Modeling respondents' comfort for taste and scale heterogeneity in stated choice experiments: An application of the scaling approach on SCUBA diving characteristics.

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Abstract: One interest in choice experiments (CE) is to identify scale heterogeneity and its implications for respondents' choice behavior. This study used data from an environmental valuation survey on SCUBA diving attributes in Sipadan Island Park to investigate how scale heterogeneity effects may derive from respondents' physical comfort. Specific self-reported measures and indicators of physical comfort elicited from respondents, and included information on times and periods of sleep, drinking and eating relative to the time of the interview. The role of these indicators was then analyzed by parameterization of the scale function using the scaled-MNL (S-MNL) model. The *a priori* hypothesis is that when there is a comfort, there will be small error variance and hence a higher scale parameter of heterogeneity. Reversely, with lower comfort, respondents' answers will have a higher variance in their response and hence a lower scale parameter. Our results suggest that some aspects of comfort decreases unobserved variance in choices and systematically affect scale heterogeneity. When results from S-MNL model are compared to a benchmark utility model, it is found that the performance of two evaluated models is improving from base MNL model to S-MNL model. While this study suggests a possible way to examine unobserved variance and choice heterogeneity, it also implies that respondents' welfare evidently influences choice behavior.