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Why the Brain Discriminates: Neurobiological Underpinnings of Racial/Ethnic Discrimination

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WHY THE BRAIN DISCRIMINATES: NEUROBIOLOGICAL UNDERPINNINGS OF RACIAL/ETHNIC DISCRIMINATION

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Objectives

• Describe neurocognitive roots of bias, prejudice and discrimination
• Describe consequences of discrimination on its victim’s mental and physical health; and performance
• Describe practical, evidence-based ways for promoting diversity and minimizing impact of discrimination
Race and Ethnicity
A Definition of Race

• Race is a socially constructed reaction to phenotypic characteristics

  • Genotype
  • Phenotype
Ethnicity

- Common ancestry/history

- Shared language, beliefs and moral codes, social rules, and behaviors of a given community
Brain Structure and Discrimination
Does the brain discriminate?
Environment and the Brain

• The brain is anatomically organized into functional regions and networks
  • This system of organization is central to how the brain learns
  • The brain learns through detecting patterns in the environment
  • When certain details are missing, the brain fills in the gaps
  • The brain stores information in a categorical fashion
Environment and the Brain

• How categorization facilitates learning
  • Reduces cognitive overload, thus enabling us to learn faster
  • Enables us to make inferences about new members of a group that we encounter for the first time.
  
(Quinn 2013)
Influence of the Environment on the Brain
Environment & The Brain

- At birth, the brain has *basic, tentative* networks that are genetically determined
  - The environment modifies these networks in various ways
    - Can strengthen them or dismantle them
      - The goal is to enable the organism to be fit for the environment that it lives in.

(Kandel, et al 2013)
Environment & The Brain

- Through sensory stimulation we construct an internal reality that reflects the external environment.
- These experiences become more hard-wired after puberty.
- Inner reality becomes the lens through which we view the world.

(Wexler, 2006)
Environment & The Brain

• After puberty
• Contradictions between the internal constructs and the actual environment will produce conflict

• Conflict means that one of the two (internal structures or the actual environment) will have to change.

(Wexler, 2006)
Environment & The Brain

- To ensure ongoing harmony between inner reality and external reality, people tend to:
  - Prefer familiar people, places, things, etc.
  - See the need to conform to group rules and pressures
Environment & The Brain

• The constructs we build as a result of our experiences will form the lenses through which we come to view the world.
  • They become the standard against which we evaluate people, actions & things.
Emergence of Social Preference in Children
At what Age Are Children Able to Detect Racial Differences?
Social Preference in Children

- 3-month-old infants can detect racial differences
- Children up to 2.5 years old show no racially-based social preference
- Racially-based preference emerges between 2.5 and 5 years of age
  - Children at this age, however, do not assign social importance to racial differences
  
(Kinzler & Spelke, 2011)
Social Preference in Children

- Children up to 6 years of age tend to use language/accent rather than race as a basis for social preference and judgment.
- Young children prefer engaging with native speakers of a different race to engaging with non-native speakers of same race.

(Kinzler & Spelke 2011)
Effect of Familiarity

- Familiarity is the primary determiner of preference for people, actions & things
  - It means that cognitive representations and external reality match each other
  - It serves our innate biological need to protect our own survival & well-being
    - Familiar people, actions, & things are predictable
      - Hence they are perceived as safe & pleasurable
      - They attract our attention

(Kinzler & Spenkle 2011; Wexler 2006)

Black Bag Experiment
Justifying Discrimination

- Discrimination emerges as a line of defense to...
  - Avoid experiences that do not match cognitive representations
    - Consequently, individuals from other groups are ignored, discredited, or forgotten all together
  - Furthermore, the person tries to justify racist attitudes and decisions
Neurochemistry of Ethnic Discrimination

- Oxytocin: hormone and neuromodulator
  - Significantly impacts social and reproductive behavior
    - Pair bonding
    - Group belonging
    - Maternal affection and behavior
    - Trust and altruism
  - Negative effects:
    - Aggression toward intruders
    - Territoriality

Love (2014)
Neurochemistry of Ethnic Discrimination

- Oxytocin....
- Has a modulatory role on motivation
- Amplifies significance of social cues
- Increases attention to social cues
- Increases processing of social information
- Increases motivation to engage in social behavior

(Love, 2014)
Impact of Discrimination on Mental and Physical Health, & Performance
Impact of Perceived Discrimination

• An impressive body of research has documented strong and consistent associations between racial discrimination and mental and physical health outcomes in children and adults.
Impact of Perceived Discrimination

• In adults:
  • A wide range of mental and physical disorders including:
    • Depression
    • Anxiety
    • Hypertension
    • Decreased sleep
    • Metabolic disorders
    • Poor memory & poor executive functions
    • Drug and alcohol addition
    • Heart disease
Stress & the HPA axis

Physical, psychological or environmental stressors lead to the hypothalamus releasing CRH. CRH stimulates the pituitary gland to release ACTH, which in turn stimulates the adrenal glands to release cortisol. Cortisol levels then feedback to inhibit CRH and ACTH production, maintaining a balance.

- **Hypothalamus**
- **Pituitary Gland**
- **Adrenal Glands**
- **Cortisol**
- **CRH**
- **ACTH**
- **GABA**
- **Cortisol**

The hypothalamus responds to levels of cortisol: if cortisol is high, it reduces CRH; if cortisol is low, it increases CRH.
Impact of Perceived Discrimination

- 66% of PED studies show that it causes risky behavior in adolescents and young adults
  - Individuals with poor coping skills are most at risk
    - Risky Behaviors include:
      - Aggression and violence
      - Dangerous, rule-breaking behaviors
      - Self-injury
      - Alcohol and/or drug addiction

(Borders & Hennebry, 2015).
Impact of Perceived Discrimination

• “Individuals of all ethnic minority groups who perceive greater discrimination report worse depression, anxiety, and physical health”

(Borders & Hennebry, 2015, p. 81)
Impact of Perceived Discrimination

• Angry rumination
  • “thinking repeatedly about past angering experiences and perceived offenses”
• Puts members of ethnic minorities at risk for:
  • Psychological stress
  • Poor physical health
  • Heightened depressive and anxious symptoms
  • Inability to forgive

(Borders & Hennebry, 2015, p. 82)
Impact of Perceived Discrimination

Thayer & Kuzawa (2015) found that PED has a serious impact on women’s biology and health during pregnancy:

- Worse self-rated health
- Elevated evening cortisol levels
- Offspring born with elevated cortisol reactivity, at least over first 6 weeks of life
Impact of Perceived Discrimination

- Maternal stress or depression during pregnancy are associated with depression
  - This elevates HPA-Axis function in infancy
  - Mothers exposed to discrimination may interact in a way that elevates stress physiology in infants
    - Stress hormones are transferred to baby through breast milk
    - This causes elevation of baby’s HPA-Axis levels

(Thayer & Kuzawa, 2015, p. 40)
Impact of Discrimination

• In children...
  • Decreased self & group regard
  • Poor health, well-being, or development
  • Metabolic disease
  • Increased risk for aggression and violence
Impact of Discrimination

- Early experiences with racism linked to addiction and negative social behaviors later in life
- Decreased academic performance
- Delinquent behavior
- Remember the case of Malcolm X?
- The Case of Azzam (a 10-year old ELL Student)
Impact of Discrimination

• Christian & Bloome (2004):
  • Case of Michelle and Oscar
    • Social status in classroom
      • Influences reading level & other skills
      • ELL children often marginalized
The Way Out
Evidence-Based Strategies

• We need to re-examine the way diversity training is being provided
Evidence-Based Strategies

• Improve coping & resilience
  • Rumination reduction through cognitive behavior modification techniques
    • Disclosure of emotional reactions
    • Mindfulness and rationalization

(Borders & Hennebry, 2015, p. 85)

• Provide social barrier awareness
Working with Adults

• Encourage parents to be closer to their children
  • Close contact between infants and their mothers improves bonding

• Encourage parents to read with their kids

• Provide social barrier awareness
Cognitive Modification

• We control our thoughts; therefore, we can change them
  • Change is hard and could even be painful at the beginning
  • Person may engage in avoidance behavior
  • Pace of change will depend on
    • (a) nature and degree of exposure
    • (b) age
Working with Adults

• Get first-hand experience with members of other cultures

• Raise awareness among adults
  • Teach about impact of discrimination on others
  • Encourage direct engagement with others
  • Encourage analysis of stereotypes
    • Challenge false ones
    • Explain how differences developed as a form of adaptation
Working with Adults

• Engage metacognitive skills through teaching adults to:
  • Analyze their own thoughts & behavior
  • Be open to new learning
    • Exposure is the key to desensitization
    • Education leads to cognitive flexibility
    • Lack of knowledge and exposure leads to cognitive rigidity/resistance to change
Role of the School

• Work to create a positive school culture
• Curriculum should be inclusive of all races in the society
• Assigning a teacher from a different ethnicity/race promotes diversity in kids
  • According to Sandersa & Downer (2011), having teachers of the same ethnicity as the majority of the students prohibits diversity-promoting practices in pre-kindergarten classrooms.”
The Role of the School

• Positive parent-school experiences enhance student engagement
  • Observe how your school treats parents

• Parents need to be aware that their expectations of the child have a direct influence on academic performance

(Kim, Sherraden & Clancy, 2013)
Working with Children

- Children from minorities need to learn about high-tier professions

- Develop programs that foster positive group image, beliefs and attitudes

- Promote multi-racial foster placements and daycare centers
Working with Children

• Assign leadership roles to children from minorities
• Raise your expectations
• Constantly make them aware that you care
• Make a serious effort to learn about them and their families
Take-Home Message

• Discrimination is not a state of being:
  • It is a state of mind

• Society will make us grow prejudiced or otherwise

• Familiarity and exposure to people from different cultures is the most important tool for preventing/overcoming discrimination

• Teaching acceptance of others should begin in the first year of life.

• We can change our ideas, because we own them!
Selected References