Complexities and Caveats

Norbert K. Semmer, PhD
Prof. em., University of Bern, Switzerland
Visiting Scholar, Claremont Graduate University

Claremont Graduate University
August 20, 2015

Constellations

We typically are not confronted with single stressors or resources. Constellations of various conditions have to be considered. Our knowledge about them is still rather limited.
Psychology of Work and Organizations, N. K. Semmer

Effort-Reward Imbalance: and cardiovascular disease

Risk of dying of CVD over 25 years

Lower third = reference group
Controlled: Age, gender, occupation, smoking, physical activity, systolic blood pressure, Total cholesterol, BMI

Imbalance between effort and reward


Lower third = reference group
Controlled: Age, gender, occupation, smoking, physical activity, systolic blood pressure, Total cholesterol, BMI

Overtime, Rewards, and Impaired Recovery

No overtime Overtime

Rewards high low Rewards high low

Poor Recovery

High rewards can – at least partially – compensate effects of overtime

Job-Stress Index:
Adding stressors, adding resources, determining which are relatively higher

<table>
<thead>
<tr>
<th>% rather or very exhausted</th>
<th>S&lt;&lt;R</th>
<th>S&lt;R</th>
<th>S=R</th>
<th>S&gt;R</th>
<th>S&gt;&gt;R</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>6.3%</td>
<td>8.4%</td>
<td>20.1%</td>
<td>41.9%</td>
<td>68.3%</td>
</tr>
</tbody>
</table>

Representative sample of 3,483 Swiss employees, 2014

Stress and social support by superiors

Problem group: High stress, low support ⇒ More symptoms

Social support helps to deal with stress

Percentage of employees with high psychosomatic symptoms (upper third)

Low level of support

High level of support

Low level of stress

High level of stress

Percentage of employees with high psychosomatic symptoms

Level of support

Low level of support

High level of support

High level of stress

Low level of stress

High level of stress
Stress and personal characteristics: Mechanisms

1. Exposition
   - People with certain characteristics are more likely to encounter stressful situations

2. Appraisal
   - People with certain characteristics are more likely to interpret the same situation as stressful

3. Reactivity
   - People with certain characteristics react more strongly to situations with equal appraisal

4. Coping
   - People with certain characteristics cope differently with similar situations

Exposition: Examples

- **Neuroticism**: More frequent encounter of stress situations (Suls & Martin, 2005)
- **Depression**: Depressive are less attractive for others (Sacco et al., 1993)
- **Hostility / low agreeableness**: More conflicts (Smith et al., 1993)

Special case of exposition: These people create more stressful situations!

Appraisal: Examples

- **Neuroticism**:  
  - Low emotional stability: Focus on threats (Gunthert et al., 1999)  
  - high emotional stability: interpretation of same situation as challenging
- **Hostility**:  
  - Interpretation of ambiguous behavior of others as a sign of their hostility (Berkowitz, 1998)
- **Self esteem**:  
  - Low self-esteem: Interpretation of failure as indicative of own personality (self-diagnostic; Brockner, 1988)
Reactivity: Examples

- **Anxiety**
  Stronger reactions to stressors (Suls & Martin, 2005)

- **Hostility**
  Stronger reactions to social stressors (Smith et al., 2004)

- **Agreeableness**
  Stronger reactions to social stressors (Suls & Martin, 2005)

---

Coping: Examples

- **Optimism**
  Optimists show more adequate coping (Carver & Scheier, 1999)

- **Neuroticism**
  More maladaptive coping-Strategies (Gunthert et al., 1999)
  Less success with coping strategies (Gunthert et al., 1999)
  More emotion-focused coping, already vis-a-vis small problems (David & Suls, 1999)

- **Conscientiousness**
  More problem focused coping (Vollrath, 2001)
Resilient People

- perceive their environment generally in a positive way
- are not hostile
- regard mistakes and failures as normal, not as a sign of incompetence
- hold the belief
  - that important things can be influenced (locus of control)
  - that they have the ability to exercise that influence (self-efficacy)
- are emotionally stable
- tend to cope in an active, problem-focused way


Interaction between Person and Situation: Control at work as stress buffer as dependent on control beliefs

Affective strain at work

Interaction between Person and Situation:
Control at work as stress buffer as dependent on control beliefs

Affective strain at work

Internal Locus of Control
(+ 1 SD)

External Locus of Control
(- 1 SD)

Internal locus of control:
Control buffers effect of stressors (in line with JCD-model)

External locus of control:
Control augments effect of stressors: Control becomes as stressor

Low job control

High job control

Low job control

High job control

Is it only work?
Private conditions, working conditions, and feeling recovered after a vacation

% well recovered

<table>
<thead>
<tr>
<th>Private situation</th>
<th>Work situation good</th>
<th>Work situation not so good</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ed. level</td>
<td>94%</td>
<td>78%</td>
</tr>
<tr>
<td>Partnership</td>
<td>84%</td>
<td>53%</td>
</tr>
<tr>
<td>Financial diff.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Work situation
time pressure: control
resources to do work well:


Short-term and long-term effects
Short-term effects

- Short-term effects often quickly disappear
- Unless something happens during the critical period
  - e.g., a mistake resulting in damage
- Single stressful episodes often are harmless

- If stressful episodes
  - are of great importance (a serious conflict)
  - accumulate over time (repeated unfair criticism)
  - are seen as an example of wider conditions
    (unfair criticism as a sign of bad conditions in general – background stressors)
  - They may persist after work
  - Recovery after work is a crucial mechanism that prevents or enhances further consequences


Cortisol on a day off and control at work

68 employees of a Swiss logistics-company


Cortisol Ruhetag: Mittelwert = 3.4, SD = 2.6 (Measuring immer mittags)
Opportunities for recovery and their Use

<table>
<thead>
<tr>
<th>Good for recovery</th>
<th>Bad for recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good mixture of</td>
<td>Activities that are similar to one’s work</td>
</tr>
<tr>
<td>• Physical activity</td>
<td>&gt; Ruminating about work problems</td>
</tr>
<tr>
<td>• Social activities</td>
<td>(negatively not solution-focussed)</td>
</tr>
<tr>
<td>• Relaxing (take a bath)</td>
<td></td>
</tr>
</tbody>
</table>

But:

- Not only the kind of activity is important, but especially its quality
- Rule of thumb: If it’s enjoyable, it is good for recovery (Sonnentag & Zijlstra, 2006)
- Playing with the kids may be effortful but enjoyable

- Using opportunities for recovery depends on
  - the person
  - the private situation (children, obligations, social support)
  - work
- After a heavy day it often is especially difficult to pull oneself together:
  Stress diminishes will power (Muraven & Baumeister, 2000)
- E.g., less sports activities after stressful days (Sonnentag & Jelden, 2005)

Stress often has after-effects
- Rumination / bad mood / irritability
- Not much energy for dealing with additional problems:
  - more easily provoked
  - less empathy for problems of partner / children
  - Can create / escalate problems in partnership

Fortunately, the family is also a resource that offers support and gives new energy
Cumulative Effects and Changes over Time

Many effects on health take time, accumulating over many years

Unfavorable work characteristics and metabolic syndrome

Metabolic syndrome: at least three of the following risk factors:
- Waist \( \geq 102 \text{ cm for men, 88 cm for women} \)
- Triglycerides \( \geq 1.69 \text{ mmol/l} \)
- HDL Cholesterol \( < 1.03 \text{ mmol/l for men, 1.29 mmol/l for women} \)
- Blood pressure \( \geq 130/\geq 85 \text{ mm Hg} \)
- Fasting glucose \( \geq 6.11 \text{ mmol/l} \)

Unfavorable work characteristics: ISO-Strain:
- High demands
- Low control
- Low social support

Appreciation and Job Satisfaction among young people entering the work force: Cumulative Effects

![Bar Chart]

**Job Satisfaction last year (Mean)**

<table>
<thead>
<tr>
<th>No. of measurements with high appreciation (Median split)</th>
<th>0 of 4</th>
<th>1 of 4</th>
<th>2 of 4</th>
<th>3 of 4</th>
<th>4 of 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.71</td>
<td>4.04</td>
<td>4.17</td>
<td>4.53</td>
<td>4.64</td>
<td></td>
</tr>
</tbody>
</table>

Controlling for Job satisfaction t1, Region, sex, occupation


Some effects are not easily reversed: Shift work as an example

<table>
<thead>
<tr>
<th>Symptoms of ill health</th>
<th>Shift workers</th>
<th>Non shift workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Used to work shifts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never worked shifts</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Development of stress-symptoms over time

Stressful period

Begin
A

End
B

C
D

dynamic accumulation
accumulation
sleeper effect
adjustment
stress reaction

Exposure time to stressor

Dysfunctioning


Methodological Issues: Research Designs and Measurement
Research Designs

> Many studies in OHP are cross-sectional
> Working Conditions and Health are measured at the same time.
> Leaves open what causes what
> —Work may influence health
> —Health may influence work
> Many indications that both is true: Reciprocal effects

Longitudinal studies:
Testing lagged relationships from job stressors on strains and from strains on job stressors

<table>
<thead>
<tr>
<th>0%</th>
<th>10%</th>
<th>20%</th>
<th>30%</th>
<th>40%</th>
<th>50%</th>
<th>60%</th>
<th>70%</th>
<th>80%</th>
<th>90%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>■</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>■</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
</tr>
</tbody>
</table>

**Measurement**

- Often, conditions at work and health/well-being are measured by self-report (e.g., questionnaire).
- Personal characteristics may determine answers to both kinds of questions.
  - e.g., more depressed people may judge both the quality of their work and their own well-being to be low.
- Measurements involving other types of measurement:
  - e.g., assessing work by supervisors.
  - Assessing health by biological indicators.
- Often show weaker but still significant associations.
  - Note: They are not necessarily really „objective“ measures.


**Measurement**

- Self-report measures often predict outcomes determined by other measures:
  - Perceived health is a good predictor of mortality (DeSalvo et al., 2005).
  - Self-report of working conditions predicts CVD (e.g., Siegrist, 2002).
  - Self-report of illegitimate tasks predicts sleep quality assessed by actigraphy (Pereira et al., 2014).
  - Self-report of stressful conditions at work predicts cortisol reactivity to experimental stress test (Wirtz et al., 2013).
  - Self-reported stress predicts performance of physicians in a simulated pulmonary resuscitation (Hunziker et al., 2011).


**Conclusion:**

- Self-report measures are error-prone but not „wrong“.
- Alternative measures are important, but are also error-prone.
Thank you!