THE NEUROSCIENCE OF TRUST, EMPATHY AND
PSYCHOLOGICAL SAFETY FOR HIGHLY
EFFECTIVE TEAMS

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Trust in the Workplace
<table>
<thead>
<tr>
<th>Competency</th>
<th>R Square (F Change &lt; .01)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem Analysis</td>
<td>.21</td>
</tr>
<tr>
<td>Team Building</td>
<td>.23</td>
</tr>
<tr>
<td>Drive for Results</td>
<td>.24</td>
</tr>
<tr>
<td>Interpersonal Trust</td>
<td>.25</td>
</tr>
</tbody>
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Our Trust Research with Executives (N = 30,227)

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Leadership Trust (p &lt; .01)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Performance Ratings</td>
<td>.43**</td>
</tr>
<tr>
<td>Overall Potential for Advancement</td>
<td>.39**</td>
</tr>
<tr>
<td>Risk of Career Failure</td>
<td>.15**</td>
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</table>
A 2016 meta-analysis by Bart de Jong at the University of Amsterdam (112 studies representing 7,700 teams) explored the relationship between team member trust and performance. Results found that increased team member trust does significantly enhance team performance (average effect size of .30). When team members trust one another, they are likely to openly share perspectives and work through differences.

Christina Breuer and colleagues at the University of Munster in Germany conducted a meta-analysis of 52 studies (1850 teams) which investigated the role of trust in virtual teams.

The meta-analysis shows a **strong and positive relationship between trust and virtual team effectiveness**, particularly on team attitudes and on the degree to which individuals are willing to share information and knowledge.

The researchers found a **moderate positive relationship** between **team trust and team performance** (task and contextual performance), as measured subjectively either by team members or supervisors, or by objective indicators.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Low vs. High Trust Quartile Percentage Difference</th>
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</thead>
<tbody>
<tr>
<td>Engagement (Utrecht Work Engagement Scale)</td>
<td>+76%</td>
</tr>
<tr>
<td>Joy at Work</td>
<td>+60%</td>
</tr>
<tr>
<td>Job Satisfaction</td>
<td>+56%</td>
</tr>
<tr>
<td>Productivity</td>
<td>+50%</td>
</tr>
<tr>
<td>Job Retention (12-month)</td>
<td>+50%</td>
</tr>
<tr>
<td>Life Satisfaction</td>
<td>+29%</td>
</tr>
<tr>
<td>Sick Days</td>
<td>-13%</td>
</tr>
<tr>
<td>Job Burnout (Maslach Burnout Inventory)</td>
<td>-40%</td>
</tr>
</tbody>
</table>

Psychological Safety
Interpersonal Trust
Psychological Safety/Interpersonal Trust Lenses

Focus on How I Behave Towards Others

Psychological Safety

Focus on How Others Behave Towards Me

Interpersonal Trust
History of Psychological Safety

1. Schutz (1958; FIRO-B)
2. Schein & Bennis (1965; “unfreezing” teams)
3. Kahn (1990; employee engagement)

Summary: Self-Determination Theory is a theory of motivation and personality that addresses three universal, innate and psychological needs: competence, autonomy, and psychological relatedness. Originators: Edward L. Deci and Richard M. Ryan, psychologists at the University of Rochester.

6. Edmondson (2004; 2018); Radecki, 2018)
7. Lance Frazier, et al., Creighton University (2017; Meta-analysis) 136 independent samples representing over 22,000 individuals and nearly 5,000 groups

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What are the Building Blocks of Psychological Safety/Interpersonal Trust?
Envisia Learning Psychological Safety/Trust Pillars Framework

Psychological Safety/Interpersonal Trust Pillars

• Consistent
• Capable
• Caring
• Candor
Trust and Culture

Trust and Culture
Cognitive vs. Affective Trust

Cognitive Trust

- U.S.
- Norway
- UK

Affective Trust

- China
- Turkey
- Mexico
- Spain
- Poland
- UK
- Norway
- U.S.

Book: The Culture Map: Breaking through the Invisible Boundaries of Global Business
The Neurobiology of Psychological Safety
“Sticks and stones can break my bones but words can never hurt me.”

Unknown
Social pain activates brain regions key in the response to physical pain and correlates with self-reported distress


Four studies showed that recall of past socially painful situations elicits greater pain than reliving a past physically painful event and has greater negative impact on cognitively demanding tasks

“Sticks and stones can break my bones but Tweets and posts can hurt much more.”

Unknown
The Neurobiology of Trust and Empathy
The “Dark Side” vs. “The Force”
Activating the primary threat and reward circuitry takes $1/5^{th}$ of a second (we respond before we think 80 – 100 x faster)

Stress Response: Tend and Befriend

Women 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)


Oxytocin appears to be a key neurological contributor to empathy, trust and collaboration.

Women leaders have been shown to use more transformational and participative leadership styles relative to men and this may have a biological basis to it mediated by oxytocin.


Female leaders are **less popular** and are judged more harshly than male counterparts.

Most people associate women with **communal traits** such as affection, compassion, kindness, helpfulness, and gentleness.

Women’s success in managerial roles is more often attributed to **luck or effort** than to ability and failures tend to be ascribed to **lack of ability**.

Trust is a Neurotransmitter and Hormone

- The amount of oxytocin (OT) release produced predicts reciprocal trustworthiness and empathy.
- Other neurochemicals have been ruled out as a contributor to trust behaviors.
- The "care for others" effect of OT can occur at a distance through movies and social media (Zak, 2012).
The Neuroscience of Trust—Trust Game Research

Decision Maker 1

Decision Maker 2

High Trust = All or some $

Low Trust = No $

High Reciprocator

Unconditional Non-Reciprocator

Time 1

Time 2

$$

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Flaws in the brain’s ability to respond to oxytocin might contribute to social disorders

1. About 2% of all participants were particularly **untrustworthy** despite elevated basal levels of oxytocin

2. Untrustworthy individuals have personality traits similar to psychopaths (indifferent to or non-reactive to other’s suffering)


1,300 healthy young Chinese adults in Singapore in a non-clinical setting were studied

Those with higher expression of **CD38 and CD157** a gene that governs the release of OT, had more close friends and better social functioning

Variation in CD38/CD157 accounted for **14 percent of the variance** in social skills in the study population (a rather large size)

Those with lower CD38/CD157 expression were found to engage in **fewer social interactions**, were less socially adept, and had fewer close friends

Oxytocin Enhancers and Inhibitors

Women, on average, produce more oxytocin (OT) than men

**INHIBITORS**

- Progesterone
- Epinephrine (in high stress situations we switch to a survival mode)
- Testosterone
  - Decreases as men age when they are in committed relationships and have children but rise with social status
  - Released 5 to 10 times higher in males
  - Synthetic testosterone administered to men, relative to a placebo, to act more selfish and entitled

**ENHANCERS**

- Estrogen
- ACTH (moderate stress)
Oxytocin Meta-Analysis Research

Bakermans-Kranenburg et al., (2013)
- 19 studies
- OT leads to more trust
- OT effects are weaker, absent or mixed when partner is unknown

Wigton et al., (2015)
- 21 studies
- Neural activation greatest in the temporal lobes
- Left insula in both sexes shows most activation

Van IJzendoorn et al., (2012)
- 23 studies
- Intranasal oxytocin administration enhances the recognition of facial expressions of emotions, and that it elevates the level of in-group trust

Cardoso et al., (2014)
- 18 studies
- Oxytocin administration showed greater attenuation of the cortisol in response to laboratory tasks that strongly activated the HPA-axis

Nave et al., (2015)
- Conducted a meta-analysis of 7 intranasal OT trust game (481 participants) showed that the combined effect size of intranasal OT on trust was small and not reliably different from zero
1. Oxytocin can produce **positive, neutral, or negative effects** depending on the context and the person.

2. Intranasal oxytocin may **reduce** trust in people who are **socially anxious**, have **borderline personality disorder** and people with **trait aggressiveness**.

3. While oxytocin increases in-group trust, it can produce **out-group bias**, envy and schadenfreude (De Dreu et al., 2012).


In-Group Identities and Biases
The Bias Iceberg (Nowack & Zak, 2020)

The Bias Iceberg

Mindful Choices
(Conscious Drivers)

Pre-frontal/
Neocortex

Mammalian
Brain
(hippocampus,
amygda,

Preconscious Bias
(Personality Based Drivers)

Unconscious Bias
(Neurobiological Based Drivers)
In-Group Bias: Race

- 3-month-old infants, not newborn infants, demonstrate racial bias in favor of members of their own race and by looking longer at own-race faces

Racial bias begins at younger age, without experience with other-race individuals

- Six to eight-month-old infants followed the gaze of members of their own race more than other-race individuals to videos showing an animal image

Infants are biased to learn information from own-race adults as opposed to other-race adults


In-Group Bias: Race

- **Empathic** neural responses increase significantly when participants viewed *faces of other races* with participants who had been born in or immigrated as a child (between 1 and 9 years of age) to a Western country populated predominantly by Caucasian people or in new immigrants (5 years or more in society).

Zuo, X. & Han, S. (2013). Cultural experiences reduce racial bias in neural responses to others’ suffering. *Culture and Brain, 1*, 34-46, 10.1007/s40167-013-0002-4

Cao, Y. et al., (2015). Racial bias in neural response to others’ pain is reduced with other-race contact. *Cortex, 70*, 68-78. https://doi.org/10.1016/j.cortex.2015.02.010
Neural responses for empathy and distress were recorded (fMRI) with 130 participants observing six hands being pricked with a needle or cotton swab.

Religious labels were placed above the hands (e.g., Christian, Muslim, Jewish, Atheist, etc.).

Empathic neural responses decreased significantly when participants viewed hands pricked of other religions that differed from their own.

A single word label is enough to influence how much you care about others.

David Eagleman (2015). The Brain with David Eagleman, Episode 5 In-Group/Out-Group, PBS.
In-Group Bias

- Gender
- Age Nationality
- Ethnicity
- Physical Abilities
- Height
- Weight
- Appearance
- Hobbies
- Speech/Voice
- Socioeconomic status
- Sexual orientation
- Education
- Health
- Occupation
- Political Affiliation
- Religion
Individual-Level Approaches to Minimizing Bias

1. Enhance an **empathy mindset** through training (Shuman, Zaki, & Dweck, 2014; Halperin, Goldenberg, et al., 2011, 2016)

2. Practice empathy-based **perspective taking** (Ames et al., 2008)

3. Practice **compassion based** mindfulness meditation (Valk et al., 2017)

4. Reflect on decisions involving others each day and those you might exclude

5. Make a commitment to **interact** with someone you perceive as different (step outside your comfort zone) and explore similarities and differences
Building High Trust/Safe Cultures
The mixed effects of online diversity training

Edward H. Chang, Katherine L. Millman, Dena M. Gromet, Robert W. Rebele, Cade Massey, Angela L. Duckworth, and Adam M. Grant

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Significance

Although diversity training is commonplace in organizations, the relative scarcity of field experiments testing its effectiveness leaves ambiguity about whether diversity training improves attitudes and behaviors toward women and racial minorities. We present the results of a large field experiment with an international organization testing whether a short online diversity training can affect attitudes and workplace behaviors. Although we find evidence of attitude change and some limited behavior change as a result of our training, our results suggest that the one-off diversity trainings that are commonplace in organizations are not panaceas for remedying bias in the workplace.

Abstract

We present results from a large (n = 3,016) field experiment at a global organization testing whether a brief science-based online diversity training can change attitudes and behaviors toward women in the workplace. Our preregistered field experiment included an active placebo control and measured participants’ attitudes and real workplace decisions up to 20 weeks postintervention. Among groups whose average untreated attitudes—whereas still supportive of women—were relatively less supportive of women than other groups, our diversity training successfully produced attitude change but not behavior change. On the other hand, our diversity training successfully generated some behavior change among groups whose average untreated attitudes were already strongly supportive of women before training. This pattern of results is consistent with recent research suggesting that diversity trainings can only produce positive change when there is already some level of support for diversity beforehand.
Organizational-Level Approaches to Building Trust Cultures

1. Provide **feedback to leaders** on practices that can contribute to a high trust team

2. Encourage and reinforce an **appreciation culture** that impacts well-being and engagement (Leiter et al., 2016; Stocker et al., 2019)

3. Encourage **healthy lifestyle practices** in employees to minimize incivility (particularly sleep; Nowack, 2017)

4. Articulate company **values around empathy and tolerance** for differences in the initial interview/selection processes (Nook, 2016)

5. Screen, **select and promote** for high civility and emotional/social competence (Porath, 2016)

6. Evaluate current selection, promotion, succession, evaluation and **hiring processes** (use practices that provide unambiguous information about candidates’ qualifications)

7. Utilize **standardized** selection tools and procedures, and other methods that predict future job performance

8. Mandate a diverse slate of candidates and **blind review** (Bohnet et al., 2016)

9. Provide employee training/coaching on **conflict, communication, feedback and listening skills** to enhance tolerance for differences
Questions
http://dx.doi.org/10.1037/cpb0000076


