Developing a Nanotechnology Perception-Attitude-Acceptance Model.

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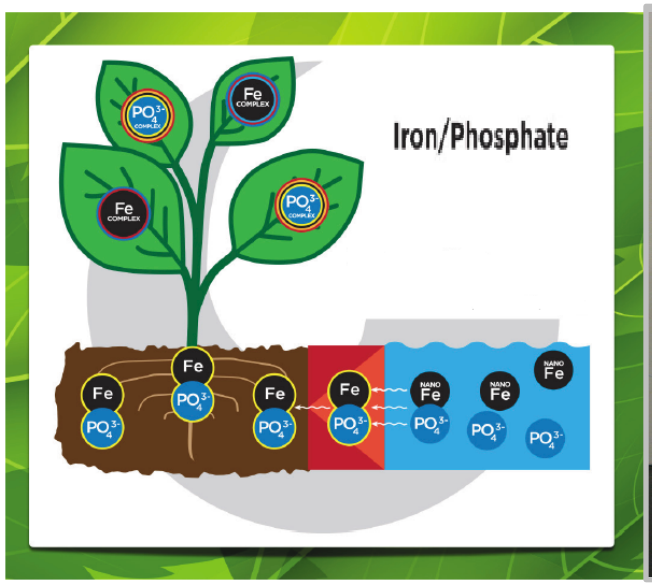
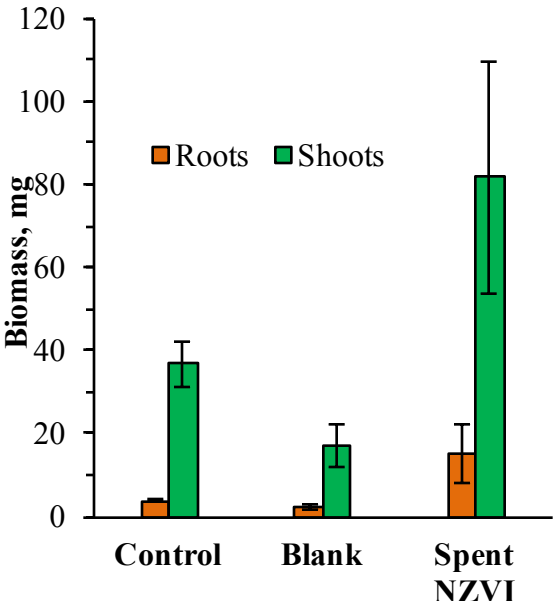
Introduction

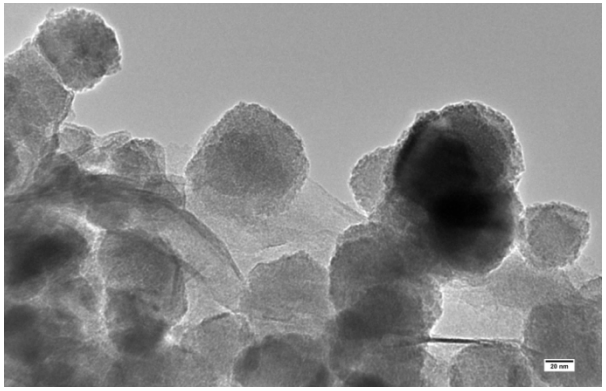
- Technological innovations have the power to transform human lives for better
- E.g. Nanotechnology applications in:
  - Agriculture
  - Medicine
  - Food packaging
  - Consumer products

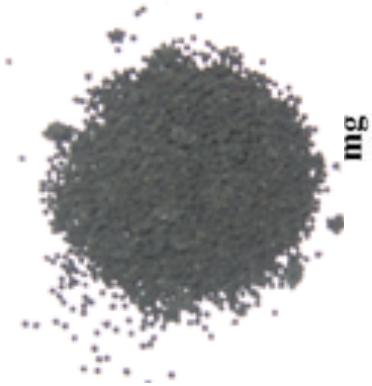
Nanotechnology Applications

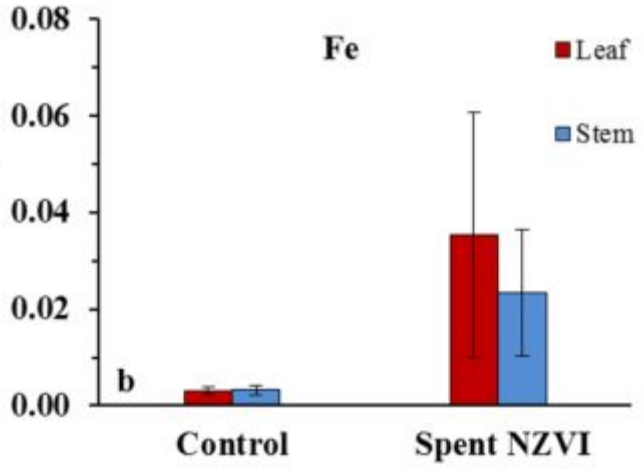


(Almeelbi and Bezbaruah, 2014)









- Yet, how people perceive the risks and benefits of nanotechnology applications are mixed (Cobb & Macoubrie 2004, Scheufele &Lewenstein 2005, Pidgeon et al. 2009).
- Several studies have investigated the phenomenon in a piece-meal manner (Cobb & Macoubrie 2004, Cacciatore, Scheufele & Corley 2011 Lee, Scheufele & Lewenstein 2005)
- Important to have a holistic understanding of the factors influencing perceptions and acceptance of nanotechnology applications

Importance

- Other technologies that have met with resistance
  - GMO
  - Persistent negative perceptions have led companies to remove them from products and communicate
  - The non-GMO movement


With Whole Grain First Ingredient
Cheerios
LOWER CHOLESTEROL*
Wholesome Goodness
1 gram of sugar
Not made with genetically modified ingredients*
*Trace amounts of genetically modified (also known as "genetically engineered") material may be present due to potential cross contact during manufacturing and shipping


Cheerios
100% WHOLE GRAIN OA
LOWER CHOLESTEROL
Post
10g of Protein with milk
grape-nuts
power-packed nutrition
the Original
CEREAL
Soy Free
NON GMO Project VERIFIED
NET WT 20.5 OZ (1 LB 4.5 OZ) 581g
TERRA
real vegetable chips
ORIGINAL
SEA SALT | NON GMO

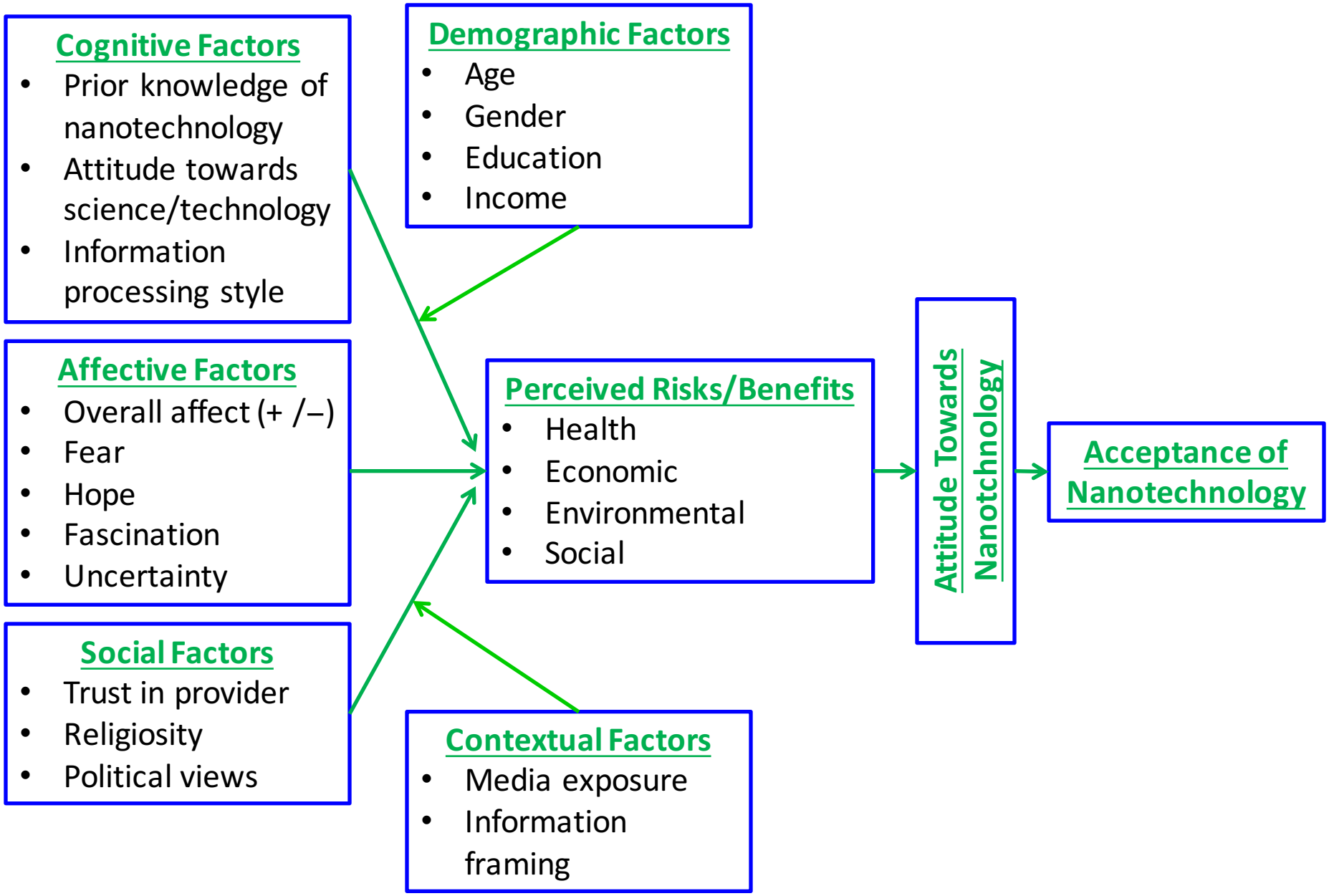

Nate's
meatless meatballs
NON GMO
SAVORY MUSHROOM
SERVING SUGGESTION
KEEP FROZEN


NON GMO Project
VERIFIED
nongmoproject.org


ORGANIC
Toaster Pastries
NON GMO Project

Emerging Non-Nano Movement

- A holistic understanding of the factors that influence nanotechnology risk perceptions and acceptance could help mitigate the negative influences through intervention and communication
- A framework to integrate the antecedent and moderating factors
- Nanotechnology Perception-Attitude-Acceptance Model (NaPAAM)


Cognitive Factors
• Prior knowledge of nanotechnology
• Attitude towards science/technology
• Information processing style
Demographic Factors
• Age
• Gender
• Education
• Income
Affective Factors
• Overall affect (+ /–)
• Fear
• Hope
• Fascination
• Uncertainty
Perceived Risks/Benefits
• Health
• Economic
• Environmental
• Social
Attitude Towards Nanotchnology
Acceptance of Nanotechnology
Social Factors
• Trust in provider
• Religiosity
• Political views
Contextual Factors
• Media exposure
• Information framing

Antecedents of Nanotechnology Risks/Benefits

- **Cognitive Factors**

- Prior knowledge of nanotechnology

(Gupta et al. 2013, Ho, Scheufele & Corley 2011, Scheufele & Lewenstein 2005, Siegrist et al. 2007)

- Attitude towards science/technology (Besley 2010, Retzbach, et al. 2011 Satterfield et al. 2009, Lee, Scheufele &Lewenstein 2005).
- Information processing style (Areni, Ferrell & Wilcox 2000, Nisbett et al. 2001)

Affective Factors

- Overall affect (+ /–)

(Gupta, Fischer &Frew 2012, Ho, Scheufele & Corley 2011, Simons et al. 2009)

  - Fear
  - Hope
  - Fascination
  - Uncertainty

Social Factors

- Trust in provider (Besley 2010, Gupta, Fischer & Frew 2012, Ho, Scheufele & Corley 2011, Liu & Priest 2009).
- Religiosity (Brossard et al. 2009, Cacciatore, Scheufele and Corley 2011, Corley et al. 2009, Ho et al. 2009, Scheufele & Corley 2010)
- Political views (Cacciatore et al. 2011)

Moderators

Demographic Factors

- Age
- Gender
- Education
- Income

(Ho, Scheufele & Corley 2011, George, Kaptan & Lee 2014)

Contextual Factors

- Media exposure (Boholm & Boholm 2012, Lee & Ho 2015, Liu & Priest 2009)
- Information framing (Cobb 2005, Druckman & Bolsen 2011, Schuetz & Widemann 2008)
- Product category (Cacciatore, Scheufele & Corely 2011)

Perceived Risks/Benefits

- Health
- Economic
- Environmental
- Social

(e.g. Cobb & Macoubrie 2004)

Additional Studies

- Study to understand farmer's perceptions of nanotechnology applications in agriculture
- Method: Qualitative study – in-depth interview of 6 farmers
- Understand what labels the agricultural industry have placed on the term nanotechnology.
- The process of adopting the label that communities begin attributing to and constructing meaning around the field (Stine Grodal 2007)

- “Small”, “research”, “new” and “improved” are the only labels farmers associated with nanotechnology
- The overall lack of awareness among farmers in regards to nanotechnology is the reasoning for lack of specific labels
- General sense of neutrality in how farmers viewed nanotechnology in agriculture (some skepticism mixed with hopes of benefits)
- Mostly uncertain but willing to learn more

Conclusion

- A holistic model of risk perception of nanotechnology
- An area ripe for future inquiry for specific applications in nanotechnology

Thank you!

Questions?