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Theory-driven research in the age of AI: How processing fluency theory can improve AI predictions in consumer research

The capability of modern AI systems to simulate and predict human responses has improved dramatically over the last few years, which has made silicon sampling (i.e., the use of AI to simulate the responses of human participants) an increasingly used approach in scientific research, but also in applied fields such as market research. These developments raise the question of whether a black box AI algorithm that uses all available information without any theoretical guidance derives more precise predictions of human behavior than a theory-informed algorithm that uses only those pieces of information that are deemed relevant based on theory. In two research projects that examine theoretical predictions of processing fluency theory, we compare the performance of pure AI predictions with theory-enriched AI predictions. Specifically, we compare the performance of such AI systems for predicting helpfulness ratings of online reviews and sales of a fast-fashion retailer. We find converging evidence that constraining the scope of the information the AI systems use based on processing fluency theory improves their predictive performance. On this basis, the current research stresses the importance of theory-driven research and has important implications for the design of AI systems.