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To your happiness? Extra hours of labor supply and worker well-being

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Abstract

Does extra work buy happiness and well-being? Unique survey data are analyzed to consider whether measures of self-reported subjective happiness, psychological health and economic satisfaction bear a net positive or negative relationship with working extra hours. Overtime work hours generally are associated with increased work stress, fatigue and work–family interference. When overtime work is required, this appears to offset the otherwise greater happiness and mental healthiness produced by its additional income. Mandatory overtime is associated with additional work–family interference and unhappiness for some workers. Policies most fruitful for improving individual economic and social welfare should focus on minimize the incidences where overtime is mandatory.

Keywords: J22; J28; I31; J23

1. To your happiness? Extra hours of labor supply and worker well-being

Economic models of labor supply have treated as a black box the specific nature of the individual welfare losses when constrained from achieving their preferred number of hours worked. While it is virtually impossible to observe directly workers' preferences regarding their hours of labor supply and utility, recently available data offer a rare glimpse into the association between workers' reported levels of subjective happiness and economic satisfaction and whether they extra work hours and are constrained by the workplace or labor market to work hours perhaps beyond the number preferred. Occupational psychology and health research is replete with evidence that

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workers who work long hours per day or per week often tend to experience added stress and fatigue and thus face an additional risk of illness, injury, burnout or work and family imbalance, particularly if such work is involuntary. Labor economics, however, has yet to take much advantage of this rich body of research that documents the potentially adverse effects of both long hours and workers' lack of control over hours on workers' utility. Specifically, mandatory overtime work is a unique situation where an employee is required by their employer to work longer than their usual or normally scheduled hours. Mandatory (also referred to as "compulsory" or "forced") overtime implies that a worker who declines or refuses the assigned extra hours expects to face some form of penalty or reprisal, either explicit or implicit, which will affect their trajectory of future income or well-being. Mandatory overtime workers thus face a binding constraint that may result in suboptimal individual welfare for a worker who does not prefer the additional hours. Any detrimental effects of extra hours of work may be compounded when they are not strictly voluntary.

Conventional economics literature suggests that because more hours of work are generally associated with greater current or future income, better health may be "purchased" thus dominating its potential adverse effects. Recent contributions in the behavioral economics literature suggest that happiness does not necessarily increase with income, particularly at relatively higher levels of income. This is in part because happiness also depends on health and family life experience. It depends as well on the extent to which absolute income gains relative to either one's aspirations or reference groups. The chief purpose of this paper is to establish whether measures of self-reported subjective happiness, mental health and satisfaction with economic aspects of life bear a statistically significant net positive or negative relationship with working extra hours, particularly when they are required by the employer. It attempts to fill voids in literatures by observing whether observed net effects can be traced to extra hours of work generally or, alternatively, because such hours are required by employers. The significance for economics lies in whether the results indicate that individual welfare, and by implication social welfare, is improved or harmed on balance with a greater incidence of overtime working, mandatory or not.

The outcomes measures used are categorized here according to broad indicators of happiness and well-being. This research uses the Quality of Working Life module in the 2002 General Social Survey (GSS), a nationally representative interview survey of US households. The 2002 GSS is a sample of 2765 individuals and the module includes detailed questions on extra work hours, including a rarely addressed question regarding whether working overtime was required by the employer. This rich data set enables an unusually direct observation of some of the specific outcomes that the literature would suggest are associated with hours of work that are not be purely voluntary in nature, and how these outcomes are distributed by personal characteristics of workers.

To provide a context, the first section briefly summarizes the standard economic model of optimal labor supply in the presence of downward hours constraints for workers and the behavioral economic approach regarding the connection between well-being and additional income. The second section of the paper reviews the empirical literature on the health and well-being implications for workers who put in overtime hours, both voluntary and involuntary, and the implications for happiness. The third section introduces the GSS data and presents descriptive statistics on selected measures of happiness and satisfaction for workers who work extra hours versus workers who do not, and then further subdivides workers with extra hours by mandatory and non-mandatory overtime. The fourth section contains the econometric estimates of the happiness and satisfaction outcomes generated by overtime work generally and any add-on effects traced to overtime work

being required. The paper concludes by discussing some implications of the results for policy regarding regulation of work hours.

2. Conventional and behavioral economic models of labor supply: downward hours constraints

In the conventional microeconomic model of labor-leisure choice, it is assumed that workers form their preferences for number of work hours to supply to the paid labor market exogenously based on innate preferences for work and leisure, the market wage rate and non-labor income sources. Workers are assumed to adjust their hours of labor supply until the unique point where the marginal rate of substitution (MRS), the relative preference for an hour of leisure vis-à-vis work, exactly equals the wage rate. Most conventional labor supply research considers workers' hours of labor supply to reflect voluntary responses. Behavioral economics research has incorporated the roles in labor supply of goals regarding psychological balance and relative real wage rates on labor supply decisions (e.g., Neumark and Postlewaite, 1998; Scacciati, 2004; Goldsmith et al., 2004). However, workers may face binding constraints imposed by their employer, such as fixed shift lengths and minimum hours requirements, which constrain many workers to supply more hours than that which maximizes their utility (see Idson and Robbins, 1991). Inflexibility of hours in the downward direction creates a kinked budget constraint driving a wedge between the market wage and a worker's MRS in the event that optimal hours preferred declines. Most applied models of the labor market accept that hours mismatches can persist where profit maximizing employers may require longer hours than employees might prefer (Dunn, 1990; Feather and Shaw, 2000; Lang and Kahn, 2001; Sousa-Poza and Henneberger, 2002). A theoretical justification for the persistence of mismatches, the creation of compensating wage differentials for inflexible, inconvenient or mandatory overtime hours, has received little support when tested empirically (Ehrenberg and Schumann, 1984; Altonji and Paxson, 1988). Thus, workers settle for longer than preferred hours in part because other options such as absenteeism or tardiness carry a risk of discharge (Yaniv, 1995; Altman and Golden, 2004). Most changes in workers' hours are not marginal adjustments, rather they take place mainly through their changing of jobs (Altonji and Paxson, 1988), or moving to self-employment status (Lombard, 2001) because adjustments of hours at their current job may even prove detrimental to workers' earnings in the longer run (Drago et al., 2004). There is the signaling effect of turning down overtime where the employee feels they will be perceived as not being a team player or not sufficiently motivated. In sum, undesired extra hours of labor supply may be a sub-optimal equilibrium that may be traced in some part to employer practices that require or induce overtime work.

3. The well-being consequences of longer hours and overtime

There is a burgeoning relevant literature in the fields of occupational psychology, occupational health and safety, labor–industrial relations, organization of work and work–family conflict that empirically documents cases of adverse effects of long hours on various aspects of worker welfare such as health (illness and injury risk, through fatigue and stress) (Danna and Griffin, 1999; Sparks et al., 2001; Van Der Hulst, 2003; Caruso et al., 2004). New workplace practices that lead to greater intensification of work or time doing repetitive tasks lower worker well-being or raise cumulative trauma disorders (Askenazy, 2004; Brenner et al., 2004). The adverse effects of longer hours tend to be exacerbated by a worker's lack of control over the volume and scheduling of work hours (Maume and Bellas, 2001; Bliese and Halvorsen, 2001; Berg et al., 2004). Greater variability of

work hours tends to reduce workers' utility (Ashkenazy, 2004). The most clear negative effects on well-being of excessive or unscheduled additional work are on workers' ability to balance their competing work and family responsibilities and on their stress levels (Cornell Institute for Workplace Studies, 1999; Fenwick and Tausig, 2001; Berg et al., 2003; Ganster and Bates, 2003). High-performance workplace practices and long work hours interact to reduce work–life balance, often trumping organizations' work–life balance policies (White et al., 2003). Moreover, employed parents with work overload transfer work stress over to their children (Crouter et al., 1999).

The combination of overtime hours and relatively greater external pressure to work overtime has been associated also with elevated risks of health complaints (Van Der Hulst and Geurts, 2001). Among those working more than 50 h a week and facing some supervisory pressure to work overtime, a dramatically higher proportion of workers report experiencing not only work–family interference, but an injury, illness, somatic stress, "feeling depressed," job-escape drinking. Mandatory overtime work creates a risk of adverse physiological consequences for workers, stemming in part from the greater risk of injury on the job associated generally with longer hours (Rosa, 1995; Dong, 2005; Dembe et al., 2005). Mandatory overtime for nurses is contributing to an occupational burnout rate as high as 40% (Aiken et al., 2002). Over 26% of all adult workers reported feeling overworked sometime in the last 3 months (Galinsky et al., 2005). The rate of overwork is considerably higher among those who work longer hours or more days than they prefer for reasons such as employer expectations and those who are not permitted at their job to change their own work schedules toward their preferred hours (Galinsky and Bond, 2001). Those who experience higher levels of overwork levels report a statistically significantly higher scale of stress and depressive symptoms. A lower proportion or workers report that their health is good or they are very successful at taking good care of themselves.

Nevertheless, the effect of longer work hours on welfare can cut two ways. While work–family imbalance is found consistently to be a by-product of longer work hours, health and well-being effects may be mixed, with no measurable net effect on well-being or life satisfaction (Ganster and Bates, 2003). In addition, there is no clear relationship between the number of work hours per se and quality of life outcomes and subjective measures of mental health, although there is some effect on subjective indicators (Barnett, 2004). Relatively longer weekly hours of work creates additional work strain, but at the same time does not reduce job satisfaction. In fact, working 46 or more hours per week improved job satisfaction relative to working 30–45 h (Green, 2004). Thus, it is not obvious that working more than usual hours will reduce satisfaction with one's job or life, on net. Indeed, "utility" theory suggests that people invest more of their time allocation in roles, including jobs, they find satisfying (Rothbard and Edwards, 2003). Thus, while satisfaction with work decreases as the number of work hours increase, average well-being is no lower among those who work long hours (Gray et al., 2004).

4. Happiness, well-being and income

Subjective measures of happiness as well as satisfaction are considered reasonable proxies of the conventional economic concept of utility (Frey and Stutzer, 2002; Helliwell, 2003). One "paradox of happiness," however, is that many individuals could conceivably reduce their own work hours without corresponding reductions in their happiness level, but do not (Binswanger, 2003). There are several underlying reasons for this apparently non-optimizing behavior of working longer hours. One is that people tend to overestimate the happiness that would be yielded from an increase in income. Indeed, the increase in happiness produced by a given rise in income, at the

national level, tends to dissipate in the longer run, in part because of rising aspirations or adaptive expectations (Hagerty and Veenhoven, 2003). A second reason is that happiness is eroded if there is no resulting gain in positional, relative income. Still another reason is that individuals tend to underestimate the opportunity costs incurred with working for additional income, and that they overestimate future time-saving opportunities. Note that the latter two reasons result in working more hours than perhaps initially preferred. Thus, happiness might be increased not only by leisure time, as emphasized in standard economic models, but by the gain in status conferred upon them either via higher relative income or greater prestige in the workplace (see Frey and Stutzer, 2002; Altman and Golden, 2004). Perhaps this explains in part why overall worker satisfaction with jobs in developed countries has been on the decline despite falling hours of work in most countries (other than US and Sweden, see Clark, 2005). This may also help explain why those who earn greater income experience greater stress, reflecting feelings of a "time crunch" (Hamermesh and Lee, 2005) during their leisure time.

To the extent that quality of health and family life contribute to well-being in equally important ways that can be separated from the effects of income, additional income from work ex poste may yield less than ex ante expected gains in well-being. This particularly the case when preferences are interdependent (see Easterlin, 2003). Thus, any gains from the material well-being generated by additional income may easily be offset by the loss in well-being from deteriorated health or family life.

5. Happiness, well-being and overtime work: analysis of GSS data

This section uses the 2002 General Social Survey (GSS) Quality of Working Life (QWL) module to empirically explore the relationship between various indicators of well-being and the type of overtime work. The GSS emerged from the movement to promote the use of social science to monitor policy relevant social trends. It has been conducted biennially beginning in 1994. The main areas covered in the GSS include socioeconomic status, social mobility, social control, the family, race relations, sex relations, civil liberties, and morality. Topical modules, such as the 2002 QWL, are designed to investigate new issues or to expand the coverage of an existing subject have been part of the GSS since 1977. The 2002 GSS module conducted uses full probability sample design which gives each household an equal probability of inclusion in the survey and a total sample size of 2765 participants. The specific 2002 GSS survey question for mandatory overtime is, "When you work overtime, is it mandatory (required by your employer)?" Any worker who reported at least one "days in a month during the last year did you work beyond your usual schedule," that they worked extra hours one or more days a month *and* yes to the question that overtime is mandatory, are then separated from workers with extra hours where the overtime is not mandatory, and from workers with no extra hours at all.

Table 1 shows that of the 1796 employed people in the survey, 461 people answered "yes," overtime is mandatory, and 1293 people answered "no." That means about 26% of employed workers in the US regard their overtime work as mandatory when they work it. Of all those employed, over 19% report both that they actually worked beyond their usual schedules in the last year that when they worked overtime it was mandatory. Among full-time workers this rate is over 21%. This rate is slightly higher though generally consistent with other recent estimates from other samples of the extent of the employed work force facing mandatory overtime work (Cornell University Institute for Workplace Studies, 1999; Friedman and Casner-Lotto, 2003; Berg et al., 2003). Over 75% of workers with mandatory overtime worked extra hours over the last month compared to 57% who do not face mandatory overtime. Workers with required extra

Table 1
General social survey 2002 basic descriptive information

	Number	Mandatory Overtime	Percent Facing Mandatory Overtime	Mandatory Overtime and Worked Extra Hours	Percent Mandatory Overtime and Extra Hours
Full sample	2765				
Labor force	1917	461	24.1	342	17.8
Employed	1787	459	25.7	342	19.2
Full-time	1424	394	27.7	301	21.1
Part-time	311	50	16.1	28	9.0

	Mandatory overtime ($n = 461$)	No mandatory overtime ($n = 1293$)	All employed workers ($n = 1796$)
Number of hours worked last week (mean)			
Full-time	47.6	45.3	45.9
Part-time	23.3	22.7	22.6
Worked beyond usual schedule over the last year	75.4%*	57.0%	66.3%
Number of days per month (mean)	7.1	4.9	5.5

Source: 2002 General Social Survey and authors' calculations.
* Difference between mandatory overtime and no mandatory overtime is significant at $p < 0.05$.

hours average more than 2 h per week and 2 days more per month than their counterparts without mandatory extra hours.

Table 2 compares the demographic characteristics of workers who worked extra hours and whose overtime is mandatory, workers with extra hours and overtime is not mandatory, and workers with no extra hours. Men are more likely to have both extra hours generally and have these be required extra hours. Whites are more likely to have overtime but less likely to have it be required overtime. Having extra hours grows with education level. Having more education reduces the incidence of overtime that is mandatory. Being foreign born significantly raises the prospect of overtime being mandatory and reduces the prospect of having voluntary overtime work. Marital status has no discernable effects. Finally, working overtime that is mandatory appears to be associated with earning less income than working overtime voluntarily, although the former raises income above that which occurs with no extra hours at all. Thus, working extra days indeed is associated with a higher bracket of family income, particularly if the overtime work is not mandatory. In sum, there are a few but small differences in characteristics between the MOT and non-MOT workers. Logistic regression analysis conducted elsewhere (see Golden and Wiens-Tuers, 2005) on the bivariate that an individual works (or does not work) extra days is statistically significantly raised by being male, having lesser education and lacking the asset of home ownership. Being married, foreign born or lesser educated is associated with relatively less overtime work generally. The concentration of mandatory overtime work among men and foreign-born is traced largely to their occupation and industry of employment. Working voluntary overtime is statistically significantly associated with relatively higher own or family income.

6. Descriptive results

Table 3 presents the proportions in the range of responses of the key health outcomes and tests for statistically significant differences in such proportions. It reveals that when overtime work is

Table 2
Selected demographics by type of overtime

	Extra hours: MOT ($n = 342$)	Extra hours: not MOT ($n = 733$)	Extra hours: all ($n = 1075$)	No extra hours ($n = 677$)	All employed ($n = 1787$)
Age in years (mean)	40.6	40.0	40.2	42.8	41.2
Distribution by gender (%)					
Male	57.0†	51.0	52.9**	42.4	48.6
Female	43.0	49.0	47.1	57.2	51.4
Distribution by race (%)					
White (may or may not be Hispanic)	77.5†	81.0	79.9*	76.2	78.3
Black	14.0	12.9	13.3*	16.4	14.6
Hispanic	8.5	6.7	8.1	9.4	8.1
Distribution by education (%)					
Less than high school	9.4†	7.2	7.9**	12.6	9.8
High school graduate	53.2	49.7	50.8**	58.9	53.7
Associates	9.7	8.9	9.1	8.3	8.9
Bachelor	18.7	22.2	21.2**	14.2	18.4
Graduate degree	9.1†	12.0	11.1**	6.1	9.2
Distribution by marital status (%)					
Married	49.7	47.1	47.9	47.6	47.9
Widowed, divorced, separated	24.3	23.4	23.9	24.7	23.9
Never married	25.4	29.5	28.2	28.1	28.3
Foreign-born (%)	11.4††	6.8	8.3**	12.7	10.0
In SMSA (%)	72.5†	76.3	75.1*	72.2	74.3
Family income category (US$)	35000–39000	40000–49000	40000–49000	30000–34999	35000–39000

Source: 2002 General Social Survey.
* Difference between all extra hours and no extra hours is significant at $p < 0.10$.
** Difference between all extra hours and no extra hours is significant at $p < 0.05$.
† Difference between extra hours: MOT and extra hours: not MOT is significant at $p < 0.10$.
†† Difference between extra hours: MOT and extra hours: not MOT is significant at $p < 0.05$.

mandatory, workers are less apt to indicate that their health is generally very good or excellent. However, those who work extra hours report better health than those who work no overtime at all. Nevertheless, both the mean number of days and proportion indicating 0 days of suffering restrictive mental health problems were significantly higher among those who work overtime, mandatory or otherwise. However, differences between the mandatory and non-mandatory sample segments are present but ultimately too small (or standard errors too large) to yield statistically significant differences.

Table 4 displays the outcomes of both mandatory and non-mandatory overtime work on indicators of happiness. Interestingly, both happiness and unhappiness is relatively greater among mandatory than not mandatory overtime workers. This bi-modality suggests that the add-on effects of overtime work being mandatory are adverse for some workers but positive for others. In addition, non-mandatory overtime workers indicate no more happiness than those with no extra hours. Thus, it appears that money does not seem to buy a net gain in happiness. Perhaps this is can be explained by the additional findings from Table 5. Overtime workers generally, but especially mandatory overtime workers, find that job demands more frequently interfere with their

Table 3
Health and well-being outcomes by type of overtime

	Extra hours: MOT ($n = 342$)	Extra hours: not MOT ($n = 733$)	Extra hours: all ($n = 1075$)	No extra hours ($n = 677$)	All employed ($n = 1787$)
General health (%)					
Excellent/very good	59.1†	63.4	62.0**	51.7	57.6
Good	27.8	25.3	26.1**	35.0	29.3
Fair/poor	13.1	11.3	11.9*	14.4	12.5
In last 30 days, how many days that mental health (stress, depression, emotional problems) was not good					
Mean number of days (S.D.)	4.5 (8.2)	3.9 (7.1)	4.1 (7.7)	3.7 (7.7)	3.9 (7.7)
Zero days (%)	56.4	58.6	54.5**	65.9	58.5
How often during past 30 days felt used up at end of day?					
Very often/often	47.1	45.3	45.9**	36.4	41.8
Sometimes	35.1	34.7	34.8	32.1	33.4
Rarely/never	17.8	19.7	19.2**	31.1	23.7

Source: 2002 General Social Survey.
* Difference between all extra hours and no extra hours is significant at $p < 0.10$.
** Difference between all extra hours and no extra hours is significant at $p < 0.05$.
† Difference between extra hours: MOT and extra hours: not MOT is significant at $p < 0.10$.

family life. Among extra hours workers, mandatory overtime workers experience work–family interference often at a rate twice that observed among non-mandatory overtime workers. This occurs on top of the adverse effect of overtime hours generally on work–life interference. Mandatory overtime workers also report often or always finding work stressful than non-mandatory overtime workers, although all workers with extra hours are more stressed than those without any extra hours of work. Similarly, mandatory overtime workers carry home fatigue more than non-mandatory overtime workers, although all overtime workers report being overly tired relative to those without extra hours. Finally, all overtime workers find that their main satisfaction in life comes from work, perhaps surprisingly, more so among mandatory than non-mandatory overtime workers. The latter may be explained by their relatively longer time spent in the workplace, or maybe being away from home. Higher satisfaction supports the Hochshchild (1997) view that time spent in the workplace has becoming increasingly more rewarding while time in the household has not. It also supports Rothbard and Edwards' (2003) utility theory that time is allocated toward more satisfying activities. Perhaps the satisfaction can be traced to the enhanced relative status for those willing to put in hours when it is required. Alternatively, it may reflect self-selection or feedback effects that endogenize a preference for more work among long-hours workers (Altman and Golden, 2004).

7. Econometric analysis

Econometric analysis is useful in isolating the effect of overtime on well-being holding constant various personal and job characteristics. An ordered logistic model, or proportional odds model, is used to estimate relationships between selected outcomes that are reported as ordinal variables such as excellent, good, fair, poor, and a set of independent variables (StataCorp, 2001). The GSS contains several questions of this structure. The model estimated is the true frequency of an

Table 4
Happiness outcomes by type of overtime

	Extra hours: MOT ($n = 342$)	Extra hours: not MOT ($n = 733$)	Extra hours: all ($n = 1075$)	No extra hours ($n = 677$)	All employed ($n = 1787$)
How happy would you say you are?	$n = 169$	$n = 376$	$n = 545$	$n = 335$	$n = 897$
Very happy	37.9†	30.1	32.8	29.6	31.6
Pretty happy	48.5††	60.6	56.9	57.9	57.1
Not too happy	13.6†	8.5	10.1	12.5	11.2
How often do demands of job interfere with family life? (%)					
Often	23.4††	12.1	15.7**	8.0	12.9
Sometimes	31.6	31.1	31.3**	19.2	26.3
Rarely/never	45.0††	56.8	53.0**	72.8	59.9
Come home from work too tired to do chores that need to be done (%)	$n = 154$	$n = 304$	$n = 458$	$n = 283$	$n = 755$
Several times a week	28.6	30.9	30.1*	24.4	28.1
Several times a month	30.5††	21.7	24.7	23.7	24.4
Once or twice/never	39.6†	46.4	44.1	48.8	45.4
How often is work stressful?					
Always/often	38.6†	34.5	35.8**	22.8	30.7
Sometimes	42.4	45.6	44.8**	39.7	42.1
Hardly ever/never	18.7	19.7	19.5**	37.4	26.1
On an average work day, how many hours do you have to relax or pursue activities that you enjoy?					
Zero hours (%)	6.4	6.0	6.1	6.9	6.4
Mean number of hours (S.D.)	3.5 (2.5)	3.6 (2.4)	3.5 (2.6)	4.2 (3.5)	3.8 (2.9)
My main satisfaction in life comes from work (%)					
Strongly agree/agree	32.6†	28.4	29.7**	24.6	27.8
Disagree/strongly disagree	67.5	71.2	69.9**	74.9	70.8

Source: 2002 General Social Survey.
* Difference between all extra hours and no extra hours is significant at $p < 0.10$.
** Difference between all extra hours and no extra hours is significant at $p < 0.05$.
† Difference between extra hours: MOT and extra hours: not MOT is significant at $p < 0.10$.
†† Difference between extra hours: MOT and extra hours: not MOT is significant at $p < 0.05$.

outcome, given by

$$O_j = \beta_1 \text{overtime}_j + \beta_2 X_{2j} + u_j$$

The dependent variable O_j is one of the selected outcomes reported as ordered categories. The independent variables are the presence of overtime and a vector of control variables (X) including age, male, married, age and age squared, and whether or not the job is a 'standard' employment arrangement (as opposed to non-standard job arrangements, such as independent contractors and agency temporaries). The first model contains the full sample, with the key independent variable, extra days worked are at least one per month = 1 and no extra days per month = 0. A second model is estimated for the sub-sample of workers reporting extra days and that their overtime work was mandatory. It is estimated along with the same control variables as the model for extra days, and u_j is also the error term. The latter will suggest if there is an add-on or an opposing effect of being required to work overtime.

Table 5
Economic satisfaction outcomes by type of overtime

	Extra hours: MOT ($n = 342$)	Extra hours: not MOT ($n = 733$)	Extra hours: all ($n = 1075$)	No extra hours ($n = 677$)	All employed ($n = 1787$)
Satisfaction with present financial situation (%)	$n = 169$	$n = 376$	$n = 545$	$n = 335$	$n = 897$
Pretty well satisfied	30.2	31.1	30.8	30.5	30.6
More of less satisfied	42.6	46.0	45.0	42.7	43.9
Not satisfied at all	27.2†	22.9	24.2*	26.6	25.4
During past few years, has financial situation changed? (%)	$n = 169$	$n = 376$	$n = 545$	$n = 335$	$n = 897$
Getting better	56.2	56.4	56.3**	45.4	52.2
Getting worse	18.9†	14.1	15.6	17.9	16.7
Stayed the same	24.9	29.5	28.1**	36.7	31.1
How does your income compare to other American families? (%)	$n = 169$	$n = 376$	$n = 545$	$n = 335$	$n = 897$
Far below/below average	26.7†	20.8	22.6**	34.1	26.8
Average	50.3	52.4	51.7*	46.9	49.7
Above/far above average	23.1	26.8	25.8**	18.8	23.2
Own your home?	$n = 98$	$n = 244$	$n = 342$	$n = 225$	$n = 580$
Yes	57.1	59.0	58.5	62.7	59.8
Fringe benefits okay? (%)					
Very/somewhat true	73.7†	77.6	76.4**	61.5	69.9
Not too/not true at all	26.0†	22.2	23.4**	38.0	28.8
If your job goes well, are you likely to get a bonus or extra pay? (%)					
Yes	23.1†	27.6	26.1**	21.7	24.1
Maybe	10.8††	15.6	14.1	14.3	13.9
No	65.5††	55.9	59.9**	63.5	60.3
Standard of living compared to your parents at same age? (%)	$n = 124$	$n = 261$	$n = 385$	$n = 211$	$n = 606$
Much/somewhat better	70.2	65.5	67.0	65.4	66.2
About the same	16.9	19.9	19.0	18.0	18.7
Somewhat/much worse	12.9	14.6	13.3	15.6	14.2

Source: 2002 General Social Survey.
* Difference between all extra hours and no extra hours is significant at $p < 0.10$.
** Difference between all extra hours and no extra hours is significant at $p < 0.05$.
† Difference between extra hours: MOT and extra hours: not MOT is significant at $p < 0.10$.
†† Difference between extra hours: MOT and extra hours: not MOT is significant at $p < 0.05$.

8. Hypotheses and limitations of the data

Overtime work tends to bring in additional current or expected future income rewards. However, the net effect of overtime work on finding health, happiness and work as the main source of satisfaction is, a priori, ambiguous (Golden and Wiens-Tuers, 2005). It is expected that extra days of work generally may create a net negative effect on indicators of happiness and health, all else constant, at least when overtime is mandatory. Overtime hours create additional stress, feelings

Table 6
Mean responses to GSS QWL happiness and satisfaction related questions

	Mean category (S.D.)				
	Extra hours: MOT	Extra hours: not MOT	Extra hours: all	No extra hours	All employed
Outcomes					
HEALTH1	2.29 (1.07)	2.20 (1.01)	2.23 (1.03)	2.38 (1.03)	2.29 (1.03)
USEDUP	2.51 (1.10)	2.60 (1.08)	2.57 (1.09)	2.89 (1.23)	2.70 (1.16)
SATFIN	1.97 (0.76)	1.92 (0.73)	1.93 (0.74)	1.96 (0.76)	1.95 (0.75)
FINALTER	1.69 (0.85)	1.73 (0.89)	1.72 (0.87)	1.91 (0.90)	1.79 (0.89)
FRINGEOK	1.99 (1.44)	1.89 (0.99)	1.92 (1.01)	2.29 (1.18)	2.07 (1.10)
WKVSFAM	2.40 (1.04)	2.67 (0.96)	2.58 (0.99)	3.05 (0.96)	2.76 (1.01)
STRESS	2.70 (1.01)	2.81 (0.96)	2.77 (0.98)	3.21 (1.06)	2.94 (1.03)
WKTOPSAT	2.77 (0.87)	2.83 (0.80)	2.81 (0.82)	2.96 (0.84)	2.86 (0.84)
HAPPY	1.76 (0.68)	1.78 (0.59)	1.77 (0.62)	1.83 (0.63)	1.80 (0.62)

of being used up and work–family interference, all subjective indicators less likely to be offset gains from any additional income.

There are, unfortunately, several limitations and complications associated with applying these data. One is that the indicators are self-rated subjective health. What individuals are thinking rather than objective measures and more subject to errors. Similarly, it is difficult to disentangle whether individual self-reports are responding to the effects of required extra hours or being in less desirable jobs. In addition, clearly, health and happiness are endogenous with working extra hours. Thus, it is possible that causality runs in both directions, for example, generally happier individuals may be willing to work and endure more overtime work, both required and voluntary. Moreover, there may be some simultaneity if workers that experience more stress and overtime share common, unobserved characteristics.

9. Results: happiness, well-being and satisfaction indicators

Table 6 reports the mean of the categories for the indicators used in the estimation, displays the mean responses in the key outcomes in the scale reported in the GSS QWL instrument. Table 7

Table 7
Ordered logit coefficient estimates of outcomes: well-being and happiness effects of working extra days and working mandatory

Outcomes (n = all)	Extradays β (S.E.)	Outcomes (n = extradays only)	Mandatory overtime β (S.E.)
HEALTH1 (n = 1776)	−0.295** (0.09)	HEALTH1 (n = 1074)	0.162 (0.12)
USEDUP (n = 1766)	−0.433** (0.09)	USEDUP (n = 1074)	−0.185 (0.12)
STRESS (n = 1767)	−0.701** (0.09)	STRESS (n = 1073)	−0.197 (0.12)
SATFIN (n = 896)	−0.099 (0.13)	SATFIN (n = 545)	0.179 (0.17)
FINALTER (n = 897)	−0.377** (0.13)	FINALTER (n = 545)	−0.059 (0.18)
FRINGEOK (n = 1764)	−0.489** (0.09)	FRINGEOK (n =)	0.159 (0.12)
WKVSFAM (n = 1769)	−0.781** (0.09)	WKVSFAM (n = 1075)	−0.502** (0.11)
WKTOPSAT (n = 1762)	−0.428** (0.10)	WKTOPSAT (n = 1071)	−0.081 (0.13)
HAPPY (n = 895)	−0.171 (0.14)	HAPPY (n = 544)	−0.118 (0.19)

Coefficient estimates are results from controls included for major occupation and industry classification.
** $p < 0.05$.

contains a summary of the β coefficients and standard errors of the ordered logistic regressions, the direction of their effect and statistical significance. Controls for demographic and various job characteristics are included but not reported in the table. The first estimation is for the question, "Would you say that in general your health is excellent (1), very good (2), good (3), fair (4), or poor (5)." Using the all employed workers, column two illustrates the effect of overtime work generally, relative to those who report working no extra days. The statistically significant and negative coefficient on health means that that overtime is actually associated with the better health categories (the lower numbers in this case), with other factors held constant. The direction of causality is unclear, however. Among only these overtime workers, column four illustrates that mandatory overtime's coefficient is positive but not statistically significant. On the one hand, this suggests there is not a significant difference in the responses to general health questions between mandatory and non-mandatory overtime workers. On the other hand, it could mean the potentially positive effect of extra work is negated when overtime is mandatory. Responses to the question, "How often during the past month have you felt used up at the end of the day," are very often (1), often (2), sometimes (3), rarely (4), and never (5). The estimated coefficient for working overtime generally is negative and statistically significant. This means workers with overtime work are more likely to feel used up at the end of the day. There appears to be a weaker add-on effect of the overtime being mandatory, but not quite strong enough for statistical significance.

Table 7 also reports the coefficients for additional potential outcomes associated with well-being. In response to the question, "How often do the demands of your job interfere with your family life?" the order of the responses is often (1), sometimes (2), rarely (3), and never (4). The expected value for extradays = 1 is −0.781. This indicates the workers who worked hours beyond their usual schedules have more work–family interference than workers who do not work beyond their usual schedule. They are statistically significantly more likely to answer the lower categories, "often" and "sometimes." The categories of responses to the question, "How often do you find your work stressful," are always (1), often (2), sometimes (3), hardly ever (4), and never (5). Again, working overtime is associated with the lower categories, in other words more stress, than not working overtime. The same is true of mandatory overtime work, although this falls short of adding on a significant effect over and above that traced to the extra hours of work per se. In response the statement, "My main satisfaction in life comes from my work," where the responses were strongly agree (1), agree (2), disagree (3), and strongly disagree (4). Working overtime generally is associated with the lower level categories, meaning workers agree with this statement. There appears to be no difference among mandatory and non-mandatory overtime work here. Finally, looking at the question, "How happy would you say you are," the responses are very happy (1), pretty happy (2), and not too happy (3), neither non-mandatory and mandatory overtime nor are statistically significantly associated with greater happiness. This suggests that there are offsetting factors at work. Its mandatory nature appears to negate the potential improvement in happiness that its additional income might otherwise yield. Additional questions regarding economic aspects of well-being refer to the responses to three additional questions, "so far as you and your family are concerned, . . . with your present financial situation, are you," more or less satisfied, or not satisfied at all?" are pretty well satisfied (1), more or less satisfied (2), and not satisfied at all (3); "During the last few years, has your financial situation been getting better (1), worse (2), or has it stayed the same (3)?" and to the statement, "My fringe benefits are good," very true (1), somewhat true (2), not too true (3) and not true at all (4). Regression results show no significant effect either way emerging from the estimations.

10. Summary, conclusions and policy implications

The extra money that working overtime brings appears to buy somewhat better mental health, but does not appear to buy additional happiness. Greater work–family life imbalance appears to be the most salient adverse effect of overtime work. There are add-on effects when the overtime work is required rather than strictly voluntary. While extra hours of work are associated generally with self-ratings of being in the highest possible health, it is not statistically significantly higher for those whose overtime work is required. When extra hours are required, this appears to negate the otherwise improved health brought about by the additional income or work. Particularly when mandatory, overtime hours are associated with increased stress at work, fatigue at home and work–family imbalance. When such work is mandatory, this is associated with greater happiness for some but greater unhappiness for others.

The significance of these findings for economics is that the black box has been partly opened and some of the individual components of individuals' (self-reported) welfare can be observed. The nuances of the results suggest that the extra hours and the mandatory nature of some overtime work should be treated in economic research and in policy as having separate and distinct effects on worker's well-being. This is because the latter tends to offset any positive effects of overtime generally, or compound any negative effects. The adverse effects on stress, in contrast, occur largely because of additional hours of work generally, whether or not it is mandatory from the employer. Research using other aspects of the GSS QWL finds that certain workplace policies and structures such as flexible daily work schedules tend to reduce the incidence of mandatory overtime (Golden and Wiens-Tuers, 2005).

The empirical findings herein offer possible prescriptions for future public and workplace policies that would ameliorate the potential worker welfare losses associated with long or required hours of work without undermining levels of happiness. These would involve creating and enforcing new standards that either limit the practice of scheduling overtime on very short-notice or create a legal right to refuse such overtime without penalty. To the extent that greater income compensates for the welfare loss associated with mandatory overtime, there is also a case for requiring employers to pay a premium for involuntarily imposed extra hours beyond the current time-and-a-half rate (for nonexempt or perhaps instituted straight-time pay for exempt workers). Some have gone further, advocating that the US Occupational Safety and Health Act's (OSHA) "general duty" clause be applied, requiring employers to remove excessive hours as a known workplace hazard (Anderson, 2004). Similarly, the International Labour Office (2005) has considered "loss of wages accompanied by threats of dismissal if workers refuse to do overtime beyond the scope of their employment contract or national laws" as falling under the definition of "forced labor." An enhanced legal right to refuse employer-requested overtime work hours could be targeted first to workers who are afflicted or affected by it most, such as working parents, those in the lower income brackets or employed in sectors where mandatory overtime practices are most pervasive. However, because national indicators of happiness are positively related to levels of economic freedom (Helliwell, 2003), all such regulation must be carefully designed so as to not suppress overtime work that workers seek and work purely voluntarily.

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Appendix A. All relevant variables and measures in 2002 GSS

Overtime work	
MOREDAYS	How many days per month do you work extra hours beyond your usual schedule?
MUSTWORK	When you work extra hours on your main job, is it mandatory (required by your employer)?
Health	
HEALTH1	Would you say that in general your health is excellent, very good, good, fair, or poor
MNTLHLTH	Now thinking about your mental health which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?
USEDUP	How often during the past month have you felt used up at the end of the day?
Happiness and satisfaction	
HAPPY	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?
WKVSFAM	How often do the demands of your job interfere with your family life?
TIREDHME	How often in the last three months have you come home from work to tired to do the chores that need to be done?
STRESS	How often do you find your work stressful?
HRSRELAX	After an average work day, about how many hours do you have to relax or pursue activities that you enjoy?
WKTOPSAT	My main satisfaction in life comes from work.
SATFIN	So far as you and your family are concerned, would you say that you are pretty well satisfied with your present financial situation, more or less satisfied, or not satisfied at all?
FINALTER	During the last few years, has your financial situation been getting better, worse, or the same?
FINRELA	Compared with American families in general, would you sat your family income is far below average, below average, average, above average, or far above average?
DWELOWN	Do you/does your family own your home/apartment, pay rent?
FRINGEOK	My fringe benefits are good
PARSOL	Compared to your parents when they were about the age you are now, do you think your own standard of living now is much better, somewhat better, about the same, somewhat worse, or much worse than theirs was?
Demographic characteristics (controls)	
age	Age in years (and age-squared)
male	Respondent is male
nonwhite	Respondent is nonwhite
married	Respondent is married
hsorless	Respondent has a high school degree or less
insmsa	Respondent within an SMSA and a large or medium size central city or not
homeowner	Respondent owns or is buying place of residence
foreign	Respondent was born in a foreign country
children	Number of children
Family income	
faminc9999	Family income less than US$ 10,000
faminc19999	Family income between US$ 10,000 and 19,999
faminc39999	Family income between US$ 20,000 and 39,999
faminc49999	Family income between US$ 40,000 and 49,999
faminc59999	Family income between US$ 50,000 and 59,999
faminc74999	Family income between US$ 60,000 and 74,999
faminc89999	Family income between US$ 75,000 and 89,999
faminc109999	Family income between US$ 90,000 and 109,999
faminc110000	Family income equal to or greater than US$ 110,000

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