

# Dominance and Prosocial Behavior

Scott Lienen  
William Swann  
Robert Josephs  
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# Dominance and Status

- Dominance: a trait motivation to obtain and maintain high status positions (Mazur & Booth, 1998)
  - Individual differences in dominance
- Status: relative position in a social hierarchy

# Dominance and Status

- Obtainment of status
  - Birthright
  - Aggression
  - Competition
  - Coercion
  - Prosocial behavior, cooperation
  - Knowledge, ability

(Tiger & Fox, 1972; Hawley, 2008, 2009; Johnson, Burk, & Kirkpatrick, 2007; Henrich & Gilwhite, 2001)

# Dominance and Status

- High status positions offer rewards
  - “A dominant animal moves more freely, eats better, gets more attention, lives longer, is healthier, and less anxious, and generally has a better time than a lowly and peripheral animal.” (Tiger & Fox, p. 28)

# Cooperation and Status

- Perpetuation of hierarchy depends on cooperation among members
- “Cooperation among males is essential... [for] the whole structure [to be] held together.” (Tiger & Fox, p. 32)

# Testosterone and Dominance

- Testosterone is a biological proxy for dispositional dominance
  - Correlates with self-reported dominance  
(Grant & France, 2001; Sellers, Mehl, & Josephs, 2007)
  - Correlates with status rank in the hierarchy  
(e.g. Anderson & Kilduff, 2009; Beehner, et al., 2006; Setchell & Dixson, 2001; Poisbleau, et al, 2005; Muehlenbien, et al., 2004)
  - Correlates with dominant behaviors
    - Aggression (Archer, 2006; Archer, Birring, & Wu, 1998)
    - Social dominance (Cashdan, 1995; Tremblay, et al., 1998)
    - Competition (Mehta & Josephs, 2006)

# Testosterone and Cooperation

- Cooperation v. Competition
  - Low T individuals function better than high T in cooperative situations (Mehta, Wuehrmann, & Josephs, 2009)
  - Interpersonal v. intergroup competition

# Testosterone and Cortisol

- Moderating testosterone's effect on behavior
  - Aggression (Dabbs, Jurkovic, & Frady, 1991; Popma, et al., 2007)
  - Competition (Mehta & Josephs, under review)
  - Perceived dominance (Mehta, 2007)

# Testosterone and Cortisol

- Cortisol

- Stress response (Dickerson & Kemeny, 2004)

- Behavioral inhibitor

- (Nunez, et al., 1996; Kagan, Reznick, & Snidman, 1987; Kalin, Larson, Shelton, & Davidson, 1998; Kalin, Shelton, Rickman, & Davidson, 1998; Smider et al., 2002)

- HPA-Axis v. HPG-Axis (Viau, 2002)

# Current Study

- Dominance drives an individual to gain high status
- High status offers rewards
- Cooperation facilitates group functioning once hierarchy is stabilized
  - “human communities are fundamentally concerned with...surviving, perpetuating the group, defending it, keeping some social order, using the environment reasonably constructively, and just generally muddling through.” (Tiger & Fox, 1972, p. 32)

# Current Study

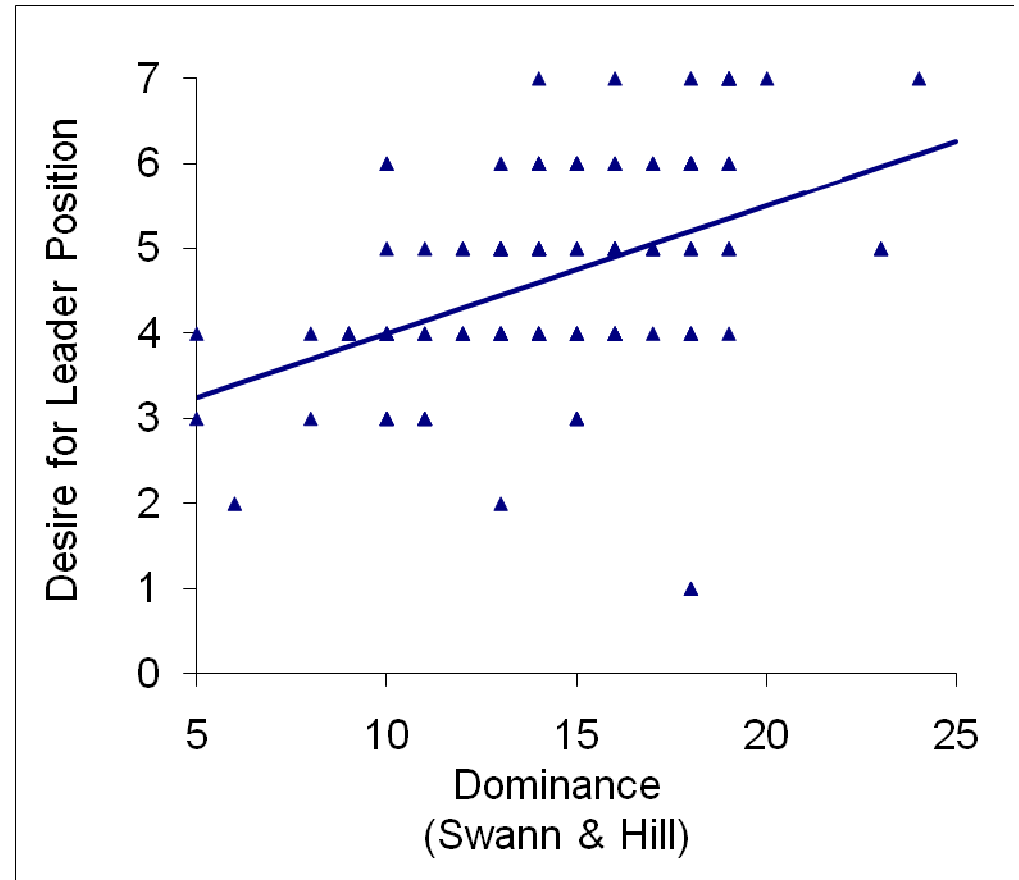
- How will dominance behaviors differ in a cooperative setting rather than a competitive one?
- Will dominant individuals reap the benefits of their high status positions even at the expense of the group?

# Methods

- Online self-report battery
  - (Swann & Hill, BFI, Comp-Coop Orientation scale, Mach-IV, NPI, PRF)
- In-lab sex-matched pairs
  - Saliva sample
  - Told they will be working together on a series of cooperative tasks
    - One will be selected to be leader, the other the follower
  - Rate their desire for which position on a 1-7 scale
  - Status assignment is made randomly
  - Task Choice
    - Either help partner with proofreading task or watch TV
    - Follower makes a hypothetical choice after the task
  - Second Saliva Sample

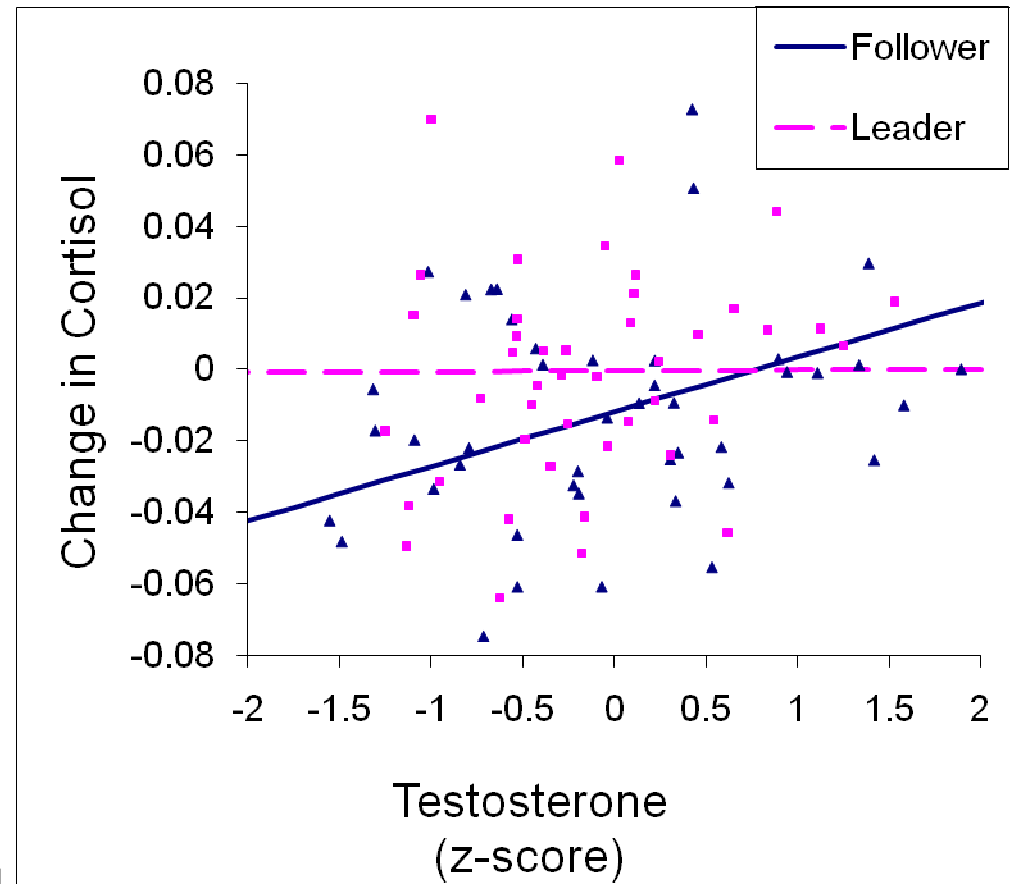
# Results

- **Self-reported** dominance predicted **self-reported** desire for the leader position  
( $\beta = 0.15$ ,  $t = 4.68$ ,  $p < 0.01$ )
- **Testosterone** did not **self-reported** desire for leader position  
( $\beta = 0.04$ ,  $t = 0.36$ ,  $p = 0.72$ )



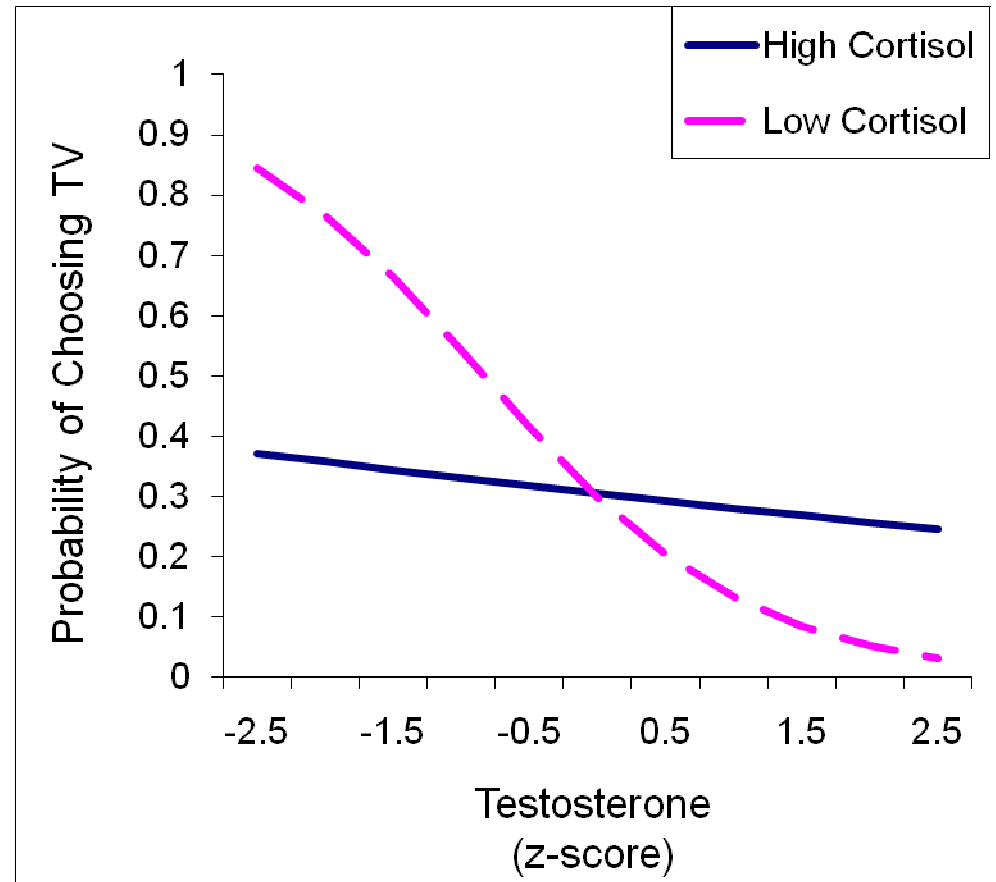
# Results

- Basal T x status predicted change in cortisol  
( $t = 2.29$ ,  $p = 0.02$ )
- Self-reports did not  
( $t = 1.63$ ,  $p = 0.11$ )
- Mismatch Effect
  - High T stressed by low status
  - Low T relax when low status  
(Josephs, et al., 2006; Zyphura, et al., 2009; Rivers, et al., in prep; Lienen, et al., in prep; Mehta, Jones, & Josephs, 2008)



# Results

- **Basal T and cortisol** predicted **behavioral** outcome  
( $X^2 = 3.20$ ,  $p = 0.07$ )
- **Self-reported dominance** did not predict **behavior**  
( $X^2 = 0.74$ ,  $p = 0.39$ )



# Discussion

- Self-reports predicted self-reported outcomes; they did not predict behavior
- Hormones predicted behaviors; they did not predict self-reported outcomes

# Discussion

- Cortisol moderated the effect of testosterone
  - Testosterone only had an effect if cortisol was low
  - If cortisol was high, any effect was suppressed
- Replicates previous studies  
(Popma et al., 2007; Mehta & Josephs, under review; Dabbs, et al., 1991)

# Discussion

- Testosterone did predict behavior
  - High T predicted helping the subordinate
  - High T did NOT predict reaping the rewards of high status
- Low 2D:4D ratio (high T) and prosocial behavior
  - Low 2D:4D ratio was associated with more prosocial behavior in a dictator game (Millet & Dewitte, 2009)
  - Low 2D:4D ratio was associated with milder negotiations in an ultimatum game when primed with sex cues (Van den Bergh & Dewitte, 2006)
  - Low 2D:4D ratio was associated with more cooperation in a public goods game (Millet & Dewitte, 2006)

# Discussion

- Once high status is obtained, dominant individuals want to maintain that status
  - One of the roles of a high status individual is perform “service and control functions” for the group (Mazur, 2005)
  - “Strength is weakness” – a coalition of weak individuals is stronger than a strong loner (De Waal, 2005)
  - Prosocial dominance linked to attractiveness in adults and popularity in children and adolescents (Jensen-Campbell, Graziano, & West, 1995; Hawley, Little, & Card, 2008; Hawley, Little, & Pasupathi, 2002; Lease, Kennedy, & Axelrod, 2002)

# Take Away Points

- **Self-reports** predicted **self-reported** desire for status
- **Testosterone/cortisol** predicted **behavioral** outcome
  - High T predicted prosocial behaviors
  - Needing an ally going forward (current study) v. holding equal status in a cooperative situation (Mehta, et al., 2009)