

When more Minds are more Creative than One: Evidence from a Natural Experiment and Laboratory Study

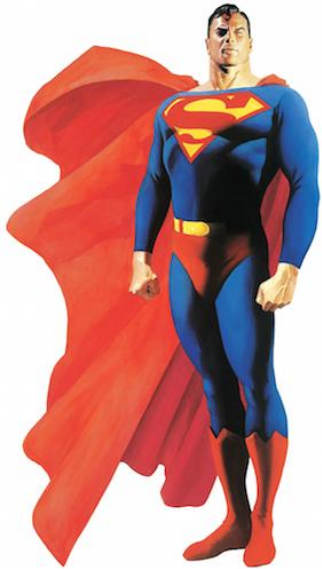
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Who Generates the Highest Quality Ideas?



VS



Superman or Fantastic 4*?

* as also starring in Taylor and Greve (2006)

Contradictory Predictions about Expected Creativity

Lone ideators >> teams

Creativity literature

Teams experience coordination and

motivation failures (Camacho & Paulus, 1995; Diehl & Stroebe, 1987; Girotra et al., 2010; Nijstad & Stroebe, 2006).

Context:

- lab studies → random team assignment

Teams >> lone ideators

Innovation literature

Teams can pool their members' social capital, knowledge and skills (Perry-Smith & Shalley, 2003; West, 2002).

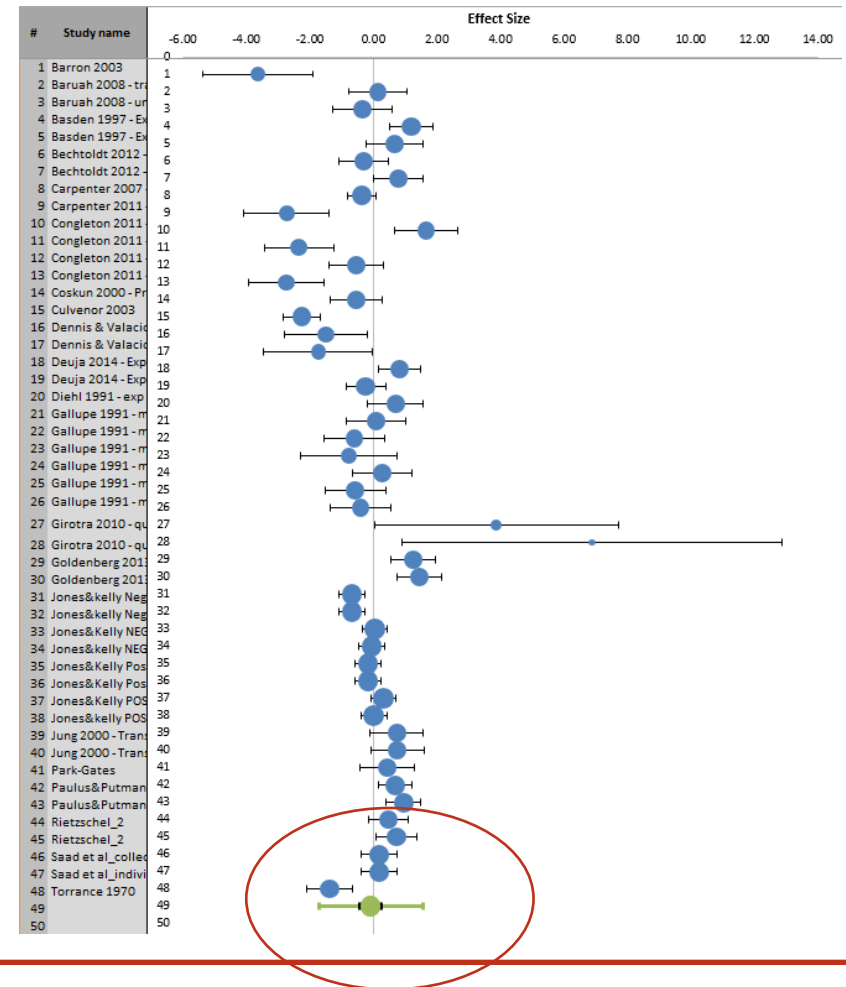
- E.g. scholars or inventors (Bikard et al., 2013; Singh & Fleming, 2010),
- E.g. Movie artists and Broadway musicals (Perretti & Negro, 2007; Uzzi & Spiro, 2005).

Context:

- field studies → self-formed teams

Meta Analysis – Team Versus Individual Based Creativity

- An (ongoing) meta-analysis of 48 studies
- **Objective:** test difference between lone ideators and teams on creative outcome
- **Initial outcome:** there is no consensus in the (creativity and innovation) literature
 - (Cohen's d, -0.08 , CI=[-0.43, 0.26] and existence of moderating variable(s) ($Q = 328.81, p < 0.00$).



Missing Link: Team Formation Type

Team based efforts

- **Self-formed team** if the team is formed endogenously by its members;
- **Induced team** if the team is formed through direct involvement of management.



Lone ideator

The *individual* pursuit of new ideas



Are more Minds more Creative than One (Generation)?

- Teams stimulate each other, enjoying enhanced motivation among team members as they help each other solve complex problems (Ding et al. 2010, Singh and Fleming 2010).

self-formed teams: yes

- Self determination and autonomy fuels *intrinsic motivation* (Bandura, 1987; Deci and Ryan 2002)
 - Encourages persistence and psychological engagement (Grant and Berry 2011)
 - Encourages proactive knowledge sharing (Lin 2007)
- Management can assemble teams to adhere to parameters of diversity, but *willingness* of members to utilize these matters (Aalbers et al. 2013, Shin et al. 2012).
 - More friction amongst strangers than amongst friends (Jehn and Shah, 1996)
 - Lower commitment to tasks one did not self-choose (Deci and Ryan 2002, LePine, and LePine, 2007)

Hypothesis 1a: Ideas generated by self-formed teams are more likely to be of high quality than ideas generated by lone ideators.

Hypothesis 2a: Ideas generated by managerially induced teams are less likely to be of high quality than ideas generated by lone ideators.

Are more Minds more Creative than One (Development)?

- Idea elaboration requires feedback and emotional support (Perry-Smith & Mannuci 2015)
 - Helps to identify ways to improve and expand ideas (Harrison & Rouse, 2015).
 - Teams leverage pooled social capital, knowledge and skills (Perry-Smith & Shalley, 2003; West, 2002).

self-formed teams: no

- Power of choice: self formation based on shared values, liking, demography and commitment, yet:
- Intragroup safety hinders autonomous thinking: conformity and groupthink (Janis, 1972)
- Diversity of social capital, knowledge and skills yield better informed decisions (Haas 2010, Szulanski 1996)
- Task conflict reduces conformity and consensus-seeking (De Dreu & West, 2001)
 - Enhances divergent thinking (De Dreu & West, 2001).

Hypothesis 2a: Ideas further developed by self-formed teams are less likely to be of high quality than ideas developed by lone ideators.

Hypothesis 2b: Ideas further developed by managerially induced teams are more likely to be of high quality than ideas developed by lone ideators.

Research Setting Study 1 - *Experimental Design*

Natural experiment at Philips Electronics, manipulating team formation conditions

- Setting: “crowd sourcing-for-innovation” idea tournaments
- Exploring the origin and evolution of 226 individual and team-based ideas submitted to this tournament

A. Control condition: *no instruction from the organization -teams self-formed*

B. Treatment condition: *management encouraged ideators to form teams before their ideas were entered into the first selection gate, with management advising on pairings for the ideation contest.*

Study 1 - Research Setting

A portrait of Frans van Houten, CEO of Philips. He is a middle-aged man with grey hair and glasses, wearing a dark suit, white shirt, and red tie. He is looking slightly to the right of the camera with a neutral expression.

“Innovation is in our DNA, we have always designed new solutions for our customers. That means that all our employees know that and that they can put their creativity to work in these areas.” Our interview with F. van Houten

Frans van Houten
The CEO of Philips

Variables

DV: Quality of idea - *Stage reached* = final stage reached in the innovation funnel (of 5)

IV: Team vs individual ideation: 0 if the idea is submitted by an individual = 0, or 1 by a team

IV: Managerial inducement.

› Managerial inducement; control condition = 0, treatment condition = 1

Controls:

Prior ideation experience

Hierarchical rank

Team size

tenure

Empirical Challenges

(i) **Rank ordered nature** of the D.V. (stage reached) → Continuation-ratio model

(ii) **Two-sided non-compliance** → 2SLS with encouragement as the instrumental variable

(iii) **non-independence of observations** due to serial ideators → Clustered standard errors over the ideators

Main Findings Study 1

- Empirical support that *how* teams are formed at the early stage of an ideation trajectory significantly affects idea quality
- **Team-based idea generation triumphs over generation by lone ideators if;**
 - A team is self-formed by its members.
 - However, teams induced by management generate lower quality ideas than the lone ideators.
- **Team-based idea development triumphs over development by lone ideators if;**
 - A team is induced by management.
 - However, self-formed teams do not out- nor underperform lone ideators.

Contributions to....

Creativity and social psychology literature

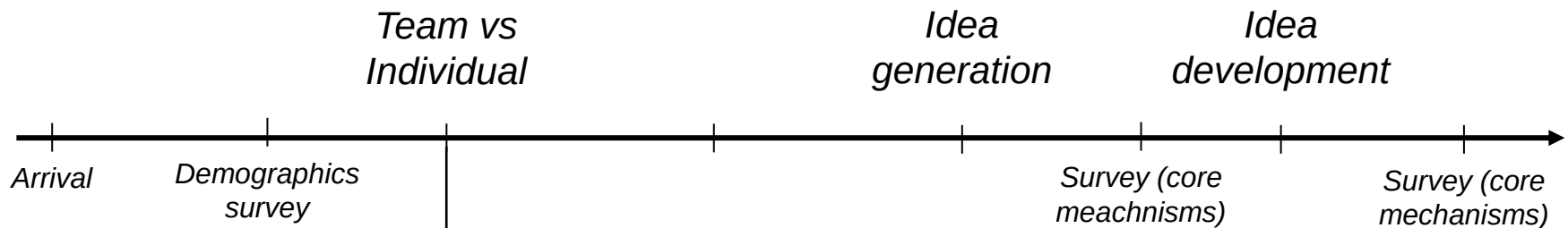
- Key to creative ideation is not *whether* ideas are generated by teams or individuals per se, but the *conditions* under which ideators are encouraged to partake in idea creation.
- Differentiation across ideation phases with a mixed method design

Literature on management interventions

- In contrast to the managerial tendency to stimulate creativity, we show that:
Intervening matters for idea development but not for idea generation (*phasing*).

Lab Experiment Complements Study 1 (*work in progress*)

3 factor between-subjects design (self-formed team, random team and individual)



Task (Girotra et al 2010): “You have been retained by a manufacturer of sports and fitness products to identify new product concepts for the student market. The manufacturer is interested in any product that might be sold to students in a sporting goods retailer (e.g., City Sports, Bike Line, EMS). The manufacturer is particularly interested in products likely to be appealing to students. These products might be solutions to unmet needs or improved solutions to existing needs .”

- No non-compliance
*Allowing direct comparisons
between induced and self-
formed teams*

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Thank you!



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