent variable

Dependent variable: satisfied (on scale from "dissatisfied" = 1 to "satisfied" = 10)								
	Comparison group 1: Single women without children		Comparison group 2: Highly educated single mothers		Comparison group 3: Married mothers		Comparison group 4: Single men without children	
	All (1)	Completed high school at most (2)	More than high school versus completed high school at most (3)	At least college versus completed high school at most (4)	All (5)	Completed high school at most (6)	All (7)	Completed high school at most (8)
Covariates								
Post Single-mother [Low-educated-single-mother for Columns (3) and (4)]	-0.3713 (0.3691)	-0.2671 (0.5922)	0.3677 (0.5573)	1.8526 (0.8068)	0.0705 (0.2114)	0.1422 (0.3022)	0.2870 (0.2919)	0.4290 (0.4154)
DD estimator	1.3460 (0.5533) {2.43}	1.7453 (0.7650) {2.28}	1.4562 (0.7636) {1.91}	-0.0742 (0.9250) {-0.08}	1.0852 (0.3999) {2.71}	1.3707 (0.4830) {2.84}	0.7817 (0.4824) {1.62}	0.8785 (0.5943) {1.48}
Age	0.0081 (0.1595)	-0.0399 (0.2419)	0.2517 (0.2803)	0.5117 (0.2901)	0.0036 (0.1494)	-0.0113 (0.1845)	-0.4239 (0.1308)	-0.3421 (0.1794)
Age squared	-0.0001 (0.0025)	0.0002 (0.0038)	-0.0037 (0.0043)	-0.0082 (0.0045)	-0.0001 (0.0022)	0.0003 (0.0028)	0.0062 (0.0021)	0.0049 (0.0029)
Very poor or poor health	-1.9722 (1.2542)	-3.01736 (2.0923)	-3.2646 (11.8446)	-3.27824 (10.4670)	-1.16014 (0.9637)	-0.1422 (1.8550)	-0.70949 (1.2409)	-0.6605 (1.3748)
Fair health	-0.2636 (0.3546)	-0.74042 (0.5470)	-0.9245 (0.5532)	-0.67898 (0.7871)	-0.74563 (0.2871)	-0.7019 (0.3672)	-0.14208 (0.3018)	-0.2252 (0.4754)
Very good health	0.8186 (0.3040)	0.0908 (0.4164)	0.1178 (0.4492)	-0.01381 (0.4972)	0.2903 (0.1919)	0.3652 (0.2481)	0.6438 (0.2555)	0.7449 (0.3301)
Income in first quintile	-0.4728 (0.3514)	-0.72146 (0.5477)	-0.5469 (0.5583)	-0.8784 (0.7237)	-0.8004 (0.3667)	-0.9074 (0.4208)	-0.39732 (0.3844)	-0.7166 (0.5359)
Income in second quintile	-0.0785 (0.3222)	-0.3088 (0.4436)	0.0230 (0.4853)	-0.3726 (0.5219)	-0.34855 (0.2669)	-0.4181 (0.3228)	-0.2375 (0.3118)	-0.8349 (0.4185)
Income in fifth quintile	0.1337 (0.5603)	0.4078 (0.8370)	0.7237 (0.8733)	-0.02073 (0.6323)	0.0516 (0.2204)	-0.4888 (0.3533)	0.1310 (0.3134)	-0.6781 (0.4270)
Unemployed	-0.8883 (0.4818)	-0.9509 (0.5703)	-1.2877 (0.7787)	-0.93555 (0.8116)	-0.69148 (0.3214)	-0.7898 (0.3703)	-0.39513 (0.4835)	-0.1669 (0.5252)
Did not complete high school	0.6562 (0.3889)	0.4234 (0.3879)	0.4983 (0.5322)	0.4504 (0.4877)	-0.3365 (0.2573)	-0.3416 (0.2496)	0.2910 (0.3468)	0.1119 (0.3436)
Completed more than high school	0.5036 (0.3498)	-	-	-	-0.0460 (0.2296)	-	0.3682 (0.3074)	-
Black	0.1437 (0.3289)	0.58913 (0.4338)	-0.1428 (0.3820)	0.31432 (0.4594)	-0.23752 (0.2825)	-0.2089 (0.3653)	0.1950 (0.2927)	0.5321 (0.3415)
Other nonwhite (not black)	0.3382 (0.3558)	0.39597 (0.5215)	0.2685 (0.6731)	0.59605 (0.6225)	0.04043 (0.3236)	-0.0944 (0.3966)	0.2527 (0.3625)	0.1874 (0.4784)
Observations	248	129	118	97	498	285	307	179
Marginal effect (single mother)								
P(satisfied = 7)	-0.0928 (0.048)	-0.0679 (0.0430)	-0.0180 (0.041)	-0.0001 (0.0030)	-0.0853 (0.0324)	-0.0927 (0.0365)	-0.0590 (0.0423)	-0.0550 (0.0458)
P(satisfied = 8)	0.0340 (0.023)	0.1087 (0.0429)	0.1292 (0.065)	-0.0083 (0.1032)	-0.0263 (0.0271)	-0.0152 (0.0328)	0.0480 (0.0205)	0.0508 (0.0260)
P(satisfied = 9)	0.1490 (0.054)	0.1574 (0.0644)	0.1582 (0.087)	-0.0067 (0.0842)	0.1171 (0.0331)	0.1143 (0.0313)	0.0712 (0.0452)	0.0698 (0.0489)
P(satisfied = 10)	0.1350 (0.080)	0.1444 (0.0929)	0.0502 (0.038)	-0.0018 (0.0228)	0.1418 (0.0675)	0.2026 (0.0923)	0.0732 (0.0550)	0.0951 (0.0752)

standard errors in parenthesis; z-score in brackets

bold coefficients are significantly different than zero at $p < 0.05$ **bold italicized** coefficients are significantly different than zero at $p < 0.10$

Figure 1a

The average happiness of single mothers and respondents who are not single mothers using GSS data

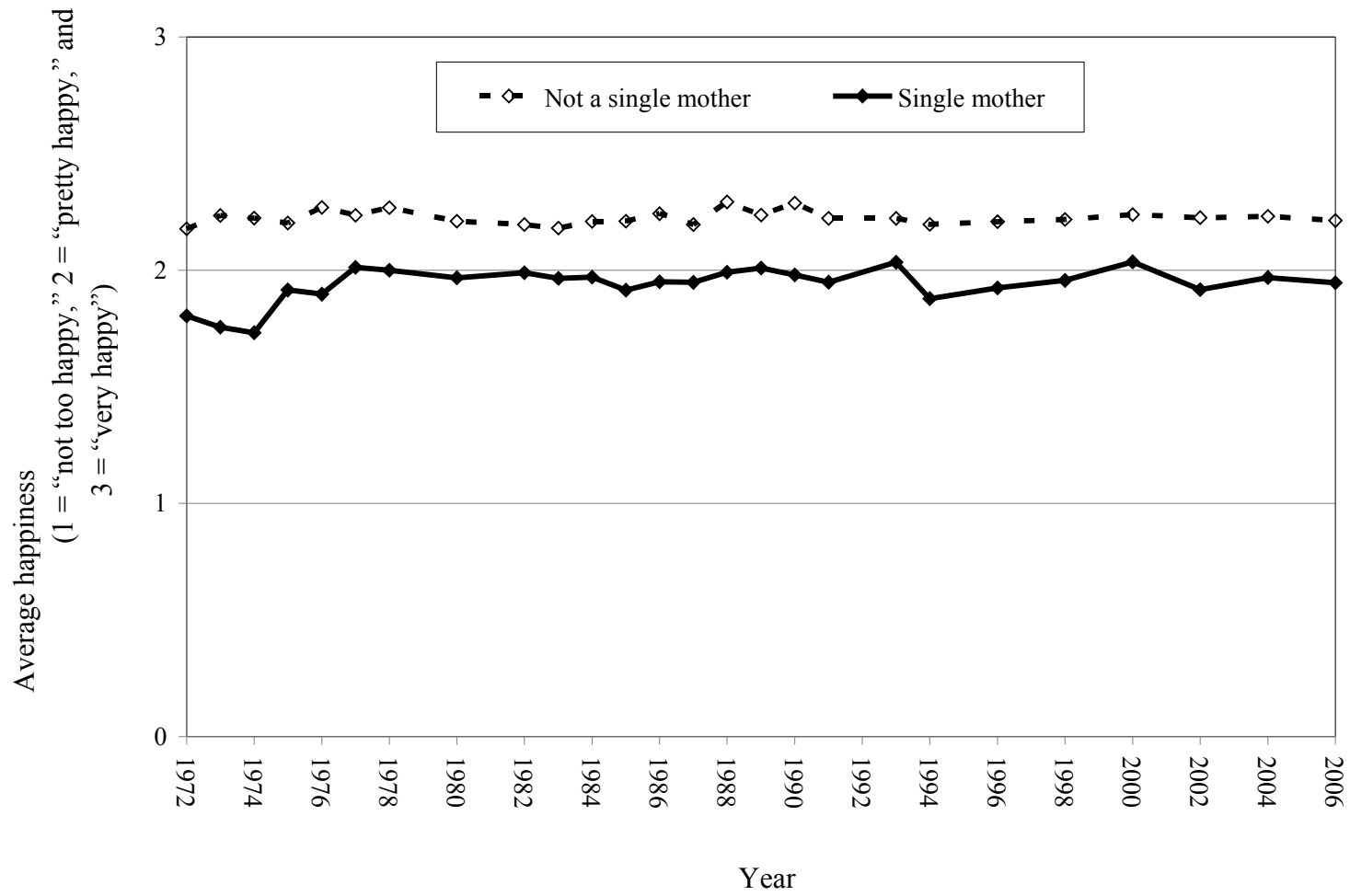


Figure 1b

The average happiness – and life satisfaction – of single mothers and respondents who are not single mothers using WVS data

