

The Natural Selection of Leadership: Integrating Biological, Evolutionary, and Psychological Approaches

Prof. Mark Van Vugt
Faculty of Psychology
VU University Amsterdam

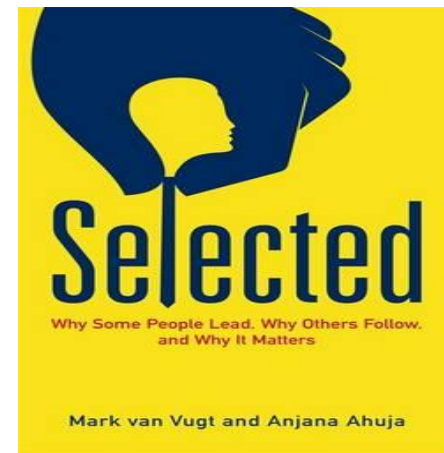
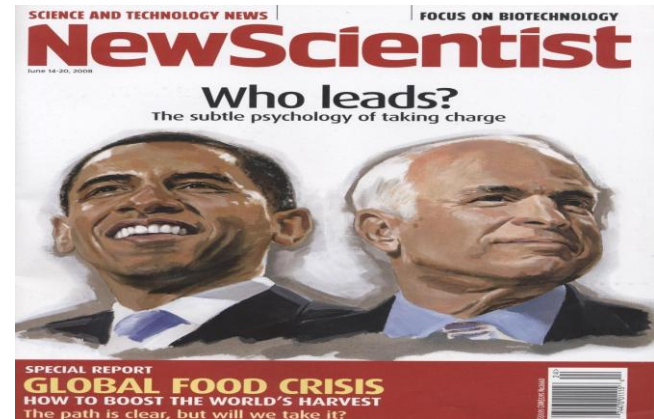
Institute for Cognitive and Evolutionary Anthropology,
University of Oxford

m.van.vugt@psy.vu.nl



Relevant Publications

- Van Vugt, M. & Ahuja, A. (2010). *Selected: Why some lead, why many others follow, and why it matters*. London: Profile/New York: Harper
- Gillet, J., Cartwright, E., Van Vugt, M. (2010). Selfish or servant leadership: Testing evolutionary predictions. *Personality and Individual Differences*
- King, A., Johnson, D., & Van Vugt, M (2009). The origins and evolution of leadership. *Current Biology*
- Van Vugt, M. (2009). Despotism, democracy and the evolutionary dynamics of leadership and followership. *American Psychologist*, 64, 54-56.
- Van Vugt, M. (2009). The male warrior hypothesis. *Annals of the New York Academy of Sciences*.
- Van Vugt, M. (2008). Follow me. *New Scientist*
- Van Vugt, M., & Spisak, B. R. (2008). Sex differences in leadership emergence during competitions within and between groups. *Psychological Science*.
- Van Vugt, M., Hogan, R., & Kaiser, R. (2008). Leadership, followership, and evolution: Some lessons from the past. *American Psychologist*, 63, 182-196.
- Wilson, D. S., Van Vugt, M., & O'Gorman, R. (2008). Multilevel selection theory and major evolutionary transitions: Implications for Psychological Science. *Current Directions in Psychological Science*.





What we know about leadership.....

It is a human universal

- Leadership is characteristic of all human groups
 - Military
 - Religious groups
 - Politics
 - Schools
 - Businesses
 - Sports and leisure groups

“The UP [Universal People] have leaders, though they may be ephemeral or situational. The UP admire, or profess to admire, generosity and this is particularly desired in a leader. No leader of the UP ever has complete power lodged in himself alone. UP leaders go beyond the limits of UP reason and morality. Since the UP never have complete democracy, and never have complete autocracy, they always have a de facto oligarchy”

-Donald Brown, *Human Universals*, 1991 (p. 138).

- Leader-follower relationships emerge very quickly.....

.....in 25 seconds flat!

(Gillet, Cartwright, & Van Vugt, 2010)

Round 1

Remaining time [sec]: 162

	X	Y	coordination
You	11	4	2
Player A	4	4	9
Player B	4	11	1
Player C	6	6	12

Player A hasn't chosen yet
Player B hasn't chosen yet
Player C hasn't chosen yet

Your choice X
 Y

OK

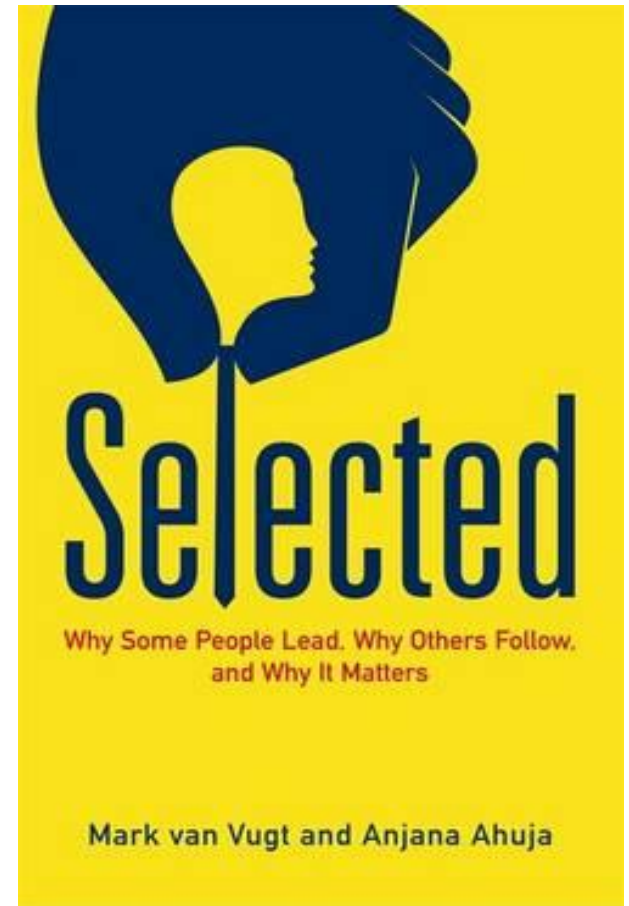
What we know about leadership....

- Leadership matters:
 - Good leadership saves lives and bad leadership can get you killed (Amundsen vs. Scott Antarctic expeditions)
 - Good leadership fosters group cooperation and coordination (Van Vugt & De Cremer, 1999)
- Yet leadership often fails:
 - The failure rate of managers in corporate America is 50%
 - Two-thirds of employees report that the most stressful aspect of their job is....their boss!
- Do we pick the right leaders?



What we don't know...

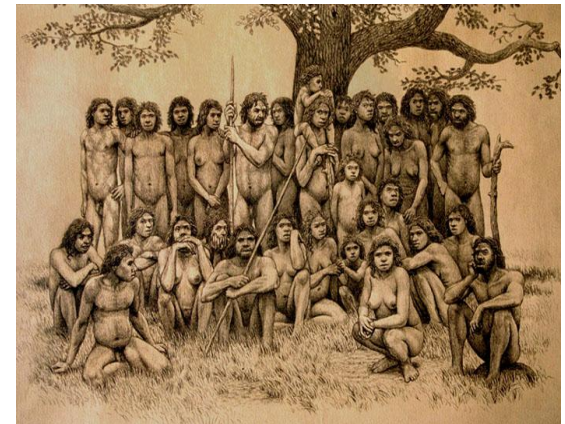
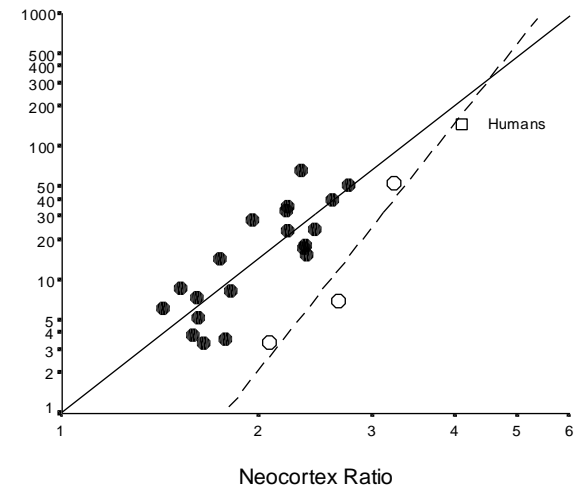
- “Leadership is one of the most observed, yet least understood phenomena on earth”
 - James McGregor Burns (1978; p.2) in his Pulitzer-prize winning book
- 15,000 publications later.....
- There are so many unanswered questions about leadership:
 - Why do we follow?
 - How can particular kinds of leaders attract millions of followers?
 - Why do tall leader candidates usually beat shorter ones in elections?
 - Why do good footballers become lousy football managers?
 - Why do women CEO's attract so much hostility?
 - Do other animals have leadership?
- There is no universal theory that can answer these questions and explain the psychology, biology, and evolution of leadership fully



Evolutionary Leadership Theory



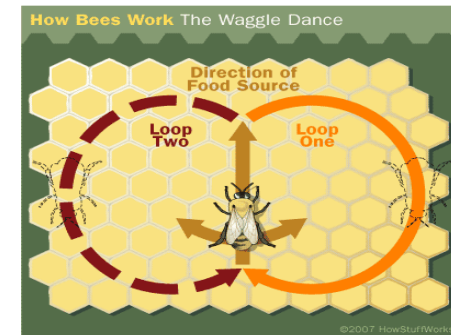
- Humans are a social species (like most other primates) – Darwin, 1859
- Humans have big brains to manage living in large complex groups (Dunbar & Schultz, 2007) and solve various problems associated with group life:
 - Finding and sharing food resources, group movement, group decision-making, internal peacekeeping, teaching knowledge and rituals, innovations, managing intergroup relations
- Leadership (and followership) may have evolved as strategies to promote cooperation and solve social coordination problems within groups
 - Here is a thought experiment....



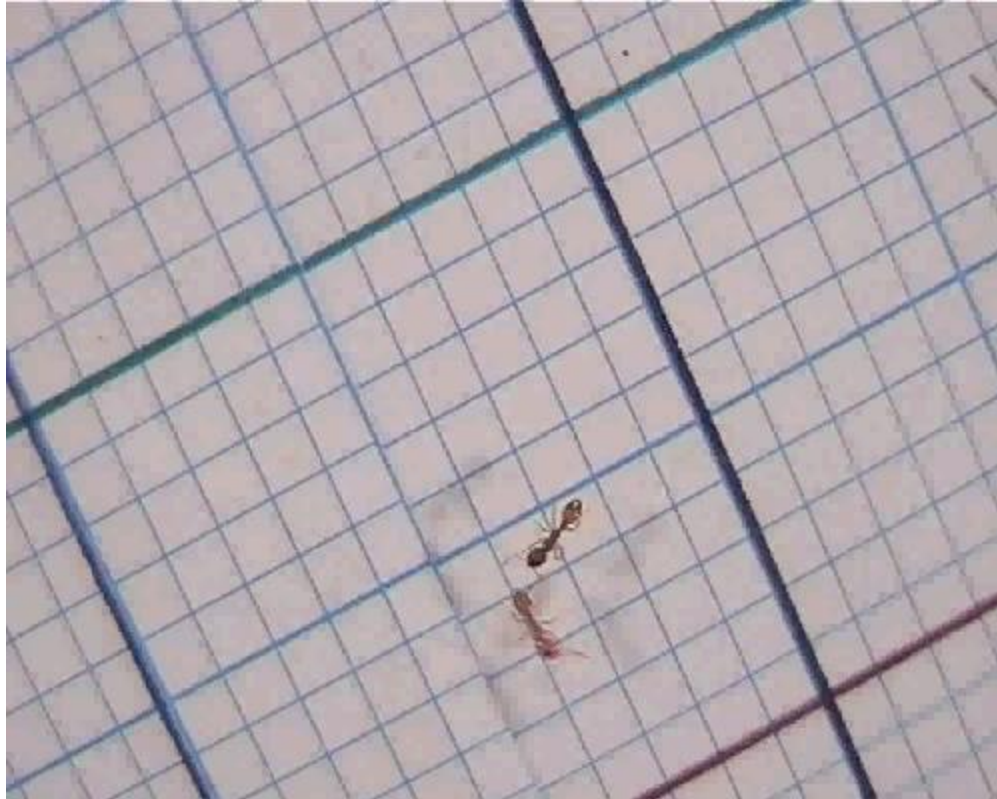
Key Findings

1. Leadership does not require much brain power...

- Leadership is common in birds and bees, e.g.,
 - Tandem running in ants (Franks)
 - Scouting in honey bees (Von Frisch)
 - Foraging in guppies (Harcourt)
 - Border patrols in chimpanzees (Wilson & Wrangham)
- Which animal emerges as leader? (King, Johnson, & van Vugt, 2009)
 - Hungriest
 - Dominant
 - Boldest (Personality)
 - Experienced



Leadership in ants



2. Leadership and followership are almost inevitable in social species....a bit of Von Neumann

Table 1. A pure coordination game

		Pat	
		Hole A	Hole B
Jamie	Water Hole A	1, 1*	0, 0
	Water Hole B	0, 0	1, 1*

Note. Payoffs are for Pat and Jamie, respectively; Hole A and Hole B represent alternative game strategies (underpinned by gene alleles); game equilibria are indicated with asterisks

Coordination is harder to achieve if there is conflict of interest

(Bshary, 2010; Van Vugt, 2009)

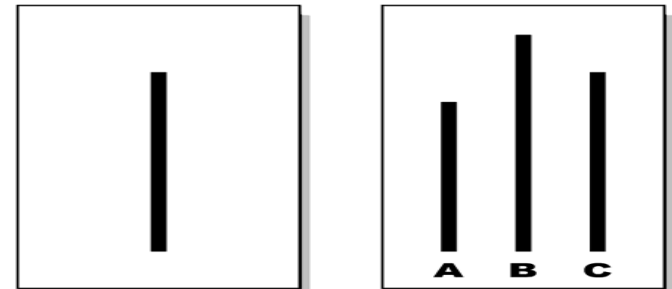
Table 2. A leader game (Battle of Sexes)

		Pat	
		Hole A	Hole B
Jamie	Water Hole A	5, 1*	0, 0
	Water Hole B	0, 0	1, 5*

Note. Payoffs are for Pat and Jamie, respectively; Hole A and Hole B represent alternative game strategies (underpinned by gene alleles); game equilibria are indicated with asterisks

3. We are born followers

- Followership is the default setting in our brain:
 - 3 months' old children follow eye gaze of their mothers
 - Pointing comes naturally in humans (look at our statues!)



- Why follow a leader?
 - Getting accurate information
 - Stick with the group
 - Wanting to be leader one day (stay close to them! Prestige-based leadership: Gil-White & Henrich, 2001)

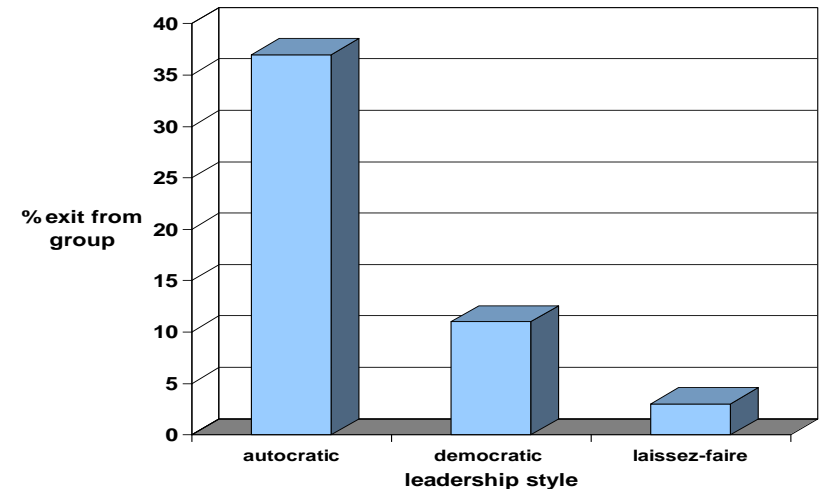
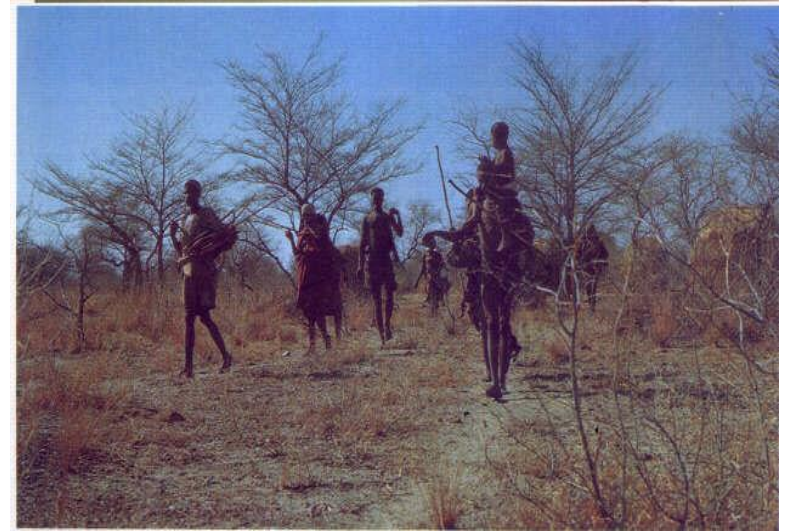


4. We are democratic apes...

- Democracy did not start in Athens, but on the African Savannah!
- STOPS: Strategies to overcome the powerful (Boehm, 1999)

The Power of Coalitions and Exit options

- Gossip or ridiculing leaders (media)
 - Public meetings
 - Replace leaders through elections, fixed term times
 - Disobedience or rebellion
 - Desertion
 - Assassination (Stoning)
- Emergence of democracy in our lab
 - cf. Hungary's Pan-european picknick (1989)



Van Vugt & De Cremer (1999) *Journal of Personality and Social Psychology*

Big Men leadership among the Mae Enga in New Guinea

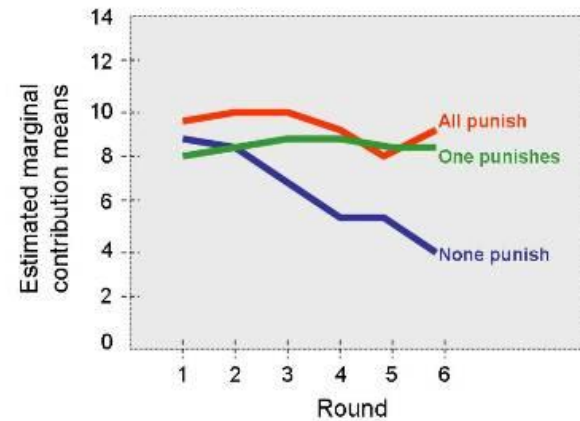
“The men who initiated the conference, or their spokesmen, briefly indicate their view of the clan’s position and the action they favor. They may argue that now is the time to launch a full-scale attack on the neighboring clan with the aim of occupying a specific section of its territory. The major Big Man [the leader] then solicits responses from the audience. Ideally, everyone present has a voice and being among his own clansmen can speak with complete freedom. The task of the Big Man at this stage is to ensure that all have a chance to offer their opinions and facts in full and to make no attempt to cut off any but obviously irrelevant speeches.”

-- Meggitt (1977; p. 76)

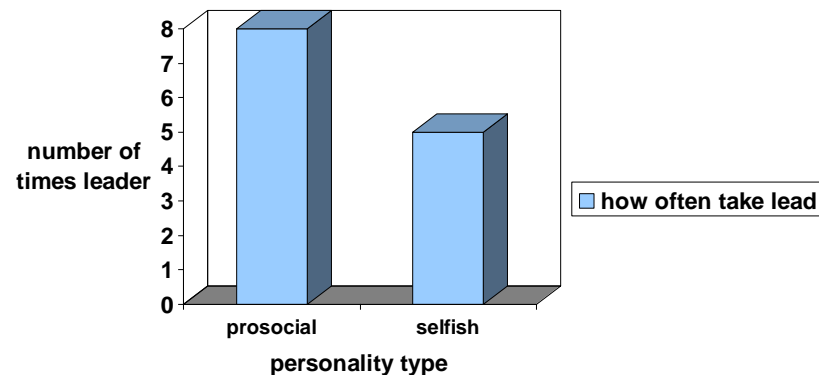
5. “Tough” leadership can help solve collective action problems

- People prefer order to chaos (Gurerk et al., 2007)

Allpun=everyone can punish
Onepun= one individual can punish
Nopun = nobody can punish



O’Gorman, R. O., Henrich, J., & Van Vugt, M. (2008). *Proceedings of Royal Society-B*

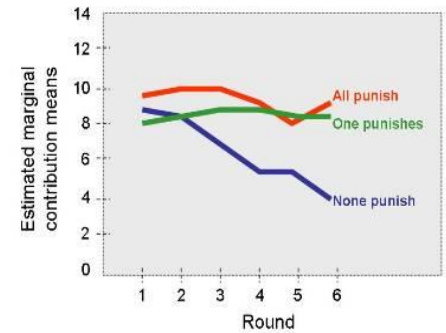


6. Leadership can easily turn into dominance and corruption!

- Dominance is part of our primate heritage



- Power corrupts when levelling mechanisms (STOPS) are missing (Kipnis, 1972)



- The agricultural revolution, and the emergence of “Dark Triad” leaders

- Machiavellianism
- Narcissism
- Psychopathy



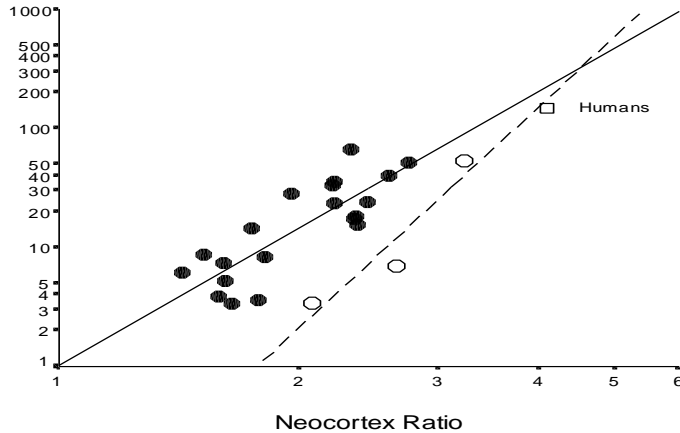
NON SEQUITUR

Monday
27
FEBRUARY

7. A short 2.5 million year evolutionary history of leadership

<i>Stage</i>	<i>Time period</i>	<i>Society</i>	<i>Group size</i>	<i>Leadership structure</i>	<i>Leader</i>	<i>Leader-follower relations</i>
1	> 2.5 million years ago	Pre-human	Any size	Situational or dominance hierarchy	Any individual or alpha	Democratic or despotic
2	2.5 million- to 13,000 years ago	Hominid bands, clans, tribes	Dozens to hundreds	Informal, situational, prestige-based	Big man, head man	Egalitarian and consensual
3	13,000- to 250 years ago	Chiefdoms, kingdoms, warlord societies	Thousands	Formal, centralized, hereditary	Chiefs, kings, warlords	Hierarchical and unilateral
4	250 years ago to the present	Nations, states, businesses	Thousands to millions	Structural, centralized, democratic	Heads of state, managers and executives	Hierarchical but participatory

8. The puzzle of charismatic leadership

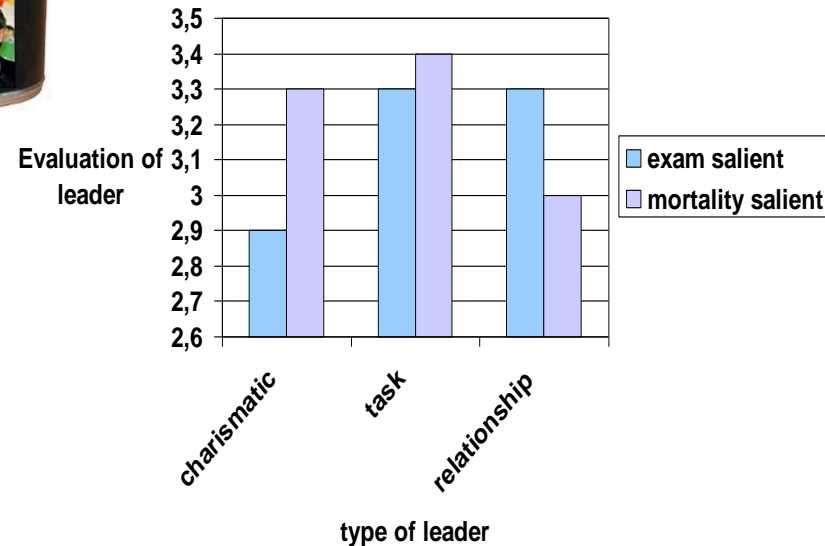


Charismatic leadership may have emerged in human evolution as a device to connect large groups of strangers



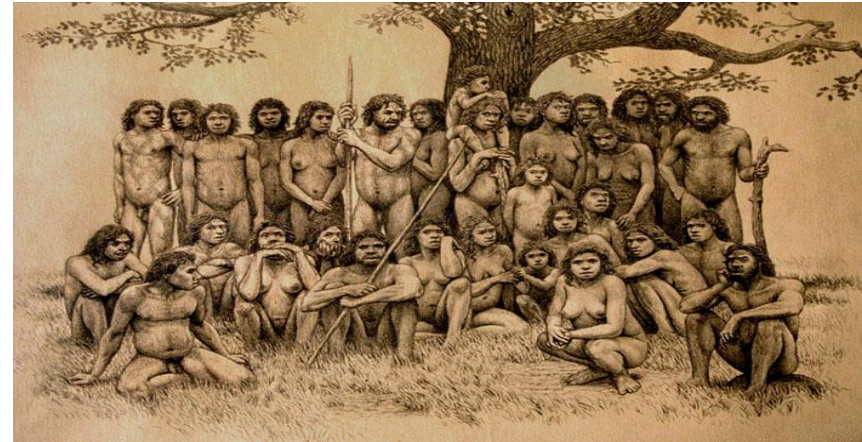
Charismatic leadership:

- The power of language
- (a) Metaphors
- (b) Articulating a vision
- Raising emotions in crowds (endorphins)
- In times of uncertainty



9. Mismatch hypothesis: Ancestral leadership was quite different (but may still affect us today)...

- Leader choices that were adaptive in ancestral environments may no longer produce good outcomes in modern environments



- “Savannah” traits of leadership: e.g.,
 - Height: In the US-presidential election the taller candidate almost always wins (good genes, good carers)
 - Masculinity/Femininity
 - Age



Who would you vote for?

- Who would you vote for as the new leader of your country?

War

Your country of Taminia is at war with the neighbouring country of Robania. It has been an aggressive and costly war and no side is willing to concede.

Peace

Your country of Taminia has a longstanding peaceful, relationship with the neighbouring country of Robania. This alliance must be preserved.



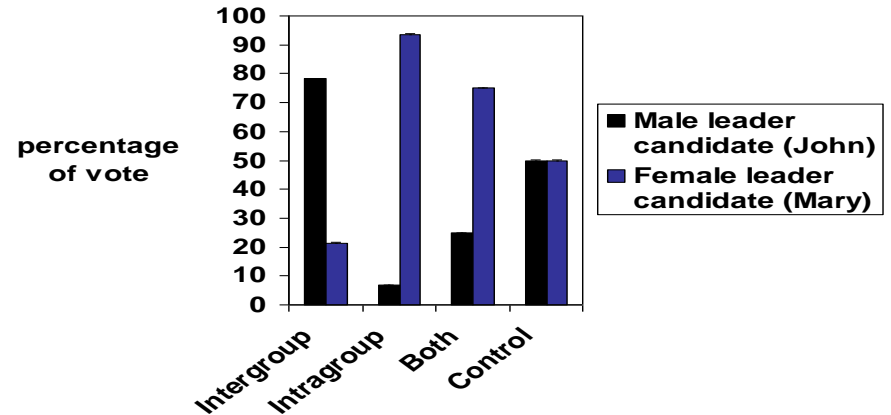
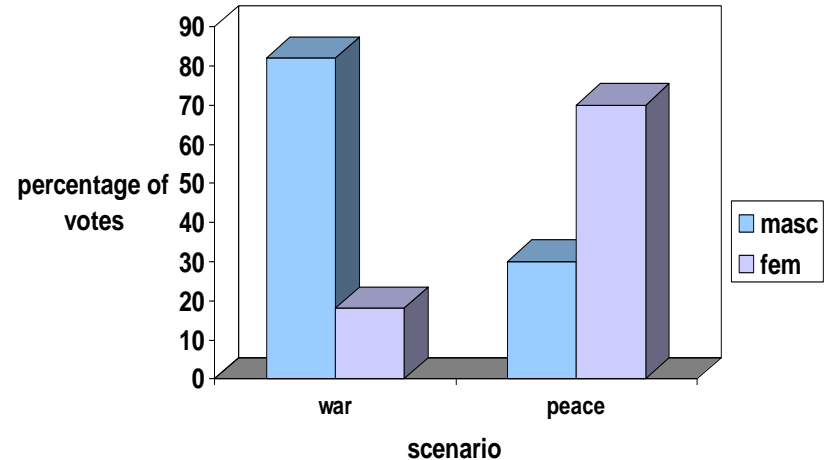
A



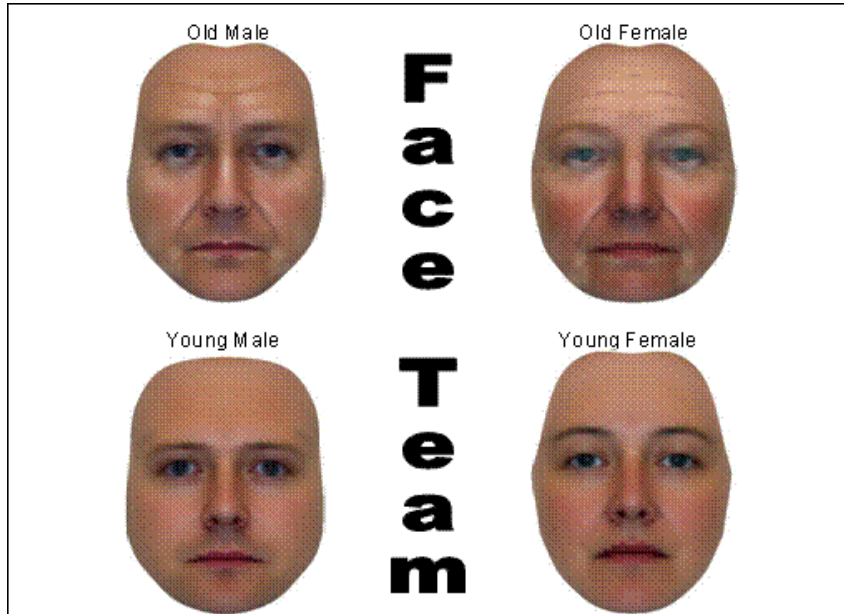
B

Cognitive biases in leadership selection

- People attribute leadership to individuals who match the prototype (bounded rationality)
- Evolved decision rule: Follow a masculine-looking leader in war time but a feminine-looking leader in peace-time (the male warrior hypothesis; Van Vugt et al., 2007)
- Are these templates universal?
 - Children can pick the winners of political elections just by seeing pictures of candidates
 - And so can foreigners....
 - CEO's with strong faces lead more successful companies



Age as leadership prototype

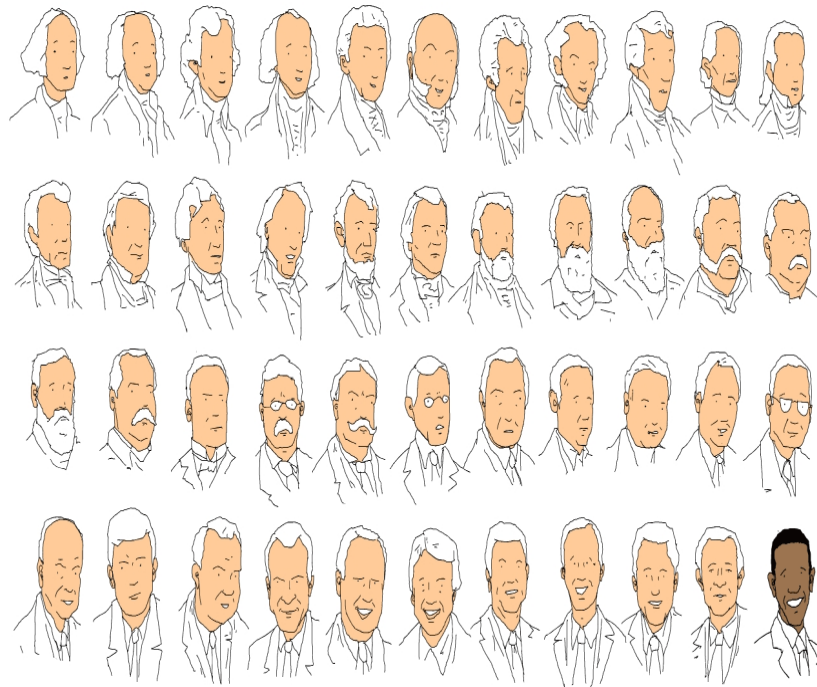


Older looking leaders are being followed when group traditions are important and younger looking leaders when group traditions must be replaced (transition).

Summary of for Age and Transition

Transition Pairings	Voting Percent age	χ^2	p
Old Male v Young Male	28% v 72%	27.37	.000
Old Female v Young Female	37% v 63%	10.49	.001

10. Preference for trustworthy (ingroup) leaders



All the US - presidents

Table 1

Preference Ratings for Various Leader Structures

Leader structure	<i>M</i>	<i>SD</i>
Democratic leader	5.51 _a	1.46
Elected leader	5.15 _a	1.36
Internal leader	4.94 _a	1.28
Appointed leader	3.22 _b	1.63
External leader	3.08 _b	1.37
Autocratic leader	2.55 _b	1.62

Note. Ratings were made on a 7-point scale (1 = *no preference for leader type*, 7 = *very strong preference for leader type*). Means with a different subscript differ significantly at $p < .001$.

TABLE 4
Contributions as a Result of Identity and Leader Type

Identity	Leader type	Sessions 1–6
Social	Skilled	181.61 ^b (41.93)
	Committed	210.07 ^a (64.87)
	<i>M</i>	195.84 (53.40)
Personal	Skilled	242.42 ^a (48.75)
	Committed	154.74 ^b (68.98)
	<i>M</i>	198.58 (58.87)
	Overall <i>M</i>	197.21 (56.14)

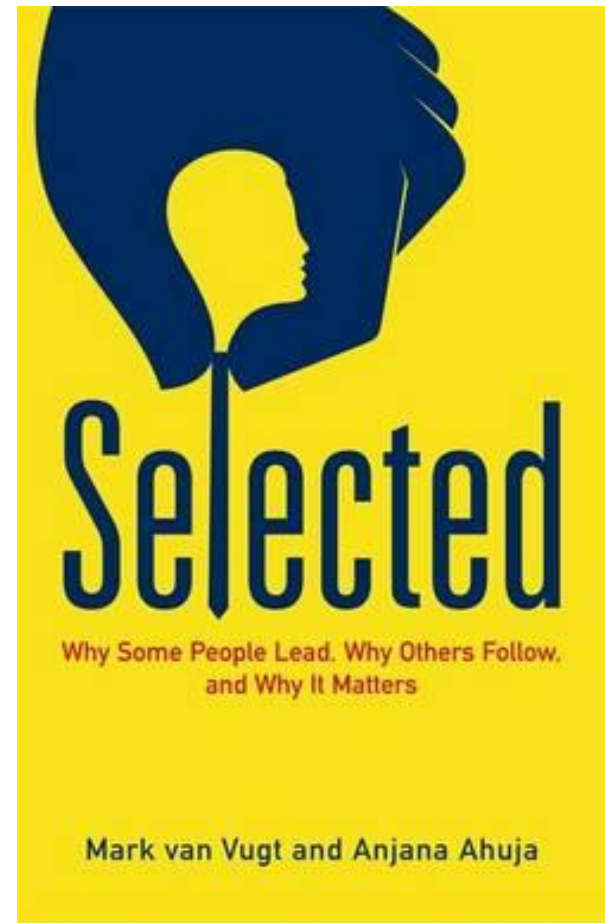
Note. Means with a different superscript differ significantly at $p < .05$; standard deviations are given in parentheses.

What's next?

- Leadership and evolution of cooperation (leader game to study personalities of leaders and 1st, second, third followers)
- Simulations of leadership emergence (group size, conflict of interest)
- Behavioral genetics:
 - leadership as conditional strategy or frequency dependent?
- Neuroscience of leadership
 - How followers respond to physical features of leaders (face, voice pitch)
 - Hormonal correlates of leadership
 - Testosterone may influence status striving
 - Oxytocin and endorphines may promote bonding between leaders and followers

Some lessons from the distant past for organizations

1. Distribute leadership
2. Mind the status gap: Don't give the Dark Triad leader an opening
3. Followers Unite: Encourage STOPs to overcome despots and corrupt leaders
4. Keep it small and informal: How about letting workers choose their managers?
5. Don't judge a leader by his jawline: Beware of selection biases against women and minorities.



Thanks!

- **The 14th International Conference on Social Dilemmas will be held from Wednesday July 6 through Saturday July 9, 2011, in Amsterdam.**
- **The VU Amsterdam offers two year Masters courses in social and evolutionary psychology**

