

Modeling Decision-Making Strategies Among Prospective Hearing Aid Buyers

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Purpose

- The purpose of this study was to determine whether the decision-making strategies of prospective hearing aid buyers can be modeled using the following strategies:
 - Equal Weighting (EQW)**
 - Weighted Additive (WADD)**
 - Take-The-Best (TTB)**

Example of Decision-Making Strategy Prediction

1. Factors considered when purchasing a vehicle

Attribute	Positive Value (+)	Negative Value (-)
Cost	Lower cost	Higher cost
Reliability	Reliable	Unreliable
Power	Fast	Slow

2. An individual's ranking and rating of attributes

Attribute	Ranking	Rating (0-100)
Cost	1	100
Reliability	2	70
Power	3	30

3. Decision-making task

	Car 1	Car 2
Cost	-	+
Reliability	+	-
Power	+	-

4. Predicted outcome based on strategy used

EQW	Considers the number of positive values 2 vs. 1
WADD	Considers the individual's rating of attributes 100 vs. 100
TTB	Considers the individual's ranking of attributes #1 = Cost

Methods

- Three groups of participants were recruited: experienced hearing aid users, non-hearing aid users, and adult children of parents with hearing loss. Eighty-nine participants completed the study with 29-30 participants in each group (43 females, mean age = 56.5 years).
- In a lab-based experiment, participants completed 45 decision-making trials, each involving a choice between two hypothetical hearing aid service options. Each option was characterized by eight attributes, and each attribute has either a positive or negative value as shown in **Figure 1**. Following the decision-making trials, participants ranked and rated (from 0-100) the attributes by importance.
- Data were analyzed using three multilevel logistic regressions (one for each strategy), with predicted decisions as the independent variable and observed decisions as the dependent variable.

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Figure 1: Selected Hearing Aid Service Factors

Attribute	Positive Value	Negative Value
Purchase location	Available at multiple convenient locations	Available only at limited locations
Out-of-pocket cost	\$700	\$1,400
Length of return period	90 days	30 days
Length of warranty	3 years	1 year
Wait time	Same day	Days/weeks
Support availability	7 days a week	Weekdays only
Support provider	Hearing care professional	Customer service representative
In-person support availability	Full in-person support	Limited in-person support

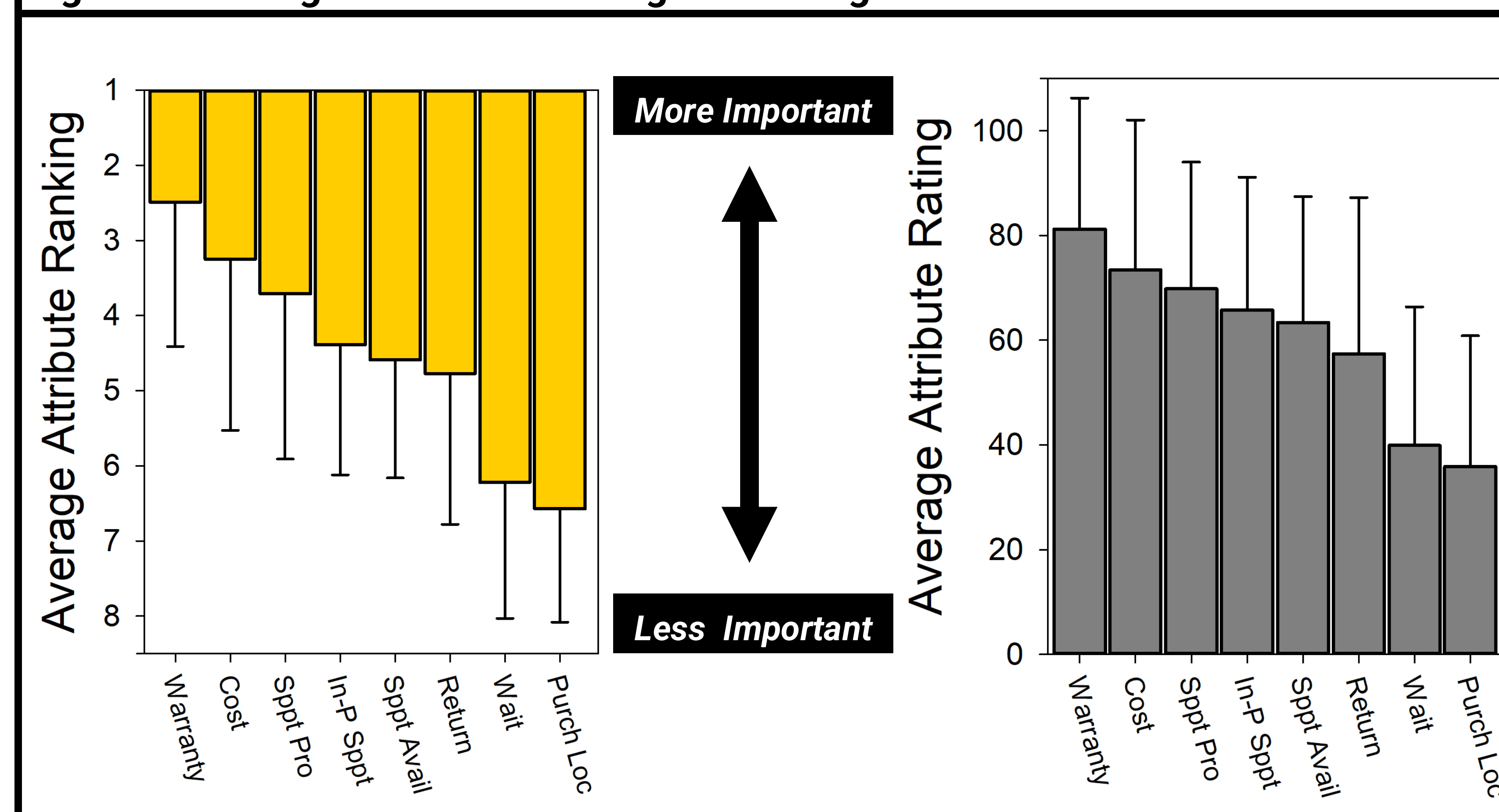
Example of Decision-Making Trial

	Option A	Option B
Length of warranty	3 years	1 year
In-person support availability	limited in-person support	full in-person support
Support availability	7 days a week	weekdays only
Purchase location	available only at limited locations	available only at limited locations
Support provider	hearing care professional	hearing care professional
Length of return period	30 days	30 days
Wait time	same day	same day
Out-of-pocket cost	\$1400	\$1400

Which option do you prefer?

Option A Option B

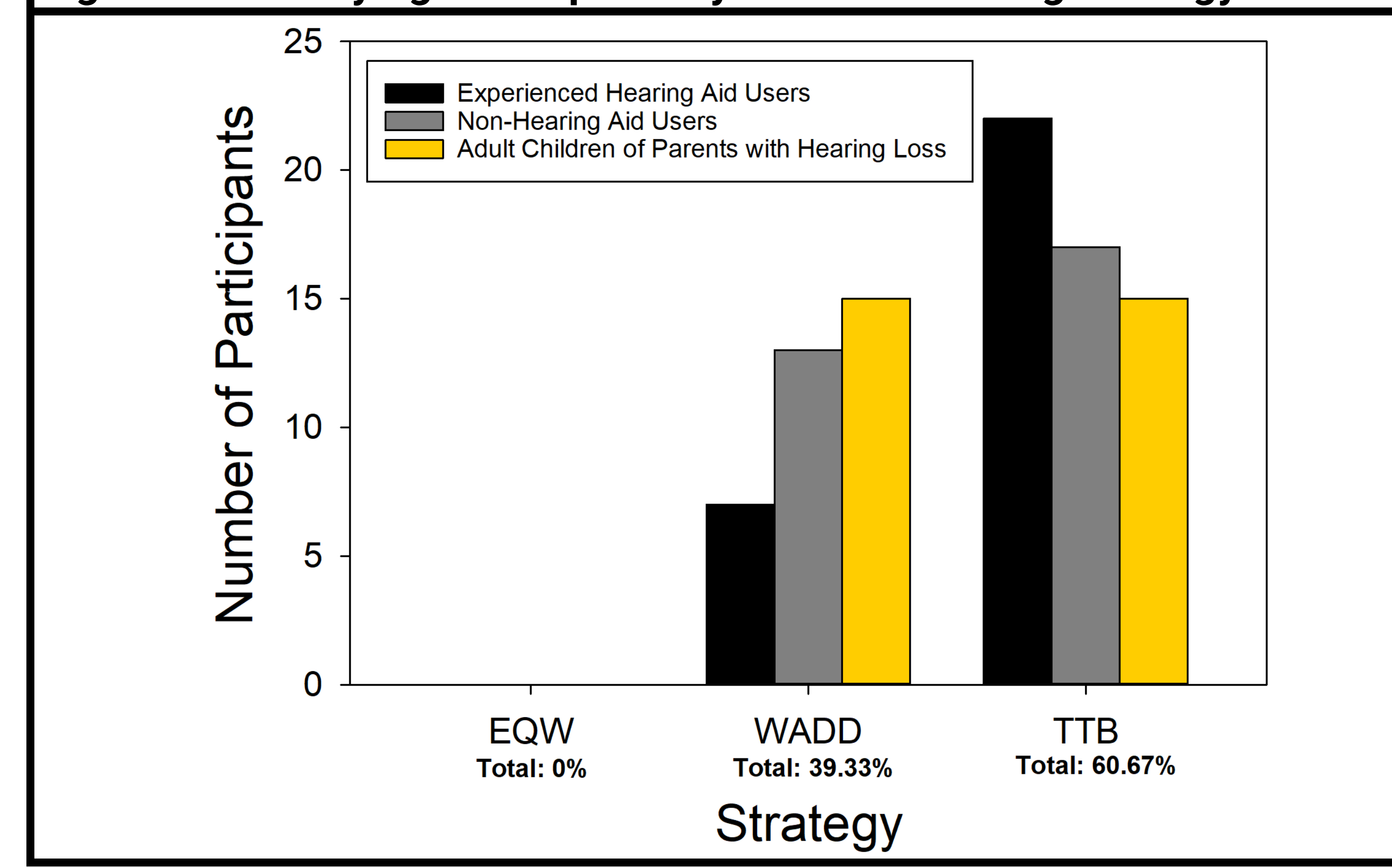
Figure 2: Average Attribute Ranking and Rating



Results

- Hearing aid warranty length, out-of-pocket cost, and support provider were ranked as the most important attributes when making decisions as shown in **Figure 2**.
- Data analysis showed that only the regression models of WADD and TTB were statistically significant, with TTB being much more likely to account for the observed data than WADD.
- The models further suggested that most participants were classified as using TTB, followed by WADD, and none using EQW as shown in **Figure 3**. Although more experienced hearing aid users employed the TTB strategy compared to non-users and adult children of parents with hearing loss, the difference was not statistically significant.

Figure 3: Classifying Participants by Decision-Making Strategy Used



Limitations

- This study only included service factors of hearing aid delivery models.
- The selected attributes and their positive and negative values are not exhaustive for every device on the market.
- This study did not consider all possible decision-making strategies.

Conclusions

- Leveraging decision-making framework theories, the findings of this study could inform the design of hearing aid service delivery models that are more appealing to prospective hearing aid buyers.
- These results indicate that prospective hearing aid buyers tend to base their decisions on a limited number of key attributes they deem most important.
- More research should be conducted to analyze decision-making strategies adopted throughout patient-clinician interactions.