

More knowledge, less reliance on heuristics? The moderating effect of knowledge on the effect of trust and affect on hydrogen refueling station acceptability

N. Huijts, E. Molin & B. van Wee

*Section of Transportation and Logistics, Faculty of Technology, Policy and Management, Delft
University of Technology, Delft, the Netherlands*

In case people have little knowledge about a technology, it may be expected that they have difficulties forming an opinion about it. It has been suggested that people with less knowledge rely their opinion more on trust and affect than people with more knowledge (Siegrist and Cvetkovich, 2000; Midden and Huijts, 2009). This reliance of one's opinion on trust or affect, rather than a pure evaluation of costs, risks and benefits, is sometimes referred to as basing one's opinion on heuristics. The aim of the paper is to examine the moderating effect of knowledge in the context of hydrogen refueling station acceptability. We test whether the moderating effect is present for both objective knowledge (as measured with a knowledge test with ten true-false items) and subjective knowledge (as rated by the participant themselves with four questions) and which type is a stronger moderator.

1200 citizens in the Netherlands were asked for their opinion about the addition of a hydrogen refueling facility at the nearest refueling station, of which 800 received information and 400 did not. We measured attitude towards a hydrogen refueling station that is to be placed at the nearest refueling station, trust towards the government as regulator, and positive affect towards the technology, all with 3 to 5 indicators each.

Analyzed separately, it was found that both subjective and objective knowledge moderated the effect of trust, while only *objective* knowledge moderated the effect of affect on attitude. When testing the moderating effects of both subjective and objective knowledge simultaneously for the effect of trust, we find that only *objective*

knowledge moderates the effect of trust on attitude. The significant interaction effects suggest that higher knowledge leads to a stronger effect of affect and trust on attitude, rather than the expected other way around.

Analyzing only the group that did not receive information, we only found a significant positive interaction effect for *subjective* knowledge with trust on attitude and thus no moderation effect for objective knowledge. Analyzing only the group that received information, we found a positive interaction effect for *objective* knowledge with both trust and affect on attitude and thus no moderating effect of subjective knowledge.

To conclude, the results suggest (in contrary to our expectations) that in case people have more knowledge (either subjective or objective) they rely more on trust and affect heuristics to form an attitude rather than the other way around. More specifically, objective knowledge is the main moderator of the effect of both trust and affect on attitude in the total sample, as well as in subsample that received information. Subjective knowledge only moderates the trust-attitude effect in the no-information group. Further research needs to clarify the interaction-effect with negative effect, and clarify the reason for the unexpected results.

References

- Midden, C. J. H. & Huijts, N. M. A. (2009). The Role of Trust in the Affective Evaluation of Novel Risks: The Case of CO₂ Storage. *Risk Analysis*, 29, 743-751.
- Siegrist, M. & Cvetkovich, G. (2000). Perception of hazards: the role of social trust and knowledge. *Risk analysis*, 20, 713-719.