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Background

- Client and family-centered research is important in healthcare to improve patient outcomes, enhance cost-effectiveness, and ensure that research efforts translate into meaningful benefits for children and their families.
- Sentiment analysis holds the potential to systematically and quantitatively provide valuable insights from interviews to steer family engagement in research on pediatric brain computer interfaces (BCIs).
- One critical aspect of sentiment analysis is the labeling of words as expressing positive or negative sentiment.

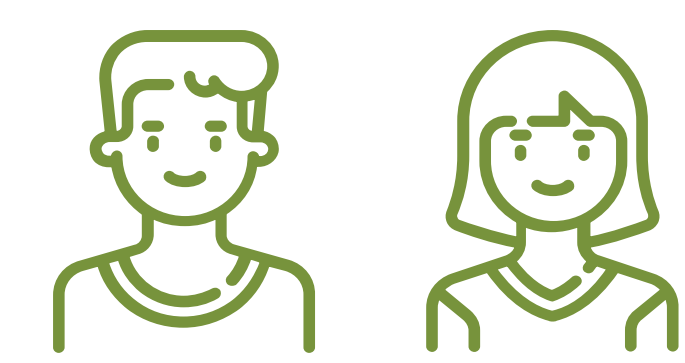
Objective

We aimed to categorize informant (family leaders, program leaders and researchers) responses as either positive or negative sentiments, thereby providing a summative understanding of perspectives of various stakeholders.

Methods

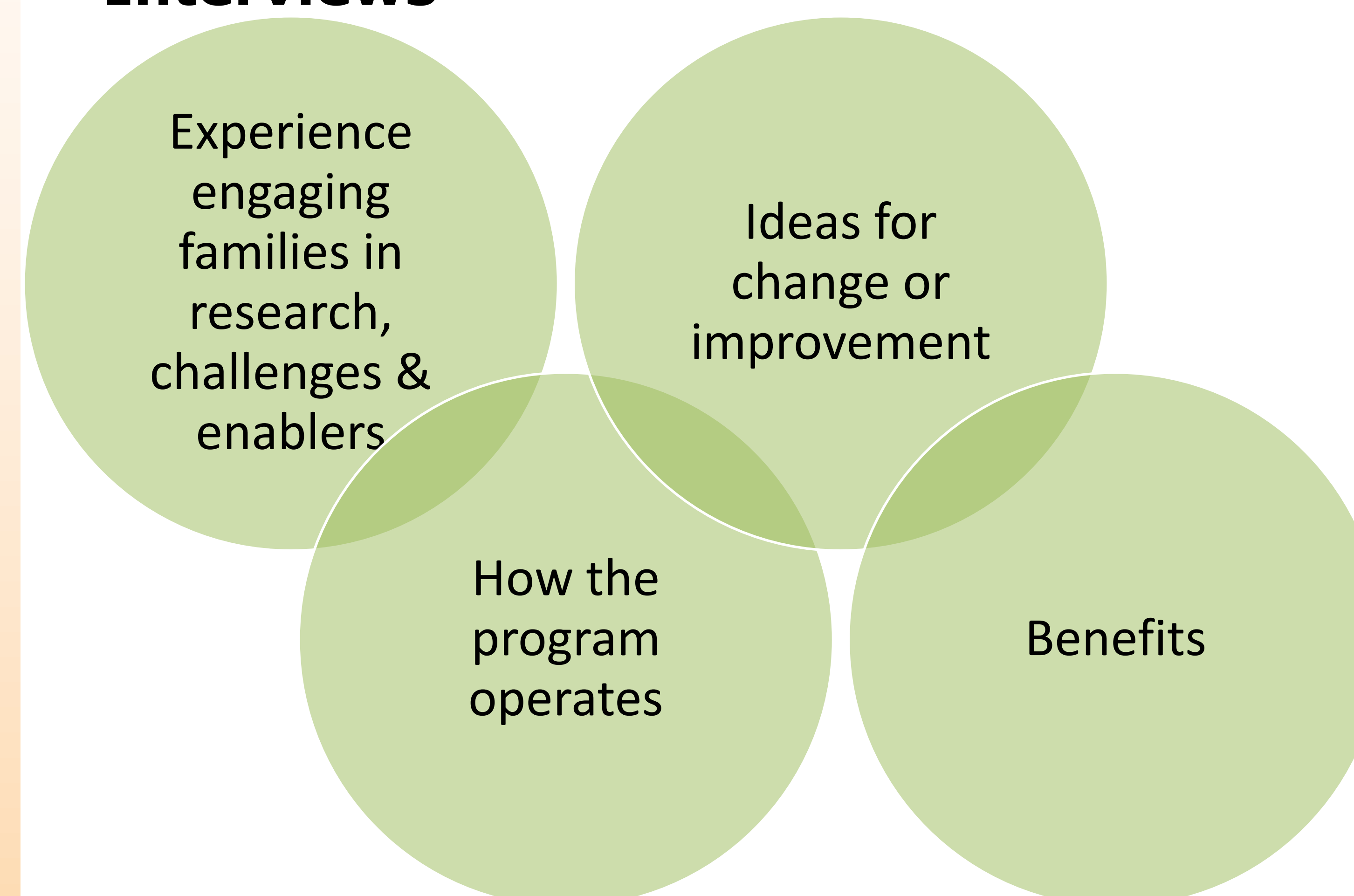
Dataset

Participants



- 7 family leaders
- 3 program leaders
- 8 researchers affiliated with BRI

Interviews



Data analysis

Remove punctuation and change all lettering to lowercase

Tokenize to break the sentence into word-for-word parts

Label each word with a positive or negative weight via a lexicon-based method

Compute confusion matrix and performance metrics to measure the effectiveness of the predictive models

Build a predictive model that classifies the individual words into positive or negative sentiments

Results

Table 1 describes the performance metrics achieved from the combination of lexicon-based method and SVM.

Accuracy	86.41%
Precision	79.13%
Recall	81.76%
F1 score	82.49%

Figure 1 shows that the lexicon-based method successfully obtained 204 correct sentiments which is the sum of true positive (190) and true negative (14). Besides, the wrong sentiments are the sum of false positive and false negative, which is $11 + 14 = 25$.

True Class	Positive	190	38
	Negative	11	14
		Positive	Negative

Predict Class

Figure 2 illustrates both positive and negative words clouds that are used on these interviews.

Positive sentiments



Negative sentiments

