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Dynamics in the formation of group preferences:

The effects of group members' characteristics and verbal communication

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Agenda

- Introduction
- Research Model and Hypotheses
- Method
- Results
- Discussion

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Research Questions

RQ 1: "How are group members' characteristics and verbal communication related to the aggregation of individual preferences into group decisions."

RQ2: "Does the actual aggregation of individual preferences into group decisions match group members' perceptions thereof?"

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Importance of Groups in Organizations

- Many organizational hierarchies are getting flatter
  → self-managed work groups (Greenberg & Baron, 2008)

- Groups make better decisions than individuals (Reimer et al., 2010) especially for complex tasks (Mannes, 2009)

- Aggregation of individual preferences to group decisions in OR (examples):
  - AHP (Ramanathan & Ganesh, 1994)
  - MAUT (Huang et al., 2013).

- Importance of behavioral aspects in OR (Hämäläinen et al., 2013)

- Basic behavioral feature of each group: Members influence each other

  (Forsyth, 1990)

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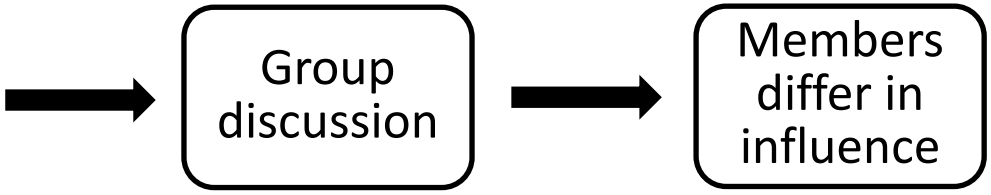
Influence

- Influence is
  - »*"a process in which individuals modify others' behaviors, thoughts, and feelings"* (Anderson & Kilduff, 2009, p.491; referring to Lewin (1951) and Cartwright (1959)).
  - »central to understanding organizational behavior (Mowday, 1978)
- Ability to influence others in organizations
  - »an important social skill (Greenberg & Baron, 2008)
  - »a basic determinant of each organizational member's effectiveness (Bass, 1990; Falbe & Yukl, 1992; Yukl et al., 1996; Anderson et al., 2008)
  - »crucial to obtain assistance, initiate change, and implement new ideas (Mowday, 1978; Yukl & Falbe, 1990; Anderson et al., 2008)
- Two strategies for making group decisions (Stasser & Birchmeier, 2003)
  - »Preference-driven strategy
  - »Information-driven strategy



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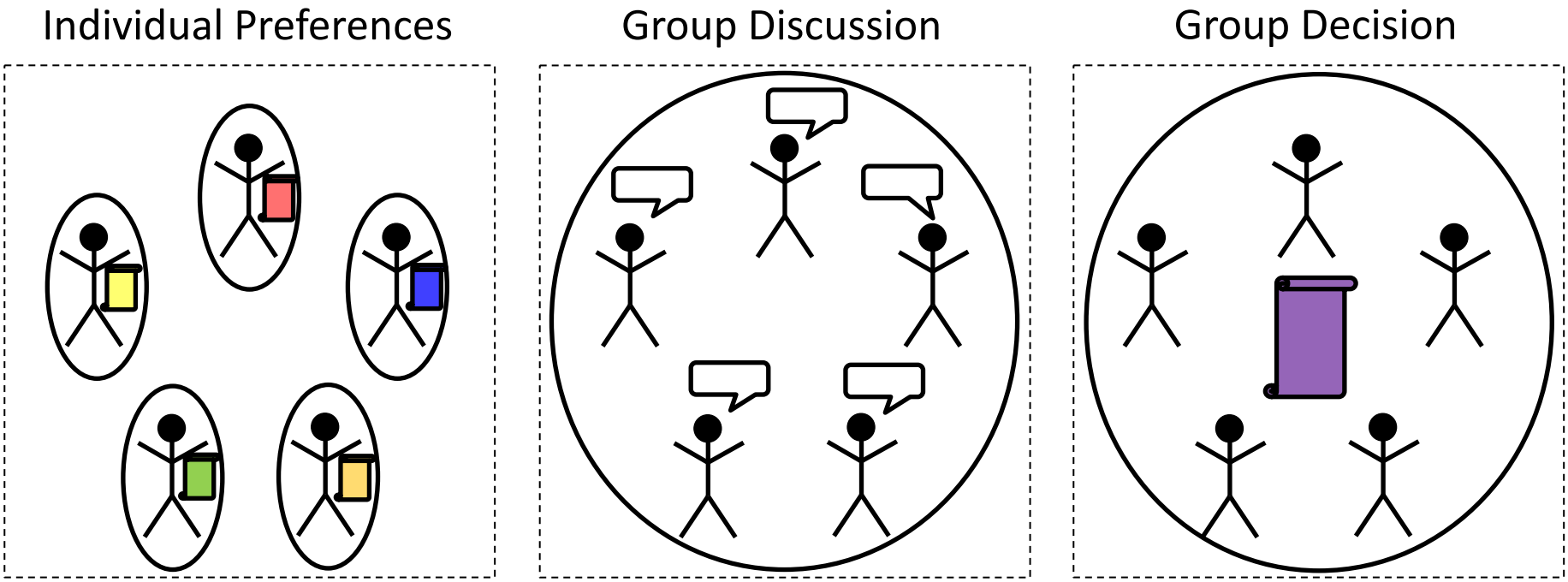
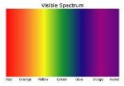
Individual Influence on Group Decisions



- **"The degree to which an individual's prediscussion preference is reflected in the group decision."**



- Members differ in individual influence on group decisions (Bonner, 2004)
- A scarcely addressed topic (Bonner et al., 2002; Bonner et al., 2007; Deuling et al., 2011)
- Actual versus perceived individual influence on group decisions (March, 1956)

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Research Model

- Our research model is designed as an input-process-output model

(McGrath, 1964; Gladstein, 1984; Hackman, 1987; Jarboe, 1988; Stasser et al., 2012)

INPUT	PROCESS	OUTPUT
• Personality • Task expertise	• Verbal communication	• Actual individual influence on the group ranking • Perceived individual influence on the group ranking

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Input-Output Hypotheses: Personality

- Big-Five Personality Dimensions (Costa & McCrae, 1989; Greenberg & Baron, 2008)
  - » Neuroticism
  - » Extraversion
  - » Openness
  - » Agreeableness
  - » Conscientiousness
- Neuroticism
  - » *"... the tendency to experience negative, distressing emotions"* (Costa & McCrae, 1987, p.301).
  - » Less goal-oriented (Malouff et al., 1990), detrimental for decision making (Socan & Bucik, 1998; Waldman et al., 2004; Maner et al., 2007; Hilbig, 2008) **-> H1: Neuroticism is negatively related to individual influence on the group ranking**.
- Dominance
  - » *"... the tendency to behave in assertive, forceful, and self-assured ways"* (Anderson & Kilduff, 2009, p.491; referring to Wiggins (1979) and Buss and Craik (1980).
  - » Active (Ghiselli & Lodahl, 1958), competitive (Daft, 2008), argue more for their ideas (Nussbaum & Bendixen, 2003), experience more positive emotions (Anderson & Berdahl, 2002) **-> H2: Dominance is positively related to individual influence on the group ranking.**

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Input-Output Hypotheses: Task Expertise

- Task expertise
  - » Closeness of individual solution to objectively correct solution (Littlepage & Mueller, 1997)
  - » Experts often produce statements which lead to an increase in confidence (Tormala et al., 2007) and which are more convincing (Reimer et al., 2004)
  - » Information presented by experts is often assumed to be valid and therefore can be trusted (Ratneshwar & Chaiken, 1991; Brinol & Petty, 2009)
  - » Experts are successful in changing others' attitudes (Petty et al., 1981; DeBono & Harnish, 1988; Bohner et al., 2002)

  - » **H3: Task expertise is positively related to individual influence on the group ranking.**

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Process-Output Hypotheses

- **Preference Statements**
  - » Adapted from Social Decision Scheme Theory (Davis, 1973; Stasser, 1999)
  - » H4: The more preference statements, the higher the individual influence.
- **Arguments**
  - » Adapted from Persuasive Arguments Theory (Burnstein & Vinokur, 1973; Nowak et al., 1990)
  - » H5: The more arguments, the higher the individual influence.
- **Problem Definition**
  - » Leader-attribution (Lord, 1977; Lord, 1985; Burke et al., 2006; Hollander et al., 1977; Anderson & Kilduff, 2009)
  - » H6: The more the problem is defined, the higher the individual influence.
- **Process Management**
  - » Leader-attribution (Lord, 1977; Lord, 1985; Burke et al., 2006; Hollander et al., 1977; Anderson & Kilduff, 2009)
  - » H7: The more the process is managed, the higher the individual influence.
- **Expertise Signaling**
  - » Expert-influence (Littlepage et al., 1997; Bonner & Baumann, 2012; Littlepage et al., 1995; Tajeddin et al., 2012)
  - » H8: Signaling expertise leads to more individual influence.
- **Questions**
  - » Role of listening in influence (Ames et al., 2012; Chen et al., 2010; Brooke & Ng, 1986)
  - » H9: The more questions, the higher the individual influence.

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Sample, Task, and Design

- Sample: n = 100 students (48 females, 52 males)

- Task: Desert Survival Situation (Lafferty & Pond, 1974; Boy & Witte, 2007)
  - » Rank 15 items (e.g., knife, mirror) according to priority for desert survival
  - » Objectively correct solution is hard to verify (McGrath, 1984)

- Design:
  - » Laboratory study with a non-experimental design (Kerlinger, 1986)
  - » Participants' actual preferences (Burnstein & Vinokur, 1973)
  - » Individual-group design (Bonner et al., 2004; Milch et al., 2009)
  - » Interacting groups (Yetton & Bottger, 1982) having leader-less group discussions (Bass, 1949; Bales, 1953; Brooke & Ng, 1986; De Grada et al., 1999)
  - » Four different measurement methodologies

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Measures

- Input measures:
  - **Personality** by self-rated questionnaire (Costa & McCrae, 1989; Borkenau & Ostendorf, 1993; Beckmann & Richter, 1975; Cronbach's Alpha: Neuroticism (.850), extraversion (.795), openness (.769), agreeableness (.787), and conscientiousness (.804))
  - **Task expertise** by Spearman's rank correlation between individual ranking and expert ranking (Boy & Witte, 2007)
- Process measures:
  - **Verbal communication** by content analysis (Neuendorf, 2002; Srnka & Koeszegi, 2007; Cohen's Kappa (Cohen, 1960; De Dreu et al., 1998): .85)
- Output measures:
  - **Actual influence** by Spearman's rank correlation between individual ranking and group ranking (Graney, 1978; Churchill & Iacobucci, 2005)
  - **Perceived influence** by peer-rating on single item (adapted from Kaplan & Miller, 1987; Ohtsubo et al., 2004; Anderson et al., 2008; average ICC (Karakowsky et al., 2004): .853)

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Effect of Personality on Individual Influence

Multiple regression	Actual influence	Perceived influence	
Neuroticism	**-.348*** **	**-.233** **	H1a supp., H1b supp.
Extraversion	-.162	.024	
Openness	.081	.085	
Agreeableness	-.017	-.017	
Conscientiousness	**-.205***	-.101	
Dominance	**.145**	**.244** **	H2a not supp., H2b supp.
Gender *(0 = male; 1 = female)*	-.005	-.161	
R^2	.146	.206	
Adj. R^2	.081	.146	

Values are standardized beta-coefficients.
*** p < .01; ** p < .05; * p < .10

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Effect of Task Expertise on Individual Influence

Multiple regression	Actual influence	Perceived influence	
Task Expertise	**.520*** **	**.205** **	H3a supp., H3b supp.
Studying Years	.001	.151	
R^2	.270	.079	
Adj. R^2	.255	.060	

Values are standardized beta-coefficients.
*** p < .01; ** p < .05; * p < .10

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Effects of Personality & Task Expertise on Individual Influence

Multiple regression	Actual influence	Perceived influence
Neuroticism	**-.269*** **	**-.274*** **
Conscientiousness	-.121	
Dominance		**.253*** **
Task Expertise	**.497*** **	**.222** **
R^2	.335	.203
Adj. R^2	.314	.178

Values are standardized beta-coefficients.
*** p < .01; ** p < .05; * p < .10

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Effects of Personality & Task Expertise on Individual Influence

Multiple regression	Actual influence	Actual influence (model 1a)	Perceived influence	Perceived influence (model 1b)
Neuroticism	**-.224****	**-.229*****	**-.271*****	**-.274*****
Dominance			**.271*****	**.253*****
Task Expertise		**.522*****		**.222****
R^2	.050	.323	.155	.203
ΔR^2		.272		.049
Sig. F-change	.025	.000	.000	.017

Values are standardized beta-coefficients.
*** p < .01; ** p < .05; * p < .10

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Effect of Discussion Content on Actual Individual Influence

Multiple regression	Actual influence	
Preference Statements	**.350*** **	H4a supp.
Arguments	.149	H5a not supp.
Problem Definition	.124	H6a not supp.
Process Management	**-.284** **	H7a not supp.
Expertise Signaling	**.184***	H8a supp.
Questions	.104	H9a not supp.
R^2	.288	
Adj. R^2	.242	

Values are standardized beta-coefficients.
*** p < .01; ** p < .05; * p < .10

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Effect of Discussion Content on Perceived Individual Influence

Multiple regression	Perceived influence	
Preference Statements	**.361*** **	H4b supp.
Arguments	**.369*** **	H5b supp.
Problem Definition	.037	H6b not supp.
Process Management	.057	H7b not supp.
Expertise Signaling	.069	H8b not supp.
Questions	.099	H9b not supp.
R^2	.564	
Adj. R^2	.536	

Values are standardized beta-coefficients.
*** p < .01; ** p < .05; * p < .10

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Effect of Discussion Content on Individual Influence

Multiple regression	Actual influence (model 2a)	Perceived influence (model 2b)
Preference Statements	**.434*** **	**.383*** **
Arguments		**.460*** **
Process Management	**-.174***	
Expertise Signaling	**.257*** **	
R^2	.237	.542
Adj. R^2	.214	.533

Values are standardized beta-coefficients.
*** p < .01; ** p < .05; * p < .10

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Input & Process on Output: Individual Influence

Multiple regression	Actual influence (model 1a)	Actual influence (model 3a)	Perceived influence (model 1b)	Perceived influence (model 3b)
Neuroticism	**-.229*** **	**-.154** **	**-.274*** **	**-.125** *
Dominance			**.253*** **	**.116** *
Task Expertise	**.522*** **	**.491*** **	**.222** **	**.150** **
Preference Statements		**.405*** **		**.373*** **
Arguments				**.384*** **
Process Management		**-.199** **		
Expertise Signaling		**.167** **		
R^2	.323	.490	.203	.591
ΔR^2		.167		.388
Sig. F-change	.000	.000	.000	.000

Values are standardized beta-coefficients.
*** p < .01; ** p < .05; * p < .10

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Implications for behavioral OR

- Personality and verbal communication of group members play an important role in preference aggregation
- Personality has a larger impact on actual aggregation
- Verbal communication has a larger impact on perceived aggregation
- GDSS help to aggregate individual preferences into group decisions (Matsatsinis et al., 2005)

→Include personality and verbal communication in GDSS

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Future Research

Our study	Future studies
•Total group discussion	•Group discussion phases
•Unanimity rule	•Unanimity vs. majority rule
•Face-to-face communication	•Contrast with computer-mediated communication

Thank you for your attention!