Human-Elaboration-Object-Construal Contingency Framework for Mobile Decision-Aids
(MoDA©) in In-Store Shopping

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Significance. Mobile migration is under way with online retail on mobile devices surpassing that on PCs, and 75% of in-store shoppers using their mobile device for decision-making (Siwicki, 2015). However, the use of mobile devices to acquire product information in-store often results in information overload and decision abandonment, leading to a retailer's lost opportunity for in-store conversion. Hence, there is a critical need to enhance consumers' abilities to make decisions in-stores, when they lack information, time and cognitive resources. To address this need, we propose a conceptual framework for designing conversational, mobile decision-aids (MoDA$^{©}$), mobile-app based intelligent systems, for in-store shopping, grounded in principles of user- and object-adaptive, intelligent information retrieval and decision strategy.

Theory and Literature. Previous work has conceptualized decision aids as 'recommendation systems' helping users by eliciting their preferred attributes, and providing the 'most accurate' choice (Lee & Benbasat, 2010). Differing from the previous work, our conceptual framework informs the design of a mobile-app based intelligent system that supports and extends human decision-making 'processes' as a 'decision companion' rather than as a 'recommendation agent.' We integrate two robust theories of social psychology related to decision-making, Elaboration Likelihood Model (ELM) and Construal Level Theory (CLT), in developing our conceptual framework. ELM maps humans on a quantitative elaboration continuum between effortful and heuristic processing based on a person's ability and motivation to engage in an object-relevant elaboration (Petty & Cacioppo, 1981). The elaboration continuum is useful for understanding which decision strategy (extensive-limited) may be employed when an individual is at different levels of elaboration (high-low). CLT maps the object of evaluation on a quantitative abstraction continuum between abstract and concrete construal based on the object's mental representation (Liberman, Trope, & Wakslak, 2007). This abstraction continuum is useful in understanding when attribute-based and alternative-based evaluative processes are employed. CLT contends and demonstrates that when consumers are thinking abstractly or at a high level about the object, they use more attribute-based processing to evaluate it. On the other hand, when they are thinking concretely or at a low level about the object, they increase the use of alternative-based processing for evaluation (Liberman, Trope, & Wakslak, 2007).

Conceptual Framework. We integrate the above theories to develop the Human-Elaboration-Object-Construal Contingency (H-E-O-C) Framework that uses a consumer's natural language to infer their elaboration and abstraction levels, and predict the use of four decision making strategies – lexicographic (LEX), satisficing (SAT), elimination-by-aspects (EBA), and weighted adding (WADD) (Fig. 1). These strategies are differentiated by the amount of information processed (extensive or limited) and the pattern of processing (alternative-based

or attribute-based). Specifically, LEX involves limited, attribute-based processing; EBA extensive, attribute-based processing; SAT limited, alternative-based processing; and WADD extensive, alternative-based processing (Bettman, Luce, & Payne, 1998). If a decision aid can continually classify the elaboration level of the consumer and the abstraction level of the object, based on conversational input, then based on the H-E-O-C framework, it should be able to predict the decision strategy likely to be used by a decision-maker for a specific decision-task.
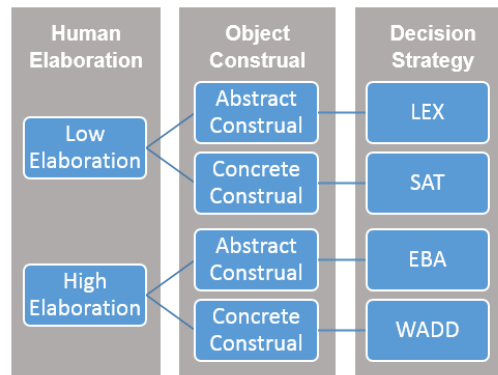

Fig. 1. Human-Elaboration-Object-Construal (H-E-O-C) Contingency Framework

Future Impact. Sub-optimal consumer decisions hurt the individual, the family, the economy, and the nation. The H-E-O-C framework for designing conversational, mobile decision-aids will enhance consumers' abilities to make informed decisions on-the-go, when they lack domain knowledge, time and cognitive resources for optimal decision-making. The mobile platform will allow for ease in adapting the decision aids to other wearable devices such as smart glass, offering the potential to integrate augmented reality with augmented decision-making.

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