100 Days of Summer

Konstantin Augemberg

www.measuredme.com
Measured Me initiative:

• ultimate personal system for self-tracking, self-discovery and self-optimization
• “self-search engine”
Life Hacker’s Wet Dream:

✓ self-accountability
✓ self-optimization
✓ self-discovery & life mining
✓ life logging
✓ self-preservation
✓ (NOT SO DISTANT FUTURE) personal API (Netflix, Google, restaurants, etc.)
✓ ... possibilities are endless
Criteria:

- self-centric
- quantitative
- parsimonious
- holistic
- purposeful
Objective: WELLBEING

- **well-being** (wlbng) *n.* The state of being healthy, happy, or prosperous
Framework: Tracking SELF through the lens of WELLBEING

Living Well
- Sleep
- Diet
- Fitness
- Habits
- Lifestyle

External Forces
- Temporal Patterns
- Cosmic Events
- Entropy

Doing Well
- Productivity
- Growth & Development
- Relationships

Being Well
- Body
- Mind
- Psyche

Existential Wellbeing
- Happiness
- Life Satisfaction
Framework: Tracking SELF through the lens of WELLBEING
Metrics of Wellbeing

Body:
- *Health*: presence/severity of symptoms or health conditions
- *Energy*: how tired/energetic I feel

Psyche:
- *Stress*: how stressed I feel
- *Emotions Positivity*: how positive/negative do I feel
- *Emotions Intensity*: how calm/tense do I feel

Mind:
- *Alertness*: Psychomotor Vigilance Test
- *Executive Cognition*: Stroop Test

Existential Wellbeing:
- *Happiness*: how happy I am
- *Life Satisfaction*: six Ryff’s Psychological Wellbeing questions
Quantified Summer

What I Did:
• 8 metrics
• 4x a day (6 am – 9 am, 9 am – 12 pm, 12 pm – 5 pm, 5 pm – 11 pm)
• 100 days (May 27 – September 3)

What I Learned:
• Trackability
• Trends
• Intra-Day Variability
• Redundancy
• Temporal and Other Patterns
Trackability: Quick and “On the Go”

- how long does it take to measure and log each metric
- difficulty ~ % of missing data (< 10% = low, 11%-30% medium, 31%> - high)

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Average Time (Sec)</th>
<th>Difficulty</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>10</td>
<td>Low</td>
<td>Good to go</td>
</tr>
<tr>
<td>Energy</td>
<td>10</td>
<td>Low</td>
<td>Good to go</td>
</tr>
<tr>
<td>Stress</td>
<td>10</td>
<td>Low</td>
<td>Good to go</td>
</tr>
<tr>
<td>Emotional State</td>
<td>20</td>
<td>Low</td>
<td>Good to go</td>
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<tr>
<td>Alertness</td>
<td>120</td>
<td>Medium</td>
<td>Ok to go; alternatives?</td>
</tr>
<tr>
<td>Cognition</td>
<td>180</td>
<td>Medium</td>
<td>Ok to go; alternatives?</td>
</tr>
<tr>
<td>Happiness</td>
<td>15</td>
<td>Low</td>
<td>Good to go</td>
</tr>
<tr>
<td>Life Satisfaction</td>
<td>60</td>
<td>Low</td>
<td>Good to go</td>
</tr>
</tbody>
</table>
Trends: Some Indicators Are Not Stationary

Life Satisfaction

Energy

Cognition
Weekdays vs Weekends: A Tale of Two “Me”s

Unless you are Tim Ferris, you live two different lives: workdays vs. off-work days

- Social Rhythm
- 9 to 5 workdays: structured, stable and predictable
- Off-workdays (weekends, vacations): diverse, unstable and unpredictable
Intra-Day Variability: From $f(\text{Dawn})$ to $f(\text{Dusk})$
Intra-Day Variability: Bonus Metrics!

Energy Flow Rate: how fast do I get tired?

- Log energy levels at least 2-3 times a day
- Fit linear regression model; slope = “flow rate”

![Graph showing Energy Flow Rate](graph1.png)

Emotional Stability (ak.a. “mood swings”)

- Log emotions’ positivity/intensity 2-3 times a day
- ES = variance(positivy) + variance(intensity)
- ES = absmax(\text{Positivity}_{PM} - \text{Positivity}_{AM}, \text{Positivity}_{EV} - \text{Positivity}_{PM})

![Graph showing Daily Mood Swings](graph2.png)
## Redundancy: Unique and Relatively Independent

<table>
<thead>
<tr>
<th></th>
<th>Happiness</th>
<th>.67</th>
<th>.03</th>
<th>.32</th>
<th>-.31</th>
<th>.51</th>
<th>.04</th>
<th>-.06</th>
<th>-.11</th>
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<tbody>
<tr>
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<td>.68</td>
<td>Life Satisf.</td>
<td>.05</td>
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<td>-.26</td>
<td>.40</td>
<td>.03</td>
<td>-.07</td>
<td>-.11</td>
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<td>.17</td>
<td>Health</td>
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<td>-.08</td>
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<td>-.04</td>
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<td>.13</td>
<td>.10</td>
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<tr>
<td>Energy</td>
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<td>-.24</td>
<td>Stress</td>
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<td>-.02</td>
<td>.05</td>
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<tr>
<td>Stress</td>
<td>.41</td>
<td>.29</td>
<td>Emotions Positivity</td>
<td>-.27</td>
<td>.05</td>
<td>-.04</td>
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<tr>
<td>Emotions Positivity</td>
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<td>.11</td>
<td>.14</td>
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<td>Emotions Intensity</td>
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<td>.04</td>
<td>.15</td>
<td>.03</td>
<td>.00</td>
<td>.16</td>
<td>Alertness</td>
<td>.02</td>
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<tr>
<td>Alertness</td>
<td>.11</td>
<td>.06</td>
<td>-.02</td>
<td>.22</td>
<td>-.01</td>
<td>-.16</td>
<td>.16</td>
<td>.08</td>
<td>Executive</td>
</tr>
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</table>

- Spearman’s rank correlations ρ; statistical significance defined by 90% confidence interval
- **workdays correlations** shown in blue, **off-workdays** in orange;
- statistically non-significant correlations are shown in grey
### Lifestyle Impact

#### Sleep ($\rho$, causality established):

<table>
<thead>
<tr>
<th>Actual Sleep Time</th>
<th>Work Days</th>
<th>Off-Work Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Happiness</td>
<td>-.23</td>
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<tr>
<td>Mental Alertness</td>
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<tr>
<td>Executive Cognition</td>
<td>-.29</td>
<td></td>
</tr>
</tbody>
</table>

#### Physical Activity ($\rho$, no causality established)

<table>
<thead>
<tr>
<th>Mental Alertness</th>
<th>Work Days</th>
<th>Off-Work Days</th>
</tr>
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<tbody>
<tr>
<td>Calories</td>
<td>-.27</td>
<td>.41</td>
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<tr>
<td>Steps</td>
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<td>Moder. Act.</td>
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<td>Vigor. Act.</td>
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<td></td>
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<tr>
<td>Stress</td>
<td>.24</td>
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Temporal Patterns

Weekday Patterns

Happiness

Life Satisfaction
Temporal Patterns

Biorhythms Theory

Physical = \sin(2\pi t/23)
Emotional = \sin(2\pi t/28), \ t= number\ of\ days\ since\ birth
Cognitive = \sin(2\pi t/33)

FAILED
External Forces

- Heat (ave T > 80F) = lower stress, more positive and less intense emotions
- Rain: no effects
- Barometric pressure: no effects
- First Moon Quarter = high stress; Last Moon Quarter = low stress
Life Mining

- how does my perfect day look like?
- are there certain “types” of days?
- can I predict my day based on morning indicators?
- can I predict how certain “milestones” will affect my life?
- can I apply technical stock trading signals and other pattern-based analytics to my life stream?
Typology of Days:

- 8-dimensional classification model (k-means cluster analysis)
- 3 types of work days:
  - Slow Days (healthy, tired, slow)
  - Good Days (happy, energetic, not stressed, good mood)
  - Bad Days (unhappy, sick, tired, stressed, bad mood, alert)
Next steps:

**Quantified Winter** (Nov 2013 – Feb 2014):

- **Health**: incorporate occasional biometric/ (blood pressure, cholesterol, c-reactive protein) data into daily health score
- **Sleep Quality**: potential body/mind/psyche indicator that ‘concludes’ picture of the day
- **Cognition**: search for more effective and comprehensive cognitive tests
- **Logging**: reduce number of measurement to 1-2 a day for some indicators
- **Doing Well**: productivity, creativity, strength of will and social support metrics
- **Living Well**: diet, lifestyle quotient and social rhythm metrics
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