The Science of Inclusion

2D Crystal Consortium-Materials Innovation Platform Webinar Series

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Are there two people in the room who share the same birthday?
Sharing a birthday

Jones, Pelham, Carvallo, & Mirenberg, 2004
Sharing a birthday

Walton, Cohen, Cwir, & Spencer, 2011
# Sharing a name

Table 1

**Surname Matching Effects in Marriage in Three Southeastern States (AL, GA, and TN)**

<table>
<thead>
<tr>
<th>Bride maiden name</th>
<th>Smith</th>
<th>Johnson</th>
<th>Williams</th>
<th>Jones</th>
<th>Brown</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smith</td>
<td><strong>198</strong></td>
<td>55</td>
<td>43</td>
<td>62</td>
<td>44</td>
<td>402</td>
</tr>
<tr>
<td>Johnson</td>
<td>55</td>
<td><strong>91</strong></td>
<td>49</td>
<td>49</td>
<td>31</td>
<td>275</td>
</tr>
<tr>
<td>Williams</td>
<td>64</td>
<td>54</td>
<td><strong>99</strong></td>
<td>63</td>
<td>43</td>
<td>323</td>
</tr>
<tr>
<td>Jones</td>
<td>48</td>
<td>40</td>
<td>57</td>
<td><strong>125</strong></td>
<td>25</td>
<td>295</td>
</tr>
<tr>
<td>Brown</td>
<td>55</td>
<td>24</td>
<td>29</td>
<td>29</td>
<td><strong>82</strong></td>
<td>219</td>
</tr>
<tr>
<td>Total</td>
<td><strong>420</strong></td>
<td><strong>264</strong></td>
<td><strong>277</strong></td>
<td><strong>328</strong></td>
<td><strong>225</strong></td>
<td><strong>1,514</strong></td>
</tr>
</tbody>
</table>

Jones, Pelham, Carvallo, & Mirenberg, 2004
Subtle cues

Everywhere around us
Can often make us feel connected to others
Often very positive!
Dark side is when cues seem biased against you - unwelcoming
Organ Donation

**Opt-In** – Default is non-participation

☐ Check the box if you **want to participate** in the organ donor program

**Opt-Out** – Default is participation

☐ Check the box if you **don’t want to participate** in the organ donor program
Organ Donation

Opt-In (check box to participate)

Opt-Out (check box to not participate)

Figure based on Johnson & Goldstein (2004)
Organ Donation

Netherlands (Opt-In Policy)

Donating your organs when you die

Opt-In
(check box to participate)

Davidai, Gilovich, & Ross, 2012
Subtle cues

Everywhere around us
Can often make us feel connected to others
Often very positive!
Dark side is when cues seem biased against you - unwelcoming

A key lesson from social psychology:
Social environments and social situations can often have a large – but often unrecognized – impact on our thoughts, feelings, and behaviors.
Overview for today

The experience of exclusion

Fundamental psychological needs

Research evidence

Facilitating change

Summary
The Experience of Exclusion
Connecting...
I simply decided it would be better not to [mention my Jewish background]. There was no obvious reason for being cagey. In my short time at the school, I’d seen no bullying or manifest contempt of that kind, and never did.

Yet it seemed to me that the Jewish boys, even the popular ones, even the athletes, had a subtly charged field around them, an air of apartness...[T]his apartness did not emanate from the boys themselves, from any quality or wish of their own, but from the school - as if some guardian spirit, indifferent of their personal worth, had risen from the fields and walkways and weathered stone and breathed that apartness upon them.

- Tobias Wolff
My experiences at Princeton have made me far more aware of my “Blackness” than ever before . . . no matter how liberal and open-minded some of my White professors and classmates try to be toward me, I sometimes feel like a visitor on campus; as if I really don’t belong . . . It often seems as if, to them, I will always be Black first and a student second.

- Michelle Robinson (1985)
Fundamental Psychological Needs
Fundamental Psychological Needs

Biological needs – air, water, food – are required for survival.

Psychological needs are important for thriving, like nutrients, that allow people to achieve their potential and function optimally.

Provide a solid foundation.

(Pittman & Zeigler, 2007)
Theory of Human Motivation

- Physiological
- Safety
- Love & Belonging
- Esteem
- Self-Actualization

Maslow (1943)
Self-Determination Theory

Deci & Ryan (2000)
Core Social Motives Theory

Figure adapted from Pittman & Zeigler (2007)
Fundamental Psychological Needs

Common Themes

- Belonging
  (also see Baumeister & Leary, 1995; Kurzban & Leary, 2001)

- Need for Control
  (also see Keltner et al., 2003; Leotti et al., 2010)

If thwarted...

- Disrupted self-regulation, thinking, behavior, emotion, health
  (e.g., Baumeister et al., 2002, 2005; Fiske, 2004; Keltner, Gruenfeld, & Anderson, 2003; Twenge et al., 2002; Williams, 2009)
Take home message...

Subtle cues – even when inadvertent - can undermine psychological well-being, motivation, interest, performance, and health

We are sensitive to cues of not belonging and for members of historically underrepresented minority groups, these cues can be pervasive

Broadening participation requires altering the psychological climate
Research Evidence
Ostracism

Thousands of people have taken part in studies using Cyberball across more than 60 countries.

After 2-3 minutes...

- Sadness and anger
- Lower sense of belonging
- Lower self-esteem
- Lower sense of meaning and control over lives

It doesn’t matter who is doing the ostracising or why

“Even subtle, artificial or ostensibly unimportant exclusion can lead to strong emotional reactions.” (Williams, 2011)

Experienced like physical pain...
Ostracism and physical pain

Fig. 1. (A) Increased activity in anterior cingulate cortex (ACC) during exclusion relative to inclusion.

A neural “alarm system,” activated by the experience of physical pain

Eisenberger et al., 2003
Ostracism and physical pain

Fig. 1. (B) Increased activity in right ventral prefrontal cortex (RVPFC) during exclusion relative to inclusion.

Regulates pain distress and negative affect

Eisenberger et al., 2003
Stereotype Threat

The threat of being viewed through the lens of a negative stereotype or the fear of doing something that would inadvertently confirm that stereotype.
Stereotype threat and test performance

Black and White undergraduates take a difficult section of verbal GRE

Diagnostic Condition: Test is accurate measure of verbal ability

Non-Diagnostic Condition: Test is instrument for solving problems

Outcome: Number of questions correctly answered corrected for guessing (and controlling for SAT scores)

Steele & Aronson, 1995
Stereotype threat and test performance

Steele & Aronson, 1995
Stereotype threat and test performance

Spencer, Steele, & Quinn, 1999
Other research on stereotype threat

- African Americans, Latinos, Native Americans
- Women and math, science, logic tests
- Older women and driving performance
- White males and math performance
- White males and athletic performance
- Older individuals and memory performance
- Economically disadvantaged and intelligence tests (France)
- Gay males and play behaviors with young children
- First generation college students
What triggers stereotype threat

Awareness of negative stereotypes (even if you don’t believe them!)
Being a numerical minority
Reminders of bias
Demographics of instructor
Signals in physical environments
Classroom environments

Stereotypical room

Star Trek poster

Sci Fi books

Coke cans

Cheryan, Plaut, Davies & Steele, 2009
Classroom environments

Non-stereotypical room

Nature poster

Neutral books

Water bottles

Cheryan, Plaut, Davies & Steele, 2009
Classroom environments

Cheryan, Plaut, Davies & Steele, 2009
Take home message (the bad part)...

Subtle environmental cues can be corrosive
Over time can undermine core psychological needs
- Belonging/Relatedness (Cook et al., 2012)
- Control/Autonomy (Cook et al., 2011)
Undermine performance
Undermine health
Constrain opportunities
Take home message (the better part)...

Negative outcomes are not based on personality characteristics or innate group differences

Disempowering situations

Long-term goal is to change situations/environments

Immediate goals are to help members of stigmatized groups be empowered and resilient
Facilitating Change

REDUCING PSYCHOLOGICAL THREATS
I propose the existence of a self-system that essentially explains ourselves, and the world at large, to ourselves. The purpose of these constant explanations (and rationalizations) is to maintain a phenomenal experience of the self – self-conceptions and images – as adaptively and morally adequate, that is, as competent, good, coherent, unitary, stable, capable of free choice, capable of controlling important outcomes, and so on. I view these self-affirmation processes as being activated by information that threatens the perceived adequacy or integrity of the self.

- Steele, 1988, p. 262
PORTIONS HAVE GROWN
SO HAS TYPE 2 DIABETES, WHICH
CAN LEAD TO AMPUTATIONS
“I do not consume sugary drinks. This ad does not apply to me.”

I don’t drink as much sugary stuff as the person sitting next to me...and anyway, I walk to my car EVERY day, which is exercise...AND...the researchers who study diabetes are paid by medical companies...who can trust them?? Whew, this ad does not apply to me!
Academic contexts are threatening if you belong to a stereotyped group

Here we protect ourselves with strategies that can undermine performance – e.g., not seeking feedback, disengaging, trying to disprove stereotype
The self-system

Global Self-Integrity

- Roles (e.g., student, parent)
- Values (e.g., humor, religion)
- Group identities (e.g., race, culture, nation)
- Central beliefs (e.g., ideology, political beliefs)
- Relationships (e.g., family, friends)
- Goals (e.g., health, academic success)
Affirming Core Values
Values-Affirmation

A writing exercise that has people select and write about their core characteristics and values

- Relationships with friends or family, religious values, sense of humor
  - “I love my friends. I love my family and I never want to lose them.”
  - “I am a very funny person. It’s nice to hear people laughing at my jokes.”
  - “When I’m creative I feel smart.”

Bolster the perceived **integrity of the self** as competent, effective, and able to control important outcomes (Sherman & Cohen, 2006; Steele, 1988)
What are your personal values?

Below is a list of characteristics and values, some of them may be important to you; some may be unimportant to you. Please rank them from 1 to 11 according to how important they are to you ("1" being the most important item, "11" being the one that is least important to you). Use each number only once.

_________ Creativity
_________ Independence
_________ Membership in a Social Group (such as your community, racial group, or school club)
_________ Music
_________ Relationships with Friends or Family
_________ Religious Values
_________ Sense of Humor
Control Condition

1. Look at the value **you ranked as #9** on the previous page.

2. Think about times **when this value would be important to someone else** (like another student at your school or a person you’ve heard about).

3. Describe why this value would be important to someone else.

Focus on your thoughts and feelings and don’t worry about spelling, grammar, or how well written it is.

__________________________________________________________________________

__________________________________________________________________________

Again, **look at your #9 value**. List the top two reasons why **someone else** would pick this as their most important value.
Affirmation Condition

1. Look at the value you picked as most important to you (the value you ranked as #1 on the previous page).
2. Think about times when this value was or would be very important to you.
3. Describe why this value is important to you.

Focus on your thoughts and feelings and don’t worry about spelling, grammar, or how well written it is.

________________________________________________________________________

________________________________________________________________________

Again, look at the value you picked as most important. List the top two reasons why this value is important to you.
Affirmation Buffers Belonging

Cook, Purdie-Vaughns, Garcia, & Cohen (2012), *JPSP*
Affirmation Buffers Belonging

Cook, Purdie-Vaughns, Garcia, & Cohen (2012), JPSP
Affirmation Buffers Belongsng

Condition x GPA, $p = .03$

Cook, Purdie-Vaughns, Garcia, & Cohen (2012), *JPSP*
Affirmation Buffers Belonging

Cook, Purdie-Vaughns, Garcia, & Cohen (2012), *JPSP*
Affirmation Buffers Belonging

Cook, Purdie-Vaughns, Garcia, & Cohen (2012), *JPSP*
Percent in college (versus no)

Race x Condition: $b = 0.82$, $p = 0.01$

- Raw means and error terms
- Covariate-adjusted means and error terms

Goyer, Garcia, Purdie-Vaughns, Binning, Cook, Reeves, Apfel, Taborsky-Barba, Sherman, & Cohen (under review)
Percent in 4-year (versus no/2-year)

Race x Condition: $b = 0.55$, $p = 0.04$

Goyer, Garcia, Purdie-Vaughns, Binning, Cook, Reeves, Apfel, Taborsky-Barba, Sherman, & Cohen (under review)
Selectivity of 4-year College

Race x Condition: $b = 0.32, p = 0.007$

Goyer, Garcia, Purdie-Vaughns, Binning, Cook, Reeves, Apfel, Taborsky-Barba, Sherman, & Cohen (under review)
Belonging as mediator

Black Students: 95% CI [0.0139, 0.1267]

Goyer, Garcia, Purdie-Vaughns, Binning, Cook, Reeves, Apfel, Taborsky-Barba, Sherman, & Cohen (under review)
Fostering a Sense of Belonging
Enhancing belonging

Black and White freshman college students

Narrative that social adversity in the transition to college is shared and short-lived

Feelings of “belonging uncertainty” common and transient

Read about more advanced students

- “Freshman year even though I met large numbers of people, I didn’t have a small group of close friends...I was pretty homesick, and I had to remind myself that making close friends takes time. Since then...I have met people some of whom are now just as close as my friends in high school were”

- Write an essay, deliver a speech on how their experiences echoed those of other students

- Control focused on change in social-political attitudes
Achievement behaviors

- Attending review sessions
- Attending office hours
- Going to study group meetings
- Sending emails to professors
- Hours spent studying
- Number of questions asked in class

Walton & Cohen, 2007
Encouraging a Growth Mindset
You Can Grow Your Brain

New Research Shows the Brain Can Be Developed Like a Muscle

By: Lisa S. Blackwell and David S. Yeager

Many people think of the brain as a mystery. We don't often think about what intelligence is or how it works. And when you do think about what intelligence is, you might think that a person is born either smart, average, or dumb—either a “math person” or not—and stays that way for life.

But new research shows that the brain is more like a muscle—it changes and gets stronger when you use it. Scientists have been able to show just how the brain grows and gets stronger when you learn.

Everyone knows that when you lift weights, your muscles get bigger and you get stronger. A person who can’t lift 20 pounds when they start exercising can get strong enough to lift 100 pounds after working out for a long time. That’s because muscles become larger and stronger with exercise. And when you stop exercising, the muscles shrink and you get weaker. That’s why people say “Use it or lose it!”

But most people don’t know that when they practice and learn new things, parts of their brain change and get larger, a lot like the muscles do. This is true even for adults. So it’s not true that some people are stuck being “not smart” or “not math people.” You can improve your abilities a lot, as long as you practice and use good strategies.
Growth Mindset

Blackwell, Trzesniewski, & Dweck, 2007
Growth Mindset

Paunesku et al., 2015
Conveying Growth Mindset

Convey the relevance and purpose of the work

• You’re learning this because...

Promote a goal of learning rather than performance

• It’s ok if you don’t get this at first

• Even the most successful people have to put in a lot of work

Normalize and promote belonging

• It’s normal to have trouble with this material at first

• I also found this tricky when I was first learning it
Summary
Strategies from research

For those in decision making positions

1. Be mindful to situation of individuals you’re recruiting
2. Engage with instructors, mentors, & administrators to minimize environmental cues of ostracism and/or threat
3. Provide opportunities to affirm, bolster belonging, and encourage a growth mindset
Thank you

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