The Adoption of Online Shopping Assistants: Perceived Similarity as an Antecedent to Evaluative Beliefs

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Agenda

1. Motivation
2. Theoretical Background
3. Research Model
4. Research Method
5. Results
6. Discussion and Future Research
Motivation

• Traditional focus on extrinsic motivation & utilitarian benefits
  ➔ Limited set of adoption determinants
• Passive user and active IT artifact
• Focus on *individualistic* beliefs

➔ How do users view IT artifacts & interactions with them?
➔ How does this affect their evaluations of IT artifacts?
General Framework

- IT artifacts are perceived by their users as social actors, and interactions with them as social interactions

- Perceptions of IT artifacts can take the form of social attributions (e.g., regarding behavior or personality)

  ➔ IT artifacts can be evaluated similar to interpersonal interactions (e.g., similarity)

- These evaluations (similarity) act as antecedents to subsequent behavioral, social, and relational beliefs.
Study Focus

1. Investigate the effects of two types of similarity perceptions, namely personality and decision strategy, on users’ evaluations of decision aids

2. Compare the effects of these perceived similarities with those of the separate assessments of the user’s and the aid’s personalities and decision strategies
Decision Aids

Customers are increasingly interacting with vendors via online decision aids:

• Automated software agents that tutor users, elicit requirements, make recommendations, and perform other functions in place of a human (a.k.a. shopping assistants, RA’s, embodied conversational agents, etc.)

• Deployed to increase human contact in online shopping

• Perceived as Social Actors (Al-Natour et al.; Nass, et al.)
Computers are Social Actors (CASA) Paradigm

- Research demonstrated that users 1) attribute human-like characteristics to IT artifacts, and 2) apply social rules and expectations when they interact with technologies (e.g., Reeves & Nass, 1996).

- The types of characteristics that could be manifested
- Ways in which users process perceptions of these characteristics and the subsequent effects on their evaluations

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Type of Attributions

- **Social Categories:**
  - Gender, ethnicity ... etc.

- **Behavioral Attributions:**
  - Attributions of particular tastes or beliefs to attributions of decision-making style and methods of reasoning when choosing among alternatives

- **Personality Attributions:**
  - Personality types

Our Focus

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Decision Strategy

- Up to 12 different decision strategies are applied to multi-alternative/multi-attribute choice problems (Svenson 1979)
- Differ in use of decision heuristics and/or normative rules
  - Amount of information processed (extensive/limited)
  - Selectivity in information processing (consistent/selective)
  - Pattern of processing (alternative/attribute)
  - Whether the strategy is compensatory or non-compensatory
- Prior work has shown how decision strategy can be manifested using decision rules, and communicated via explanations
Dominance

- A dimension in the circumplex of interpersonal behavior (Wiggins & Pincus 1989)
- Anchored by Dominant-Submissive:
  - Dominance: marked by behavior that is confident, leading, assertive, and take-charge
  - Submissiveness: marked by behavior that is self-doubting, weak, passive, following, and obedient (Wiggins, 1979)

➤ Prior work has shown how dominance can be manifested using design characteristics
Similarity-attraction Hypothesis

People are attracted to those similar to them (Byrne et al., 1967)

Explanations:
1. **effectance-arousal**: positive and negative reinforcers (including information about similarity/dissimilarity) serve as stimuli for affective responses.
2. **uncertainty reduction**: similarity offers the reward of decreasing uncertainty about a target individual
3. **pleasurable interactions**: reduced potential for conflict increases enjoyment
Measures of Similarity

Perceived vs dyadic

• Al-Natour et al. (2006) showed how dyadic similarity can predict perceived similarity

This study focuses on perceived similarity
Effects of Perceived Personality Similarity

Will mainly affect the interaction experience

- **Trust**: Identification-based trust facilitated by uncertainty reduction

- **Perceived enjoyment**: Similarity as a Pleasurable-Interactions Stimulus

- **Social presence**: Similarity as an Effectance-Arousal Stimulus; focused attention leading to better recognition of social characteristics
Effects of Perceived Decision Process Similarity

Will mainly affect the interaction experience and utilitarian outcomes

- **Ease of use, usefulness and trust**: Uncertainty reduction

- **Perceived enjoyment**: Similarity as a Pleasurable-Interactions Stimulus

- **Social presence**: Similarity as an Effectance-Arousal Stimulus
The Relationship Between the Different Similarity Types

Individuals will likely use evaluations of similarity on one dimension in their evaluations of similarity on a different, yet related dimension (Byrne et al., 1967)

- Less specialized to more specialized
  ➔ Personality similarity affects process similarity
Similarity Effects Relative to Artifact and User Characteristics

**Traditional view:** more of the “right stuff” encourages better evaluations

**Our view:** similarity will have stronger effects than the separate assessments of the assistant’s and the user’s personalities and decision processes
Research Method

A 2 x 2 x 2 x 2 between subjects research design:

• Modality (text only, voice only), aid’s personality (dominant, submissive), aid’s decision strategy (additive compensatory, elimination by aspect) aid’s gender (male, female)

• 181 subjects were randomly assigned - asked to shop for a laptop computer for a friend
  – Aid offers information about attributes
  – Subject makes a choice
  – Aid makes a recommendation and provides reasoning
  – Subject either changes or not

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Dominance Treatment

Following Al-Natour et al. (2006), dominance was manifested by the shopping assistant by varying the degrees of its decisional guidance (Silver, 1990), use of directive speech acts (Searle, 1969), and expression of confidence.

Strategy Treatment

Manifested through the explanations aid provides to users (Wang & Benbasat, 2007). Aid used either a normative-based or a heuristic-based strategy (changed the decision rules).
PPS and PDPS had means of 4.67 and 4.34 and variances of 1.64 and 1.86, respectively. Overall, the treatment shopping assistants were able to create adequate levels of variation in the similarity.

* = p < 0.05
+ = p < 0.1
ns = not significant
Results – Similarity vs Ind. Assessments

### Table 3 (a): Personality Similarity vs. Subject’s and Assistant’s Personalities

<table>
<thead>
<tr>
<th></th>
<th>Assistant’s Personality</th>
<th>Subject’s Personality</th>
<th>Personality Similarity</th>
<th>Combined $R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effects on Perceived Enjoyment</td>
<td>0.15</td>
<td>-0.14</td>
<td>0.23*</td>
<td>10%</td>
</tr>
<tr>
<td>Effects on Social Presence</td>
<td>0.24</td>
<td>-0.04</td>
<td>0.13</td>
<td>10%</td>
</tr>
<tr>
<td>Effects on Trust</td>
<td>0.24</td>
<td>-0.22</td>
<td>0.26*</td>
<td>17%</td>
</tr>
<tr>
<td>* $p &lt; 0.05$</td>
<td></td>
<td></td>
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</tr>
</tbody>
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### Table 3 (b): Strategy Similarity vs. Subject’s and Assistant’s Strategies

<table>
<thead>
<tr>
<th></th>
<th>Assistant’s Strategy</th>
<th>Subject’s Strategy</th>
<th>Strategy Similarity</th>
<th>Combined $R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effects on Perceived Ease of Use</td>
<td>0.13</td>
<td>0.24*</td>
<td>0.36*</td>
<td>26%</td>
</tr>
<tr>
<td>Effects on Perceived Usefulness</td>
<td>0.26*</td>
<td>0.07</td>
<td>0.44*</td>
<td>31%</td>
</tr>
<tr>
<td>Effects on Perceived Enjoyment</td>
<td>0.29*</td>
<td>0.12</td>
<td>0.36*</td>
<td>27%</td>
</tr>
<tr>
<td>Effects on Social Presence</td>
<td>0.22*</td>
<td>0.20*</td>
<td>0.36*</td>
<td>28%</td>
</tr>
<tr>
<td>Effects on Trust</td>
<td>0.14*</td>
<td>0.22*</td>
<td>0.38*</td>
<td>27%</td>
</tr>
<tr>
<td>* $p &lt; 0.05$</td>
<td></td>
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Discussion

• Similarity as an important predictor above and beyond the individual assessments
• Relative effects of the two types of similarity might be biased by the utilitarian nature of the task

Future Work

• Different tasks (e.g., uncooperative)
• Longitudinal - effects of similarity over time
• Effects of similarity on actual behavior (buying and switching behavior)

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Thank you