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WEEKENDS AND SUBJECTIVE WELL-BEING

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ABSTRACT

This paper exploits the richness and large sample size of the Gallup/Healthways US daily poll to illustrate significant differences in the dynamics of two key measures of subjective well-being: emotions and life evaluations. We find that there is no day-of-week effect for life evaluations, represented here by the Cantril Ladder, but significantly more happiness, enjoyment, and laughter, and significantly less worry, sadness, and anger on weekends (including public holidays) than on weekdays. We then find strong evidence of the importance of the social context, both at work and at home, in explaining the size and likely determinants of the weekend effects for emotions. Weekend effects are twice as large for full-time paid workers as for the rest of the population, and are much smaller for those whose work supervisor is considered a partner rather than a boss and who report trustable and open work environments. A large portion of the weekend effects is explained by differences in the amount of time spent with friends or family between weekends and weekdays (7.1 vs. 5.4 hours). The extra daily social time of 1.7 hours in weekends raises average happiness by about 2%.

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An online appendix is available at:
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1. Introduction

Within and across nations, the search is on for better ways to measure how well individuals, neighbourhoods, and societies are faring. Measures of subjective well-being are at the centre of this search, and there are many initiatives to extend and improve local and national accounts of subjective well-being. Central to the success of any such ventures is the need to clarify what questions to ask, and to ensure that different measures either tell the same or consistently different stories. An important distinction has been made between life evaluations and reports of current emotions. One aspect of this is the distinction between current and retrospective reports; a second is the contrast between cognitive evaluations and emotional reports, and a third is related to long-running philosophical discussions about the sources of good lives. Central to the latter is the debate between those who emphasize the maximization of current pleasures (or the excess of pleasures over pains) and those agreeing with the stoics that a good life is all about doing the right thing. For those who adopt the epicurean, or more recently Benthamite, view, the best measures of the quality of life would be given by summing momentary evaluations, with as little retrospection as possible, of current pleasures and pains. For those who follow a strong stoic position, the essence of a good life can be assessed by the virtue it permits, and the capacities available to individuals. In this case, subjective assessments of the quality of life are less important, or possibly even misleading.

The middle ground on this issue is best exemplified by Aristotle, who argued that neither the pleasure principle nor the stoic alternative was sufficient, and that a judicious mix was required. He argued that the best way of seeing whether a good mix was

achieved would be to ask people to assess the quality of their lives. He hypothesized that those who were most satisfied with their lives were those whose lives reflected doing well for others as well as themselves, in ways that showed social engagement and a sense of broader purpose.

Much of modern research on subjective well-being relies on some form of life evaluation. The most common measure is the answer, often on a scale of zero to ten, of how satisfied respondents are with their lives as a whole. Another, which is found in the Gallup World Poll and in the Gallup/Healthways US daily poll data we use here, asks respondents to think of their lives as a ladder, with the best possible life for them being the top step, or a ten, and the worst possible as a zero. They are then asked to rate their own current lives on this scale, and are sometimes also asked to assess in the same terms their lives five years ago, and to forecast five years into the future. A third possibility has been to ask people how happy they are with their lives as a whole. Some have argued that both satisfaction and happiness are emotions, and that this will colour the answers given, even if the focus is on life as a whole. It is to be expected that answers to questions about a person's state of happiness at the current moment, or yesterday, will vary from day to day. If they do, how are the differences to be understood?

If answers to questions about positive and negative emotions are systematically different from life evaluations, does that threaten the whole exercise? On the contrary, we argue that the systematic differences increase the value and validity of both measures. Both philosophy and psychology lead us to expect that the answers will differ in very particular ways. If they do differ in the theoretically expected ways, then both types of measure gain validity. The Gallup/Healthways US daily poll provides perhaps the best

data available to test some key hypotheses about the differences between current emotions and life evaluations by seeing to what extent they vary according to temporary circumstances. This is made possible by the size of the sample and frequency of observations. The poll includes 1,000 observations each day on a wide range of variables including a life evaluation (the Cantril Self-Anchoring Striving Scale, henceforth the Cantril Ladder) and a range of questions asking about emotions felt during the previous day. This focus on a particular day, combined with the large size of the sample, permits the best chance of identifying day-of-week or weekend effects. Is there evidence to support the storied 'Blue Monday' effect often appearing in song and stories, and studies of the stock market (Pettengill 2003)? Are weekends happier or less happy, and why?

Rossi and Rossi (1977) show that positive emotions are more frequent on weekends, but negative ones are not. Stone *et al*. (1985) find a significant weekend effect rather than "Blue Monday" effect for moods. Egloff *et al*. (1995) find that pleasantness peaks on weekends in a survey of college students. Kennedy-Moore *et al*. (1992) find that both positive and negative affect show weekend effects. Csikszentmihalyi and Hunter (2003) find that happiness peaks on weekends based on a survey for US school students in the 6th, 8th, 10th and 12th grades. Most of these results, although they give relatively consistent findings of weekend effects for emotions, have limited statistical power because of their small sample sizes. There has been much less study of day-of-week effects for life evaluations. The only one we located is Akay and Martinsson (2009) who find a very small negative life satisfaction effect for Sunday using the German Socio-Economic Panel data. The studies listed above are not able to compare weekend effects for emotions with those for life evaluations. By using the Gallup/Healthways US daily

poll, we are able to harness the statistical power of sample sizes exceeding 600,000 respondents, randomly assigned by day of week, and containing answers for one life evaluation and six emotions, of which three are positive and three negative.

Our first hypothesis is that if there are systematic day-of-week effects for emotions, they will show up in the Gallup/Healthways daily data. Furthermore, and more fundamentally, if there are significant day-of-week effects for emotions, they will be smaller or absent for life evaluations, which we think to be more heavily dependent on the overall circumstances of life. The latter part of the hypothesis has already been shown: life evaluations are much more significantly determined by social and economic life circumstances than are emotions. But now we are able to make a strong test of the first part of the hypothesis: that short-term conditions of life will affect current emotions much more than they affect life evaluations.

We find that US respondents are significantly happier, have more enjoyment, and laugh more, while feeling less worry, sadness and anger, on weekends (including public holidays) than on weekdays. By contrast, there is no evidence supporting day-of-week effects for the Cantril Ladder. The size of the weekend effects for emotions is seen to depend on variables reflecting some aspects of the relative attractiveness of life at home and at work.

When we turn to explain the size and potential determinants of weekend effects, previous studies provide some clues. Kennedy-Moore *et al*. (1992) show that the greater relative frequency of desirable events, and the reverse for undesirable ones, on weekends compared to weekdays can partially explain the weekend effects. Csikszentmihalyi and Hunter (2003) show that students spending more time in school and in social activities

are happier than those who spend less. We hypothesize that the size of weekend effects for emotions is determined primarily by the extent and quality of the respondent's social connections on the weekend compared to those during the week. Our analysis shows that most of the weekend effects is due to the greater time respondents are able to spend in valued social interactions with friends or family. While social time is at least as valuable to them on weekdays as it is on weekends, the additional 1.7 hours per day they spend in the company of friends or family during the weekend explains a large part of the weekend effects, especially for positive emotions.

In concluding, we will argue that our research shows the importance of measuring both life evaluations and emotions, and the need to do so in comparable ways in the same surveys. It will also be important to see if and to what extent our findings carry over to other countries. The weekend effects show that working life has emotional costs for typical US respondents, and yet the United States has the longest working hours among all comparable countries. Are weekend effects smaller in countries with shorter working hours and weeks? Or is there too much else in play by way of international differences in intra-week variations in emotions? Is the social context of well-being equally important in other countries, and are the resulting impacts on weekend happiness replicated in other countries?

The rest of the paper is organized as follows. Section 2 describes the data. Section 3 presents the day-of-week effects for life evaluations and emotions. Section 4 explores the likely sources of the weekend effects by sub-group analysis and Oaxaca (1973)-Blinder (1973) decomposition. Section 5 concludes.

2. Data

This study uses data from the Gallup/Healthways US daily poll. Currently we have the data from January 2, 2008 to June 30, 2009. The survey method for the poll relies on live interviewers conducting telephone interviews with randomly sampled respondents aged 18 and older, including cell phone users and Spanish-speaking respondents from all 50 states and the District of Columbia. It covers around 1,000 survey respondents each day, and 630,466 respondents in total.

The poll contains answers for one life evaluation and six emotions. The life evaluation measure used in the poll is the Cantril Ladder, a zero to ten scale response to the question "On which step of the ladder would you say you personally feel you stand at this time?" There are three positive emotions including happiness, enjoyment, and laughter, and three negative ones including worry, sadness, and anger. The emotions are zero to one scale responses to the question "Did you experience the following feelings during a lot of the day yesterday?" Laughter is a zero to one scale response to the question "Did you smile or laugh a lot yesterday?"

Table 1.1 presents summary statistics for the Cantril Ladder and emotions. The average Cantril Ladder score is 6.6. The proportions of respondents reporting positive emotions are much higher than those reporting negative emotions. Specifically, the average values for happiness, enjoyment, and laughter are 87.9%, 83.9%, and 81.8%, while those for worry, sadness, and anger are 32.8%, 18.3%, and 14.1%, respectively.

The survey includes many socio-demographic variables, including gender, age, marital status, number of children under 18, education, employment status, monthly household income, importance of religion in life, and social time spent with friends and

families. The monthly household income means the before-tax income including income from wages and salaries, remittances from family members living elsewhere, farming, and all other sources. The original response to the income question is on a zero to ten scale, in which zero to ten stands for no income, under $60, $60 to $499, $500 to $999, $1,000 to $1,999, $2,000 to $2,999, $3,000 to $3,999, $4,000 to $4,999, $5,000 to $7,499, $7,500 to $9,999, and $10,000 and over, respectively. We then replace the categorical response by the mean of each corresponding category to construct a numerical income variable. The social hours variable is a response to the question "Approximately, how many hours did you spend, socially, with friends or family yesterday? Please include telephone or e-mail or other online communication." The answer to this question ranges between 0 and 24. About 5% of respondents report more than 16 social hours. To make this social hours variable more reliable, we recode the values between 16 and 24 as 16. The survey contains also two workplace environment questions and one job satisfaction question for those in the working population. One is "Does your supervisor at work treat you more like he or she is your boss or your partner?" Another is "Does your supervisor always create an environment that is trusting and open, or not?" The job satisfaction question is "Are you satisfied or dissatisfied with your job or the work you do?" Table 1.2 presents summary statistics for those variables.

3. Blue Monday or blue all week?

In this section, we explore the day-of-week distributions for the Cantril ladder and emotions. Table 2 reports the estimated means and standard errors for the Cantil Ladder and each emotion on each day of week and public holidays. Figure 1 illustrates the mean

difference of emotion between on Monday and on other weekdays. If Blue Monday represented the worst day, then positive emotions would be better and negative emotions worse than on all of the other days. What do the data show? The data show that there simply are no day-of-week differences for life evaluations, as represented by the Cantril Ladder. This adds to the growing weight of evidence that these are cognitive evaluations principally driven by differences in life circumstances. For all of the daily emotional reports, there is a significant daily pattern, with emotions being roughly equal every weekday and significantly better on the weekends and public holidays.

We then conduct OLS regressions for the day-of-week effects for the Cantril Ladder and the six emotion measures, happiness, enjoyment, laughter, worry, sadness, and anger, controlling for socio-demographic variables as well as public holidays, month, year, and state dummies. The results are reported in Table 3 and illustrated in Figure 2. Overall, the regression results show no day-of-week differences for the Cantril Ladder, but a very distinctive pattern for emotions with the two weekend days and public holidays differing from regular weekdays[1]. The holiday effect is not significantly different from the weekend effect at 5% significant level for each emotion. Thus all of our subsequent analysis is simplified by the ease with which the daily effects can be compressed into a weekend effect, where public holidays are treated as weekend days. This permits a much clearer analysis of their patterns and likely causes. We now proceed to our analysis of the

[1] The coefficient for public holidays for the Cantril Ladder is positive and significant at the 5% level, however, we might not be able to draw the conclusion that there is a holiday effect since the coefficient is not stable across model specifications. It is significant only if month dummies are controlled. The significant holiday effect in the model presented in Table 3 is likely driven by the small number of samples on public holiday and the correlation between public holiday and month dummies.

weekend effects for emotions, having established at the outset the primary result that the day-of-week effects are strongly present in emotions and absent for life evaluations.

4. Sources of weekend effects

In this section we explore the likely sources of weekend effects for emotions. We first show that the survey date of reporting emotions 'yesterday' does not have significant effect on the emotions. Intuitively respondents surveyed on the eve of or during a public holiday might show higher positive emotions and lower negative emotions. To examine whether there exist such effects, we compare the emotions on those weekdays (specifically Monday to Thursday) followed by public holidays with those not followed by public holidays by regressing each of the six emotions by a dummy variable equal to one for those weekdays followed by public holidays and zero otherwise. As shown in Table 4, there is no significant difference in any emotion measure between the two categories of weekdays. This result supports the conjecture that the report of emotions is not significantly driven by expectation of holiday or date of reporting. We next conduct a series of sub-group analysis and Blinder-Oaxaca decomposition analysis to explore the potential driving forces of weekend effects.

4.1 Weekend patterns by gender, family structure and age

Tables 5.1 and 5.2, and Figures 3.1 and 3.2, provide demographic decompositions of the weekend effects. These weekend effects are estimated separately for each of the demographic groups in question. Naturally, all of these demographic variables are also

correlated with other variables with important links to the weekend effect, such as health and employment status. We shall later use more complete modeling to tease out the separate impacts of a range of contributing factors. But these preliminary results expose in a useful way some of the patterns to be explained.

We start with Figure 3.1 showing the weekend effects by gender and marital status. Weekend effects are larger for males than females, and significantly so for happiness, laughter and anger. Indeed, the average happiness advantage favouring females is entirely due to the fact that there are more weekdays than weekends, as males are slightly happier than females on weekends, with the reverse being true on weekdays. This is consistent with other evidence finding that women value high trust (and hence happier) workplaces more than men, and are more likely to find and stay in such jobs (Helliwell and Huang 2010, figures 5 and 6)

For all emotions weekend effects are bigger for the married than for others. This is probably another sign of the importance of the social context, as the weekend provides more time for those in well-functioning family units to have time together. Our later results also show that having children has a more positive effect on emotions during the weekend than on weekdays, suggesting that weekends permit more relaxed, or at least less harried, family times. To some extent this will be revealed by our social hours variables, but the effect apparently extends further than that, as there is some evidence of it even after weekend social hours are taken into account. The fact that positive emotions are more frequent, and negative emotions less prevalent, on the weekends for the married implies that on average family relations are friendly rather than the reverse.

Figure 3.2 shows a striking age pattern. To a significant extent, the established age patterns in subjective well-being, whereby life evaluations and positive emotions follow a U-shape with a low point about age 50, is diminished during the weekends. This is consistent with previous findings that the U-shape was more pronounced, and the mid-life low-point lower, for those who felt themselves unable to achieve work/life balance. Since weekends are on average a time when work pressures fade into the background, then we should expect the U-shape to be less then, especially for full-time workers. The weekend offsets but does not eliminate the U-shape: we show later that it is about one-quarter smaller on weekends than on weekdays.

4.2 The importance of trust and the social context at work

From the gender effects in Figure 3.1, we were starting to see hints that the social context at work might have something to do with the size of weekend effects. Where workmates are friends and the job is a pleasure, the weekend should make less difference, since one is simply changing one set of friends for another. However, if the climate of workplace trust is poisonous, and the job unsatisfying, then we should expect to find significantly more positive emotions and fewer negative emotions during weekends.

Table 5.3 and Figure 3.3 show four different ways of separating the size of weekend effects according to job characteristics. First we show that weekdays are a lot less fun than the weekends for those in full-time employment. The weekend effect is about twice as large for the full-time employed as for the rest of the population. This does not mean that people are not happy to have jobs. Our equations show, on the contrary, that full-time workers are on average happier. What we are showing here is that a

substantial part of this extra happiness shows up during their well-earned weekends. This is consistent with the additional result that part-time workers have weekend effects that do not differ significantly from those for the non-working population.

Second, the Gallup/Healthways US daily poll asks a substantial fraction of employed workers whether they consider their immediate work supervisor as a partner rather than a boss. Figure 3.3 shows that weekend effects are significantly smaller, less than half as large in the case of happiness and enjoyment, for those whose supervisors are partners rather than bosses. Third, we split the employed samples based on whether the workplace environment is trusting and open. Figure 3.3 shows that weekend effects are approximately four times larger in the case of laughter and sadness, two times larger in the case of happiness and anger, as well as one half larger in the case of enjoyment and worry, for those who are in low-trust workplaces. The better the social context of the job, the smaller differences there are between weekday and weekend emotions. Finally, we split our employed respondents according to whether or not they are generally satisfied with their jobs. Those who are generally satisfied with their jobs- a remarkable 90% of the respondents- have weekend effects only one-third as large as those with unsatisfactory jobs.

4.3 Whether week or weekend, what matters most is the social context

The primary explanation of the weekend effect we find to be the greater opportunities the weekend provides for time with friends or family. We show this by exploiting the binary nature of our daily effects. We can split our overall sample in two, one comprising all the weekend observations and the other containing all the weekday

observations. Our Saturday and Sunday observations for emotions were actually collected on Sundays and Mondays, since the questions ask about the prevalence of emotions 'yesterday'. Using this split sample, we can fit separate and pooled models for each emotion, calculate how much of the weekend difference is explained by differences in the average levels of the independent variables, and then show how much is related to different coefficients being applicable for weekdays and weekends. We do this, following Helliwell and Barrington-Leigh (2010), using the Junn (2008) modeling of the Oaxaca (1973)-Blinder (1973) decomposition using pooled coefficients. Table 6 and Figure 4 report the key results including the size of weekend effect and the proportion explained by social time for each emotion. Full regression results for the separate and pooled models are reported in the on-line appendix.

One feature of the split-sample data is very reassuring. There must always be a worry, when one is looking for day-of-week effects, that different types of respondents are responding on different days of the week, and thus that the results may be contaminated by sample selection bias. Table 7 shows that the means and standard errors of our variables for the weekend and weekday samples are almost identical in all respects. The major exception to this is just where we would expect to find it- in the variable measuring yesterday's hours of social contacts. This variable is thus the major candidate to explain weekend effects in terms of circumstantial differences between week and weekend days. For each of the emotions, the change in social hours, averaging about a 1.7 hour difference between weekdays and weekend days, explains the largest single part- about half in the cases of happiness, enjoyment, laughter, and sadness- of the

weekend effect. The remaining parts are due to a number of smaller factors, each represented by coefficient differences between the weekday and weekend samples.

As already noted, the major coefficient changes we find relate to job characteristics, gender, and age. Table 8 and Figure 5 shows that for all emotions, and especially happiness and enjoyment, the social context of the job, whether the immediate supervisor is more like a partner than a boss and whether the work environment is trusting and open, have much greater impacts on weekday than on weekend emotions. Once again this shows how emotions respond to immediate circumstances, and especially to the social context. Having a partner-like supervisor and workplace trust are always important to subjective well-being, but the emotional consequences are much larger on working days.

Our large weekend and weekday samples also permit us to follow up on the experiments of Gliebs *et al*. (2011) who find that the size and significance of income coefficients increase if data are collected in circumstances where the material aspects of life are rendered more salient. We have already seen that some workplace characteristics are more salient during weekdays than on weekends, and we use this to explain their larger estimated effects on weekdays. We can also see if life evaluation equations estimated using weekend data show smaller income effects than those estimated using data collected on weekdays. The results in appendix table A2.1 show that for life evaluations the income effects are slightly higher for the weekday sample (0.406 vs. 0.396), but not significantly so. There is a similar pattern for emotions as shown in the appendix tables A2.2-A2.7, except for worry, where the income coefficient is slightly higher (and significantly so) on weekends than on weekdays. In all cases, in the large data samples from the Gallup/Healthways US daily poll the change in salience is not

large enough to materially change the estimated income effects. This provides a useful confirmation of the direction of the much larger effects found by Gliebs *et al*. (2011) in their small samples, but also provides assurance that such day-of-week changes in salience are not materially influencing income effects estimated in large samples.

Finally, we can use our large samples to test for seasonal effects in emotions and life evaluations. The appendix tables show significant seasonal patterns in life evaluations as well as emotions. As others have noted (e.g. Smith 1979), these effects are large enough that they are worth adjusting for when comparing data drawn from surveys taken at different times of the year. Compared to a January base, life evaluations are significantly higher in the late spring (averaging about 0.15 higher, on the zero to ten scale, from April through June) and significantly lower in the late fall (by more than 0.3 in November and December).

We defer our analysis of the likely causes and consequences of these patterns, since our current focus is on weekday and weekend effects. For this purpose, it is enough to show, as in our appendix tables A1.1-A1.3, that our key results do not change depending on whether monthly fixed effects are included in the estimation.

5 Conclusions

In this paper we exploit the size and daily frequency of the Gallup/Healthways US daily poll to make two important points. First, we show that day-of-week effects are strong for emotions, and non-existent for life evaluations. These results, plus the patterns of coefficients in the underlying equations explaining both emotions and life evaluations,

confirm that life evaluations are driven mainly by life circumstances, with emotions less driven by those circumstances (especially material) and more subject to what is happening in daily life.

Second, when we turn to explain the size and pattern on weekend effects, we find more positive and fewer negative emotions on weekends, with the patterns and sizes of the differences varying by gender, age, and especially the social context of life both at home and on the job. A large portion of the weekend effect is explained by differences in the amount of time spent with friends or family. Respondents report an extra daily social time of 1.7 hours on weekends (7.1 vs. 5.4 hours) and this extra social time raises average happiness by about 2%. Weekend effects are twice as large for full-time paid workers as for the rest of the population, and are much smaller for those whose work supervisor is considered a partner rather than a boss and who report trustable and open work environment.

Overall, we think that the Gallup data and our analysis should help to increase confidence in the content and value of subjective well-being data. It is true, as skeptics have long noted, that subjective measures of well-being are affected by the structure of the questions and what is currently going on in the lives of respondents. But we are finding that these differences are almost exactly of the nature that theory and experimental results predict, thus increasing the trust that can be placed in the data. For example, when respondents are asked how happy they were yesterday, their answers relate a lot to what was going on in their lives yesterday. We find that for these US respondents, weekends are good for all emotions, happiness included. But when the focus and content of the question are changed, and people are asked how happy they are with

their lives as a whole, their answers are much more akin to those given by other life evaluations (Helliwell and Putnam 2004).

When emotions and life evaluations give different relative weights to different aspects of life, as they do in our equations, the choice of which weights to use for policy applications remains an open issue. In general, life evaluations give more weight to income, relative to other determinants of subjective well-being, than do emotional reports, and hence provide lower estimates of the income-equivalent values (compensating differentials) for non-economic aspects of life. We would propose, in order to err if anything on the conservative side, that life evaluations should continue to be used as the primary source for relative values used in cost-benefit analysis.

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Table 1.1 Summary Statistics of the Cantril Ladder and Emotions

Variable	# obs	Mean	Std. Dev.	Min	Max
Cantril ladder	626251	6.566	2.106	0	10
Happy	628125	0.879	0.327	0	1
Enjoyment	628326	0.839	0.368	0	1
Laughter	625728	0.818	0.386	0	1
Worry	629583	0.328	0.469	0	1
Sadness	629574	0.183	0.387	0	1
Anger	629862	0.141	0.348	0	1

Table 1.2 Summary Statistics of Explanatory Variables

Variable	# obs	Mean	Std. Dev.	Min	Max
Log of income	630466	6.267	3.510	0	9.393
Indicator for no or missing income	630466	0.230	0.421	0	1
Male	630465	0.483	0.500	0	1
Age	623534	48.067	17.464	18	99
Age-squared/100	623534	26.154	17.826	3.24	98.010
Married or as married	629058	0.578	0.494	0	1
Separated, divorced, or widowed	629058	0.212	0.409	0	1
High school	627933	0.362	0.481	0	1
Some college	627933	0.221	0.415	0	1
College	627933	0.167	0.373	0	1
Graduate	627933	0.131	0.337	0	1
Full-time paid worker	630466	0.387	0.487	0	1
Part-time paid worker	630466	0.091	0.288	0	1
Health insurance	629687	0.846	0.361	0	1
Number of children	629596	0.747	1.172	0	15
Importance of religion in life	627819	0.657	0.475	0	1
Number of social hours with family or friends	625825	5.938	4.629	0	16
Indicator for zero social hour	625825	0.056	0.230	0	1
Indicator for zero to one social hour	625825	0.030	0.171	0	1
Trustable and open workplace	297398	0.794	0.404	0	1
Partner-like supervisor	295961	0.641	0.480	0	1
Satisfied with job	222647	0.895	0.307	0	1

Table 2: The Cantril Ladder and Emotions by Day of Week

	Ladder	Happiness	Enjoyment	laughter	Worry	Sadness	Anger
Monday	6.575	0.867	0.819	0.802	0.351	0.186	0.149
	(0.009)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Tuesday	6.575	0.868	0.820	0.807	0.358	0.191	0.155
	(0.009)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Wednesday	6.560	0.869	0.822	0.806	0.351	0.188	0.152
	(0.009)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Thursday	6.577	0.866	0.820	0.809	0.349	0.191	0.154
	(0.009)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Friday	6.544	0.881	0.839	0.823	0.335	0.181	0.146
	(0.009)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Saturday	6.580	0.898	0.873	0.841	0.278	0.170	0.119
	(0.009)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.001)
Sunday	6.55	0.900	0.878	0.841	0.278	0.170	0.116
	(0.009)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.001)
Public Holiday	6.564	0.895	0.863	0.835	0.286	0.173	0.115
	(0.028)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.003)

Notes: Standard errors clustered at the county level are reported in parentheses.

Table 3: Regression Results for the Canril Ladder and Emotions

	(1) Ladder	(2) Happiness	(3) Enjoyment	(4) Laughter	(5) Worry	(6) Sadness	(7) Anger
Tuesday	0.005	0.002	0.002	0.006+	0.006+	0.004	0.006*
	(0.015)	(0.002)	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)
Wednesday	-0.008	0.003	0.003	0.005+	-0.000	0.002	0.004
	(0.014)	(0.002)	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)
Thursday	0.004	0.001	0.002	0.007*	-0.003	0.004	0.005+
	(0.015)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Friday	-0.000	0.016***	0.021***	0.022***	-0.016***	-0.005+	-0.001
	(0.015)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Saturday	0.016	0.032***	0.055***	0.040***	-0.073***	-0.016***	-0.028***
	(0.013)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)
Sunday	-0.003	0.033***	0.060***	0.038***	-0.073***	-0.016***	-0.032***
	(0.014)	(0.002)	(0.003)	(0.003)	(0.004)	(0.003)	(0.002)
Public holiday	0.074*	0.032***	0.050***	0.038***	-0.071***	-0.017***	-0.034***
	(0.036)	(0.004)	(0.005)	(0.005)	(0.005)	(0.004)	(0.004)
Log of income	0.399***	0.032***	0.038***	0.028***	-0.054***	-0.047***	-0.024***
	(0.007)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Indicator for no or missing income	3.347***	0.261***	0.320***	0.232***	-0.459***	-0.391***	-0.198***
	(0.061)	(0.009)	(0.009)	(0.010)	(0.012)	(0.010)	(0.010)
Male	-0.193***	-0.008***	0.013***	-0.015***	-0.042***	-0.042***	0.007***
	(0.008)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.001)
Age	-0.082***	-0.009***	-0.009***	-0.010***	0.013***	0.009***	0.002***
	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age-squared/100	0.086***	0.009***	0.009***	0.009***	-0.016***	-0.010***	-0.004***
	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Married or as married	0.171***	0.038***	0.021***	0.030***	0.007**	-0.017***	-0.008***
	(0.013)	(0.002)	(0.002)	(0.003)	(0.003)	(0.002)	(0.002)
Separated, divorced, or widowed	-0.254***	-0.015***	-0.026***	-0.015***	0.059***	0.056***	0.011***
	(0.016)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
High school	0.096***	0.035***	0.052***	0.029***	-0.051***	-0.075***	-0.023***
	(0.018)	(0.003)	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)
Some college	0.165***	0.044***	0.063***	0.031***	-0.041***	-0.084***	-0.025***
	(0.019)	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)	(0.003)
College	0.447***	0.046***	0.069***	0.028***	-0.050***	-0.097***	-0.038***
	(0.020)	(0.003)	(0.003)	(0.004)	(0.004)	(0.003)	(0.003)
Graduate	0.636***	0.044***	0.073***	0.027***	-0.043***	-0.091***	-0.034***
	(0.021)	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)	(0.003)
Full-time worker	0.171***	0.034***	0.027***	0.049***	-0.070***	-0.068***	-0.027***
	(0.008)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)
Part-time worker	0.172***	0.036***	0.041***	0.047***	-0.045***	-0.049***	-0.029***
	(0.013)	(0.002)	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)
Health insurance	0.536***	0.035***	0.039***	0.015***	-0.079***	-0.059***	-0.036***
	(0.015)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.002)

Number of children	-0.009+	-0.000	-0.003***	-0.000	0.007***	0.000	0.009***
	(0.005)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Importance of	0.276***	0.043***	0.041***	0.057***	-0.014***	0.009***	-0.016***
religion in life	(0.009)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)
Constant	4.242***	0.675***	0.548***	0.680***	0.710***	0.556***	0.410***
	0.079	(0.010)	(0.012)	(0.013)	(0.014)	(0.013)	(0.012)
State dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of obs.	613044	614741	614948	612523	616069	616049	616287
Adjusted R-squared	0.096	0.034	0.036	0.024	0.056	0.056	0.028
Number of clusters	3123	3123	3123	3123	3123	3123	3123

Notes: The table reports the OLS estimates. The coefficients are reported with standard errors, clustered at the county level, in parenthesis. +, *, **, and *** indicate significance at the 10, 5, 1, and 0.1% levels.

Table 4: Emotions on Weekdays (Specifically Monday to Thursday) Followed by Public Holidays vs. on Those Not Followed by Public Holidays

	(1)	(2)	(3)	(4)	(5)	(6)
	Happiness	Enjoyment	Laugh	Worry	Sadness	Anger
"Monday to	-0.010	-0.017	-0.009	0.014	0.013	-0.006
Thursday" dummy	(0.010)	(0.011)	(0.011)	(0.014)	(0.012)	(0.019)
Number of obs.	339418	339570	338070	340296	340293	340462
Number of clusters	3107	3107	3107	3107	3107	3107

Notes: The table reports the OLS regressions. The "Monday to Thursday" dummy is a binary variable in which "1" indicates the weekdays between Monday and Thursday is followed by a public holiday, and "0" means those not followed by a public holiday. Coefficients are reported with standard errors, clustered at the county level, in parenthesis. +, *, **, and *** indicate significance at the 10, 5, 1, and 0.1% levels.

Table 5.1: Weekend Effects by Gender and Marital Status

	(1) Male	(2) Female	(3) Married	(4) Separated, divorced, or widowed	(5) Single
Happiness	0.032***	0.024***	0.028***	0.027***	0.028***
	(0.002)	(0.002)	(0.001)	(0.003)	(0.003)
Enjoyment	0.051***	0.050***	0.053***	0.047***	0.047***
	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)
Laughter	0.032***	0.029***	0.035***	0.024***	0.025***
	(0.002)	(0.002)	(0.002)	(0.003)	(0.004)
Worry	-0.070***	-0.070***	-0.077***	-0.061***	-0.060***
	(0.003)	(0.003)	(0.002)	(0.004)	(0.004)
Sadness	-0.016***	-0.018***	-0.018***	-0.013**	-0.017***
	(0.002)	(0.002)	(0.002)	(0.004)	(0.004)
Anger	-0.039***	-0.028***	-0.035***	-0.034***	-0.028***
	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)

Notes: The table reports the OLS estimates of weekend effects. Each cell of the table presents the weekend effect for a specific population group and one of the six emotion variables. The control variables in each model include age, age squared divided by 100, education, employment status, health insurance enrollment status, number of children, importance of religion in life, as well as state, month and year dummies. Specifically, the marital status is controlled in the regressions for subpopulations defined by gender, and the gender variable in the regressions for subpopulation defined by marital status. All the coefficients of these control variables are not reported in the table to save space. Standard errors, clustered at the county level, are reported in parenthesis. +, *, **, and *** indicate significance at the 10, 5, 1, and 0.1% levels.

Table 5.2: Weekend Effects by Age Cohort

	(1) <=25	(2) 26-35	(3) 36-45	(4) 46-55	(5) 56-65	(6) >65
Happiness	0.013**	0.030***	0.036***	0.036***	0.030***	0.015***
	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)	(0.002)
Enjoyment	0.025***	0.061***	0.067***	0.064***	0.046***	0.026***
	(0.005)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)
Laughter	0.014***	0.042***	0.042***	0.032***	0.029***	0.018***
	(0.005)	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)
Worry	-0.047***	-0.085***	-0.094***	-0.084***	-0.063***	-0.035***
	(0.007)	(0.005)	(0.004)	(0.004)	(0.004)	(0.003)
Sadness	-0.010+	-0.022***	-0.019***	-0.023***	-0.016***	-0.008**
	(0.006)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)
Anger	-0.023***	-0.047***	-0.041***	-0.043***	-0.029***	-0.013***
	(0.005)	(0.004)	(0.003)	(0.003)	(0.003)	(0.002)

Notes: The table reports the OLS estimates of weekend effects. Each cell of the table presents the weekend effect for a specific age group and one of the six emotion variables. The coefficients of control variables including gender, marital status, education, employment status, health insurance enrollment status, number of children, importance of religion in life, as well as state, month and year dummies, are not reported in the table to save space. Standard errors, clustered at the county level, are reported in parenthesis. +, *, **, and *** indicate significance at the 10, 5, 1, and 0.1% levels.

Table 5.3: Weekend Effects by Job Characteristics

	(1) Happiness	(2) Enjoyment	(3) Laughter	(4) Worry	(5) Sadness	(6) Anger
Full-time paid worker	0.035*** (0.002)	0.066*** (0.002)	0.034*** (0.002)	-0.086*** (0.003)	-0.016*** (0.002)	-0.046*** (0.002)
Others	0.023*** (0.002)	0.040*** (0.002)	0.028*** (0.002)	-0.059*** (0.002)	-0.017*** (0.002)	-0.025*** (0.002)
Partner-like supervisor	0.023*** (0.001)	0.048*** (0.002)	0.025*** (0.002)	-0.078*** (0.002)	-0.011*** (0.002)	-0.032*** (0.002)
Boss-like supervisor	0.053*** (0.002)	0.097*** (0.003)	0.050*** (0.003)	-0.091*** (0.004)	-0.023*** (0.003)	-0.056*** (0.003)
Trustable workplace	0.022*** (0.002)	0.045*** (0.002)	0.022*** (0.002)	-0.073*** (0.003)	-0.011*** (0.002)	-0.031*** (0.002)
Non-trustable workplace	0.069*** (0.004)	0.125*** (0.005)	0.068*** (0.005)	-0.109*** (0.006)	-0.035*** (0.005)	-0.078*** (0.005)
Satisfied with job	0.021*** (0.002)	0.044*** (0.002)	0.024*** (0.002)	-0.076*** (0.003)	-0.013*** (0.002)	-0.034*** (0.002)
Not satisfied with job	0. 095*** (0.008)	0.159*** (0.009)	0.086*** (0.008)	-0.1 16*** (0.009)	-0.051** (0.009)	-0.091*** (0.008)

Notes: The table reports the OLS estimates of weekend effects. Each cell of the table presents the weekend effect for a specific population group and one of the six emotion variables. The coefficients of control variables including age, age squared divided by 100, gender, marital status, education, employment status, health insurance enrollment status, number of children, importance of religion in life, as well as state, month and year dummies, are not reported in the table to save space. Standard errors, clustered at the county level, are reported in parenthesis. +, *, **, and *** indicate significance at the 10, 5, 1, and 0.1% levels.

Table 6: Weekend Effects Explained by Social Hours

	(1) Happiness	(2) Enjoyment	(3) Laugh	(4) Worry	(5) Sadness	(6) Anger
Weekend effects	0.028***	0.051***	0.031***	-0.070***	-0.017***	-0.034***
	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.001)
Log of social hours	0.017***	0.022***	0.023***	-0.016***	-0.010***	-0.006***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

Notes: The table reports Blinder-Oaxaca decomposition results. The control variables include age, age squared divided by 100, gender, marital status, education, employment status, health insurance enrollment status, number of children, importance of religion in life, log of social hours, indicator for zero social hour, indicator for zero to one social hour, partner-like supervisor dummy (=1 if supervisor being considered as a partner, and =0 if supervisor being considered as a boss, value missing or not applicable), boss-like supervisor dummy (=1 if supervisor being considered as a boss, and =0 if supervisor being considered as a partner, value missing or not applicable), trustable workplace environment (=1 if reporting trustable workplace environment, =0 if reporting non-trustable workplace environment, value missing or not applicable), non-trustable workplace environment (=1 if reporting non-trustable workplace environment, =0 if reporting trustable workplace environment, value missing or not applicable), as well as state, month and year dummies. The "Weekend effects" indicates the difference of emotions between weekends (including public holidays) and weekdays. The coefficients of log of social hours are reported with standard errors, clustered at the county level, in parenthesis. The coefficients of other controls are not reported to save space. +, *, **, and *** indicate significance at the 10, 5, 1, and 0.1% levels.

Table 7: Sample Means during Weekends and Weekdays

	Weekends			Weekdays		
Variables	# obs	Mean	S.E.	#obs	Mean	S.E.
Log of income	198276	6.315	(0.008)	432190	6.302	(0.005)
Indicator for no or missing income	198276	0.230	(0.001)	432190	0.229	(0.001)
Male	198276	0.483	(0.001)	432189	0.483	(0.001)
Age	196104	48.004	(0.050)	427430	48.096	(0.034)
Age-squared/100	196104	26.081	(0.048)	427430	26.187	(0.033)
Married or as married	197845	0.579	(0.001)	431213	0.578	(0.004)
Separated, divorced, or windowed	197845	0.211	(0.001)	431213	0.213	(0.001)
High school	197552	0.364	(0.001)	430381	0.362	(0.001)
Some college	197552	0.220	(0.001)	430381	0.221	(0.001)
College	197552	0.167	(0.001)	430381	0.168	(0.002)
Graduate	197552	0.130	(0.001)	430381	0.131	(0.001)
Full-time paid worker	198276	0.393	(0.001)	432190	0.384	(0.001)
Part-time paid worker	198276	0.091	(0.001)	432190	0.091	(0.001)
Health insurance	198035	0.847	(0.001)	431652	0.845	(0.001)
Number of children	197975	0.748	(0.004)	431621	0.746	(0.003)
Importance of religion in life	197462	0.660	(0.001)	430357	0.655	(0.001)
Social hours	196990	7.109	(0.014)	428835	5.399	(0.009)
Indicator for no social hour	196990	0.051	(0.001)	428835	0.058	(0.000)
Indicator for zero to one social hour	196990	0.022	(0.000)	428835	0.034	(0.000)
Partner-like supervisor	96530	0.637	(0.002)	199431	0.643	(0.001)
Trustable workplace	97000	0.795	(0.001)	200398	0.794	(0.001)
Satisfied with job	73850	0.896	(0.001)	148797	0.894	(0.001)

Note: Standard errors clustered at the county level are reported in parenthesis.

Table 8: Sources of Weekend Effects: Workplace Environment

	(1)	(2)	(3)	(4)
	Partner-like supervisor		Trustable and open workplace	
	Weekends	Weekdays	Weekends	Weekdays
	Panel 1: Sample Means			
Mean	0.637***	0.643***	0.795***	0.794***
	(0.002)	(0.001)	(0.002)	(0.001)
	Panel 2: Coefficients			
Happiness	0.032***	0.057***	0.053***	0.097***
	(0.003)	(0.002)	(0.003)	(0.003)
Enjoyment	0.042***	0.083***	0.072***	0.146***
	(0.003)	(0.003)	(0.004)	(0.003)
Laugh	0.052***	0.075***	0.076***	0.119***
	(0.003)	(0.002)	(0.004)	(0.003)
Worry	-0.074***	-0.087***	-0.122***	-0.157***
	(0.004)	(0.003)	(0.005)	(0.004)
Sadness	-0.035***	-0.048***	-0.063***	-0.087***
	(0.003)	(0.002)	(0.004)	(0.003)
Anger	-0.037***	-0.057***	-0.072***	-0.118***
	(0.003)	(0.003)	(0.004)	(0.003)

Notes: The table reports the sample means (in panel 1) and marginal effects (in panel 2) of two variables indicating workplace environment during weekdays and weekends. Each cell of panel 2 in model (1) and (2) presents the marginal effect of the dummy variable indicating "supervisor being considered a partner rather than a boss" for one of the six emotion variables. Each cell of panel 2 in model (3) and (4) presents the marginal effect of the dummy variable indicating "trustable and open workplace environment" for one of the six emotion variables. The control variables in the regressions include age, age squared divided by 100, gender, marital status, education, employment status, health insurance enrollment status, number of children, importance of religion in life, as well as state, month and year dummies. Standard errors clustered at the county level are reported in parenthesis. +, *, **, and *** indicate significance at the 10, 5, 1, and 0.1% levels.

Figure 1: The Cantril Ladder and Emotions
Mean Differences from Monday

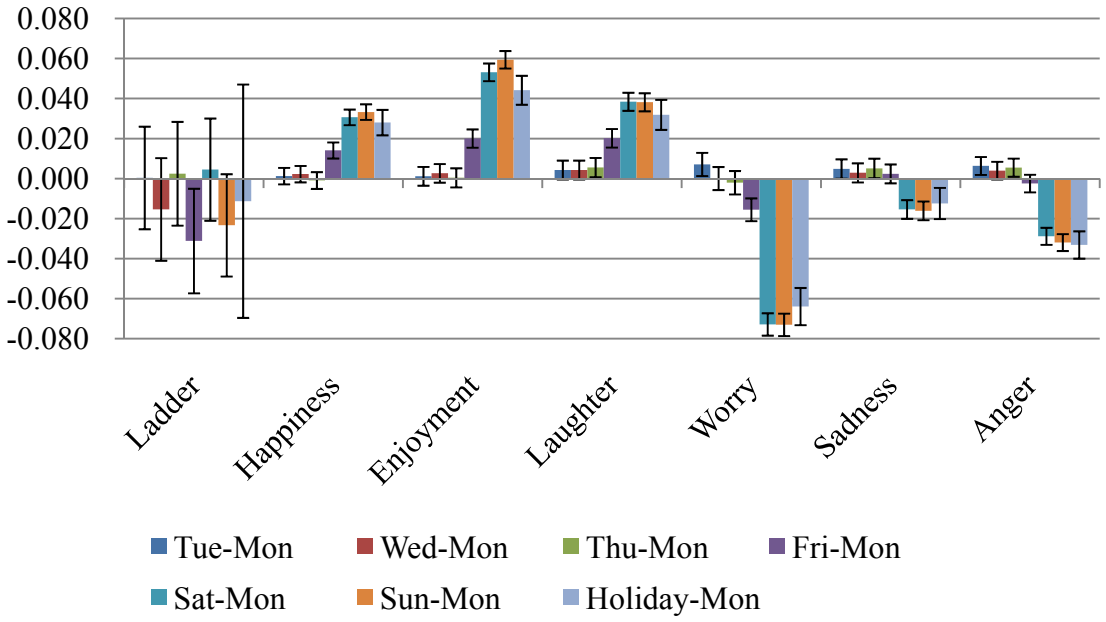

Figure 2: The Cantril Ladder and Emotions
Day-of-Week Effects

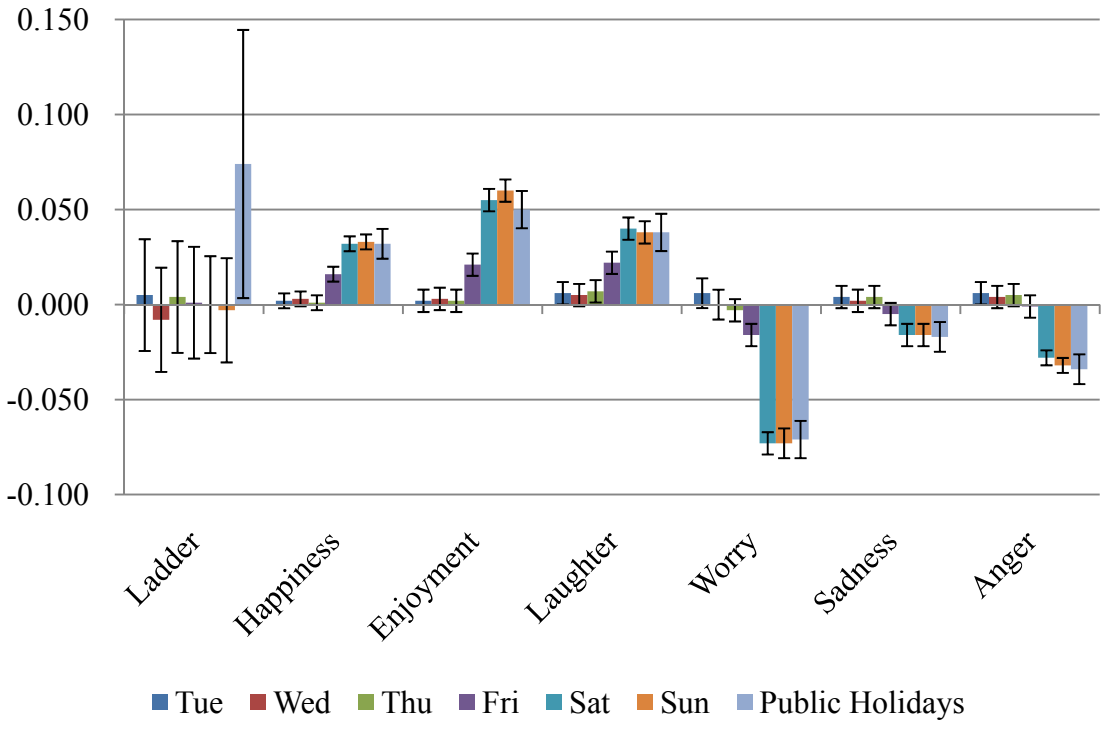

Figure 3.1: Weekend Effects by Gender and Marital Status

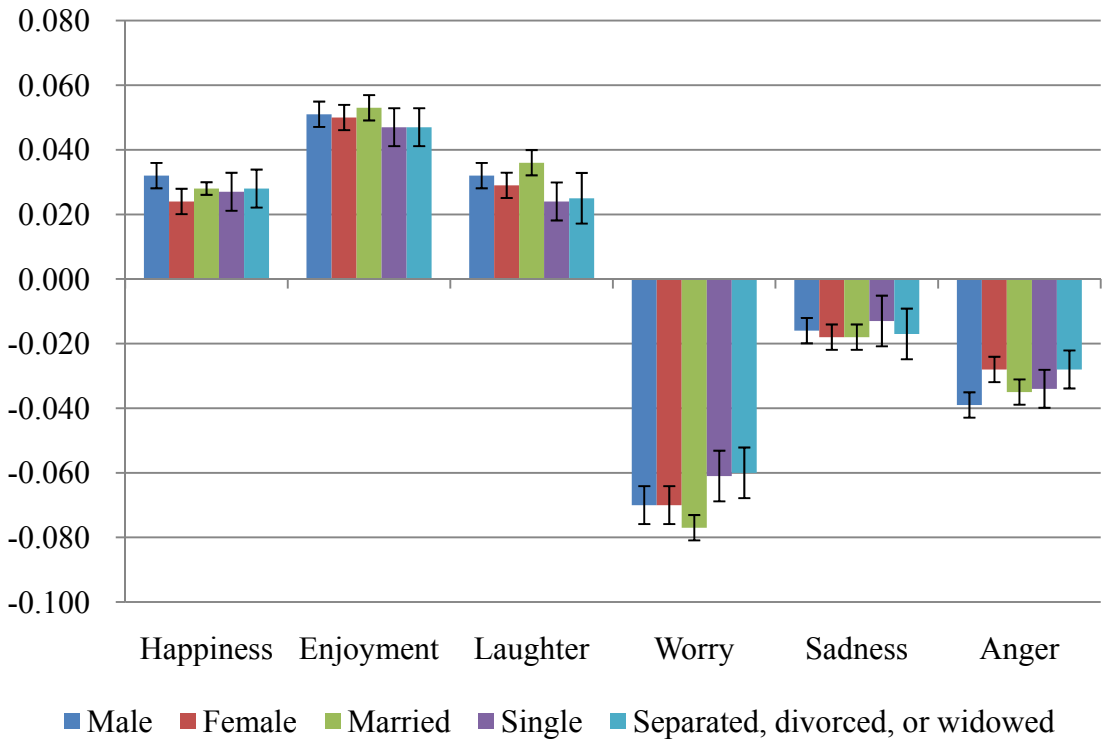

Figure 3.2: Weekend Effects by Age Cohort

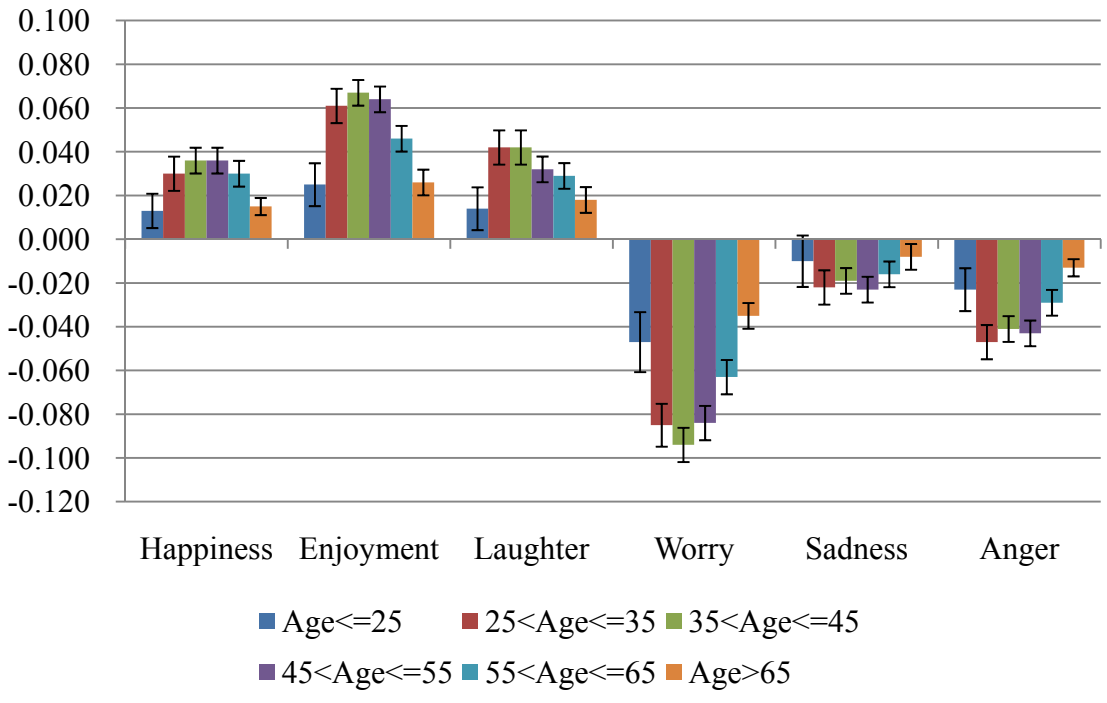

Figure 3.3: Weekend Effects by Job Characteristics

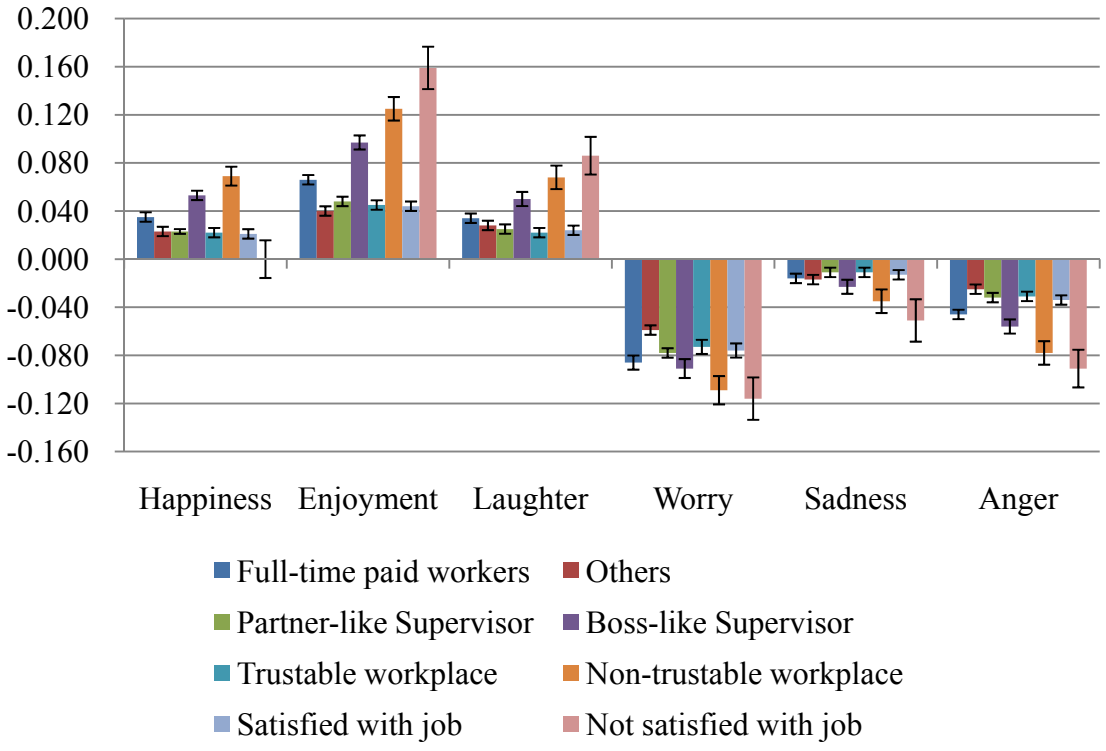

Figure 4: Oaxaca Decompostion
Weekend Effects Explained by Social Hours

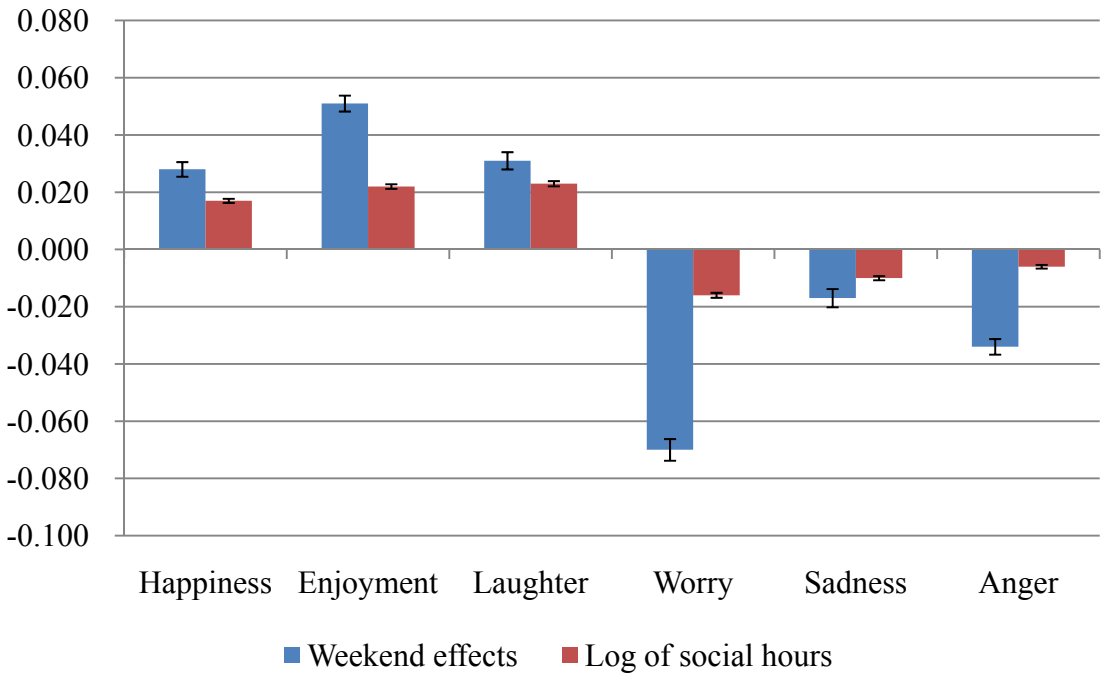

Figure 5: Marginal Effect of Workplace Environment on Weekends and Weekdays