Footloose and Fancy Free?
Two Decades of Single Mothers' Subjective Well-Being

October 2011

Chris M. Herbst
School of Public Affairs
Arizona State University
411 N. Central Avenue, Suite 480
Phoenix, AZ 85004-0687
Email: chris.herbst@asu.edu

Abstract

The last several decades witnessed dramatic changes to U.S. tax and transfer programs. Despite an abundance of research evaluating the impact of these work-based policy reforms on single mothers' employment and welfare behavior, little is known about mothers' subjective well-being, as captured by survey questions on happiness and life satisfaction. Using unique data from the DDB Needham Life Style Survey, I examine several dimensions of single mothers' subjective well-being before and after the policy reforms were fully implemented. Compared to other groups of women, single mothers experience large deficits in most indicators of well-being. However, over the past few decades these mothers witnessed absolute and relative increases in global life satisfaction, declining regrets about the past, and improved financial satisfaction. Nearly all of these gains occurred after the tax and transfer reforms went into effect. In contrast, measures of self-reported stress and anxiety indicate that single mothers' condition worsened slightly following the transition to a work-based policy regime.

I. Introduction

During the last few decades, U.S. tax and transfer programs shifted to a work-based policy regime. Successive welfare reform legislation through the 1988 Family Support Act, states' welfare waivers in the early- to mid-1990s, and the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) of 1996 increasingly sought to encourage work and discourage welfare participation. Significant expansions to the Earned Income Tax Credit (EITC) and child care subsidies created powerful incentives to enter the labor force, and a series of Medicaid reforms allowed single mothers and their children to retain eligibility for health insurance after leaving welfare.

Although a vast body of research evaluates the impact of these tax and transfer programs on single mothers' work and welfare outcomes (e.g., Fang & Keane, 2004; Grogger, 2003; Herbst, 2008; Meyer & Rosenbaum, 2001), comparatively little is known about their *well-being* in the wake of these reforms. This paper, therefore, takes a novel approach by considering the evolution of mothers' subjective well-being—as captured by survey questions on happiness and life satisfaction—over the last several decades. There are numerous ways to conceptualize subjective well-being, but scholars generally agree that these measures tap both the affective (instantaneous) and cognitive (remembered) dimensions of quality-of-life (Diener, 1984; Kahneman & Deaton, 2010). Although psychologists have studied subjective well-being for decades, economists and public policy researchers are increasingly turning to these measures to understand the ways in which self-reported happiness is influenced by a range of economic and policy phenomena. Thus, measures of subjective well-being represent a largely untapped resource for conducting social policy evaluations.

This topic is also of interest given that work-based policy reforms are predicted to have conflicting effects on subjective well-being. Tax and transfer programs should influence mothers' health—including self-reported happiness and life satisfaction—primarily through changes in employment and income. On the one hand, by creating strong incentives to enter the labor force,

welfare reform and the EITC may discourage time-intensive well-being investments (e.g., exercise and other leisure activities). Furthermore, insofar as these reforms increase disposable income, single mothers might shift toward the consumption of health-degrading (normal) goods and services such as fast food and sedentary activities, which may have negative implications for subjective well-being. On the other hand, policy-induced increases in income may enable individuals to consume goods and services that enhance well-being (e.g., health insurance and mental health services). There is also evidence that employment by itself increases subjective well-being beyond the income-related benefits of working. Such findings imply that recent tax and transfer reforms may confer psychological benefits in the form of increased self-esteem and confidence as well as reductions in the stigma costs associated with long-term unemployment and program participation. Together, these factors imply that recent policy reforms have complicated and potentially offsetting effects on subjective well-being.

The goals of this paper, therefore, are twofold. Given the novelty of these outcomes, I first paint a descriptive portrait of trends in single mothers' subjective well-being between 1985 and 2005. This provides an opportunity to assess whether mothers' well-being improved, declined, or remained stable during a period in which the U.S. social safety net shifted to a work-first system. I then attempt to determine whether the observed changes in mothers' well-being can be explained by the introduction of this new policy regime. To distinguish between the impact of policy reforms and other factors (e.g., economic conditions), the empirical strategy first compares the change in single mothers' well-being before and after reform to that experienced by groups of women who have been minimally affected by the policies. I then compare these results to those based on a sub-set of *lower-skilled* single mothers, a group that is highly likely to be influenced by welfare and other social policy reforms. Finally, to ensure that the results are not confounded by changes in economic conditions, I incorporate controls for the unemployment rate and state fixed effects. The analyses draw upon novel data from the DDB Needham Life Style Survey, which dates back to the mid-

1970s, when the advertising agency DDB Needham commissioned a polling firm to inquire about Americans' consumer preferences and habits. Importantly for the current study, the Life Style Survey contains both a standard question on global life satisfaction as well as several questions on subjective health, and I use these data to paint a multi-dimensional picture of single mothers' quality-of-life over the past few decades.

Results from this study can be summarized as follows. Generally speaking, single mothers experience considerably lower levels of subjective well-being than single women without children and married mothers. However, single mothers witnessed significant well-being gains over time, both absolutely and relative to these comparison groups. Indeed, the trends' analysis points to increases in global life satisfaction and declining regrets about the past as well as growing optimism about the future and improved financial satisfaction. These positive developments are somewhat lessened by single mothers' small declines in measures of subjective health, especially those capturing feelings of stress and pressure. When I examine relative changes in well-being across a set of pre-reform, policy phase-in, and post-reform periods, I find that most of the life satisfaction improvements occurred after the tax and transfer reforms were fully implemented. Overall, single mothers' global life satisfaction gap declined approximately 60 percent relative to single women without children and declined about 22 percent relative to married mothers. On the other hand, measures of physical health show little change in the post-reform period, but some measures of mental health indicate that single mothers' condition worsened after the tax and transfer reforms went into effect.

The remainder of the paper is organized in the following manner. Section II provides background information on the key tax and transfer reforms enacted over the last few decades and summarizes the extensive literature on these reforms. Section III introduces the DDB Needham Life Style Survey and outlines the empirical methodology. Section IV summarizes the results, and Section V concludes with a discussion of policy implications.

II. Background

The Employment-Based Policy Context

A series of reforms to the welfare system began in 1988 with the passage of the Family Support Act (FSA).[1] The FSA's centerpiece was the Job Opportunities and Basic Skills Training (JOBS) program, which required states to fund a mix of work supports and employment activities. Although direct work requirements were not imposed on single parent families, states were required to meet modest participation rates in the JOBS program, and for the first time at least one parent in AFDC-UP families was required to engage in a work activity. In the early-1990s, states began experimenting with more aggressive revisions to their AFDC programs. Between January of 1993 and August of 1996, 43 states obtained a waiver from the Secretary of Health and Human Services to implement one or more changes to existing federal AFDC statutes. Many of the waivers approved the use of strict and broad-based work requirements, time limits on benefit receipt, and sanctions on families that failed to comply with work requirements.

These incremental changes to the welfare system eventually culminated in the 1996 passage of the PRWORA. Congress repealed the AFDC program and replaced it with Temporary Assistance to Needy Families (TANF). The PRWORA eliminated the legal entitlement to cash welfare by imposing a 60-month lifetime time limit on benefit receipt and requiring individuals to leave welfare for work after two years. States have the option of initiating sanctions that reduce or eliminate all or part of a family's welfare grant in cases where parents are not exempt from work requirements and not complying with them. In addition to these new federal rules, the PRWORA devolved programmatic and administrative authority to the states, resulting in considerable geographic variation in TANF implementation.

To ease the transition from welfare to work, the PRWORA restructured and expanded the patchwork child care subsidy system. Congress consolidated four preexisting programs into a single

[1] This review draws on Grogger & Karoly (2005), Herbst (2008), Fang & Keane (2004).

Child Care and Development Fund (CCDF). To be eligible for child care assistance, families must be engaged in a state-defined work activity (e.g., employment, education, or job training), have an income below 85 percent of the state median income, and have at least one child ages 0 to 12. Expenditures on the programs that eventually became the CCDF grew steadily throughout the early-1990s, but exploded after the passage of welfare reform. By 2005, states spent approximately $9.4 billion on child care subsidies and served 1.7 million children per month (Child Care Bureau, 2005).

Expansions to the EITC represent another important change to work incentives faced by single mothers. Enacted in 1975, the credit initially provided a 10 percent wage subsidy on earnings up to $4,000. Major reforms in 1986, 1990, and 1993 gradually increased the EITC's generosity by raising the subsidy rate to 34 percent for one-child families and 40 percent for multiple-child families. Expenditures on the EITC grew by a factor of 20 between 1986 and 2005, from $2 billion to $39 billion (Tax Policy Center, 2008). Another important development is the proliferation of state EITC programs. By 2005, 17 states operated an EITC, with annual foregone revenue ranging from $17 million in Vermont to $591 million in New York (Nagle & Johnson, 2006).

A final policy shift came through the expansion of Medicaid, which provides medical insurance to low-income families. Prior to the mid-1980s, eligibility for Medicaid was closely linked to participation in AFDC, but a series of policy changes enabled unmarried women and their children to retain benefits after transitioning to employment. Another important change was enacted in 1990, when states were required to cover poor children born after September 1983, a benchmark that was met in the early-2000s. Such expansions, among others, resulted in a seven-fold rise in Medicaid expenditures between 1986 and 2005, from $25 billion to $182 billion (Budget of the U.S. Government, 2008).

Previous Research on the Impact of Tax and Transfer Reforms

The policy reforms discussed above have led to an impressive empirical literature attempting to explain the relative contribution of each to single mothers' *employment* growth over the last few

decades (Fang & Keane, 2004; Grogger, 2003; Looney, 2005; Meyer & Rosenbaum, 2001). A tentative conclusion from this research is that expansions to the EITC explain approximately one-third of this employment growth, with welfare reform responsible for another 25 percent. Programs such as child care subsidies and Medicaid usually explain less than 10 percent of the observed employment changes. More recent work has begun to explore the ways in which social policy interacts with the business cycle in an attempt to understand changes in single mothers' employment and welfare use following the recessions of 2001 and 2007-2009 (Bitler & Hoynes, 2010; Herbst, 2008; Lerman, 2005; Pavetti & Rosenbaum, 2010). This work generally finds that although food stamp participation and other non-cash benefits have become more sensitive to economic conditions after welfare reform, AFDC/TANF participation may have become less sensitive. It also appears that the positive employment effects of recent social policy reforms are not only amplified during periods of economic growth, but do not fade substantially during recessions.

A sizeable body of work also focuses on changes to single mothers' *income* in the wake of welfare and other policy reforms. Early work from state-specific welfare "leavers" studies (e.g., Cancian et al., 2000; Danziger et al., 1999; U.S. GAO, 1999) and those using nationally representative data (e.g., Primus et al., 1999) tend to find declines in income among welfare leavers compared to the mix of earnings and welfare benefits prior to exit. Other studies attempt to estimate the causal effect of specific reforms on single mothers' financial well-being (Bollinger et al., 2009; Grogger, 2003; Moffitt, 1999; Schoeni & Blank, 2000). Results from this work point to small increases in income and modest reductions in poverty following welfare waivers and TANF, while the 1990s EITC expansions led to sizeable improvements in economic well-being. Consistent with this evidence, a recent study that followed low-income mothers between 1999 and 2005 finds sizeable gains in income and reductions in poverty across most groups of single mothers, particularly among those able to consistently remain off welfare (Frogner et al., 2009).

A small number of studies focus on broader measures of *material well-being*, such as food

insecurity and consumption (e.g., Falk, 2000; Frogner et al., 2009; Jencks & Winship, 2002; Kaushal et al., 2007; Meyer & Sullivan, 2004; 2006; Slack et al., 2007). This work generally finds small reductions in food insecurity and small increases in consumption over time. In particular, while welfare reform did not lead to an overall increase in expenditures, work-related expenses such as transportation, clothing, and food consumed away from home did increase in the period following welfare reform (Kaushal et al., 2007). Consistent with these results, a recent study of five non-experimental datasets finds small improvements in some measures of material well-being after welfare reform (Slack et al., 2007). Finally, Meyer and Sullivan (2004) find absolute and relative gains in single mothers' consumption between 1984 and 2000, with slightly larger increases for mothers near the bottom of the skill and consumption distributions. Although welfare reform's role is unclear, the authors find that relative consumption among low-skilled single mothers increased over 10 percent between 1984 and 2000.

Highly relevant to the current paper is the research focusing the impact of welfare reform on *physical health* and *health-related behaviors*. As summarized in Bitler and Hoynes (2006), this works tends to emphasize such outcomes as health insurance coverage, alcohol and drug use, and maternal and infant health. Welfare reform is found to reduce rates of health insurance coverage (e.g., Kaestner & Kaushal, 2003), although at least one study finds that it did not affect Medicaid use and actually increased participation in private coverage (DeLeire et al., 2006). The evidence on physical health outcomes is more sparse and mixed. For example, Kaestner and Tarlov (2006) find few effects of welfare reform on mothers' health-related behaviors, while other studies find small negative effects on infant health (Kaestner & Lee, 2005) and reductions in breast feeding (Haider et al., 2003). Most recently, a comprehensive study of illicit drug use, drug-related prison admissions, and drug-related treatment admissions following welfare reform generally point to improvements in health outcomes and behaviors (Corman et al., 2010).

Perhaps the most relevant—and recently developed—strand of research answers the call from

some to begin focusing on well-being outcomes beyond the traditional economic measures (e.g., Blank, 2002; Grogger & Karoly, 2005). In particular, a small but growing body of work focuses on both long-term trends in and the impact of welfare reform on single mothers' *subjective well-being*, as captured by survey questions on happiness and life satisfaction (Herbst, 2010; Ifcher, 2011; Ifcher & Zarghamee, 2011). This works finds that although single mothers are substantially less happy than other groups of women, their happiness increased in absolute and relative terms over the past few decades. In fact, Ifcher & Zarghamee (2011) report that single mothers are one of the few groups of women to have experienced happiness gains over time. Finally, the work evaluating the 1996 welfare reform legislation finds that such policy changes led to sizeable improvements in single mothers' happiness (Herbst, 2010; Ifcher, 2011).[2]

III. Data and Empirical Strategy

The DDB Needham Life Style Survey

I examine single mothers' subjective well-being using the DDB Needham Life Style Survey (LSS). Each year since 1975, the advertising agency DDB Needham commissions Market Facts, a commercial polling firm, to conduct the survey on a sample of approximately 3,500 Americans. The questionnaire covers a remarkably diverse set of topics, ranging from consumer behavior and product preferences to recreational activities and political attitudes. Importantly for the current study, the LSS contains a large number of items measuring multiple domains of subjective well-being. These data, along with detailed information on respondents' demographic characteristics, employment experience, and residential location, provide researchers with a unique opportunity to study subjective well-being and conduct policy evaluations.[3]

The LSS has a number of unique features that distinguish it from the General Social Survey (GSS), the primary dataset used to evaluate subjective well-being in the U.S. First, whereas the GSS

[2] A related paper by Rote and Quadagno (2011) finds that while welfare recipients were just as likely as non-recipients to express depressive symptoms before welfare reform, a decade following reform welfare recipients were more likely to do so.

[3] For an extensive introduction to and evaluation of the LSS, see Putnam and Yonish (1999) and Groeneman (1994). This is a proprietary data archive, although the 1975-1998 surveys are freely available on Robert Putnam's *Bowling Alone* website.

relies on a single question to measure global happiness, the LSS contains numerous questions that allow researchers to construct a nuanced and multi-dimensional picture of subjective well-being.[4] As described in more detail below, the survey covers such issues as global life satisfaction, feelings of regret about the past, and multiple indicators of physical and mental health. In addition, the LSS has been conducted annually since 1975, with all well-being questions asked in precisely the same manner each year and the data collection procedures remaining stable over time. In contrast, the GSS operated as an annual survey until 1994, after which it became a biennial survey. This change coincides with the implementation of several reforms to tax and transfer programs, making it difficult to conduct policy evaluations. Finally, given that the LSS is administered through the mail, as opposed to face-to-face interviews (as with the GSS), it allows DDB Needham to inquire about highly sensitive issues while maintaining anonymity and reducing social desirability biases (de Leeuw, 2005; Dillman et al., 1996; Dillman et al., 2009).[5]

Several other characteristics of the LSS are noteworthy. Between 1975 and 1985, the survey included only married individuals, which is problematic for a study of single mothers. To maintain consistency in the sampling frame, I begin the observation period in 1986.[6] In addition, the LSS is based on a form of quota sampling called the "mail panel." Briefly, the process for creating the LSS sample begins when Market Facts invites (by mail) large, representative samples to express a willingness to participate in future mail inquires on consumer habits. From this pool of several hundred-thousand individuals, Market Facts then selects a demographically representative sample for the DDB Needham Life Style Survey. Approximately 5,000 respondents are mailed a written questionnaire, for which the response rate is consistently between 70 percent and 80 percent.

[4] Subjective well-being in the GSS is measured with the following question: "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?"

[5] A potential concern with all surveys used to study social policy reforms aimed at disadvantaged populations is that the individuals most affected by the reforms are the least likely to respond to the survey. However, one of the advantages of mail-based surveys (relative to face-to-face or telephone surveys) is that respondents have substantially greater control over when the survey is completed and the pace at which it is completed. Mail respondents, in other words, are able to review and complete the survey instrument at a comfortable pace and with less regard for the amount of time it takes to complete it. It is therefore possible that mail participants are less susceptible to the time pressures and cognitive limitations that influence response rates and quality (Dillman et al., 1996; Dillman et al., 2009).

[6] The survey underwent a dramatic redesign in 2006. Therefore, I end the observation period in 2005.

Given these complex sampling techniques, mail panels in general and the LSS specifically have been subjected to extensive validity tests (e.g., Groeneman, 1994; Heberlein & Baumgartner, 1978; Herbst, 2010; Putnam & Yonish, 1999; Visser et al., 1996). Results from these tests indicate a striking similarity in the distribution of demographic characteristics for respondents in the LSS and GSS; a close agreement in the trends of attitudinal variables common to both surveys; and a strong correspondence in the demographic correlates of those attitudinal variables. Such results increase confidence in the validity of these data for undertaking the current analysis.[7]

The analysis sample is created by pooling cross-sections of LSS's between 1986 and 2005 and retaining women ages 18 to 64, regardless of marital status and the presence of children. This allows me to construct the group of primary interest (single mothers) as well as two comparison groups (single women without children and married mothers). The group of single mothers includes never married, separated, divorced, and widowed women.[8] Families with children are coded as such if they contain at least one child ages 0 to 17. Although the initial estimates come from samples of women from all levels of education, sub-samples of women with less than a bachelor's degree and with no more than a high school degree are also explored to capture individuals increasingly likely to be affected by the tax and transfer reforms.[9] The number of observations in the sample varies according to the dependent variable and comparison group used. Sample sizes using single women without children range from 9,248 to 9,281, while those based on married mothers range from 14,919 to 14,950 (N=3,167 single mothers; N=6,180 single women without children; N=11,854 married mothers).

I exploit the richness of the LSS by examining responses to 10 statements tapping various

[7] See Herbst (2011), who provides a comparison of demographic and labor market characteristics across the LSS and GSS samples. With the exception of marital status (the LSS appears to overcount married individuals compared to the GSS), there is a close correspondence in the distribution of sample characteristics across both surveys.

[8] Unfortunately, the marital status categorization in the LSS does not allow one to distinguish between more complex family-types, including unmarried women who are cohabitating with a partner. This is a potential limitation of the study, as it seems reasonable that the well-being effects of social policy reforms may differ across cohabitating and non-cohabitating women.

[9] A key motivation for conducting the analysis using multiple education criteria is that the broader welfare reform literature is unsettled as to what the most appropriate education cut-off should be. For example, some studies (e.g. Grogger, 2003; Herbst 2008; Meyer & Rosenbaum, 2001) do not use any education cut-off, while others examine women with a high school degree or less (e.g., Kaushal & Kaestner, 2001). Still other studies experiment with multiple education cut-offs (e.g., Bitler et al., 2005; Bitler & Hoynes, 2010).

dimensions of subjective well-being. For conceptual reasons, I organize these statements into *life satisfaction* (5 items) and *physical and mental health* (5 items) domains. The primary outcome overall is a standard measure of global life satisfaction: "I am very satisfied with the way things are going in my life these days." This is considered a global well-being measure because it captures an averaging of quality-of-life evaluations over multiple life domains (e.g., work, marriage, and financial).[10] Also included in the *life satisfaction* category is a domain-specific statement regarding financial satisfaction: "Our family income is high enough to satisfy nearly all our important desires." Regarding the *physical and mental health* domain, a key outcome is a statement tapping respondents' overall physical health status: "I am in very good physical condition." As with the life satisfaction outcomes, I also explore a number of domain-specific health statements relating to respondents' quality of sleep, prevalence of headaches, and ability to relax. Respondents are asked to indicate the direction and intensity of their agreement with each statement on a scale of one ("definitely disagree") to six ("definitely agree").[11] In the empirical analysis, I examine the full distribution of ordered responses as well as binary indicators that equal unity for respondents who "definitely disagree" or "definitely agree" with a given statement.

It is important to be clear about what these statements are measuring and whether they are likely to be valid. According to Kahneman et al. (1997), survey-based reports of happiness and life satisfaction capture *experienced utility*, or the perceived well-being generated by an experience, rather than *decision utility*, which takes individuals' choices as the sole indicator of well-being. Consistent with this study's use of multiple well-being measures, Kahneman and Krueger (2006) argue that subjective well-being does not contain a "single, unifying concept that motivates all human choices and registers all relevant feelings and experiences" (p. 4). Regarding validity,

[10] It is important to reiterate that the measure of life satisfaction used here is fairly close to other standard measures used in the happiness literature. For example, the Eurobarometer survey asks respondents: "On the whole, are you very satisfied, fairly satisfied, not very satisfied, and not at all satisfied with the life you lead?"

[11] The full set of responses is the following: 1 (definitely disagree), 2 (generally disagree), 3 (moderately disagree), 4 (moderately agree), 5 (generally agree), and 6 (definitely agree).

subjective well-being measures are highly correlated with one another (Fordyce, 1988) and are strongly associated with other dimensions of well-being. For example, reports of global happiness and life satisfaction are shown to be correlated with such physical attributes as smiling, laughing, and verbal expressions of positive emotion (Frey & Stutzer, 2002; Layard, 2005). Indicators of physical health, including self-reported health status and sleep quality, also appear to be correlated with subjective well-being (Diener et al., 2006). Happy individuals are rated similarly happy by friends and family, tend to smile and display more positive affect during social interactions, and are less likely to commit suicide (Helliwell, 2006; Kahneman & Krueger, 2006). Reported happiness responds in predicable ways to changing life events, even though basic personality traits maintain its stability (Ehrhardt et al., 2000). Such evidence led Diener (1984) to conclude that subjective well-being measures contain "substantial amounts of valid variance" (p. 551).

Table 1 provides summary statistics for the subjective well-being measures. Panel A presents summary information for the *life satisfaction* statements, and Panel B summarizes the *physical and mental health* statements. For ease of interpretation, the figures show the fraction of women agreeing ("definitely," "generally," or "moderately") with each statement. Generally speaking, single mothers experience large gaps in subjective well-being relative to their childless and married counterparts. Approximately 46 percent of single mothers express that they are very satisfied with life, compared to 57 percent among single women without children and 69 percent among married mothers. In addition, single mothers are substantially more likely to express regrets about the past and less likely to feel optimistic about the future. Although the fraction of women claiming they are in very good physical condition is about equal across all three groups (50 percent), large differences emerge in other domains of physical and mental health. Problems with sleep and headaches, for example, appear to be more prevalent among single mothers, and they are more likely to express an inability to relax and feelings of pressure. For example, nearly 70 percent of single mothers report that they are

"under a great deal of pressure most of the time," compared to about 60 percent among their childless and married counterparts.

Assessing the Evolution of Single Mothers' Subjective Well-Being

The story emerging from Table 1 implies that single mothers experience lower levels of subjective well-being than single women without children and married women with children. Recent changes to tax and transfer programs may have altered single mothers' well-being in ways that either mitigated or worsened these gaps. However, most of these policy reforms occurred at the same time that the U.S. economy experienced robust growth. Given that subjective well-being exhibits a pro-cyclical fluctuation (e.g., Wolfers, 2003), it is important for the purposes of this analysis to be able to discern the impact of policy reforms from the impact of economic conditions.

I attempt to isolate the role of tax and transfer reforms by comparing changes in single mothers' subjective well-being to the changes experienced by single women without children and married women with children (the comparison groups). Although I present results that control explicitly for local labor market conditions, the comparison-group-approach should appropriately account for the role of economic shocks in determining single mothers' subjective well-being. It is plausible that women in all three groups are similarly affected by changes in economic conditions, but women in the comparison groups are less likely to be influenced by the tax and transfer reforms.[12] As shown by Meyer and Rosenbaum (2000, 2001), all three groups of women participate in comparable labor markets, receive similar wages, and are equally affected by fluctuations in the unemployment rate. Such similarities are even more prevalent among sub-groups of lower-skilled women. Thus, the empirical approach compares changes in single mothers' well-being over time to

[12] There are concerns with both comparison groups' ability to represent the counterfactual change in single mothers' subjective well-being. Although single women without children are ineligible to receive AFDC/TANF (and thus are a good comparison group for the impact of the 1996 welfare reform legislation), they are eligible for the childless version of the EITC. However, with a phase-in rate of 7.65 percent, the EITC's maximum credit is substantially smaller than that for families with children and therefore less likely to influence subjective well-being among single women without children. Once again, married mothers are likely to be a valid comparison group for the impact of welfare reform—given their extremely low AFDC/TANF participation rate—but they do represent a non-trivial fraction of EITC recipients. For example, in 2003 those filing joint tax returns represented 23.5 percent of all EITC recipients (Urban-Brookings Tax Policy Center, 2003). With these concerns in mind, a finding of consistent effects across both comparison groups should help to bolster confidence in the overall results.

the changes experienced by the comparison groups, both for women overall as well as for women with lower levels of education.

The empirical analysis proceeds in two steps. I begin by investigating trends in subjective well-being for single mothers and the comparison groups between 1986 and 2005. As previously stated, this is intended to provide a descriptive look at whether, and how, mothers' well-being changed during the transition to a work-based social policy regime. To do so, I estimate permutations of the following regression model:

[1] $$y_{it} = \beta_0 + \beta_1 single\_kids_t + \beta_2(single\_kids_t \times trend) + \beta_3(comparison_t \times trend) + \mathbf{D}'_{it}\gamma + \varepsilon_{it},$$

for $i = 1, \ldots, S$; $t = 1, \ldots, N$, where i indexes individuals and t indexes years. The dependent variable, y_{it}, represents various measures of subjective well-being for the i^{th} woman in year t. Given that the LSS well-being statements use an ordered response scale, I estimate equation [1] using an ordered probit. I also examine trends in the proportion of women at the top and bottom ends of the well-being distribution by constructing separate binary indicators that equal unity for the response categories "definitely agree" and "definitely disagree." These models are estimated using a linear probability model (LPM).

The *single_kids* is a dummy variable that equals unity if a given woman is a single mother and zero if she belongs to one of the comparison groups. The interaction term (*single_kids* × *trend*) is a linear time trend for single mothers (/100), and the (*comparison* × *trend*) is a trend specified for the comparison groups (/100). Finally, the $\mathbf{D}'$ is a vector of exogenous family characteristics, including age, race and ethnicity, household size, educational attainment, and Census region.[13] As previously stated, I estimate versions of equation [1] using the full sample of women, followed by sub-sets of lower-skilled women, defined as those with less than a bachelor's degree. In robustness checks, I further constrain the sample to include women with no more than a high school degree.

[13] Also included in the model are dummy variables that equal unity to account for missing information in the demographic controls. Summary statistics for all demographic variables are reported in Appendix A.

Limiting the sample to lower-skilled women is advantageous because it allows me to focus on groups of single mothers increasingly likely to be affected by the tax and transfer reforms.

The β_1, β_2, and β_3 are the parameters of interest in equation [1], although to conserve space I report only β_2 and β_3 in the tables. The β_1 provides an estimate of the average subjective well-being gap between single mothers and the comparison groups over the period 1986 to 2005. The β_2 and β_3 report the average, annual change in well-being for single mothers and the comparison groups, respectively. These parameter estimates allow one to examine *absolute* changes in women's subjective well-being over time. To determine whether single mothers experienced *relative* improvements or declines in well-being, I conduct tests of the null hypothesis of the equality of estimated trends for single mothers and the comparison groups. P-values from these specification tests are reported alongside the trend coefficients.

Although the results emerging from equation [1] are useful for determining whether single mothers' subjective well-being improved during a period that witnessed dramatic shifts in tax and transfer policy, they do not convincingly link the timing of well-being changes to the implementation of policy reforms. To do so, I take advantage of the fact that these reforms were phased-in throughout the early-1990s and became fully implemented between the mid- to late-1990s. The differential timing in policy implementation therefore allows me to compare the change in single mothers' well-being between the pre- and post-reform period to the change that occurred among their childless and married counterparts.

To implement this approach, I divide the years 1986-2005 into three periods: 1986-1990, 1991-1995, and 1996-2005 (Meyer & Sullivan, 2004). Based on the discussion in Section II, the first period (1986-1990) is marked by relatively few social policy changes, and hence is referred to as the *pre-reform* period. The years 1991-1995 are characterized by the start of two major EITC expansions, the onset of welfare waivers, and the creation of two child care subsidy programs. I refer to these years as the policy *phase-in* period. In the final period, 1996-2005, welfare reform was

passed and implemented in all states, the EITC expansions were completely phased-in, and a new framework for providing child care assistance was introduced. This period is referred to as the *post-reform* years.[14]

Using these temporal demarcations, the empirical approach is implemented in the following manner:

$$[2] \quad y_{ist} = \beta_0 + \beta_1(single\_kids_t \times pre\text{-}reform_t) + \beta_2(single\_kids_t \times phase\text{-}in_t) + \beta_3(single\_kids_t \times post\text{-}reform_t) + time\_period_t\mu + \mathbf{D}'_{ist}\gamma + \varphi S_{st} + \mu_s + \varepsilon_{ist},$$

where y_{it} once again represents various measures of subjective well-being for the i^{th} woman in state s and year t; *single_kids* is a dummy variable that equals unity if a given woman is a single mother and zero if she belongs to one of the comparison groups; *pre-reform*, *phase-in*, and *post-reform* represent dummy variables for the periods 1986-1990, 1991-1995, and 1996-2005, respectively; *time_period* is a vector of period dummy variables; and $\mathbf{D}'$ is a vector of demographic controls. Note that because equation [2] omits the "main effect" (*single_kids*), the coefficients β_1, β_2, and β_3 capture period-specific subjective well-being gaps between single mothers and women in the comparison groups. Therefore, differences between these coefficients render the relative change in single mothers' subjective well-being over time. The comparisons of interest are β_1 and β_2, which show the relative well-being change throughout the policy phase-in period, and β_1 and β_3, which show the relative well-being change after the tax and transfer reforms were fully implemented. As in equation [1], I estimate equation [2] on the full sample of women as well as on sub-sets of lower-skilled women.

Although the identification strategy relies primarily on the comparison-group-approach to produce unbiased estimates for each policy period, I take several additional steps to mitigate the influence of omitted variables. A chief concern is that the strong economy throughout the 1990s could be partially responsible for the observed changes in single mothers' subjective well-being.

[14] The definition of these periods is obviously somewhat arbitrary. Therefore, I experiment with several alternatives. For example, I extend the phase-in period to include the years 1991-1997 and decrease the post-reform period to include the years 1998-2005. In no case are my results significantly different from those reported here.

Therefore, I control explicitly for local labor market conditions by entering in equation [2] the average annual state-level unemployment rate (S). However, there might be other unobserved time-invariant differences across states as well as time-varying shocks to all states that might be temporally commingled with the implementation of the tax and transfer reforms. For example, it could be the case that states' social policy choices reflect persistent local attitudes toward disadvantaged families, or, alternatively, they could reflect evolving national views on the role of policy to inculcate a work ethic among public assistance recipients. To guard against these and other omitted factors, the estimated models include period fixed effects (*time_period*) to capture period-specific unobservables affecting all states and state fixed effects (μ) to capture permanent differences across states that may influence subjective well-being.

It is important to note that this strategy does not allow for the impact of individual policy reforms to emerge. As Section II makes clear, the period under investigation is marked by a large number of policy reforms that were implemented more or less simultaneously. Disentangling the impact of each is an extremely difficult task, one that is made even more difficult by having to account for the robust economy throughout the 1990s. The approach outlined here, therefore, uncovers the bundled effects of these policy reforms in a way that purges the confounding effects of macro-economic conditions.

IV. Estimation Results

The main results for this analysis are presented in Tables 2 through 6. Specifically, Table 2 presents trends (equation [1]) in the global measure of life satisfaction, while Table 3 shows the analogous results for the remaining outcomes in the *life satisfaction* domain as well as those in the *physical and mental health* domain. Table 4 provides a descriptive portrait of the relative change in well-being between the pre-reform and post-reform periods, while Tables 5 and 6 show the regression-adjusted changes (equation [2]). Table 5 focuses on global measure of life satisfaction, while Table 6 considers the remaining well-being outcomes.

Trends in Single Mothers' Subjective Well-Being

The Global Measure of Life Satisfaction

Table 2 provides a comparison of trends in the global measure of life satisfaction across single mothers, single women without children [columns (1) through (3)], and married women with children [columns (4) through (6)]. For each comparison group, I estimate life satisfaction trends for the full sample of women (Panel A) and the lower-skilled sub-sample (Panel B). As previously stated, this outcome is explored first—and in isolation—because it is among the most commonly studied subjective well-being measures in the happiness literature, and its focus on global as opposed to domain-specific well-being makes it a powerful marker of overall quality-of-life.

I find robust evidence of absolute and relative gains in single mothers' self-reported global life satisfaction over the period 1986 and 2005.[15] Looking first at the full sample of women, similar qualitative findings emerge irrespective of the comparison group, although the results appear to be stronger in the married mothers' sample. Results based on the full life satisfaction index [columns (1) and (4)] show that single mothers experienced an absolute upward trend in global well-being, while single women without children and married mothers experienced downward trends. The separate trend analyses at the top [columns (2) and (5)] and bottom [columns (3) and (6)] ends of the well-being distribution reveal that the improvement in single mothers' well-being overall has been driven by gains among the least satisfied with life. Indeed, there has been a statistically significant decline in the proportion of single mothers who "definitely disagree" that they are very satisfied with life, while the proportion of mothers who "definitely agree" has remained stable. In three of the six models in Panel A, the specification test rejects the null hypothesis of equal trend coefficients across single mothers and the comparison groups, suggesting that single mothers also witnessed a relative improvement in global life satisfaction.

[15] Consistent with the descriptive evidence presented in Table 1, the estimated subjective well-being gap between single mothers and comparison groups (β_1) is fairly large and highly statistically significant. For example, the coefficient on β_1 in Panel A, column (1) is -0.16***, and the analogous coefficient in Panel A, column (4) is -0.56***, suggesting that single mothers score 0.16 and 0.56 standard deviations lower than their childless and married counterparts, respectively, on the measure of life satisfaction.

Constraining the sample to lower-skilled women increases the magnitude of single mothers' time trend coefficients. Results based on the full life satisfaction index [columns (1) and (4)] show statistically significant absolute increases in lower-skilled single mothers' well-being, with the trend coefficients becoming substantially larger in magnitude than those from the full sample. This pattern is an initial piece of evidence that the tax and transfer reforms are at least partially responsible for the observed well-being improvements. Once again, single women without children and married mothers show absolute reductions in well-being, although the trend coefficients are imprecisely estimated. Also mirroring the full sample results is the finding that the least happy single mothers witnessed the largest well-being improvements over time. In four of the six models in Panel B, the specification test rejects the null hypothesis of equal trend coefficients across single mothers and the comparison groups, implying once again that single mothers witnessed a relative improvement in global life satisfaction.

Auxiliary Life Satisfaction and Physical and Mental Health Outcomes

Table 3 shows the analogous trend results for the remaining outcomes in the *life satisfaction* domain (Panel A) and the full set of results in the *physical and mental health* domain (Panel B). The remaining *life satisfaction* outcomes are interesting on their own—given that they cover domain-specific areas of subjective well-being—but they also offer an opportunity to check the robustness of the global life satisfaction trend results.[16] For ease of presentation, I present only the trend results from the sub-sample of lower-skilled women using the full ordered outcome measures.

The picture emerging from Table 3 is that lower-skilled single mothers continue to show absolute and relative gains in the proxy measures of life satisfaction. Specifically, such women witnessed reductions in regrets about the past ("If I had my life to live over, I would sure do things

[16] The measure of global life satisfaction is strongly correlated with the remaining outcomes in the *life satisfaction* domain. Using all women (single mothers, single women without children, and married mothers) in the lower-skilled sub-sample sample, I find the following correlations with the measure of life satisfaction: -0.44 ("I wish I could leave my present life and do something entirely different"), -0.36 ("If I had my life to live over, I would sure do things differently"), -0.28 ("I dread the future"), and 0.47 ("Our family income is high enough to satisfy nearly all our important desires").

differently), increased optimism about the future ("I dread the future"), and large improvements in self-reported financial satisfaction ("Our family income is high enough to satisfy nearly all our important desires"). In most cases, well-being appears to be declining among lower-skilled single women without children and married mothers. Together, the results in panel A of Table 3 reveal absolute and relative gains in single mothers' well-being across all four of the remaining life satisfaction outcomes.

The story changes somewhat when physical and mental health trends are examined. Lower-skilled single mothers experienced absolute declines in self-reported physical condition ("I am in very good physical condition"), an increased prevalence of sleep problems ("I have trouble getting to sleep") and headaches ("I get more headaches than most people"), and a growing inability to relax ("I wish I knew how to relax"). However, the comparable trends for single women without children and married mothers reveal similar slippages in physical and mental health. Such results imply that the trends for single mothers reflect long-term health developments in the broader female population. Indeed, the results show an absolute decline in single mothers' health across four of the five indicators, but a relative decline in only one domain ("I wish I know how to relax"). In no case do I estimate absolute or relative health improvements among single mothers.

In sum, the results discussed above imply that single mothers between 1986 and 2005 made important absolute and relative progress in the area of life satisfaction, but remained stagnant or fell slightly behind other groups of women in the health domain. Although it appears that most of the life satisfaction gains are concentrated among lower-skilled single mothers, there is little evidence to suggest that the health reductions have disproportionately affected these mothers.

Relative Changes in Single Mothers' Subjective Well-Being

Raw Changes in Subjective Well-Being

To assess whether recent tax and transfer reforms are responsible for the observed trends in single mothers' subjective well-being, I begin by comparing raw (unadjusted) differences between

single mothers and the comparison groups across the pre- and post-reform periods. For ease of presentation, these differences are calculated using only the lower-skilled sample during the pre- and post-reform periods. As shown in Table 4, column (1) displays the fraction of women reporting any agreement with a given statement throughout the pre-reform period, while column (2) shows the well-being gap for that period between single mothers and the comparison groups. Columns (3) and (4) present the analogous results for the post-reform period. Column (5) displays the differential change in well-being among single mothers between the pre- and post-reform periods. The figures in this column are equivalent to raw difference-in-differences estimates of the impact of tax and transfer reforms on the subjective well-being of single mothers.

Generally speaking, results from this exercise mirror the story emerging from the trend analysis: single mothers appear to have made significant gains in measures of life satisfaction, while experiencing little or no change in physical and mental health. For example, as shown in column (1), fully 44 percent of single mothers throughout the pre-reform period are very satisfied with life, compared to 55 percent and 68 percent among their childless and married counterparts, respectively. These differences translate to sizeable well-being deficits: 10 to 24 percentage points [column (2)]. However, in the post-reform period, the well-being gap experienced by single mothers declined somewhat, such that these mothers were between eight and 21 percentage points less likely to express life satisfaction. The changing differences imply that single mothers experienced a relative improvement in global life satisfaction of 2.4 percentage points between the pre- and post-reform periods [column (5)]. Similar improvements are found for the other *life satisfaction* outcomes.

Results in Panel B once again offer mixed evidence on the potential impact of tax and transfer reforms on lower-skilled single mothers' physical and mental health. Moving from the pre- to the post-reform period, single mothers' self-reported physical health improved relative to their childless and married counterparts. Indeed, the likelihood that single mothers are in very good physical condition increased between one and four percentage points throughout the study period.

However, it appears that single mothers became increasingly likely to report problems with headaches. In addition, a questionnaire item tapping mental stress ("I wish I knew how to relax) shows that single mothers experienced a growing inability to relax. The well-being gap increased from four to six percentage points in the pre-reform period to nine percentage points in the post-reform period. The changing differentials imply that single mothers experienced a relative reduction in this well-being domain of two to five percentage points between the pre- and post-reform periods.

By comparing lower-skilled single mothers to single women without children and married mothers, the above analysis attempts to isolate the impact of social policy reforms, which arguably affect only single mothers, from the impact of exogenous economic shocks, which tend to affect all three groups of women in a similar manner. However, the observed well-being changes could have occurred if single mothers or women in one of the comparison groups experienced compositional changes between the pre- and post-reform periods. Therefore, it is important to condition on women's observable characteristics.

Regression-Adjusted Changes in Subjective Well-Being

Tables 5 and 6 therefore present the regression-adjusted estimates of single mothers' relative well-being changes, as detailed in equation [2]. Table 5 focuses on the global measure of life satisfaction, while Table 6 examines the remaining outcomes in the *life satisfaction* domain and the full set of outcomes in the *physical and mental health* domain. For ease of presentation, only the full ordered subjective well-being outcomes are considered, and thus all models are estimated using an ordered probit. Coefficients can be interpreted as the standard-deviation difference in each well-being outcome between single mothers and the comparison groups within each policy reform period (Stevenson & Wolfers, 2009).[17] Bolded coefficients (and standard errors) in the phase-in and post-reform periods indicate that a given well-being differential is statistically significantly different (at

[17] The ordered probit yields coefficients derived from a latent standard normal well-being index, conditional on the covariates. In specification checks, I first standardize the well-being indexes to have a mean of zero and a standard deviation of unity. I then re-estimate the models using OLS. These results are virtually identical to those reported here.

the 10 percent level or better) from the pre-reform differential.[18] A bolded coefficient implies that single mothers' well-being changed over time relative to that experienced by women in the comparison groups.

The Global Measure of Life Satisfaction

Looking first at Table 5, columns (1) through (3) use single women without children as the comparison group, and columns (4) through (6) use married mothers as the comparison group. For each comparison group, Panel A shows the full sample results, and Panel B shows those from the lower-skilled sub-sample. Columns (1) and (4) present the baseline results, with the state-level unemployment rate added in columns (2) and (5) and state fixed effects added in columns (3) and (6). Adding the unemployment rate and the state fixed effects does not significantly change the results relative to the baseline model, so the forthcoming discussion focuses on the richest specification [columns (3) and (6)].

The regression-adjusted global life satisfaction estimates are qualitatively similar to the raw differences presented in Table 4. Single mothers experienced sizeable life satisfaction deficits throughout the pre-reform period, and these deficits increase in magnitude when the sample is constrained to lower-skilled women. In particular, lower-skilled single mothers scored 0.17 standard deviations below their childless counterparts [Panel B, column (3)] and 0.57 standard deviations below their married counterparts [Panel B, column (6)] on the life satisfaction index. Furthermore, these well-being differences remain largely fixed throughout the policy phase-in period. Relative to single women without children and married mothers, lower-skilled single mothers in the phase-in period experienced life satisfaction deficits of 0.16 and 0.50 standard deviations, respectively.

Turning to the post-reform period, I find that single mothers show marked improvement in global life satisfaction after the tax and transfer reforms were fully implemented. Lower-skilled

[18] That is, I conduct two specification tests: Ho: Single mother x (1986-1990)-Single mother x (1991-1995)=0, and Ho: Single mother x (1986-1990)-Single mother x (1996-2005)=0.

single mothers almost fully closed the life satisfaction gap relative to their childless counterparts and made substantial progress in comparison to their married counterparts. Specifically, these mothers reduced the life satisfaction gap to 0.07 standard deviations relative to single women without children, and reduced the gap to 0.45 standard deviations relative to married mothers. The bolded coefficients (and standard errors) reveal that single mothers experienced a statistically significant relative improvement in life satisfaction between the pre- and post-reform periods. In fact, these estimates suggest that the life satisfaction gap declined approximately 60 percent relative to single women without children and declined about 22 percent relative to married mothers.

Auxiliary Life Satisfaction and Physical and Mental Health Outcomes

Table 6 shows the analogous results for the remaining outcomes in the *life satisfaction* domain (Panel A) and the full set of results in the *physical and mental health* domain (Panel B). For ease of presentation, I present only the model results from the sub-sample of lower-skilled women using the full ordered outcome measures. All models include the controls for the state-level unemployment rate and state fixed effects.

Similar findings emerge for the remaining measures in the *life satisfaction* domain. In particular, single mothers became significantly less likely to express regrets about the past ("If I had my life to live over, I would sure do things differently") in the post-reform period. The well-being gap for this measure fell by 90 percent (from 0.19 to 0.02 standard deviations) relative to single women without children and declined by 24 percent (from 0.57 to 0.43 standard deviations) relative to married mothers. In addition, single mothers showed progress in self-reported financial satisfaction, reducing the financial well-being deficit by about 50 percent (from 0.49 to 0.23 standard deviations) relative to single women without children and reducing the deficit by 25 percent (from 0.75 to 0.47 standard deviations) relative to married mothers.

Results for measures of *physical and mental health* are also consistent with the raw differences presented in Table 4. Single mothers tend to show small but statistically insignificant

reductions in health compared to their childless and married counterparts. Relative to married mothers, in particular, the well-being gap for single mothers' sleep quality and frequency of headaches increased between the pre- and post-reform periods. However, in neither case is the growing well-being gap statistically significant. The one domain in which single mothers appear to lose considerable ground is mental health, as captured by the indexes measuring the inability to relax and self-reported feelings of pressure. For example, in the pre-reform period, lower-skilled single mothers scored 0.01 standard deviations *below* their childless counterparts on the statement "I wish I knew how to relax." Throughout the post-reform period, however, these mothers scored 0.13 standard deviations *higher* on this measure. A similar pattern emerges for the statement "I feel I am under a great deal of pressure most of the time," although the changes over time are not as large nor are they as precisely estimated as those tapping the inability to relax.

Specification Checks

In results not reported in the tables, I undertake several specification checks to ensure the robustness of the main results. All findings discussed here are available from the author upon request.

Recall that the main results are based on samples of women (married/unmarried and with/ without children) ages 18 to 64 with less than a bachelor's degree. In the first set of robustness checks, I run the model on slightly different versions of the analysis sample. I first conduct the analysis using a more restrictive educational criterion: women with a high school degree or less. Doing so allows me to conduct the trends (equation [1]) and time period (equation [2]) analyses on a group of women who are more likely to receive means-tested assistance. If the main results are in fact due to recent changes in tax and transfer programs, the estimates should be similar to or larger than the main results. Results from this exercise conform to this expectation. Next, I alter the age criterion to include only those women ages 18 to 45. Given that low-skilled women in this age range

are particularly likely to receive means-tested assistance, estimates from this sample should also be larger than the main results.[19] Once again, I find evidence in favor of this pattern.[20]

Given that both sets of analyses are conducted over a 20-year period, another concern is the presence of differential changes in the characteristics of treatment and comparison group women. For example, single mothers over the last two decades became more likely to be classified as "never married" as opposed to "divorced," "separated," or "widowed," and such women became more likely to obtain higher levels of education (Herbst, 2008). If left unaccounted for, such compositional changes might confound the estimated effect of each policy reform time period. To mitigate the potential bias from unobserved compositional changes, I estimate versions of equations [1] and [2] that include cohort, or year-of-birth, dummy variables.[21] In a further specification check, I interact the cohort dummies with *single_kids* and the controls for educational attainment. Together, these controls should capture the unobserved, cohort-specific determinants of subjective well-being that vary across the treatment and comparison groups. The results are robust to the inclusion of these additional controls.

The subjective well-being trends presented in Tables 2 and 3 come from a linear parameterization. Given that the analysis period extends over a 20-year period, it might be too restrictive to model well-being trends in a purely linear framework. Therefore, I estimate the models with a quadratic in the time trend. The coefficient estimates consistently suggest that single mothers experienced declines in life satisfaction and health at a rapidly decreasing rate over time. The linear and quadratic trends are usually statistically significant for single mothers. Such findings are broadly consistent with the positive well-being changes that emerge in the post-reform periods. The

[19] Placing this age restriction on the analysis sample also serves as an additional control for the impact of age on subjective well-being. Doing so is important given the large differences in age across the treatment and comparison groups. I thank an anonymous referee for suggesting this robustness check.

[20] In a further specification check, I utilize both sample constraints (women with a high school degree or less and ages 18 to 45) simultaneously. Results based on this sample are even stronger (i.e., single mothers reveal greater absolute and relative gains in subjective well-being) than those from the separate sample constraints.

[21] In particular, I create a set of five dummy variables to indicate 10-year increments (approximately) in year-of-birth. The earliest cohort was born between 1922 and 1939, while the latest cohort was born between 1970 and 1985. The cohorts in the intervening period were sorted in 10-year increments.

quadratic trends for single women without children and married mothers are usually insignificant, suggesting that their well-being is trending linearly (downward) between 1986 and 2005.

Finally, it is possible that the estimates reported in Tables 5 and 6 are sensitive to the definition of pre-reform, phase-in, and post-reform. For example, the post-reform period is defined to start in 1996, when only 24 states implemented their TANF plan. Another 26 states implemented TANF in 1997, and one state (California) did so in 1998 (Grogger & Karoly, 2005). To test whether changes in the definition of phase-in and post-reform periods affect the results, I estimate models that define the post-reform period as starting in 1997 and again in 1998. Results from these models are qualitatively similar to those presented here. If anything, starting the post-reform period in 1997 or 1998 tends to accentuate the positive life satisfaction results and diminish the negative physical and mental health results.

V. Discussion

The last several decades witnessed important changes to U.S. tax and transfer programs. Although the specific policy tool and mode of administration differ dramatically across these reforms, each one has sought to encourage work and discourage welfare participation among single mothers. Indeed, a substantial empirical literature finds that welfare reform and the EITC, in particular, account for much of mothers' employment growth throughout the 1990s. In addition, a number of studies find that earnings, income, and consumption increased for some groups of single mothers. Nevertheless, researchers have largely ignored the impact of recent policy changes on subjective well-being. This study therefore conducts a comprehensive analysis of single mothers' subjective well-being over the last several decades.

The results of this analysis can be summarized as follows. Across most domains of subjective well-being, single mothers experienced substantial well-being gaps between 1986 and 2005 compared to their childless and married counterparts. However, mothers made progress in closing this gap, especially in the domain of global life satisfaction. Most of the improvement in

relative well-being, moreover, was experienced after 1996, when welfare reform and the mid-1990s EITC expansions were fully implemented. Overall, lower-skilled single mothers' global life satisfaction gap declined approximately 60 percent relative to single women without children and declined about 22 percent relative to married mothers. These positive developments are somewhat lessened by single mothers' stagnation or small relative declines in measures of physical and mental health. The three measures of physical health (self-reported physical condition, sleep quality, and prevalence of headaches) show little change in the post-reform period, but the measures of mental health (inability to relax and feelings of pressure) indicate that single mothers' condition worsened slightly after the tax and transfer reforms were fully implemented.

Are these results consistent with the theoretical mechanisms through which tax and transfer programs should influence disadvantaged mothers' subjective well-being? The passage of employment-based policies such as welfare reform, the EITC, and child care subsidies is predicted to increase the opportunity costs associated with leisure time. As a result, the price of engaging in healthy behaviors, especially those demanding significant time investments (e.g., exercise and the home production of meals), is predicted to rise. Such a rise in the time price of leisure is expected to delay healthy habits or lead to permanent behavioral changes in a way that could reduce subjective well-being. There are, however, a number of potential employment-related benefits from these policy reforms. For example, increased access to high-quality health insurance options may offset some of the deleterious effects of working. Employment is also predicted to have substantial psychic and social benefits, ranging from declines in depression and anxiety to increases in self-esteem and personal control. Moreover, these work-based policies may increase well-being by reducing the stigma costs associated with long-term unemployment and program participation.

Results in this study lend some support to both sets of predictions. In particular, single mothers experienced relative gains across most indicators of life satisfaction and small (but inconsistent) declines in mental health. Therefore, insofar as these policy-induced changes in

employment and income influenced mother's subjective well-being, a tentative conclusion is that improvements in life satisfaction have come at cost of moderately increased stress and anxiety. The most optimistic conclusion regarding single mothers' physical health is that the mid-1990s policy reforms did not appear to worsen these outcomes.

It is important to reiterate that this study examines the bundled—or overall—effects of what is essentially a policy regime change that unfolded throughout the 1990s but accelerated starting in the mid-1990s. Relative changes in single mothers' well-being could have been catalyzed by a combination of the passage of welfare reform legislation in 1996, the EITC expansions in 1990 and 1993, steady increases in child care subsidy expenditures throughout the 1990s, or the liberalization of Medicaid eligibility that began in the late-1980s. Sorting out which policies are primarily responsible for single mothers' quality-of-life improvements is an important avenue for future research. Indeed, individual policies might have induced conflicting effects on subjective well-being that need to be differentiated.

References

Bitler, Marianne P. & Hilary W. Hoynes. (2006). Welfare Reform and Indirect Impacts on Health. NBER Working Paper 12642. Cambridge, MA: National Bureau of Economic Research.

Bitler, M. & Hoynes, H. (2010). The state of the social safety net in the post-welfare reform era. *Brookings Papers on Economic Activity, Fall,* 71-127.

Blank, R. (2002). Evaluating welfare reform in the United States. *Journal of Economic Literature, 40,* 1105-1166.

Bollinger, C., Gonzalex, L., & Ziliak, J. (2009). Welfare reform and the composition and level of income. In J. Ziliak (Ed.) Welfare Reform and Its Long-Term Consequences for America's Poor. New York, NY: Cambridge University Press.

Budget of the U.S. Government. (2008). Budget of the United States Government: Fiscal Year 2008. Washington, DC: Office of Management and Budget.

Cancian, M., Haveman, R., Meyer, D., & Wolfe, B. (2000). Before and after TANF: The economic well-being of women leaving welfare. Institute for Research on Poverty Special Report No. 77. Madison, WI: University of Wisconsin.

Child Care Bureau. (2005). 2005 CCDF State Expenditure Data. Washington, DC: U.S. Department of Health and Human Services, Administration for Children and Families, Child Care Bureau. Accessed from http://www.acf.hhs.gov/programs/ccb/data/index.htm on March 1, 2008.

Corman, H., Dave, D., Reichman, N., & Das, D. (2010). Effects of welfare reform on illicit drug use of adult women. NBER Working Paper No. 16072. Cambridge, MA: National Bureau of Economic Research.

Danziger, S., Corcoran, M., Danziger, S., & Heflin, C. (2000). Work, income, and material well-being after welfare reform. *Journal of Consumer Affairs, 34,* 6-30.

de Leeuw, E. (2005). To mix or not to mix data collection modes in surveys. *Journal of Official Statistics, 21,* 233-255.

DeLeire, Thomas, Judith A. Levine, & Helen Levy. (2006). Is Welfare Reform Responsible for Low-Skilled Women's Declining Health Insurance Coverage in the 1990s? *Journal of Human Resources, 41,* 495-528.

Diener, E. (1984). Subjective well-being. *Psychological Bulletin, 95,* 542-575.

Diener, E., Lucas, R., Scollon, C. (2006). Beyond the hedonic treadmill: Revising the adaption theory of well-being. *American Psychologist, 61,* 305-314.

Dillman, D., Sangster, R., Tarnai, J., & Rockwood, T. (1996). Understanding differences in people's answers to telephone and mail surveys. *New Directions for Evaluation, 70,* 45-61.

Dillman, D., Phelps, G., Tortora, R., Swift, K., Kohrell, J., Berck, J., Messer, B. (2009). Response rate and measurement differences in mixed mode surveys: Using mail, telephone, interactive voice response and the internet. *Social Science Research, 38,* 1-18.

Ehrhardt, J., Saris, W., & Veehoven, R. (2000). Stability of life satisfaction over time. *Journal of Happiness Studies, 1,* 177-205.

Falk, G. (2000). Consumption expenditures for families with children. Working Paper. Congressional Research Service. Washington, DC: Congressional Research Service.

Fang, H. & Keane, M. (2004). Assessing the impact of welfare reform on single mothers. *Brookings Papers on Economic Activity, 35,* 1-116.

Fordyce, M. (1988). A review of research on happiness measures: A sixty-second index of happiness and mental health. *Social Indicators Research, 20,* 355-381.

Frey, B. & Stutzer, A. (2002a). Happiness and Economics: How the Economy and Institutions Affect Human Well-Being. Princeton, NJ: Princeton University Press.

Groeneman, S. (1994). Multi-purpose household panels and general samples: How similar and how different? Paper presented at the Annual Meeting of the American Association for Public opinion Research. Danvers, MA.

Grogger, J. (2003). The effects of time limits, the EITC, and other policy changes on welfare use, work, and income among female-headed families. *Review of Economics and Statistics, 85,* 394-408.
Grogger, J. & Karoly, L. (2005). Welfare reform: Effects of a decade of change. Cambridge, MA: Harvard University Press.
Grossman, M. (1972). On the concept of health capital and the demand for health. *Journal of Political Economy, 80,* 223-255.
Haider, Steven J., Alison Jacknowitz, & Robert F. Schoeni. (2003). Welfare Work Requirements and Child Well-Being: Evidence from the Effects on Breast-Feeding. *Demography, 40,* 479-97.
Heberlein, T. & Baumgartner, R. (1978). Factors affecting response rate to mailed questionnaires: A quantitative analysis of the published literature. *American Sociological Review, 43,* 447-462.
Helliwell, J. (2006). Well-being and social capital: Does suicide pose a puzzle? *Social Indicators Research, 81,* 455-496.
Herbst, C.M. (2008). Do social policy reforms have different impacts on employment and welfare use as economic conditions change? *Journal of Policy Analysis and Management, 27,* 867-894.
Herbst, C.M. (2010) Welfare reform and the subjective well-being of single mothers. Working Paper. School of Public Affairs, Arizona State University.
Herbst, C.M. (2011). Paradoxical' Decline? Another Look at the Relative Reduction in Female Happiness. (2011). Journal of Economic Psychology, 32(5), 773-788.
Ifcher, J. (2011). The happiness of single mothers after welfare reform. *B.E. Journal of Economic Analysis and Policy: Topics, 11,* 1-27.
Ifcher, J. & Zarghamee, H. (2011). Trends in the happiness of single mothers: Evidence from the General Social Survey. Working Paper. Santa Clara University.
Jencks, C. & Winship, S. (2002). Changes in food security after welfare reform. Working Paper. Joint Center on Poverty Research. Chicago, IL: Northwestern University.
Kaestner, Robert & Neeraj Kaushal. (2003). Welfare Reform and Health Insurance Coverage of Low-Income Families. *Journal of Health Economics, 22,* 959-81.
Kaestner Robert & Elizabeth Tarlov. (2006). Changes in the Welfare Caseload and the Health of Low-Educated Mothers. *Journal of Policy Analysis and Management, 25,* 623-643.
Kahneman, D., Wakker, P., & Sarin, R. (1997). Back to Bentham? Explorations of experienced utility. *Quarterly Journal of Economics, 112,* 375-405.
Kahneman, D. & Krueger, A. (2006). Developments in the measurement of subjective well-being. *Journal of Economic Perspectives, 20,* 3-24.
Kaushal, Neeraj, Qin Gao, & Jane Waldfogel. (2007). Welfare Reform and Family Expenditures on Children. *Social Service Review, 81,* 369-396.
Layard, R. (2005). Happiness: Lessons from a New Science. London: Penguin Press.
Lerman, R. (2005). How Did the 2001 Recession Affect Single Mothers? Single Parents' Earnings Monitor no. 3. Washington: Urban Institute.
Looney, A. (2005). The effects of welfare reform and related policies on single mothers' welfare use and employment in the 1990s. (Finance and Economics Discussion Series Working Paper 2005-45). Washington, DC: Federal Reserve Board.
Meyer, B. & Rosenbaum, D. (2001). Welfare, the Earned Income Tax Credit, and the labor supply of single mothers. *Quarterly Journal of Economics, 116,* 1063-1114.
Meyer, B. & Sullivan, J. (2004). The effects of welfare and tax reform: the material well-being of single mothers in the 1980s and 1990s. *Journal of Public Economics, 88,* 1387-1420.
Meyer, B. & Sullivan, J. (2006). Consumption, income, and material well-being after welfare reform. NBER Working Paper No. 11976. Cambridge, MA: National Bureau of Economic Research.
Moffitt, R. (1999). The effect of pre-PRWORA waivers on AFDC caseloads and female earnings, income, and labor force behavior. In S. H. Danziger (ed.) *Economic Conditions and Welfare Reform*. Kalamazoo, MI: W.E. Upjohn Institute for Employment Research.
Nagle, A. & Johnson, N. (2006). A hand up: How state Earned Income Tax Credits help working families escape poverty in 2006. Washington, DC: Center on Budget and Policy Priorities.

Pavetti, L. & Rosenbaum, D. (2010). Creating a Safety Net That Works When the Economy Doesn't: The Role of the Food Stamp and TANF Programs. Washington: Center on Budget and Policy Priorities.

Primus, W., Rawlings, L., Larin, K., Porter, K. (1999). The initial impacts of welfare reform on the incomes of single-mother families. Washington, DC: Center on Budget and Policy Priorities.

Putnam, R. & Yonish, S. (1999). How important is response rate? An evaluation of a "mail panel" survey archive. Working Paper. Cambridge: MA: JFK School of Government, Harvard University.

Quadagno, J. & Rote, S. (2011). Depression and alcohol dependence among poor women: Before and after welfare reform. *Social Service Review, 85,* 229-245.

Schoeni, R. & Blank, R. (2000). What has welfare reform accomplished? Impacts on welfare participation, employment, income, poverty, and family structure. Working Paper No. 7627. Cambridge, MA: National Bureau of Economic Research.

Slack, Kristen Shook, Katherine Magnuson, Lawrence Berger, Joan Yoo, Rebekah Levine Coley, Rachel Dunifon, Amy Dworsky, Ariel Kalil, Jean Knab, Brenda J. Lohman, and Cynthia Osborne. (2007). Family Economic Well-being Following the 1996 Welfare Reform: Trend Data from Five Non-Experimental Panel Studies. *Children and Youth Services Review, 29,* 698-720.

Stevenson, B. & Wolfers, J. (2009). The paradox of declining female happiness. *American Economic Journal: Economic Policy, 1,* 190-225.

Tax Policy Center (2008). Spending on the EITC, Child Tax Credit, and AFDC/TANF, 1976 – 2010. Washington, DC: Urban-Brookings Tax Policy Center.

U.S. Department of Health and Human Services (U.S. DHHS). (2007). Characteristics and financial circumstances of TANF recipients. Available at http://www.acf.hhs.gov/programs/ofa/character/index.html. Accessed on January 11, 2010.

U.S. General Accounting Office (U.S. GAO). (1999). Welfare reform: Information on former recipients' status. Paper No. GSO/HEHS-99-48. Washington, DC: U.S. General Accounting Office.

Visser, P., Krosnick, J., Marquette, J., & Curtin, M. (1996). Mail surveying for election forecasting: An evaluation of the *Columbus Dispatch* poll. *Public Opinion Quarterly, 60,* 181-227.

Table 1: Summary Statistics for the Subjective Well-Being Outcomes, 1986-2005

Outcome	Single Mothers (1)	Single Women without Children (2)	Married Women with Children (3)
Panel A: Life Satisfaction (% agreeing with each statement)			
"I am very satisfied with the way things are going in my life these days"	0.456	0.571***	0.688***
	(0.498)	(0.494)	(0.463)
"I wish I could leave my present life and do something entirely different"	0.567	0.508***	0.317***
	(0.495)	(0.499)	(0.465)
"If I had my life to live over, I would sure do things differently"	0.797	0.688***	0.567***
	(0.401)	(0.463)	(0.495)
"I dread the future"	0.316	0.261***	0.209***
	(0.465)	(0.439)	(0.406)
"Our family income is high enough to satisfy nearly all our important desires"	0.304	0.463***	0.562***
	(0.460)	(0.498)	(0.496)
Panel B: Physical and Mental Health (% agreeing with each statement)			
"I am in very good physical condition"	0.499	0.521**	0.504
	(0.500)	(0.499)	(0.499)
"I have trouble getting to sleep"	0.473	0.429***	0.348***
	(0.499)	(0.495)	(0.476)
"I get more headaches than most people"	0.394	0.302***	0.339***
	(0.488)	(0.459)	(0.473)
"I wish I knew how to relax"	0.585	0.497***	0.510***
	(0.492)	(0.500)	(0.499)
"I feel I am under a great deal of pressure most of the time"	0.689	0.581***	0.602***
	(0.462)	(0.493)	(0.489)

Notes: Standard deviations are presented in parentheses. The figures presented in Panel A and Panel B show the percent agreeing ("definitely," "generally," or "moderately") with the statement. N = 3,138 to 3,148 for unmarried women with children. N= 6,110 to 6,135 for unmarried women without children. N = 11,775 to 11,804 for married women with children. *, **, *** indicate that a given mean is statistically significantly different from that for single mothers at the 10%, 5%, and 1% levels, respectively.

Table 2: Trends in Global Life Satisfaction for Single Mothers, 1986-2005
Dependent Variable: "I am very satisfied with the way things are going in my life these days"

	Comparison Group: Single Women without Children			Comparison Group: Married Women with Children		
Variable	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Panel A: Full Sample						
Single Mothers × Trend	0.321	-0.019	-0.323**	0.600**	0.039	-0.373***
	(0.301)	(0.071)	(0.123)	(0.283)	(0.063)	(0.124)
Comparison Group × Trend	-0.155	-0.018	-0.057	-0.036	0.061	-0.023
	(0.197)	(0.063)	(0.078)	(0.146)	(0.062)	(0.037)
Equality of Trends (p-value)	0.140	0.985	**0.060**	**0.015**	0.796	**0.012**
Panel B: Lower- Skilled Sample						
Single Mothers × Trend	0.550**	0.041	-0.386***	0.749***	0.066	-0.427***
	(0.272)	(0.088)	(0.120)	(0.259)	(0.082)	(0.124)
Comparison Group × Trend	-0.346	-0.036	-0.045	-0.079	0.095	-0.025
	(0.253)	(0.081)	(0.091)	(0.171)	(0.075)	(0.048)
Equality of Trends (p-value)	**0.007**	0.506	**0.005**	**0.015**	0.779	**0.003**
Dependent Variable	Full Index	Pr(def. agree)	Pr(def. disagree)	Full Index	Pr(def. agree)	Pr(def. disagree)
Estimation Method	Ordered Probit	OLS	OLS	Ordered Probit	OLS	OLS

Notes: Standard errors, shown in parentheses, are adjusted for clustering by year. The dependent variable in column (1) and (4) is a continuous measure ranging from 1 ("definitely disagree") to 6 ("definitely agree"), and the model is estimated using an ordered probit. The dependent variable in column (2) and (5) is binary indicator for "definitely agree" with the life satisfaction statement, and the model is estimated using a linear probability model (OLS). The dependent variable in column (3) and (6) is binary indicator for "definitely disagree" with the life satisfaction statement, and the model is estimated using a linear probability model (OLS). The low-skilled sample in Panel B is defined to include women with some college education and below. All models include controls for age, age-squared, race/ethnicity (two dummy variables), household size, educational attainment (three dummy variables), Census region (eight dummy variables). Dummy variables that equal unity are included to account for missing information in the demographic controls. The specification tests are of the null hypothesis of the equality of the trend coefficients (with the p-value shown). *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 3: Trends in Auxiliary Measures of Subjective Well-Being, 1986-2005, Lower-Skilled Sample

	Comparison Group: Single Women without Children		Comparison Group: Married Women with Children	
Subjective Well-Being Outcome	Single Mothers × Trend	Comparison Group × Trend	Single Mothers × Trend	Comparison Group × Trend
Panel A: Proxies for Life Satisfaction				
"I wish I could leave my present life and do something entirely different"	-0.314	0.869***	-0.503*	-0.539***
	(0.270)	(0.234)	(0.276)	(0.155)
	p-value: **0.010**		p-value: 0.914	
"If I had my life to live over, I would sure do things differently"	-0.675**	0.960***	-0.940***	0.448***
	(0.344)	(0.258)	(0.348)	(0.157)
	0.000		**0.000**	
"I dread the future"	-1.413***	-0.460	-1.500***	-1.245***
	(0.429)	(0.311)	(0.500)	(0.351)
	0.075		0.549	
"Our family income is high enough to satisfy nearly all our important desires"	1.392***	-0.376	1.697***	-0.480**
	(0.260)	(0.290)	(0.217)	(0.221)
	0.000		**0.000**	
Panel B: Physical and Mental Health				
"I am in very good physical condition"	-1.401***	-1.823***	-1.478***	-1.745***
	(0.391)	(0.267)	(0.408)	(0.291)
	0.245		0.454	
"I have trouble getting to sleep"	2.065***	1.981***	2.175***	1.927***
	(0.305)	(0.395)	(0.269)	(0.228)
	0.806		0.404	
"I get more headaches than most people"	0.977**	1.201***	1.028***	0.507*
	(0.388)	(0.222)	(0.398)	(0.271)
	0.625		0.265	
"I wish I knew how to relax"	1.260***	0.436	1.149***	0.864***
	(0.344)	(0.271)	(0.366)	(0.210)
	0.072		0.450	
"I feel I am under a great deal of pressure most of the time"	0.156	0.280	0.131	0.266
	(0.440)	(0.295)	(0.428)	(0.235)
	0.792		0.727	

Notes: Standard errors, shown in parentheses, are adjusted for clustering by year. The dependent variable is a continuous measure ranging from 1 ("definitely disagree") to 6 ("definitely agree"). All models are estimated using an ordered probit. All models include controls for age, age-squared, race/ethnicity (two dummy variables), household size, educational attainment (three dummy variables), Census region (eight dummy variables). Dummy variables that equal unity are included to account for missing information in the demographic controls. The specification tests are of the null hypothesis of the equality of the trend coefficients (with the p-value shown). *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 4: Relative Changes in Single Mothers' Subjective Well-Being Between 1986-1990 and 1996-2005
Unadjusted Differences, Lower-Skilled Sample

Outcome	Group	1986-1990 (1)	Difference (2)	1996-2005 (3)	Difference (4)	Change (5)
Panel A: Life Satisfaction (% agree)						
"I am very satisfied with the way things are	Single mothers	0.443		0.443		
going in my life these days"	Single women without children	0.546	-0.103	0.522	-0.079	0.024
	Married mothers	0.679	-0.235	0.655	-0.211	0.024
"I wish I could leave my present life and do		0.576		0.576		
something entirely different"		0.514	0.061	0.565	0.011	-0.050
		0.355	0.220	0.324	0.251	0.031
"If I had my life to live over, I would sure		0.807		0.802		
do things differently"		0.692	0.114	0.760	0.042	-0.072
		0.587	0.219	0.608	0.193	-0.026
"I dread the future"		0.335		0.298		
		0.310	0.024	0.299	-0.001	-0.025
		0.261	0.073	0.208	0.089	0.016
"Our family income is high enough to satisfy		0.257		0.288		
nearly all our important desires"		0.432	-0.174	0.394	-0.105	0.069
		0.518	-0.260	0.503	-0.214	0.046
Panel B: Physical/Mental Health (% agree)						
"I am in very good physical condition"		0.543		0.463		
		0.554	-0.010	0.465	-0.001	0.009
		0.553	-0.010	0.433	0.030	0.040
"I have trouble getting to sleep"		0.445		0.525		
		0.423	0.022	0.514	0.011	-0.011
		0.344	0.101	0.426	0.099	-0.002
"I get more headaches than most people"		0.378		0.422		
		0.289	0.088	0.331	0.091	0.003
		0.356	0.021	0.363	0.059	0.038
"I wish I knew how to relax"		0.582		0.627		
		0.542	0.039	0.537	0.089	0.050
		0.519	0.062	0.547	0.079	0.017
"I feel I am under a great deal of pressure		0.679		0.688		
most of the time"		0.576	0.103	0.580	0.107	0.004
		0.591	0.087	0.594	0.093	0.006

Notes: The figures presented in Panel A and Panel B show the percent agreeing ("definitely," "generally," or "moderately") with the statement. The analysis is conducted separately for single mothers (first row), single women without children (second row), and married women with children (third row). In all analyses, the sample is constrained to the subset of women with some college education and less.

Table 5: Regression-Adjusted Relative Changes in Single Mothers' Global Life Satisfaction
Dependent Variable: "I am very satisfied with the way things are going in my life these days"

	Comparison Group: Single Women without Children			Comparison Group: Married Women with Children		
Variable	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Panel A: Full Sample						
Single mother × pre-reform	-0.129***	-0.132***	-0.133***	0.558***	-0.558***	-0.557***
	(0.048)	(0.048)	(0.045)	(0.031)	(0.030)	(0.030)
Single mother × phase-in	-0.160***	-0.159***	-0.166***	0.505***	-0.504***	-0.509***
	(0.048)	(0.048)	(0.047)	(0.057)	(0.057)	(0.056)
Single mother × post-reform	-0.088**	-0.088**	-0.089**	**0.460*** **	**-0.460*** **	**-0.463*** **
	(0.036)	(0.036)	(0.035)	**(0.025)**	**(0.025)**	**(0.025)**
Panel B: Lower- Skilled Sample						
Single mother × pre-reform	-0.169***	-0.170***	-0.172***	-0.574***	-0.574***	-0.573***
	(0.060)	(0.059)	(0.054)	(0.039)	(0.039)	(0.039)
Single mother × phase-in	-0.154***	-0.153***	-0.155***	-0.490***	-0.490***	-0.496***
	(0.051)	(0.051)	(0.049)	(0.059)	(0.059)	(0.059)
Single mother × post-reform	**-0.068***	**-0.068****	**-0.066***	**-0.448*** **	**-0.448*** **	**-0.450*** **
	(0.035)	**(0.035)**	**(0.035)**	**(0.034)**	**(0.034)**	**(0.035)**
Demographic Covariates	Yes	Yes	Yes	Yes	Yes	Yes
State Unemployment Rate	No	Yes	Yes	No	Yes	Yes
State Fixed Effects	No	No	Yes	No	No	Yes

Notes: Standard errors, shown in parentheses, are adjusted for clustering by year. The dependent variable is a continuous measure ranging from 1 ("definitely disagree") to 6 ("definitely agree"). All models are estimated using an ordered probit. Columns (1) through (3) use single women without children as the comparison group, and Columns (4) through (6) use married women with children as the comparison group. The low-skilled sample in Panel B is defined to include women with some college education and below. The demographic covariates include age, age-squared, race/ethnicity (two dummy variables), household size, educational attainment (three dummy variables), Census region (eight dummy variables), and dummy variables for the periods 1991-1995 and 1996-2005. The Census dummy variables are excluded from the model in column (3) and (6), and are replaced by state fixed effects. Dummy variables that equal unity are included to account for missing information in the demographic controls. Two specification tests are conducted: Ho: Single mother x (1985-1990)-Single mother x (1991-1995)=0, and Ho: Single mother x (1985-1990)-Single mother x (1996-2005)=0. Bolded figures indicate that the null hypothesis of the equality of the period-specific coefficients is rejected at the 10% level or better. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 6: Regression-Adjusted Relative Changes in Additional Measures of Single Mothers' Subjective Well-Being, 1986-2005, Lower-Skilled Sample

Subjective Well-Being Outcome	Variable	Comparison Group: Single Women without Children	Comparison Group: Married Women with Children
Panel A: Proxies for Life Satisfaction			
"I wish I could leave my present life and do something entirely different"	Single mother × pre-reform	0.029	0.493***
		(0.053)	(0.030)
	Single mother × phase-in	-0.003	0.527***
		(0.024)	(0.030)
	Single mother × post-reform	**-0.083**	0.534***
		(0.051)	(0.039)
"If I had my life to live over, I would sure do things differently"		0.190***	0.568***
		(0.073)	(0.057)
		0.188**	0.507***
		(0.084)	(0.063)
		0.019	**0.430*** **
		(0.040)	**(0.039)**
"I dread the future"		0.035	0.204***
		(0.077)	(0.057)
		0.134***	0.271***
		(0.044)	(0.048)
		-0.037	0.205***
		(0.046)	(0.032)
"Our family income is high enough to satisfy nearly all our important desires"		-0.489***	-0.749***
		(0.065)	(0.040)
		-0.259* **	**-0.580*** **
		(0.043)	**(0.031)**
		-0.232* **	**-0.470*** **
		(0.037)	**(0.035)**
Panel B: Physical and Mental Health			
"I am in very good physical condition"		-0.031	-0.069**
		(0.037)	(0.031)
		-0.024	-0.049
		(0.066)	(0.079)
		0.018	-0.026
		(0.040)	(0.033)
"I have trouble getting to sleep"		-0.051	0.157***
		(0.056)	(0.050)
		0.000	0.190***
		(0.051)	(0.044)
		-0.037	0.192***
		(0.030)	(0.019)
I get more headaches than most people"		0.055	0.082*
		(0.068)	(0.048)
		0.030	0.108**
		(0.050)	(0.043)
		0.030	0.158***
		(0.037)	(0.036)
"I wish I knew how to relax"		-0.011	0.142***
		(0.045)	(0.041)

	0.167* **	0.196***
	(0.039)	(0.031)
	0.133* **	0.193***
	(0.044)	(0.031)
"I feel I am under a great deal of pressure most of the time"	0.130**	0.316***
	(0.066)	(0.051)
	0.312* **	0.398***
	(0.033)	(0.029)
	0.164***	0.303***
	(0.042)	(0.029)
Demographic Covariates	Yes	Yes
State Unemployment Rate	Yes	Yes
State Fixed Effects	Yes	Yes

Notes: Standard errors, shown in parentheses, are adjusted for clustering by year. The dependent variable is a continuous measure of each statement ranging from 1 ("definitely disagree") to 6 ("definitely agree"). All models are estimated using an ordered probit. The first column uses single women without children as the comparison group, and the second column uses married women with children as the comparison group. All models are estimated on the lower-skilled sample, defined to include women with some college education and below. The demographic covariates include age, age-squared, race/ethnicity (two dummy variables), household size, educational attainment (three dummy variables), and dummy variables for the periods 1991-1995 and 1996-2005. State fixed effects are included in all models. Dummy variables that equal unity are included to account for missing information in the demographic controls. Two specification tests are conducted: Ho: Single mother x (1985-1990)-Single mother x (1991-1995)=0, and Ho: Single mother x (1985-1990)-Single mother x (1996-2005)=0. Bolded figures indicate that the null hypothesis of the equality of the period-specific coefficients is rejected at the 10% level or better. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Appendix A: Summary Statistics for the DDB Needham Sample, 1986-2005

Variable	(1) Single Mothers	(2) Single Women without Children	(3) Married Women with Children
Age (years)	35.35	43.64	35.59
	(9.34)	(12.81)	(7.79)
White (%)	0.603	0.786	0.852
	(0.489)	(0.409)	(0.354)
Black (%)	0.305	0.144	0.059
	(0.460)	(0.352)	(0.236)
Other Race/Ethnicity (%)	0.091	0.068	0.087
	(0.288)	(0.253)	(0.282)
Household Size (no. persons)	3.421	1.744	4.142
	(1.297)	(1.043)	(1.044)
Less than High School (%)	0.098	0.062	0.051
	(0.298)	(0.242)	(0.220)
High School/GED (%)	0.347	0.280	0.333
	(0.476)	(0.449)	(0.471)
Some College (%)	0.406	0.342	0.342
	(0.491)	(0.474)	(0.474)
BA+ (%)	0.147	0.313	0.272
	(0.354)	(0.463)	(0.445)
Employed (%)	0.762	0.811	0.654
	(0.425)	(0.391)	(0.475)
Household Income < $30k	0.733	0.581	0.282
	(0.442)	(0.493)	(0.450)
Household Income $30-$49k	0.169	0.241	0.314
	(0.375)	(0.427)	(0.464)
Household Income $50k-$69k	0.058	0.100	0.209
	(0.234)	(0.300)	(0.407)
Household Income $70k-$99k	0.027	0.053	0.126
	(0.163)	(0.224)	(0.332)
Household Income >= $100k	0.010	0.023	0.066
	(0.101)	(0.152)	(0.248)

Notes: Standard deviations are in parentheses.