

Hardiness/Resilient

The X-Factor for Healthy & Successful Talent

PTC Annual Conference 2015



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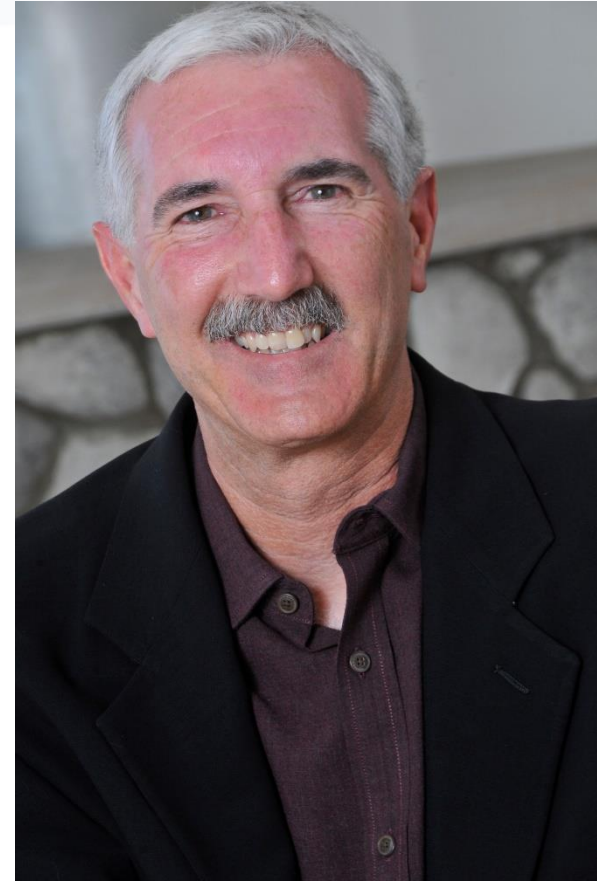
The logo for Envisia Learning, featuring the word "envisia" in a blue serif font with three red dots above the "i", and "LEARNING" in a blue sans-serif font below it.

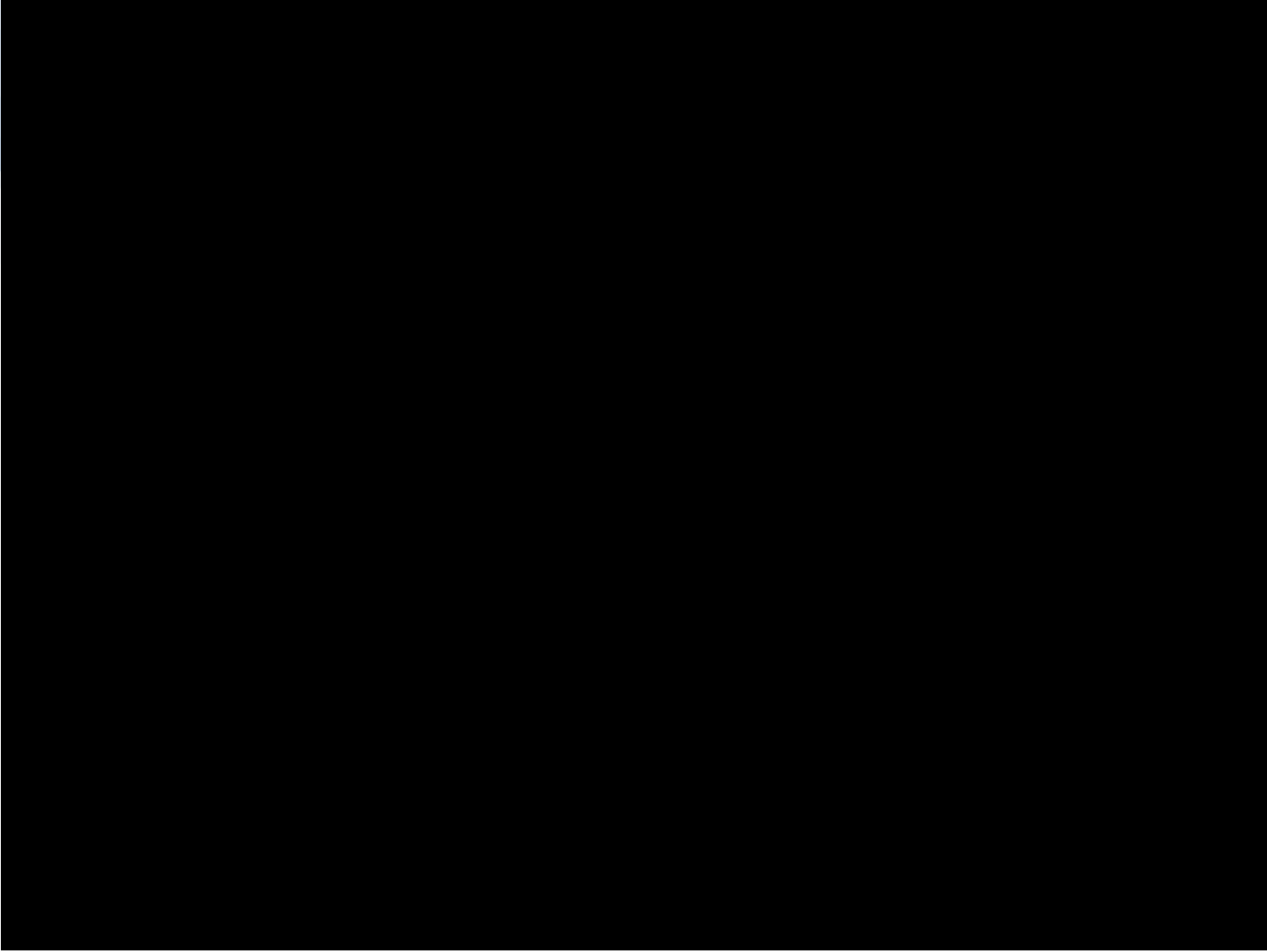
Enlighten.
Encourage.
Enable.

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Dr. Nowack received his doctorate degree in Counseling Psychology from the University of California, Los Angeles and has published extensively in the areas of leadership development, assessment, health psychology, and behavioral medicine.

Ken serves on Daniel Goleman's Consortium for Research on Emotional Intelligence in Organizations and serves as Associate Editor for *The Consulting Psychology Journal: Practice and Research*.





Hardiness/Resilient The X-Factor for Healthy and Successful Talent



The Importance for Resilience for Organizations

Resilience, Health and Performance

Our Research on Resilience

Resilience and Sleep: Connected Bedfellows

Questions

Why Resilience is Important to Organizations

Workforce 2015: Changing Career Paradigms

OLD PARADIGMS

- Traditional Families
- Job Security
- Longitudinal Career Paths
- Job/Person Fit
- Work is Where You Go
- Hierarchical Structure
- Organizational Loyalty
- Career Success
- Academic Degree
- Position/Title
- Full-Time Employment
- Retirement
- Single Jobs/Careers
- Change in jobs based on fear
- Promotion tenure based
- Many Workers are Smarter

NEW PARADIGMS

- Non-Traditional Families
- Employability Security
- Alternate Career Paths
- Person/Organization Fit
- Work is What You Do
- Flat/Matrix Structure
- Job/Task Loyalty
- Work/Family Balance
- Continuous Relearning
- Competencies/Development
- Contract Employment
- Career Sabbaticals
- Encore Careers
- Change in jobs based on growth
- Promotion performance based
- Many Workers are Different

The New Work/Career Principles

1

- Employees are now increasingly like our external “customers” and have to be treated as *volunteers*

2

- A feedback/Trust culture is *driven* primarily by leaders and cascaded throughout the organization (70% of the variance in employee engagement scores can be attributed to leadership behaviors)

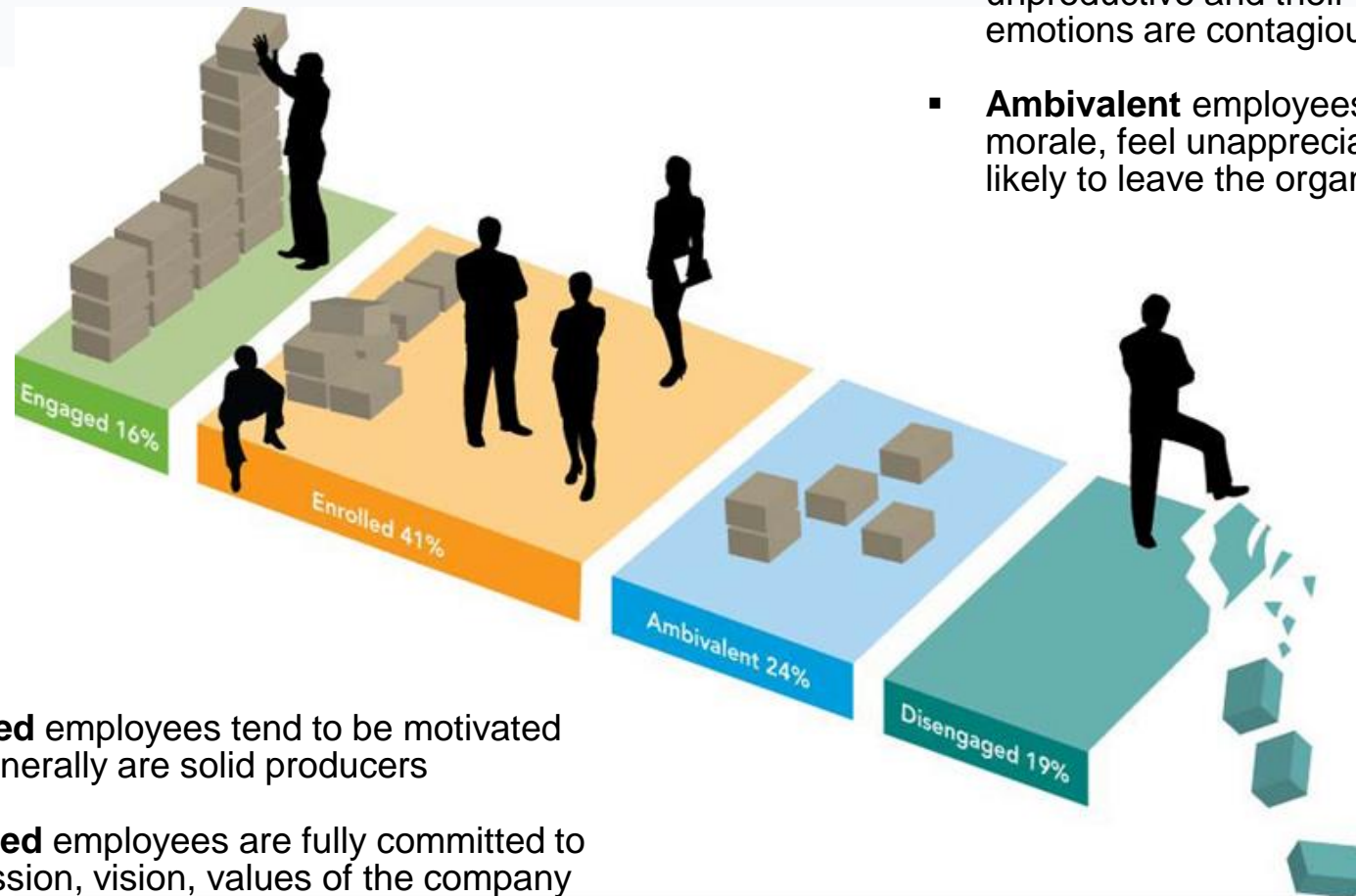
3

- The *new* Work/Career paradigms changes how leaders today have to behave to engage *volunteers*

4

- Research suggest that what drives *volunteers* today is based on how the job is structured, leadership/management practices, growth opportunities, and the work climate

Engagement & Performance Connection



- **Actively Disengaged** employees are unproductive and their negative emotions are contagious to others
- **Ambivalent** employees have low morale, feel unappreciated and are likely to leave the organization

- **Enrolled** employees tend to be motivated and generally are solid producers
- **Engaged** employees are fully committed to the mission, vision, values of the company

Engagement Drivers

Towers Watson Global Workforce Study 2014

Attraction Drivers	Retention Drivers	Sustainable Drivers
<p>Base pay/salary</p> <p>Job Security</p> <p>Career advancement opportunities</p> <p>Convenient work location</p> <p>Opportunities to learn new Skills</p>	<p>Base pay/salary</p> <p>Career advancement opportunities</p> <p>Relationship with boss</p> <p>Trust/confidence in senior leadership</p> <p>Stress, balance and workload</p>	<p>Trust/confidence in senior leadership</p> <p>Stress, balance and workload</p> <p>Goals and objectives</p> <p>Leadership practices</p> <p>Corporate Image</p>

Leadership and Health: Killer Bosses

Leadership Practices and Inflammation

- A prospective study of 3,205 males and 1,204 females measured “perceived justice” (supervisory practices) and inflammation (C-reactive protein and IL-6)
- In men, low organizational justice was significantly associated with increased C-reactive protein (CRP) levels at both follow-ups and increased IL-6 at the last follow-up (phase 7)
- The long term associations were largely independent of covariates, such as age, employment grade, body mass index and depressive symptom
- In women, no relationship was found between organizational justice and CRP or IL-6



Elovainio M., Ferrie J.E., Singh-Manoux, A., Gimeno, D., De Vogli, R., Shipley, M., Vahtera, J., Brunner, E., Marmot, M. G., & Kivimäki, M. (2010). Organisational justice and markers of inflammation: the Whitehall II study. *Occupational Environmental Medicine*, 67, 78-83

Leadership Practices and CHD

- A prospective study of 6,442 male British civil servants measured “perceived justice” (supervisory practices) and tracked heart disease
- Employees who perceived their supervisors treated them fairly had 30% lower CHD incidents after adjustment for other risk factors

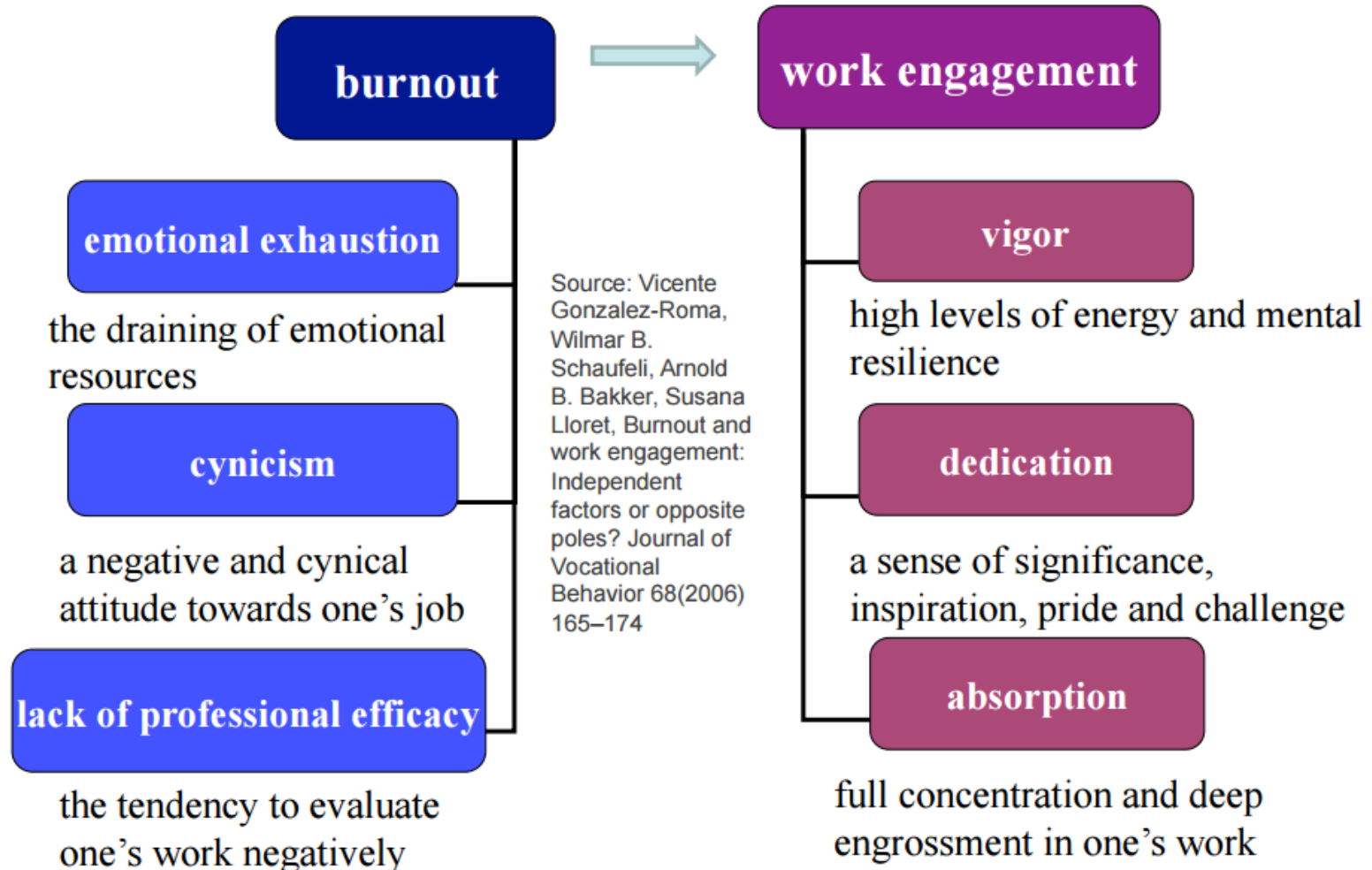
Kivimaki, M. et al., 2005. Justice at Work and Reduced Risk of Coronary Heart Disease Among Employees: The Whitehall Study. *Archives of Internal Medicine*, 165, 2245-2251.

- A 3-year prospective study on 3,122 Swedish workers showed that transformational managerial behaviors was significantly associated with lower cardiac risk

Nyberg, A. et al., 2008. Managerial leadership and ischaemic heart disease among employees: The Swedish WOLF study. *Occupational and Environmental Medicine*, 66, 51-55.

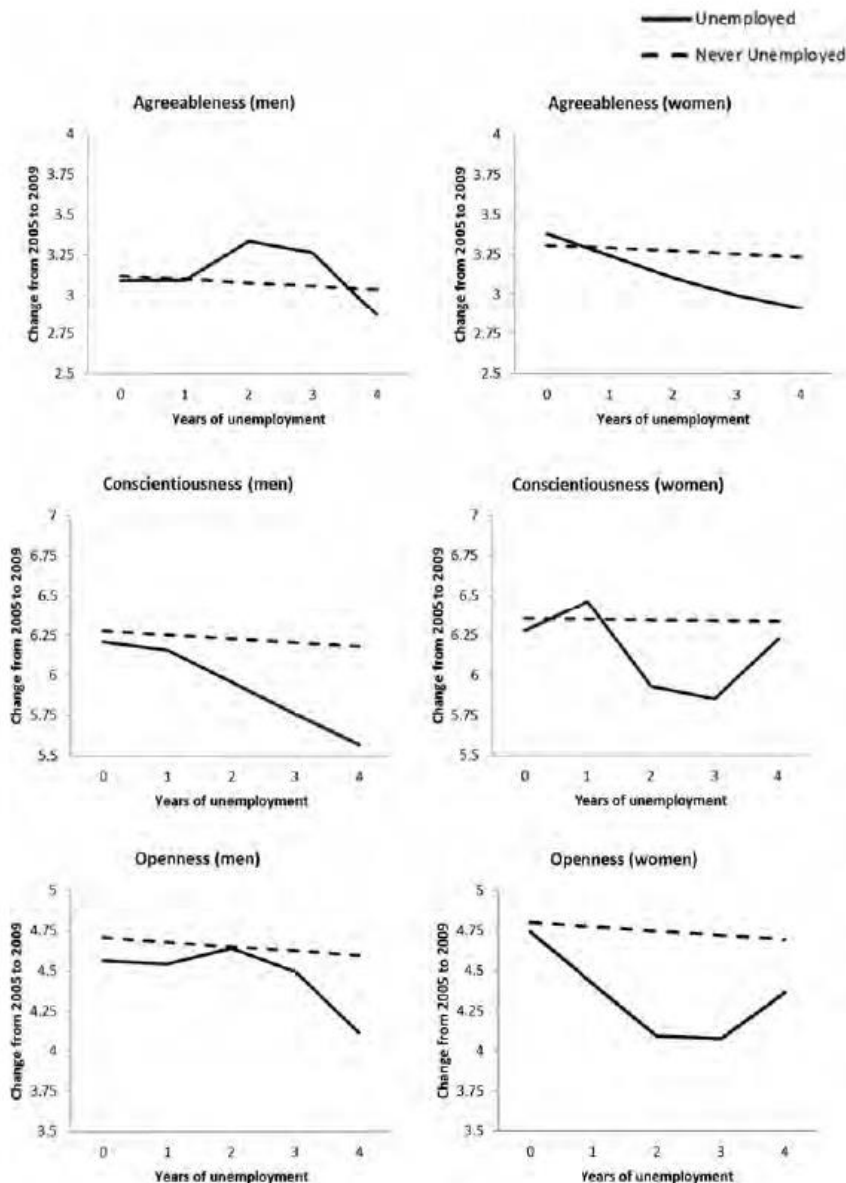


Change in Management Focus



Personality/Resilience: Plaster or Plastic?

Personality Change and Life Events

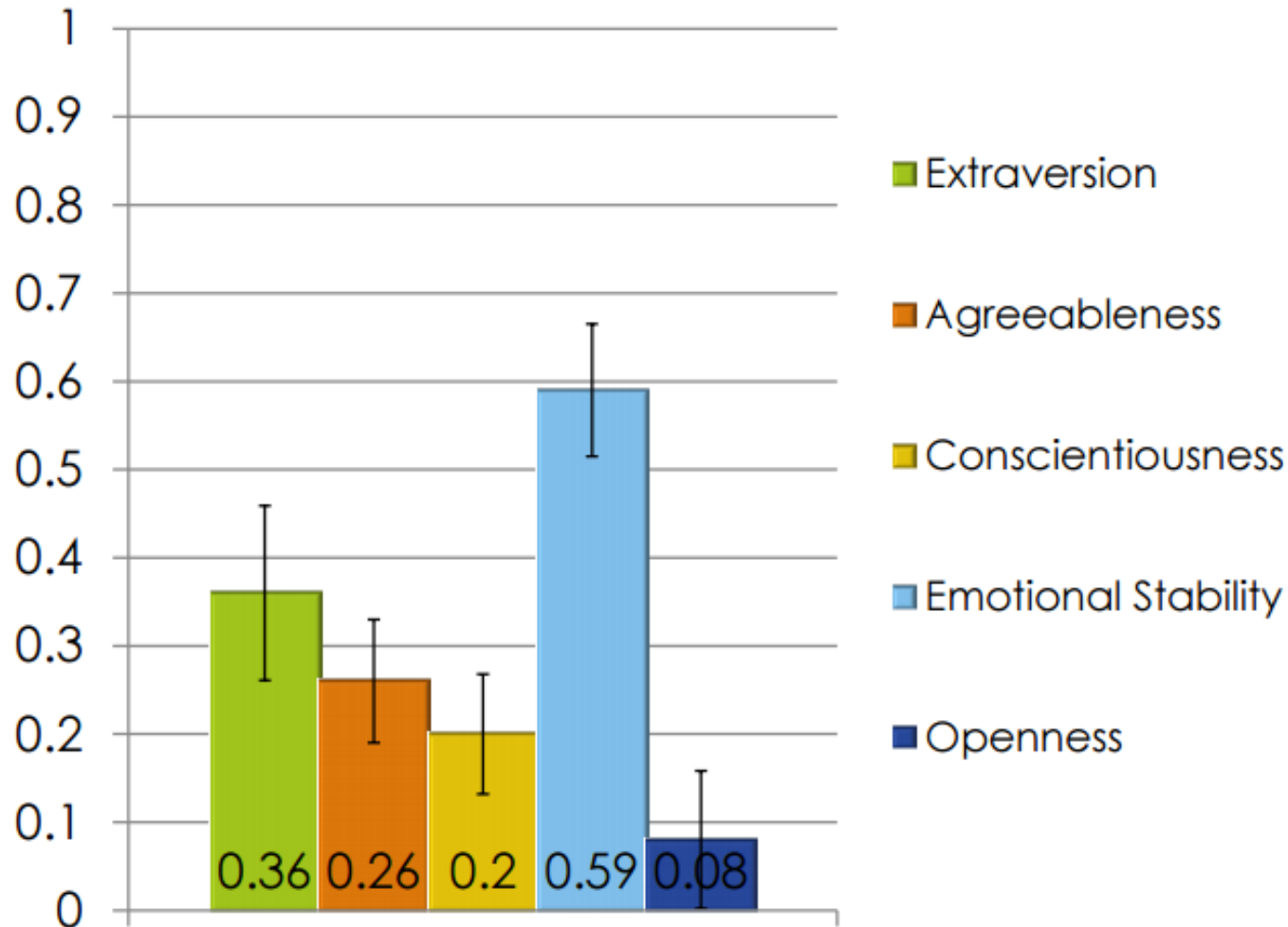


- Unemployment has a strong impact on well being ($d = -0.38$) comparable to being disabled
- Personality change was tracked at 2 times four years apart ($n = 6,769$)
- Compared to those employed, unemployed men and women demonstrated significant change in mean levels of conscientiousness, agreeableness & openness
- Across other life events, mean level changes have been reported .10-.25 (e.g., divorce)
- No *meaningful* change was observed for *neuroticism* or *extraversion*

Boyce et al. (2015). Personality change following unemployment. *Journal of Applied Psychology*, 4, 991-1011.

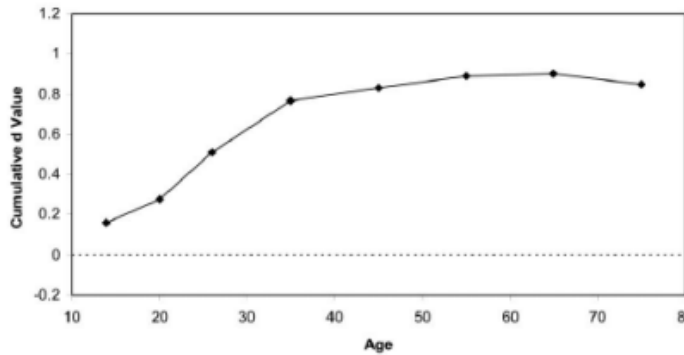
Personality Change and Therapy (Smith, Glass, & Miller, 1980)

Effect of therapy on personality trait change: $d = .31$ (K=13)

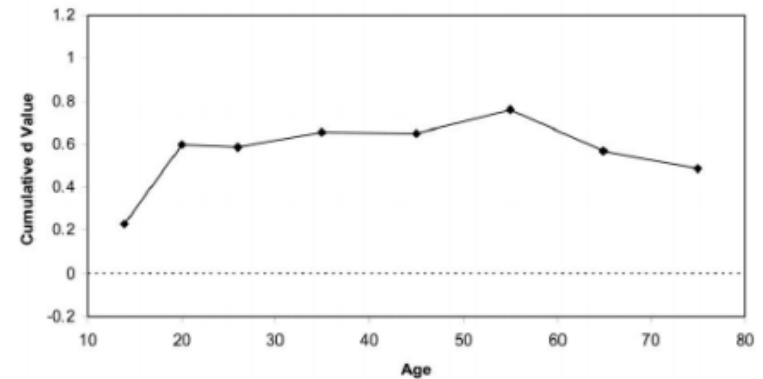


Personality Change Over Time

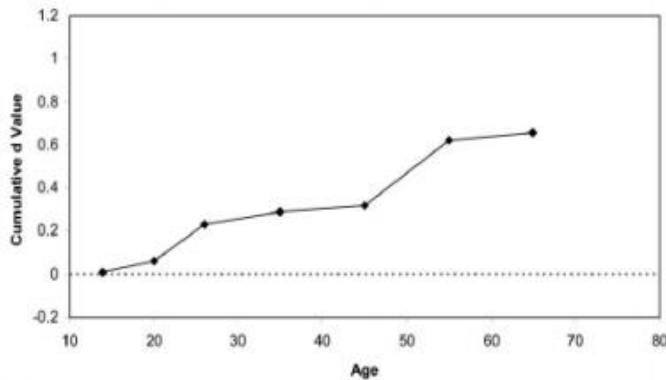
Emotional Stability



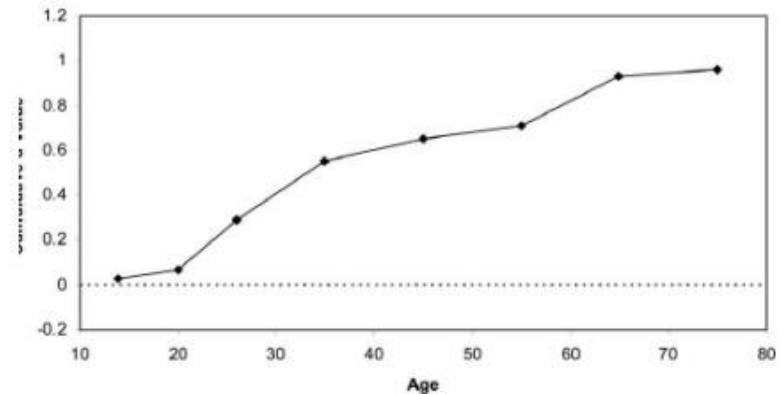
Openness to Experience



Agreeableness



Conscientiousness



Roberts et al (2006), *Psychological Bulletin*

Personality Change Over Time

- Personality traits *change with age* as much as 1 SD from age 20-60 (Roberts & Mroczek, 2008)
- Rank-order consistency *does not* vary markedly across FFM traits, assessment method (i.e., self-reports, observer ratings, and projective tests), or gender
- 80% of the personality consistency demonstrated by their sample of twins was attributable to *genetic influences*
- Personality trait changes are correlated with many different types of *life experiences* (Donnellan, Hill & Roberts, 2012)
- Meta-analysis of 92 longitudinal samples using FFM from adolescence (10-18 years) until old age (70+ years) suggest that the most significant changes are in *extraversion* (socially dominant), *conscientiousness* and *emotional stability* (Roberts, Walton & Viechtbauer, 2006)

Personality, Resilience and Job Performance

Emotional Stability (Resilience) and Job Performance

- Meta-analysis of 71 samples (N = 7,535) demonstrated that emotional stability *significantly* predicted ***adaptive performance*** (ability to meet unexpected or changing demands of one's work)
- Emotional stability exhibited moderate validities of .28 and .26, respectively, with *task performance* and *contextual performance*

Huang et al., (2015). Personality and adaptive performance at work: A meta-analytic investigation. *Journal of Applied Psychology*, 99, 162-179

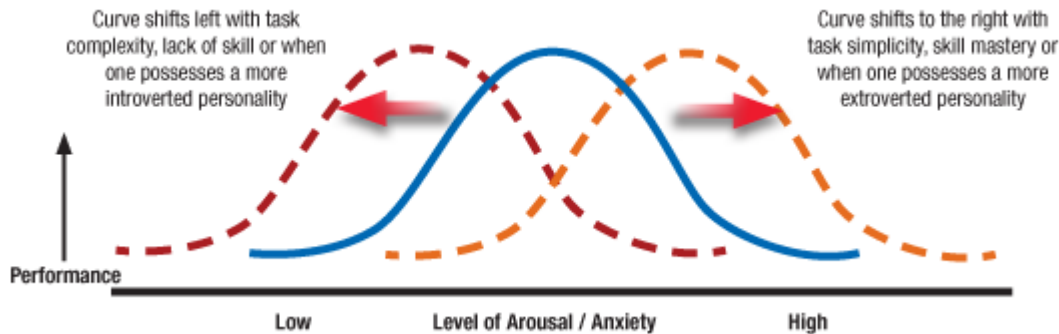
Rojon, C., McDowall, A. and Saunders, M.N.K. (2015) The relationships between traditional selection assessments and workplace performance criteria specificity: A comparative meta-analysis. *Human Performance* 28.1, 1-25

Emotional Stability and Job Performance

- **Conscientiousness** and **Agreeableness** emerged as the *most highly sought* attributes by interviewers
- Attributes related to emotional stability (resilience) were ***less likely*** to be included into interviews/selection processes
- Designers of interviewing system *shied away* from assessing **emotional stability** because they perceived those attributes as either difficult to assess via interview or as an uncomfortable topic to raise in interviews

Sackett et al., (2014). Which Personality Attributes Are Most Important in the Workplace? *Perspectives in Psychological Science*, 9, 538-551

Personality and Performance It's Not Always Linear



Ethical leadership demonstrated a linear relationship with deviant behavior of employees but a curvilinear relationship with organizational citizenship behaviors (OCB) in 3 studies

Stouten, J. et al., (2013). Can a leader be seen as too ethical? The curvilinear effects of ethical leadership. *The Leadership Quarterly*, 24, 680-695.

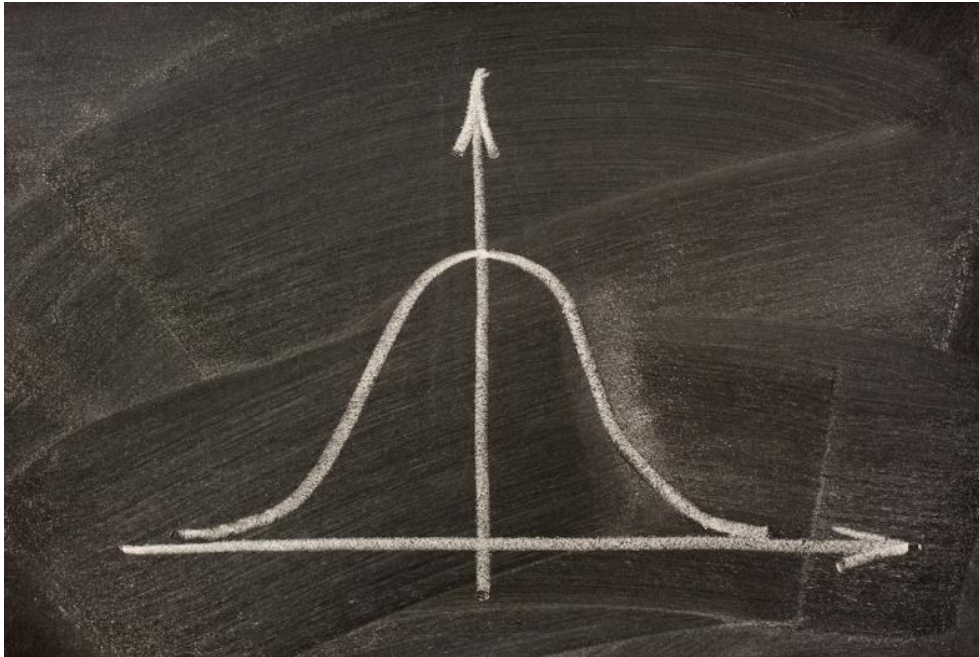
A curvilinear relationship exists between personality emotional stability and job performance

Le, H., et al., (2011). Too much of a good thing: Curvilinear relationships between personality traits and job performance. *Journal of Applied Psychology*, 96, 113-133.

A study of 340 outbound-call-center representatives supported the predicted inverted-U-shaped relationship between extraversion and sales revenue

Grant., A. (2013). Rethinking the Extraverted Sales Ideal: The Ambivert Advantage. *Psychological Science*, 24, 1024–1030.

The Inverted-U Curve of Resilience

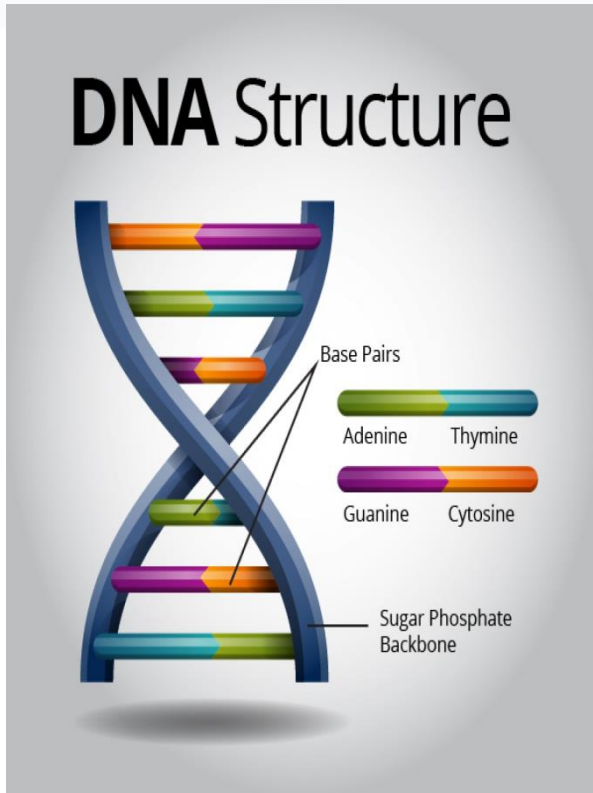


A history of some lifetime adversity predicts better long-term health outcomes than *high or no adversity*

Seery, M. (2011). Resilience: A silver lining to experiencing adverse life events? *Current Directions in Psychological Science*, 20, 390-394.

Defining and Measuring Resilience

Five Basic Human Drives (Nowack, 2015)



Approach/Avoidance

Affiliation/Bonding

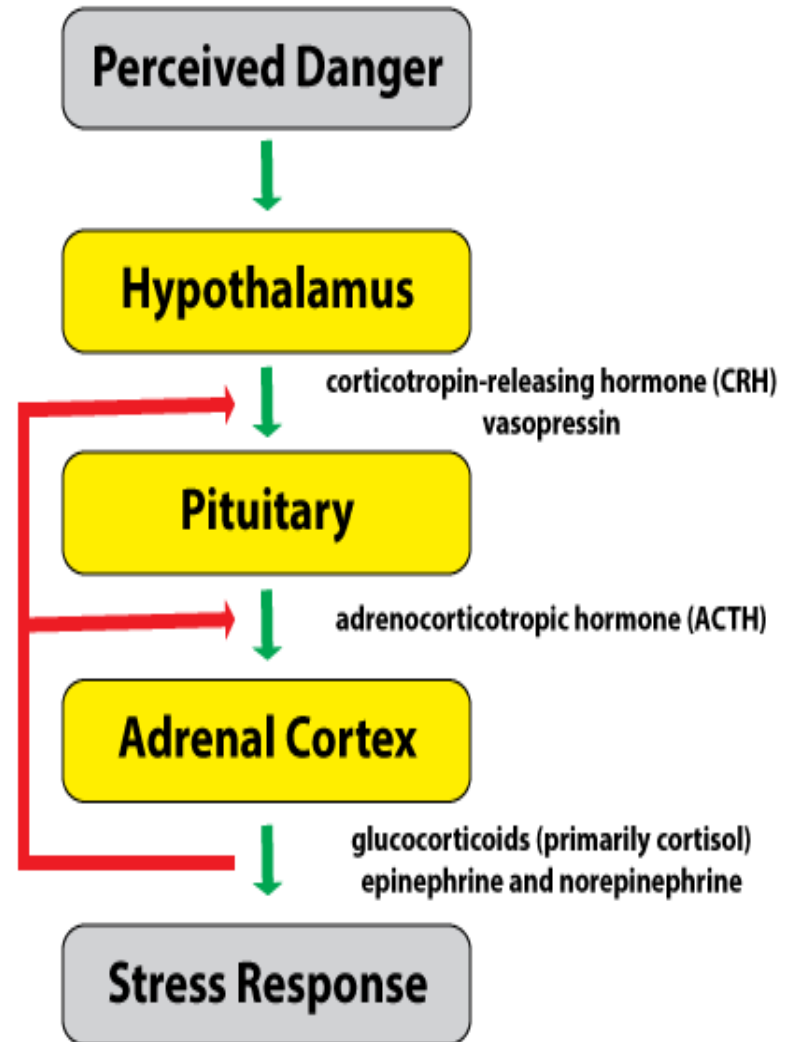
Autonomy/Control

Mastery/Growth

Purpose/Hope

Stress Response (HPA Axis)

Threat—Hindrance—Challenge Stressors



Stress Response “Tend-and-Befriend” Model

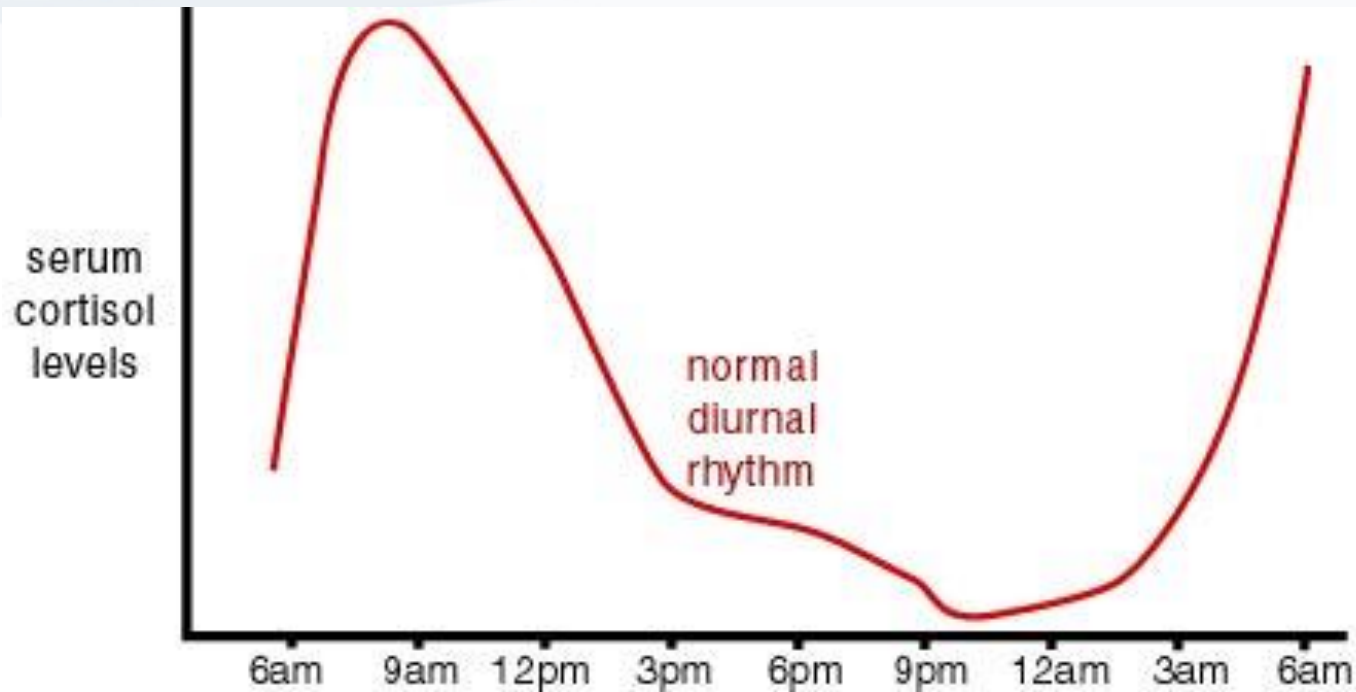
Female approach to coping

- Respond to stressful situations by protecting themselves and their young through nurturing behaviors--*"tend"*
- Forming alliances with a larger social group, particularly among women--*"befriend"*
- The “tend and befriend” response appears to be largely associated with the female hormone **oxytocin (OT)** which is *inhibited* by high levels of testosterone in males and high levels of epinephrine in both males and females



Taylor, Shelley (2002). *The Tending Instinct: Women, Men and the Biology of Nurturing*. New York: Times Books

The Circadian Rhythm of the Stress Hormone Cortisol



High Flat Level Profile	Depression/Sleep Deprivation
Low Flat Level	Job Burnout/PTSD

“It is not the strongest of the species that survives, nor the most intelligent that survives. It is the one that is the most adaptable to change.”

Charles Darwin

Definition of Resilience

Resilience refers to *positive* adaptation or the ability to maintain physical health and psychological well-being in the face of life adversity and challenge

Herrman, et al., 2011

Neurobiology of Resilience

Cortisol Awakening Response (CAR)

Inslicht, S. et al., (2011). Cortisol Awakening Response Prospectively Predicts Peritraumatic and Acute Stress Reactions in Police Officers. *Biological Psychiatry*, 70, 1055-1062

CAR is *elevated* in non-hardy individuals upon *awakening*

Neuropeptide Y

Morgan C. et al., (2002). Neuropeptide Y, cortisol, and subjective distress in humans exposed to acute stress: Replication and extension of previous report. *Biological Psychiatry*, 52, 136-142

Amino acid that regulates blood pressure, appetite, memory and anxiety reduction *increases* in hardy individuals

DHEA

Morgan, C. et al., (2004). Relationships Among Plasma Dehydroepiandrosterone Sulfate and Cortisol Levels, Symptoms of Dissociation, and Objective Performance in Humans Exposed to Acute Stress. *Archives of General Psychiatry*, 61, 819-825

Natural steroid is released in *higher amounts* in hardy individuals

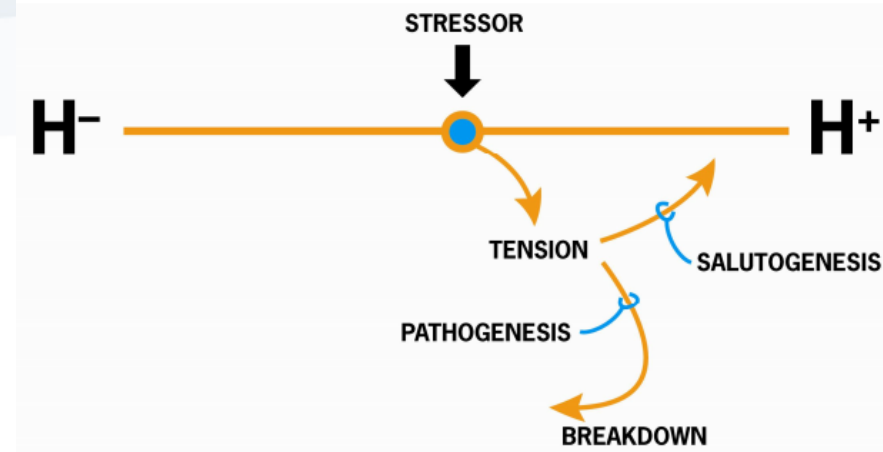
Twin studies have estimated an overall heritability of posttraumatic stress disorder (PTSD) ranging from 32 to 38% (Southwick et al., 2012)

*“Things turn out best for those who
make the best of how things turn out.”*

Jack Buck

Models of Hardiness/Resilience

- Salutogenesis/Sense of Coherence (Antonovsky, 1979)
- Post-Traumatic Growth (Tedeschi & Calhoun, 2004)
- Job Burnout (Maslach, 1978; 2001)
- Personality Hardiness (Kobasa, 1979)
- Grit/Toughness (Dienstbier, 1989; Duckworth, 2007)
- Optimism/Positive Affectivity (Seligman, 1990; Segerstrom, 2006)
- Psychological Capital (Avey, Luthans & Jensen, 2009)--self-efficacy, hope, optimism & resilience
- Core Self Evaluation (Judge et al., 1997)--locus of control, neuroticism, self-efficacy, self-esteem
- Repressive Coping (Schwartz et al., 1995)
- Cognitive Hardiness (Nowack, 1999)
- Flourishing (Fredrickson, 2001)—"Broaden & Build" theory of positive emotions
- Subjective and Psychological Well-being (Diener, 2007)



Measuring Cognitive Hardiness/Resilience

Stress Profile / StressScan / Resiliency Inventory <http://talenttools.org>



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ONLINE EVALUATION SYSTEM

The Stress Profile™

The Stress Profile™

By Kenneth M. Nowack, PhD



ENLARGE IMAGE

The Stress Profile™



BENEFITS	Provides Health Risk Alerts and Health Resources for each individual assessed
AGES	Adults
ADMIN TIME	20-30 minutes
FORMAT	Self-report
NORMS	Based on an ethnically diverse sample of more than 1,000 men and women, aged 20 to 68
PUBLISH DATE	1999
QUALIFICATIONS	Level B required. About Qualification Levels
TRANSLATION	Available in Danish, Czech, & Spanish Published Translations

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Is It Really Free?

Yes! We used to sell the TalentTools assessments and psychometrics, but over the years we've retired many of our assessments to focus on our leadership development work. Eventually we will be adding all of our retired assessments to TalentTools and offering them for free, forever.

Free Tool #1: Envisia Resilience Inventory

The Envisia Resilience Inventory is a validated measure of resilience, which has demonstrated association with a wide variety of physical health and psychological outcomes in published studies including depression, job burnout, work/life stress, organizational turnover, job satisfaction, physical injury and cortisol reactivity. The report provides a comparison to over 25,000 adults and provides useful exercises to develop hardiness and resilience.

Free Tool #2: Innate Index

The Innate Index is a new generation five-factor personality (FFM) useful for executive coaching, training, talent selection/promotion, and research. This validated personality assessment consists of 45 adjectives and is normed on over 50,000 leaders, professionals, technical, and administrative employees. The Innate Index provides a comprehensive feedback report with a clear picture of strengths and areas of improvement.

Innate Index Five Factor Personality Model

Conscientiousness



Achievement



Character

Emotional Stability



Resilience



Confidence

Extraversion



Sociability



Energy

Agreeableness



Openness to Experience

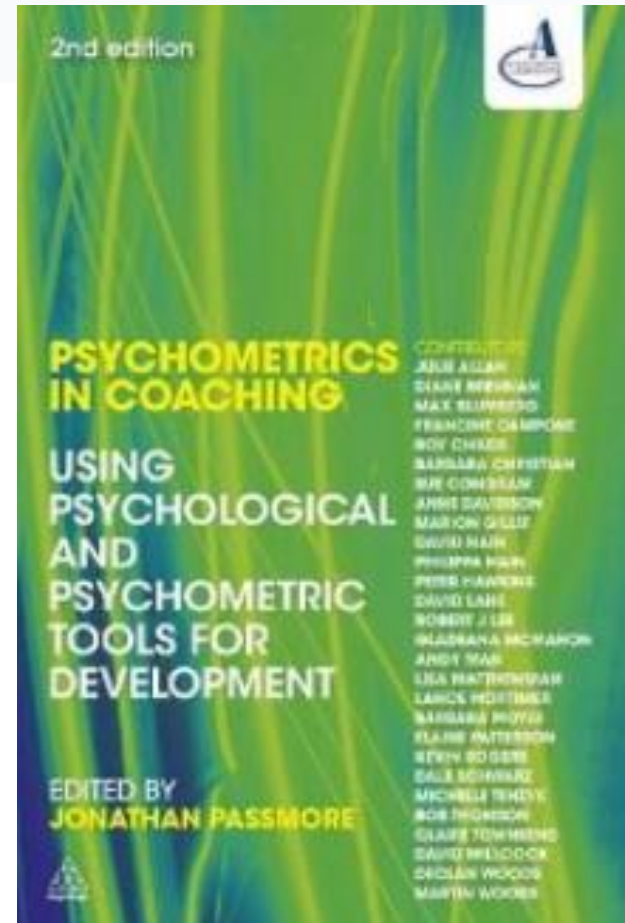


PURCHASE PRODUCT

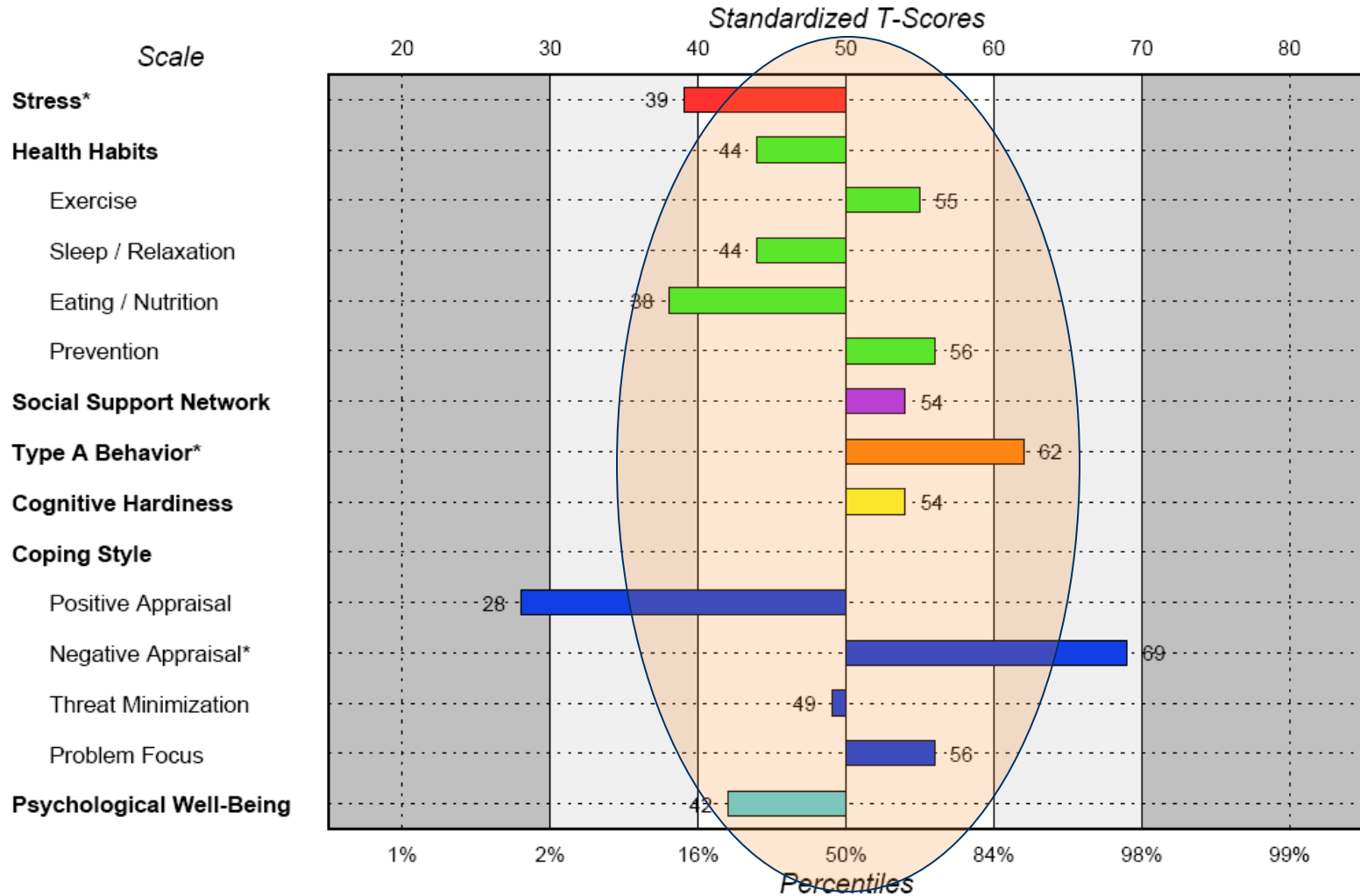
DESCRIPTION

Coaching for Stress: StressScan (Nowack, 2013)

www.koganpage.com



StressScan Summary Report Scales



* High T-scores indicate a health risk. For all other scales, high T-scores indicate strengths, and low T-scores indicate health risks.

Cognitive Hardiness Inventory (Nowack, 1994)

- 30 questions derived from the published Stress Profile (Western Psychological Services)
- High internal consistency reliability of 0.84
- Test re-test reliability of .94 (three-week period)
- Demonstrated significant associations with a variety of organizational, physical and psychological health outcomes including:
 - Absenteeism
 - Job Burnout
 - Depression
 - Hospitalization
 - Happiness/Subjective Well-Being
 - Job Performance
 - Cortisol Reactivity
 - Goal Accomplishment

Cognitive Hardiness and FFM Correlations

Cognitive Hardiness and NEO Correlations (Mashihi, S., 2003; N=130)

	Emotional Stability	Conscientiousness	Extraversion	Agreeableness	Openness
Cognitive Hardiness	-.64*	.44*	.44*	.46*	-.02

Cognitive Hardiness and BFI Correlations (Barazza & Zak, 2009; N=120)

	Emotional Stability	Conscientiousness	Extraversion	Agreeableness	Openness
Cognitive Hardiness	-.47*	.38*	.37*	.41*	.239

Cognitive Hardiness/Resilience Inventory

Stress Profile Scale (WPS; Nowack, 1996)

WHAT IS BEING MEASURED

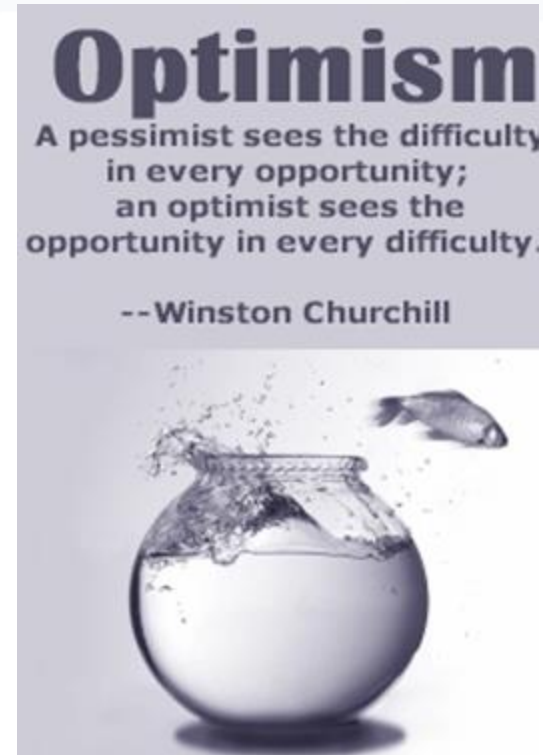
- **Theoretical Construct: Personality Hardiness (Kobasa, 1979); Sense of Coherence (Antonovsky, 1979)**
- **A set of pervasive attitudes and beliefs that include:**
 - View change as a challenge, rather than a threat
 - Are committed, rather than alienated, with their activities a work and home
 - Possess a more internal, rather than external, locus of control
 - Possess an optimistic explanatory style by appraising bad events as relatively external, unstable and specific

WHAT HIGH SCORES MEAN

- **High scores suggest a general optimistic attitude and sense of resilience compared to those with low scores**

IMPLICATIONS

- **Hardy individuals who experience stress report significantly less illness, job burnout, and psychological distress**



Resilience Inventory Interpretation

RESILIENCE



INTERPRETATION OF YOUR SCORE

Very High	t-score above 70 (about 98% of the people who took Envisia Resilience Inventory got a lower score on this scale)
High	t-score above 60 (about 84% of the people who took Envisia Resilience Inventory got a lower score on this scale)
Moderately High	t-score above 55 (about 69% of the people who took Envisia Resilience Inventory got a lower score on this scale)
Average	t-score equal to 50 (about 31% of the people who took Envisia Resilience Inventory got a higher score on this scale and about 31% got a lower score)
Moderately Low	t-score below 45 (about 69% of the people who took Envisia Resilience Inventory got a higher score on this scale)
Low	t-score below 40 (about 84% of the people who took Envisia Resilience Inventory got a higher score on this scale)
Very Low	t-score below 30 (about 98% of the people who took Envisia Resilience Inventory got a higher score on this scale)

“I feel my best when I’m happy.”

Winona Ryder

Can Resilience Be Developed?

1. 12-week lifestyle and cognitive-behavioral intervention with MS patients significantly increase resilience

Giesser, B. et al. (2007). *Living Well with Multiple Sclerosis: Lessons Learned from a 12-Week Community Based Quality of Life Program*. Paper presented at 17th Annual Art & Science of Health Promotion Conference, March, 2007, San Francisco, CA

2. Executive coaching over 10 weeks significantly increased resilience and well-being compared to a control group.

Grant, A. et al. (2009). *Executive coaching enhances goal attainment, resilience, and workplace well-being: A randomized controlled study*. *The Journal of Positive Psychology*, 4, 396-407

3. 29 coaches participating in a 12-week training program resulted in reduced anxiety, increased goal attainment and enhanced cognitive hardiness

Grant, A. (2008). *Personal life coaching for coaches in training enhances goal attainment, insight and learning*. *Coaching: An International Journal of Theory, Research and Practice*, 1, 54-70

4. In a randomized controlled design, 56 female high school teachers participated in either a life coaching program for 10 sessions over two terms or a wait list control group and reported significantly higher cognitive hardiness and hope and decrease in depression

Green, S. et al. (2007). *Evidence-based life coaching for senior high school students: Building hardiness and hope* *International Coaching Psychology Review*, 2, 24-32

5. In a randomized controlled design, 44 high school teachers participated in either a life coaching program for 10 sessions over 20 weeks reported significantly higher cognitive hardiness, goal attainment, mental health and workplace well-being compared to a wait list control group

Grant et al., (2010). *Developmental coaching for high school teachers: Executive coaching goes to school*. *Consulting Psychology Journal: Practice and Research*, 62, 151-168

6. For a period of twelve weeks, 11 participants listened to a self-administered hypnosis stress reduction program resulting in a significant decrease in the inflammatory marker IL-6 and negative appraisal coping

Schoen, M. & Nowack, K. (2013). *Reconditioning the stress response with hypnosis CD reduces the inflammatory cytokine IL-6 and influences resilience: A pilot study*. *Complementary Therapies in Clinical Practice*. <http://dx.doi.org/10.1016/j.ctcp.2012.12.004>

7. In a cognitive behavioral coaching program consisting of four, 90-minute sessions with 31 executives showed significant increases in cognitive hardiness at the conclusion of the program while the organization was undergoing dramatic change

Grant, A. (2013). *The Efficacy of Executive Coaching in Times of Organisational Change*. *Journal of Change Management*, DOI: 10.1080/14697017.2013.805159

Developing Resilience

Resilience Factors	Coaching Interventions
<p>Neurobiological: Effective regulation of the hypothalamus-pituitary axis (HPA) to stress; Capacity to regulate limbic reactivity to stress and prefrontal executive function</p>	<p>Stress inoculation training (SIT); Mindfulness based stress reduction meditation</p>
<p>Physical Health: High quality and adequate quantity of sleep; Regular physical activity; Healthy nutritional habits</p>	<p>Wellness/lifestyle management interventions</p>
<p>Social: Satisfaction and utilization of one's social support network; Strong social skills; Resilient role models</p>	<p>Enhancement of social and emotional competence (EI); Strengthening of social support networks</p>

Behavioral Approaches to Enhance Resilience

1. Sleep More

2. Increase Physical Activity

3. Develop/Strengthen your social support network

4. Practice Gratitude

5. Fall Upwards

Behavioral Approaches to Enhance Resilience

6. Develop a “Catastrophe” vs. “Annoyance Mindset

7. Be Hopeful and Optimistic

8. Move Towards Goals...Or Quit

9. Practice Forgiveness

10. Identify/Deploy “Signature Strengths”

“I want to die in my sleep like my grandfather—not screaming and yelling like the passengers in his car.”

Will Shriner

Three Stages of Resiliency



Understanding



Managing



Growing



Resilience Goal Setting Options

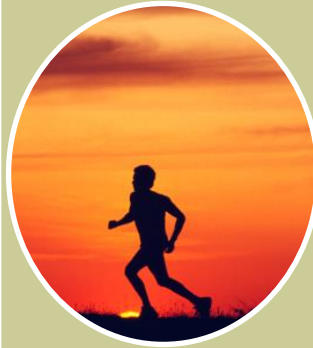
One Time—Sometime—All The Time (BJ Fogg, 2014)



**Stop
Doing**



**Do
Less**



**Start
Doing**



**Do
More**



**Do
Differently**



Enhancing Resilience

Two New Studies....

Complementary Therapies in Clinical Practice xxx (2012) 1–6



Contents lists available at SciVerse ScienceDirect

Complementary Therapies in Clinical Practice

journal homepage: www.elsevier.com/locate/ctcp



Reconditioning the stress response with hypnosis CD reduces the inflammatory cytokine IL-6 and influences resilience: A pilot study

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ABSTRACT

Keywords:
Resilience
Hypnosis
Stress
Inflammation
Cytokines
Coping

Aim: The aim of this investigation was to measure the impact of a self-administered hypnosis intervention on resilience and the inflammatory cytokine IL-6.
Method: Over a period of 12 weeks, 11 participants listened to a self-administered hypnosis stress reduction program designed to recondition and improve participants' emotional and physical reactions to perceived work and life stressors. Subjects were administered subjective measures of coping, resilience, and stress tolerance, as well as, IL-6, an objective blood measure of inflammatory activity.
Results: After 12 weeks, participants were observed to have a significantly lower IL-6 serum level from baseline. Further, participants reported a significant decrease in the use of negative appraisal coping (such as, self-deprecating statements, perfectionism, and catastrophic and pessimistic thinking), and an improvement in eating/nutritional habits following the intervention. Baseline eating/nutritional habits and threat minimization coping significantly predicted a change in serum IL-6 over the course of the intervention in stepwise hierarchical regression analyses.
Conclusion: Pilot study provides support that a brief self-administered CD hypnosis stress reduction program can modify a physiological measure of inflammation (IL-6), and improve coping and resilience in the face of work and life stress.

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1. Introduction

It is well established that psychological stress can lead to adverse physical and psychological health changes.^{1,2} Chronic stress has been clearly associated with systemic inflammation and an overproduction of pro-inflammatory cytokines.^{3–5} Chronic and high levels of inflammation and its cytokine precursors have been linked to long term morbidity and a variety of acute and chronic conditions including heart disease,⁶ autoimmune disorders,⁷ cancer,⁸ and depression.⁹ Similarly, inflammation and chronic cytokine production has been shown to be associated with mortality as well in recent studies.¹⁰

Further, it has become evident that pronounced emotional reactions such as anxiety and fear are directly linked to inflammatory changes in the body as well.^{11,12} Additionally, emotions such as anger, hostility, and loneliness are associated with an escalation of inflammatory activity in the body.^{13,14}

More recently, the inflammatory response has been implicated in influencing resilience. Resilience is the ability to effectively cope

and bounce back after being confronted with challenges and adversity.¹⁵ The inflammatory response has been found to elevate the risk of Post-Traumatic Stress Disorder (PTSD).¹⁶ As a result, the inflammatory response has been hypothesized as a mediator of PTSD risk and resilience.¹⁵

Research conducted on the inflammation stress connection has focused on several key protein indicators with the inflammatory cytokines most frequently investigated including Interleukin 6 (IL-6) and Tumor Necrosis Factor alpha (TNF- α). A growing number of investigations have evaluated different stress modulating interventions and have observed subsequent decrements in inflammatory cytokines including physical activity/exercise,¹⁷ music,¹⁸ relaxation training,¹⁹ meditation,²⁰ and online programs.^{21,22}

Several studies have evaluated the effect of hypnosis on modulating inflammatory cytokines. For example, Mawdsley, Jenkins, Macey, et al.²³ found that hypnosis treatments with ulcerative colitis participants led to a significant decrease in IL-6. Kiecolt-Glaser and her colleagues²⁴ examined immune dysregulation in 31 medical students who were treated with hypnotic relaxation for acute examination stress. They found that frequent hypnotic relaxation practice was associated with changes in CRP, T- γ

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A randomized trial of stress management for the prevention of new brain lesions in MS

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Abstract

Full Text (PDF)

Also available: PODCAST Accompanying Editorial Argentine Translation

ABSTRACT

Objectives: This trial examined the efficacy of a stress management program in reducing neuroimaging markers of multiple sclerosis (MS) disease activity.

Methods: A total of 121 patients with relapsing forms of MS were randomized to receive stress management therapy for MS (SMT-MS) or a wait-list control condition. SMT-MS provided 16 individual treatment sessions over 24 weeks followed by a 24-week post-treatment follow-up. The primary outcome was the cumulative number of new gadolinium enhancing (Gd+) brain lesions on MRI at weeks 8, 16, and 24. Secondary outcomes included new or enlarging MRI lesions, brain volume change, clinical exacerbation, and stress.

Results: SMT-MS resulted in a reduction in cumulative Gd+ lesions ($p = 0.04$) and greater numbers of participants remained free of Gd+ lesions during the treatment (76.8% vs 54.7%, $p = 0.02$), compared to participants receiving the control treatment. SMT-MS also resulted in significantly reduced numbers of cumulative new T2 lesions ($p = 0.006$) and a greater number of participants remaining free of new T2 lesions (69.5% vs 42.7%, $p = 0.006$). These effects were no longer detectable during the 24-week post-treatment follow-up period.

Conclusions: This trial indicates that SMT-MS may be useful in reducing the development of new MRI brain lesions while patients are in treatment.

Classification of evidence: This study provides Class I evidence that SMT-MS, a manualized stress management therapy program, reduced the number of Gd+ lesions in patients with MS during a 24-week treatment period. This benefit was not sustained beyond 24 weeks, and there were no clinical benefits.

Trial registration: ClinicalTrials.gov, number NCT00147446.

Received August 11, 2011.

Accepted

Momentor for Wellness/Health Coaching and Developing Resilience



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Research suggests that implementation intentions coupled with reminders result in greater behavior change.

***“Dreams don’t work
unless you do.”***

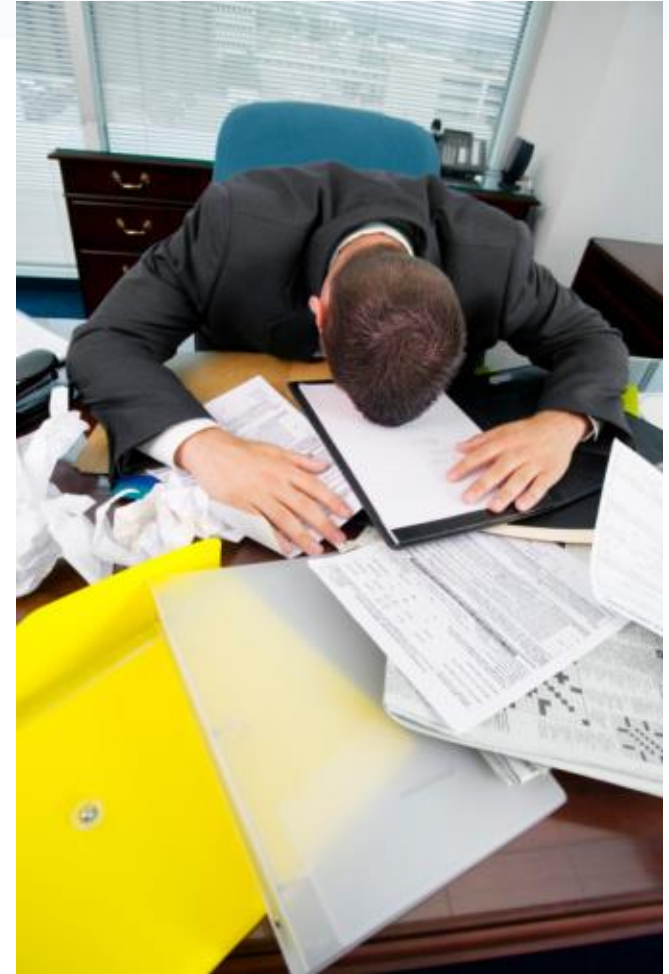
Anonymous

Resilience and Sleep: What We Know and Why It is Important

Envisia Learning Sleep Results

5-Item Sleep/Rest Scale *Stress Profile (WPS)*

- Sample of over 25,000 working adults in diverse industries
- 35.7 percent reported “often” or “always” *receiving less sleep than required* because of staying up too late or getting up too early
- 23 percent reported being *tired during the day* due to poor quality sleep (either falling asleep took too long or unable to stay asleep)
- 8 percent reported *missing an entire night* or large proportion of sleep because of work or play activities in the last 30 days



Sleep Drive vs Body Clock

- Sleep is regulated by two neural systems: *sleep/wake homeostasis* and the *circadian biological clock*
- “Free running” experiments suggest our sleep clock is about *25 hours* but light and social zeitgebers reset it
- Circadian rhythm dips and rises with the *strongest sleep drive* between *2:00-4:00 am* and in the afternoon between *1:00-3:00 pm* (variation if you are a “lark” or “night owl”)



*"The early bird gets the worm, but the
second mouse gets the cheese."*

Stephen Wright

The Architecture of Sleep

Awake
Beta waves



Drowsy, relaxed
Alpha waves



Stage N1 sleep
Theta waves



Stage N2 sleep
Sleep spindles



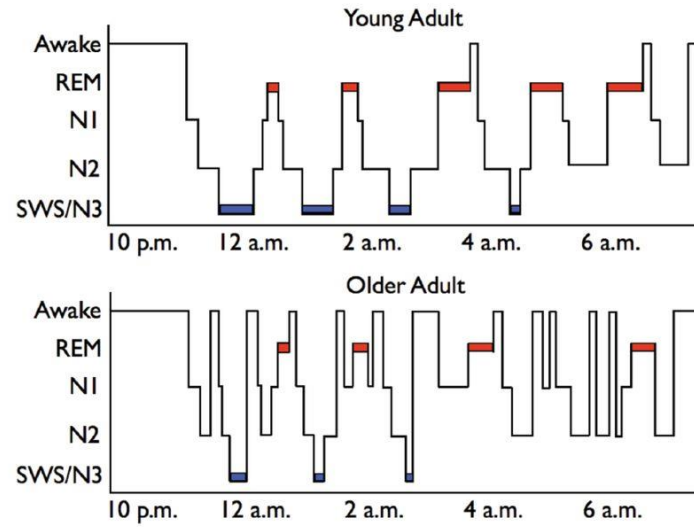
Stage N3 sleep
Delta waves



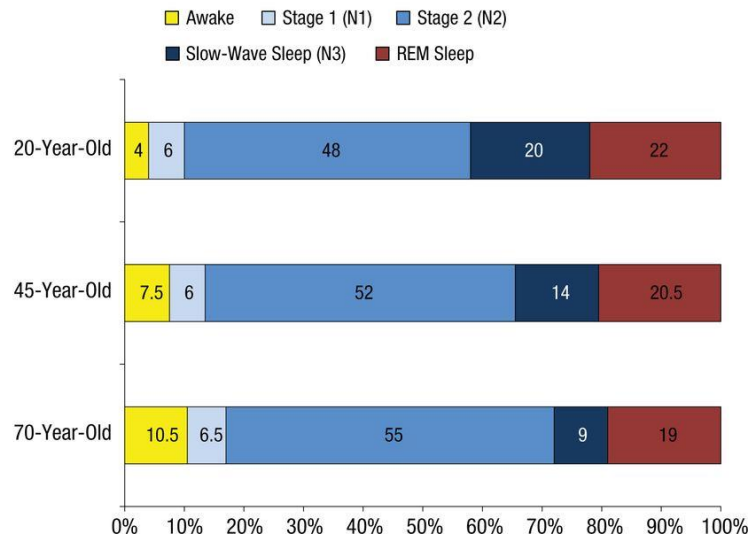
REM sleep
Fast, random



a



b



“If sleep does not serve an absolutely vital function, then it is the biggest mistake the evolutionary process has ever made.”

Allan Rechtschaffen

Why Do We Need Sleep?

Across an 85-year life span, an individual may sleep nearly *250,000 hours* or over *10,000 full days*

- Tissue restoration (Adam & Oswald, 1977)
- Brain-metabolite (β -amyloid) clearance (Xie et al., 2013)
- Activation of genes involved in creating of oligodendrocyte precursor cells or myelin (Bellesi et al., 2013)
- Stabilization and integration of memory (Scullin et al. 2015)



How Much Sleep Do We Really Need?



- In “free running” experiments, **95% sleep between seven and eight hours** out of every 24. Another 2.5 percent sleep *more* than eight hours. That means just 2.5 percent of us require less than 7 hours of sleep a night to feel fully rested (1 out of every 40)
- In Anders Ericcson’s famous study of violinists, the *top performers* slept an *average of 8 ½ hours* out of every 24, including a 20 to 30 minute midafternoon nap

Short and Long Sleepers

Depression

Bae, C. (2011). The good life: Good sleepers have better quality of life and less depression. *Sleep*, 34, A265.

Coronary heart disease (short or long)

Yong, et al., (2013). Sleep Duration and Chronic Diseases among US Adults Age 45 Years and Older: Evidence From the 2010 Behavioral Risk Factor Surveillance System (2013). *Sleep*, DOI: 10.5665/sleep.3028

Coronary heart disease (short or poor sleepers)

Hoevenaar-Blom et al., (2011). Sleep duration and sleep quality in relation to 12-year cardiovascular disease incidence: the MORGEN Study. *Sleep* 34, 1487-1492.

Premature Death

15 year longitudinal study of over 70,000 men and women;
Short sleepers (< 6 hrs) had significantly *higher* mortality than normal; Longer sleepers who reported little exercise were high risk for CHD but not cancer

Bellavia, et al., (2013). Sleep Duration and Survival Percentiles Across Categories of Physical Activity. *American Journal of Epidemiology*, 179, 484-491.

Colds (Participants who averaged 5-6 hours of sleep were 4 times more likely to develop a cold)

Prather, A. Janicki-Deverts, D., Hall, M. & Cohen, S. (2015). Behaviorally Assessed Sleep and Susceptibility to the Common Cold. *SLEEP*, 2015; DOI: 10.5665/sleep.496



Effects of Poor Quality/Quantity of Sleep

Work Performance

- Diminished Information Processing Skills (Maddox et al., 2009)
- Poor Conflict Resolution (Gordon & Chen, 2014)
- Impaired Attention (Doran, Van Dongen & Dinges, 2001)
- Reduced Productivity (Hossain & Shapiro, 2002)
- Impaired Safety (Mellor & St. John, 2012)
- Increased Illness Related Absenteeism (Daley et al., 2009)

Health/Well-Being

- Impaired Immune Functioning (Lange, et al., 2003)
- Susceptibility to Infectious Illness (Cohen et al., 2009)
- Inflammation (Irwin et al., 2008; Mills et al., 2007)
- Coronary Artery Calcification (King et al., 2008)
- All-cause Mortality (Dew et al., 2003; Gallicchio et al., 2009)

"I hate it when my foot falls asleep during the day because that means it's going to be up all night."

Steven Wright

The Power of Napping

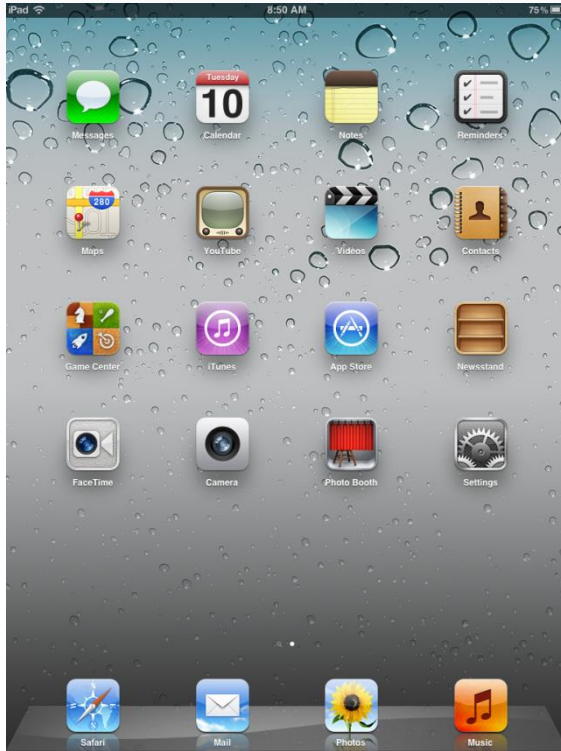
- A 1995 NASA study found that a 26-minute nap improved performance 34% and alertness 54%
- A 60-minute nap improves alertness for 10 hours
- Naps of 90-120 minutes encompass all stages of sleep but may lead to sleep inertia

Rosekind et al., (1995). Alertness management: strategic naps in operational settings. *Journal of Sleep Research*, 4, 62-66.



Avoid Before Bed.....

Bright (Blue light) or “Netlag”



Chang et al., (2014). Evening use of light-emitting eReaders negatively affects sleep, circadian timing, and next-morning alertness. *PNAS*, 112, 1232-1237. doi: 10.1073/pnas.1418490112

Higuchi et al., (2005). Effects of playing a computer game using a bright display on presleep physiological variables, sleep latency, slow wave sleep and REM sleep. *Journal of Sleep Research*. 14, 267–273.

Higuchi et al., (2003). Effects of VDT tasks with a bright display at night on melatonin, core temperature, heart rate, and sleepiness. *Journal of Applied Physiology*, 94, 5, 1773–1776.

Alcohol (REM Rebound)



Ebrahim et al., (2013). Alcohol and Sleep I: Effects on Normal Sleep Alcoholism: *Clinical & Experimental Research*, 37, 539-549.

8 Sleep Deprivation Facts....

Sleep Facts #1

Sleep Deprived People Look Unattractive

- 23 participants were photographed after a normal night's sleep (eight hours) and after sleep deprivation (31 hours of wakefulness after a night of reduced sleep)
- Sleep deprived participants were rated as *significantly* less healthy, less attractive, and more tired compared with when they are well rested

Axelsson et al., (2010). Beauty sleep: experimental study on the perceived health and attractiveness of sleep deprived people. *British Medical Journal*, 341, c6614



Sleep Facts #2

Things Aren't Funny When You Are Sleep Deprived



- In 54 participants, humor appreciation for cartoon stimuli was enhanced by modafinil (provigil) relative to both placebo and caffeine, but there was *no effect* of any stimulant medication on the appreciation of verbal humor during sleep loss

Kilgore, et al. (2006). The Effects of Caffeine, Dextroamphetamine, and Modafinil on Humor Appreciation During Sleep Deprivation. *Sleep*, 29, 841-847

*"Never got to bed mad.
Stay up and fight."*

Phyllis Diller

Sleep Facts #3

Sleepless Nights Mean Worse Fights

- In study 1, 87 participants reported more conflict on days *following poor night* of sleep controlling for conflict the previous day
- In study 2, 71 couples were rated on previous night of sleep and evaluated during a conflict interaction--Participants reported being *most successful* at resolving conflict when both partners were well rested



Gordon, A. & Chen, S. (2014). The Role of Sleep in Interpersonal Conflict: Do Sleepless Nights Mean Worse Fights? *Social Psychological and Personality Science*, 5, 168-175

Sleep Facts #4

Happy Affect Might Contribute to Poor Sleep



Ong, A. et al., (2014). Linking stable and dynamic features of positive affect to sleep. *Annals of Behavioral Medicine*, 46, 52-61

- Analyses from 100 participants selected from the National Survey of Midlife in the US (MIDUS II) found that high *trait positive affectivity* was associated with greater morning rest and better overall sleep quality
- In contrast greater *PA reactivity* (magnitude of change in daily PA in response to stress) was significantly associated with poor quality and quantity of sleep

Sleep Facts #5

You Are More Likely to Sleep Around...When You Are Sleep Deprived

- Adults engaged in less unethical behavior (e.g., less lying and cheating) on tasks performed in the morning than on the same tasks performed in the *afternoon*

Kouchaki, M. & Smith, I. (2014). The Morning Morality Effect: The Influence of Time of Day on Unethical Behavior. *Psychological Science*, 25, 95-102. doi: 10.1177/0956797613498099

- People are more inclined to cheat on a task at different times of the day depending on their individual body clocks, or “chronotypes”

Gunia, et al., (2014). The Morality of Larks and Owls: Unethical Behavior Depends on Chronotype as Well as Time of Day. *Psychological Science*, 25, 2272-2274.

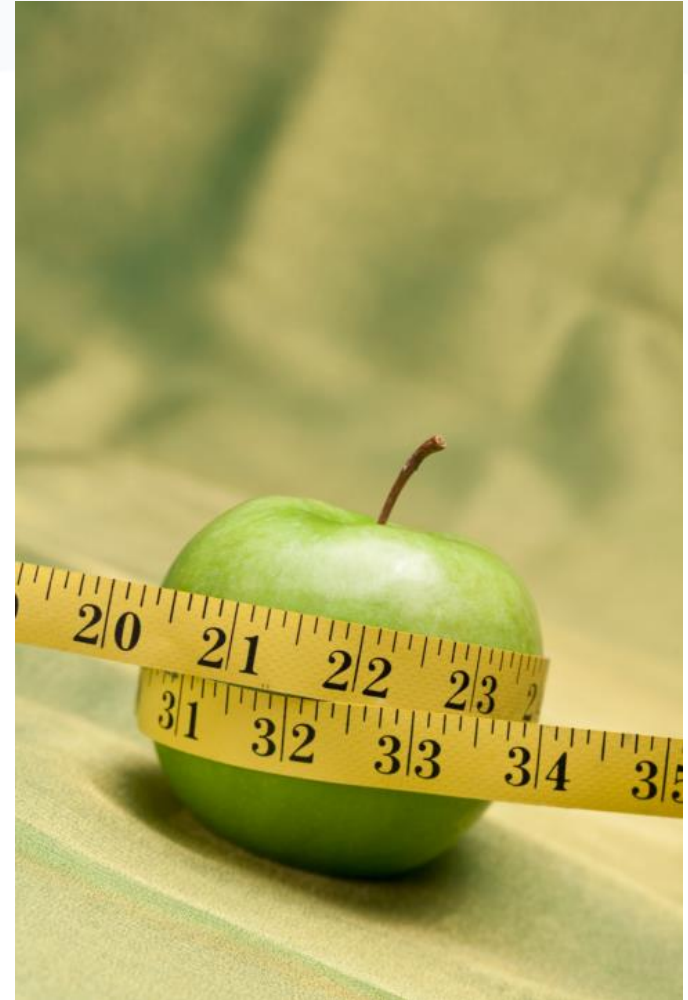
- *Lack of sleep* influences moral decision making and was moderated by *emotional intelligence* (i.e., those with higher EI were less susceptible to changes in moral judgments as a function of sleep loss)

Killgore, et al., (2007). The Effects of 53 Hours of Sleep Deprivation on Moral Judgment. *Sleep*, 30, 345-352.

Sleep Facts #6

Light Sleepers are Heavier

- Two hormones related to appetite, metabolism and calorie burning change during sleep (*leptin increases* and *ghrelin decreases*) and lack of sleep **lowers** leptin production
- In a study by Harvard researchers involving 68,000 middle-aged women followed for 16 years, those who *slept five hours or less* each night were found to weigh 5.4 pounds more — and were **15 percent more likely to become obese** — than the women who slept seven hours nightly (Patel, 2008)
- 11 healthy volunteers who spent two 14-day stays in a sleep laboratory limited to 5.5 hours of sleep a night and during the other they got 8.5 hours of sleep -- the subjects ate the same amount of food at meals but **consumed an average of 221 more calories** from snacks than they did when they were getting more sleep (Nedeltcheva, 2009)



Sleep Facts #7

Telepressure Causes Poor Sleep

- Workplace **telepressure** (urge to quickly respond to emails, texts & voicemails at all hours) appears to be *distinct* from other personal (job involvement, affective commitment) and work environment factors
- **Telepressure** predicts job burnout (physical and cognitive) and absenteeism
- A recent study found a *significant* association between **telepressure** and poor sleep quality ($r = .18$) and inconsistency ($r = .19$) but not quantity



Barber, L. K., & Santuzzi, A. M. (2014, November 3). Please Respond ASAP: Workplace Telepressure and Employee Recovery. *Journal of Occupational Health Psychology*. Advance online publication. <http://dx.doi.org/10.1037/a0038278>

Sleep Facts #8

zzzzMail



- Study explored Smartphone use at home, use at work checking of text messages and overall use for 101 adults
- Poor sleep duration and quality were *significantly* correlated with:
 - Use of Smartphone for *personal* use ($r = -.29$)
 - Use of Smartphone for *work* related activities ($r = -.43$)
 - Checking Smartphone for *missed* text messages/calls ($r = -.43$)
 - *Overall* Smartphone use ($r = -.42$)

Balding, R. & Nowack, K. (2013). The Relationship between Smartphone use in the Workplace and Personal use on Perceived Stress. Poster Presented at the American Psychological Association Work, Stress and Health 2013 Conference, Los Angeles, CA

"I bought a self-learning record to learn Spanish. I turned it on and went to sleep; the record got stuck. The next day I could only stutter in Spanish."

Steven Wright

*“Live each day as if it is
your last for one day it will be.”*

Unknown

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