Viruses, Vaccines, and Health Decision-Making

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Background

According to Fuzzy-Trace Theory, humans store information in two parallel ways, verbatim and gist (Reyna & Brainerd, 2023). Adults tend to rely on gist-based processing, which influences decision making (Reyna & Brainerd, 2023; Reyna, Broniatowski, & Edelson, 2021). During the COVID-19 pandemic, social media-based communication was at the center of health communication and misinformation (Ding et al., 2024).

A study on the 2014 Disneyland measles outbreak demonstrated that social media posts with more gisty, understandable messages led to greater virality and spread (Broniatowski et al. 2016).

In a recent study, Edelson and colleagues found that the extent to which college-aged people endorse categorical thinking and gist principles correlated with COVID-related risks (Edelson et al., 2024). Greater endorsement of categorical thinking and gist principles correlated with taking fewer COVID-related risks.

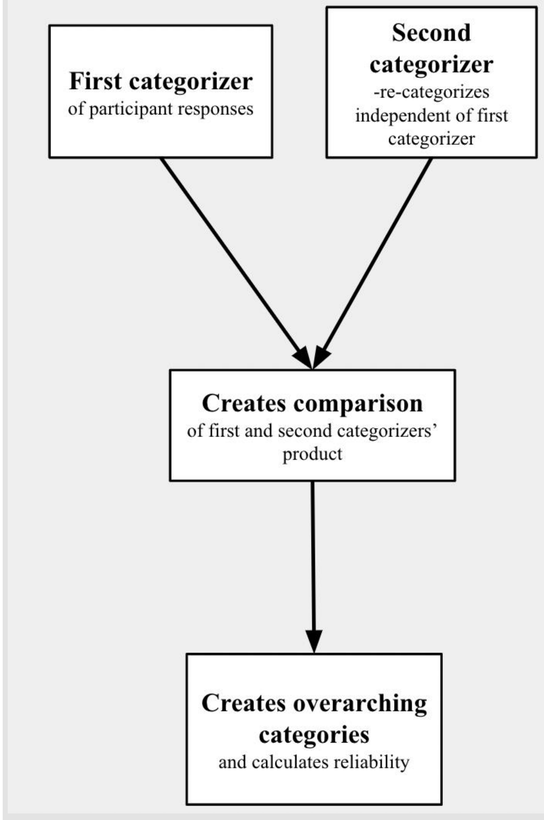
Methodology

During the COVID-19 pandemic, thousands of Twitter and Facebook posts and messages were run through a machine learning topic model, which summarized these posts as either sets of 10 words each, or sets of 10 examples each. A set of 10 words or examples is referred to as a 'topic'.

Survey participants summarized the gists, or 'bottom-line meaning' they extracted from these topics for twelve arms of the study, repeated for two sets of topics that were created at separate time points during the pandemic. In total, N=367 students and N=102 adults were recruited. Our team then categorized all these responses based on strict decision criteria.

The purpose of the reliability process is to compare one person's categories with another's, to test the inter-rater reliability of these categories. Quantitative metrics are then computed to represent the inter-rater reliability for each arm of the study.

Carrying out this reliability process ensures that the qualitative categorizations are robust and replicable. Further, the reliability percentage is one indicator of how coherent the survey responses are.



Findings

The vast majority of inter-rater reliabilities calculated, across recruiting platforms, were strong, ensuring that the final categories (that analyses will be based on) are strong.

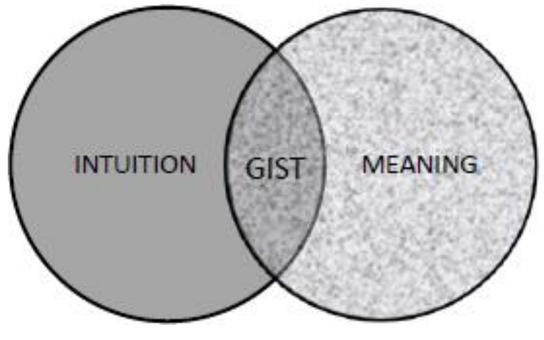
Recruiting Platform #1			
	Total Responses	**Total Categories**	**Number of Overarching Categories:**
Matched	100% - 52/52	100% - 16/16	6
Unmatched	0% - 0/52	0% - 0/16	
Recruiting Platform #2			
Matched	66.10% - 39/59	92.31% - 24/26	12
Unmatched	33.90% - 20/59	7.69% - 2/26	

The table above is an example of the reliabilities for one topic across two recruitment platforms. Inter-rater reliability for the first platform was perfect and for the second platform it was also high but slightly less so.

Next Steps

These results demonstrate for the first time how coherent semantic themes can be extracted from thousands of social media messages. The reliabilities were the last step in this process of completing the categorizations. We will now pivot to different areas of this project, specifically more quantitative ones. At the very end of my research for the summer, I merged the project's dataset and starting running descriptives and correlations.

Next steps will include analyzing these correlations and descriptives, and examining findings across different demographic factors of the participants like age, sex, and nationality.



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Laidlaw Experience

Joining Dr. Reyna's lab this past spring semester through the Laidlaw Scholars program was my first undergraduate research experience. In speaking with the members of my research cohort this summer, I came to understand that there are stark differences between different kinds of research, contrasts between the structure of small self-led projects and large research teams, between STEM research and humanities research, and more. I joined a large ongoing research project, with a team of fellow undergraduate students. In one vain, this was daunting, as I had to immediately catch up to the pace of an efficient team, but in another, it was extremely helpful to have more experienced researchers to look up to and to learn from. Unlike other scholars in my cohort, I did not begin my first Laidlaw summer hoping to finish an individual project, but I aimed to get as much work done as I could on a larger project, aware that it will be ongoing for the next few years. There may have been less pressure for completion, but there was responsibility in knowing that the work I completed needed to be thorough and correct, as it would be utilized for further aspects of the larger project for quite a while. Through my Laidlaw experience, I learned so much about the structure of undergraduate research, and I feel well prepared to further apply a global lens to research during my Leadership-in-Action next summer.

Acknowledgements

As I have completed my first summer as a Laidlaw scholar, I am excited to use what I learned this through my first summer experience to guide my global experience next year. I owe a great thank you to all that helped me through this process:

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