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THE IMPACT OF INDIVIDUAL QUALITIES ON MESSAGE COMPREHENSION
AND LIKING IN THE DEFENSE INDUSTRY

BY
EVAN CRAWLEY

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF
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IN
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UNIVERSITY OF RHODE ISLAND

2023

THE IMPACT OF INDIVIDUAL QUALITIES ON MESSAGE COMPREHENSION
AND LIKING IN THE DEFENSE INDUSTRY

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2023

Abstract

Professionals working in corporate communications within the defense industry have cited a need to send the same message multiple times in many different ways to maximize the effectiveness of the correspondence. At the present time, communication specialists rely on guesswork to ensure that the workforce has the relevant knowledge needed to be effective at work. It would be far more effective if these specialists had greater knowledge of the most accurate way to reach each sector of their workforce, particularly in light of the Covid-19 pandemic that caused an unprecedented increase in telework. By understanding the medium preference, generational cohort, military status, age, and telework frequency in relation to message comprehension and liking, this study aims to create new knowledge of how best to communicate with a diverse and specialized workforce with unique information needs. The study ultimately yielded largely inconclusive results because of sampling size, but further explorations is warranted. The study found evidence that receiving a video treatment results in less message comprehension compared to text or image. There also was evidence of a strong relationship between age, military status and working in the defense industry with liking. These findings will need to be substantiated by further research with a larger sample.

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CHAPTER 1

INTRODUCTION

A. Title of the Study

The Impact of Individual Qualities on Message Comprehension and Liking in the Defense Industry

B. Statement of the Problem

Professionals working in corporate communications within the defense industry have cited a need to send the same message multiple times in many different ways to maximize the effectiveness of the correspondence. At the present time, communication specialists rely on guesswork to ensure that the workforce has the relevant knowledge needed to be effective at work. It would be far more effective if these specialists had greater knowledge of the most accurate way to reach each sector of their workforce, particularly in light of the Covid-19 pandemic that caused an unprecedented increase in telework. By understanding the medium preference, generational cohort, military status, age, and telework frequency in relation to message comprehension and liking, this study aims to create new knowledge of how best to communicate with a diverse and specialized workforce with unique information needs.

C. Justification for and Significance of the Study

Properly replacing and training the next generation of employees is critical to the long-term health of any organization. Effective communication is a key aspect in this process, as it is important that new employees are getting the information they need to be successful in their jobs. Message effectiveness as a concept, however, is as vast as it is intricate. It entails elements of purpose, social and professional connectedness, emotional

response, comprehension, and liking, among other concepts. For the purposes of this study, only comprehension and liking will be examined in relation to the qualities of the media and qualities of the study participants. These two were specifically chosen because they are — in theory — relatively easy to measure yet essential parts of an effective message. Whether or not a message can be understood is a foundational aspect of communications, while pleasing messages are more likely to elicit a favorable response. Further research should explore other elements of communication effectiveness to develop a more well-rounded understanding of the concept, which is relatively understudied with respect to media richness in organizational communication.

This study also will provide further evidence as to what effect the Covid-19 pandemic has had on this process. It is a problem Jeff Prater often has pondered over the last few years. Prater is a retired surface warfare officer in the United States Navy and currently the Director of Corporate Communications for the Naval Undersea Warfare Center (NUWC) Division Newport. This organization is the Navy's full spectrum research, development, test and evaluation, engineering and fleet support center for submarine warfare and other systems associated with the undersea battlespace. In addition to his experience at NUWC Division Newport, Prater previously served as the Public Affairs Officer for Naval Surface Warfare Center Panama City Division in Panama City, Florida. During an interview conducted March 10, 2022, Prater identified a number of issues he has noticed throughout his career and contrasted them with more recent developments. As for the present research, the most relevant development he has noticed is with respect to different messaging needed for different generations. In his previous work doing communications on Navy surface ships, the age gap was around 20-

45 years old and most were on the same page with respect to messaging as a result of Navy training and a relatively smaller number of people. That changed when he got to the warfare centers, as now he needed to reach more than 6,000 employees with an age gap of 15 years old for interns all the way to the most senior employees in their 80s.

“Early on, I learned to get proper penetration you need to hit them with it five times, five different ways,” Prater said. “You have to recognize that there are different generations and that these different generations communicate very differently.” In addition to the repetition and variety needed, timing also matters, Prater said. He found different generations respond differently to certain modes of communication, which is why his team uses a variety of methods, such as face-to-face, telephone, email, digital signage, posters, articles and livestreaming videos.

Prater’s approach is rooted in communications theory, yet the literature does not support this exact problem in the defense industry or provide a targeted approach like this study proposes. It is unknown if this population is unique within the field of communications as the amount of studies are limited, representing a gap in the literature. Those working in the field of defense communications, like Prater, have cited observable communications differences between the general population. It is the intent of this research to investigate whether or not there is a quantifiable difference. This study also takes a unique approach to defining generational cohorts by examining employees who began working before, after and during the Covid-19 pandemic. By exploring variables that in totality are not typically grouped together, it will attempt to fill a gap in the current literature while simultaneously providing greater knowledge about a real-world problem. By understanding the medium preference, generational cohort, military status, age, and

telework frequency in relation to message comprehension and liking, I hope to answer following question:

RQ1: How do the qualities of the reader and medium predict message comprehension and liking?

CHAPTER 2

Review of Literature

The approach for this project is rooted in medium theory, intergenerational communications, and telework research. Medium theory provides an overarching framework for this study. Meyrowitz (1995) asserted that media can differ from one another in a variety of ways, but medium theory explores the relatively fixed characteristics of media content. This includes two levels of analysis. The micro level explores the consequences of choosing one medium over another in a particular situation, while the macro level looks beyond these individual uses. An example of this would be examining how a new technology affects society as a whole. Most importantly, medium theory provides proper justification for the proposed method in this study as the theory does not present a cause-and-effect view. Rather, it describes how a medium encourages or discourages the ways in which people communicate (Meyrowitz, 1995).

This is just what this study seeks to investigate, that video, images and text either encourage or discourage communications liking and comprehension. Yet, before this proposal can move forward and address independent variables, it is important to address the dependent variable, message liking and comprehension. Downs and Hazen (1977) provided the pioneering work on the relationship between job satisfaction and organizational climate, ultimately developing their Communication Satisfaction Questionnaire (CSQ). An original questionnaire was distributed to a diverse group of companies and later revised, revealing eight communications satisfaction factors. These include personal feedback, corporate perspective, organizational integration, relation with supervisor, communication climate, horizontal communication, media quality and

relations with supervisor. While generally accepted as a sound method for analyzing communication satisfaction in an organization, some have taken issue with aspects of the CSQ over the years. DeConinck et al. (2008) replicated the CSQ with retail store buyers and suggested that the factors should be condensed from eight to five (DeConinck et al., 2008). This research is just one element of message effectiveness and shows just how wide-reaching it can be as a concept. Furthermore, aspects such as liking and comprehension are factors when it comes to the use of messages (Hornikx, 2017). In their study of how different cultures react to different messages, Hornikx and le Pair used a semantic differential scale to test their hypotheses (Hornikx, 2017).

It also is important to acknowledge that the term “generation” needs to be defined. In a systematic literature review published by Han in 2022, he found that intergenerational differences in communications are understudied variables in the field as opposed to other factors like gender or sex. Even when they are the focus, it is often a family perspective and rarely workplace-focused (Han, 2022). Han’s work provides a valuable roadmap for properly defining generations. As Han notes, this is no easy task given that plenty of authors have taken different approaches to establishing margins. For the purposes of this study, generations will be viewed through two perspectives. The first is outlined by the Pew Research Center, which classifies Americans both by their “place in the life cycle” and “membership in a cohort of individuals who were born at a similar time” (Dimock, 2019). In turn, the current working class according to Pew is broken down into five generations: Silent (born 1928-1945), Boomers (1946-1964), Generation X (1965-1980), Millennials (1981-1996) and Generation Z (1997-2012) (Dimock, 2019). Other research has established similar margins (Han, 2022).

This is not the only way generations have been defined, however, and given the effects of the COVID-19 pandemic, it is important to consider other benchmarks. Joshi et al. (2010) developed a framework for understanding generations in the workplace based on chronology — the idea that a distinct location and time creates a generation — and genealogy — the concept that generations are linked through their ideas, values skills or knowledge. From this point of view, generations can be defined by when an employee began working at an organization and was indoctrinated into its culture (Joshi et al., 2010). Han adds that within these generations, researchers have noted a number of communication differences and preferences. Ota et al. (2012) explored how communication choices are based on age and role. They found that older generations prefer in-person communications, while younger generations gravitate more toward email and social media (Ota et al., 2012). Polat and Yilmaz (2020) found that personal, relational and managerial factors represent the greatest barriers to successful intergenerational communications. The most common barriers were seeing experience as power, lack of motivation and poor communication. Malek and Jaguli (2018) reported similar findings in their study on women in Malaysia. Woodward and Vongswasdi (2017) in their study of 191 company executives found that technological advances are better viewed as complements to traditional communications practices rather than replacements. They cite this as evidence of the importance of understanding the preferences of different generations in the workplace. Myers and Sadaghiani (2010), and Mehra and Nickerson (2018) in their respective studies found a positive workplace communications environment minimizes the gap in intergenerational communications while increasing productivity and efficiency. Wok and Hashim (2013), meanwhile,

theorized that younger generations learn and adapt from older generations with workplace communications. Thus, effective communications could enhance the relationship between generations.

While understudied, the topic of telework communication satisfaction has been broached before. Smith et al. (2018), for example, sought to determine why some teleworkers experience greater levels of job satisfaction than others. For their study, they adopted Herschel and Andrews' (1997) definition of telework as the ability to work from remote locations thanks to advances in communication technology, which in turn has reduced the impact of time and place on organizational communication. Some of the benefits of teleworking, according to the authors, include increased performance, decreased organizational expenses, and higher employee morale. Some of the disadvantages noted, meanwhile, are diminished relationship with coworkers and managers, increased feelings of isolation, feeling less-connected to the organization, and feeling out of the loop in office politics and decisions. In regard to job satisfaction, the authors cite previous research that found a relationship with telework, but could not discern the nature of this connection. Smith et al. sought to clear this up a bit by studying how the Big Five personality types and communication satisfaction with methods like email, instant messaging, phone and video influence the job satisfaction of teleworkers. A key discovery with respect to this research proposal is they found when people are satisfied with the communications channel, they are typically satisfied with their jobs. They also noted since personality type affects job satisfaction, it is important for employers to understand the personalities of their employees to optimize their working environment. These findings also demonstrate the importance of employers making

available a wide array of communications channels to teleworkers, and recommend future studies investigate the generational effects of teleworking. The concept of telework communication satisfaction is particularly understudied in the defense industry, yet not totally nonexistent. Monroe and Haug (2021) carried out a similar approach to the one proposed here for their assessment of telework at a federal agency, using a questionnaire to explore the opinions of 46 federal agency workers to determine mainly positive attitudes about telework, the agency's mission and work environment. This was done in light of common concerns about telework, such as disconnection, reduced trust leading to less effectiveness and lack of control for managers. Despite the small sample size, the framework of distributing a questionnaire like this was sound, which is one the reasons this research takes a similar approach.

Given the transformative effect digital technologies has had on telework, it is important to consider the confidence people have in using these developments at work — particularly in light of the Covid-19 pandemic. In their study of employees required to work from home, McGloin et al. (2022) found that less traditional or formal methods of communication may be required to maintain rapport between supervisors and employees. This was evidenced in their survey results by a significant relationship between texting and rapport, defined by the authors as “employees’ subjective perceptions of outcomes of interactions with their supervisors, including the viewpoint that one has been justly heard and treated” (McGloin et al., 2022, 45). Furthermore, McGloin et al. found that employees with significant amounts of apprehension about using computer-mediated communication methods had lower rapport with their supervisors. With respect to this

research proposal, this information suggests understanding employee feelings about technology is a factor in effective communications.

It also is important to understand that reliance on digital communications methods have risen since the start of the Covid-19 pandemic. In a rapid literature review to model how people used technology during the pandemic, Vargo et al. (2021) identified 52 articles using internet database searches and thoroughly reviewed 29 concerned with medicine, education, work and daily life. Results were coded according to technology, user, activity and affect. As expected, the authors found a significant transition from fact-to-face interactions to digital methods for communicating and delivering instructions. Video-based communications platforms were among the methods that saw an increase during the pandemic as the primary users were providers and receivers, such as doctors to patients, teachers to students, or government officials to the general public. An essay by Nguyen et al. (2020) also explored changes in digital communications patterns and inequalities that have arisen in the use of these methods. The authors surveyed 1,374 Americans from April 4-8, 2020, when lockdowns were at their peak in the United States. Nguyen et al. looked at how participants used media, what methods they used and for what purpose, and compared it to variables like age, gender, if they lived alone, internet skills and concerns about internet access. Like Vargo et al., Nguyen et al. reported a significant increase in the use of video chat applications for communications. Communications also increased for text messaging (43% of participants), voice calls (36%), social media (35%), email (24%) and online games (22%). Overall, the youngest participants reported an increase in digital communications use, while the older respondents reported a reduction. Women, those living alone and

those worried about internet access also were more likely to increase digital communications, while internet skills only made a difference for the least skilled, who decreased use of digital communications. Overall, these results point to a widening inequality gap for those groups most at-risk of becoming disconnected from their social environment.

CHAPTER 3

Methodology

Research Strategy

The first step was to determine the best possible way to answer RQ1: How do the qualities of the reader and medium predict message comprehension and liking? Survey research was identified, and proper instrumentation was developed. Once completed, a sampling and recruitment strategy needed to be established. Leveraging contacts within the defense industry, two sampling methods were developed: blast email through a defense industry advocate group and LinkedIn nonprobability sampling. After limited success, a third method utilizing probability sampling by way of financial incentives through Amazon Mechanical Turk was employed. Data was collected, cleansed and organized for preliminary analysis. Further investigation revealed the appropriate analysis tool to be used and a need to amend RQ1 to fit the data collected. The following describes in detail this process.

Experimental Design

The design of this survey was inspired, in part, by research from Hornikx and le Pair (2017) on advertisement liking and complexity. After all, in many ways, organizational messaging to employees shares plenty of similarities to the conventional relationship between advertisers and consumers. This survey, which can be viewed in Appendix A, was built and administered through Qualtrics. In this instance, actual organizational messaging provided by NUWC Division Newport was utilized. In it, the same information and wording was conveyed in three different treatments: text, image and video. These were designed to be as simple as possible in attempt to limit any further

confounding variables. The idea was they would ask the viewer to remember basic recall information relating to the celebration of an organization's 150th anniversary. In practice, organizational communications messages often are far more comprehensive and involve a request for action. To ensure homogeneity, participants were randomly assigned which treatment they received by Qualtrics. The treatments can be seen in Appendix B. Once participants received their treatment, they were administered a series of questions. The first two were multiple choice questions designed to gauge comprehension. Each had one correct and three incorrect responses. Questions were simple and brief, but required participants to recall the information they had just been shown. A semantic differential scale to gauge liking followed with five poles: appealing-unappealing, good-bad, powerful-weak, exciting-boring, helpful-unhelpful. Some of these measures were adapted from Hornikx and le Pair (2017). Participants were asked to rank these liking measures on a scale of one to seven based on the medium they had just seen. At the urging of the principal investigator, this format was repeated a second time to add validity to the results. In total, each participant received two treatments, and answered four comprehension questions and 10 liking questions, as well as demographic questions to address the independent variables age, hire date, military status, defense industry and telework status. Questions on gender and race also were included. Given each set of questions addressed a specific treatment set, the degree to which these results could be aggregated was limited.

Recruitment of Subjects

For this project, three separate recruitment efforts were undertaken. Each initiative provided insight into the difficulty associated with surveying defense industry workers outside of organizationally sanctioned efforts.

Institutional Agreements

First, an agreement with the Southeastern New England Defense Industrial Alliance (SENEDIA) was formed to distribute the survey to its member organization via email. Given that 134 companies have working arrangements with SENEDIA, even meager responses from that base would yield statistically relevant results. It quickly became clear, however, that this method would not work. The researcher directly contacted an affiliated defense industry organization's human resource department to distribute the survey to its workforce, but the representative explained that they could not do that per their company's guidelines. "I'd love to support your request, however, it would create some difficulty and possible issues. If I were to distribute it, it becomes a corporate data request, which in turn needs an available charge code. This wouldn't be something billable to either overhead or direct charge codes for each contract, so it just becomes a bit problematic from that perspective." In addition to email solicitations often being ignored, this was further evidence that most companies would have a similar response. Thus, it became clear that what originally had thought to be a very wide net would have to increase not only in scope, but also in intention. The researcher sought similar distribution efforts from the National Defense Industrial Alliance (NDIA), an organization similar in makeup to SENEDIA only at the national level with many more members, but those pleas were ignored.

Nonprobability Sampling

The second strategy utilized a nonprobability method, as the researcher launched a purposive sample on LinkedIn. The researcher already had an account and on Jan. 21, 2023, he signed up for a free, one-month trial of LinkedIn Premium. An adapted version of the initial recruitment letter was posted to the researcher's main page. This message was pinned to the top of the page, and follow-up posts were made one and two weeks later, respectively. They then selected two target companies, one a current employer and one a former employer. Both companies are so large that there were very few people contacted whom the researcher knew before they were solicited for participation.

While this study acknowledges there are limitations to nonprobability sampling and possibilities for bias, it is a necessary risk to reach a population like the defense industry. Those who work in this business regularly undergo training to spot Phishing attacks, operational security risks or other cybersecurity vulnerabilities. As such, they are inherently more guarded against unsolicited requests — particularly those asking them to click a link — than other members of the general population.

To establish legitimacy, the researcher sent connect messages to the first 100 employees following the Indus Technology Inc. LinkedIn page. During this selection process, followers that seemed illegitimate were omitted (those with little to no information immediately listed in their profile). This message had to be carefully crafted, as it needed to establish legitimacy, include the link to the survey and adhere to the 300-character limit. The following was sent to potential participants: “Hey there, fellow Indus employee here. Working on my master's thesis, a survey of defense industry employees. Hoping you could help me out and take this anonymous, 5-minute survey. Open to all in the defense industry, please share:

https://uri.co1.qualtrics.com/jfe/form/SV_8pQJN3v06oSpunk.” This method allowed those interested to directly reach out with questions or comments. A number of respondents were “happy to help,” while others empathized with the survey process, having completed their master’s degrees previously. There also was skepticism; one respondent said they would be happy to complete the survey only if it came directly from an Indus email address. The majority ignored the message altogether, although some accepted the connection without taking the survey.

Eight days after the initial data call, the process was repeated with the first 100 employees listed at McLaughlin Research Corp. (MRC), the researcher’s former employer. The reason why this took so long is LinkedIn limits users to only 100 connections in a seven-day period. The message to MRC employees was similar to what was sent to Indus employees, and the subsequent response was comparable. While employees were asked to share the survey with friends or coworkers in the defense industry, it became clear in the results that very few had done so. In terms of percentages, this method was very effective. Approximately 200 connect messages were sent out on LinkedIn and it yielded 35 responses, of which 26 were useable. This represents a 17.5% response rate and a 13% effective response rate. However, time proved to be a limiting factor on this method. At optimum efficiency with no slow-ups in response rate, it would take approximately two months to get 100 responses. In all likelihood, it would take even longer, so a third method was employed.

Crowdsourcing

Amazon Mechanical Turk (MTurk) is a crowdsourcing website that, among other functions, allows researchers to hire users to take their surveys for a small fee. Using this

service is relatively straightforward, but required a few modifications to the initial Qualtrics survey. To set this up, the researchers replicated the same survey in Qualtrics, only made it so that when a participant began the survey, unbeknownst to them they were assigned a unique identification number anywhere from one to four digits. Once the participant completed the survey, they were brought to an additional screen that revealed the participant number to enter on MTurk to receive payment.

Setting up the corresponding MTurk was fairly simple, yet there was one caveat that hung up the process for about one week. After signing up for an account, users can create their survey with a title, brief description and keywords so the desired users can find the survey. Organizational Communications, Quick Survey, Research, Academic, Defense Industry, Government, Veteran, Message Comprehension and Liking were used as keywords for this survey. Each respondent had 20 minutes to complete the survey, about four times more than the estimated completion time. The survey was live for seven days and those that completed the survey were paid \$0.75. Workers were not required to be MTurk Masters, but did have to be located in the United States, have an approval rate greater than 90% and be employed in the government or nonprofit industry. Once the survey went live, it was open to all MTurk users who met these requirements.

The cost of the survey after fees collected by Amazon was \$217.76, but new users cannot publish surveys without contacting Amazon Web Services because the default monthly spending limit is nearly \$0 (this information is nowhere on the MTurk website). Thus, you must reach out to Amazon Web Services via email to request an increased spending limit; the entire process took about a week. Once live, the results poured in at a much faster rate. After 88 respondents, the researcher reviewed their codes

to ensure they were not trying to cheat the system with faulty codes. Two were immediately rejected for providing clearly false codes, while 81 were approved based on their codes provided in MTurk matching a code listed in Qualtrics. Another five payment requests were rejected for providing incorrect codes. This was commensurate with the 81 useable survey responses in Qualtrics at that time.

While there are hesitations with using a method like this — you are surveying people motivated to take surveys who may not be representative of the general population — there are certain advantages. As a simple random sample with replacement, this is a more reliable method as an example of probability sampling. This also provides access to a much larger pool of participants, as there were as many respondents within an hour of the survey being live as there were in three weeks of the LinkedIn method. Given the difficulty involved with gaining trust of defense industry employees outside their own organization, a very large pool of participants is necessary. This process was repeated once the survey closed after two weeks, and ultimately yielded 112 responses.

Data Cleaning and Preliminary Analysis

Once data was collected, it was imported into SPSS for scrubbing. Categories were renamed, where necessary, to more accurately describe the variables.

Independent Variables

The independent variables defense industry, military status, hire date, age, telework status, gender and race did not require any recoding.

Type of Treatment: Text, Image or Moving Image

First, the data for treatment was recoded, as it was imported in separate categories since Qualtrics assigned treatments at random. Those receiving text treatment were

coded as one, image as two and video as three. This process was then repeated for treatment two. In addition to specific instructions, a 30-second timer was installed on the video treatment to discourage people from skipping ahead in the video. The time each participant spent on a given page of the survey also was recorded, although it was not analyzed in this study because of research deadlines.

Dependent Variables: Comprehension and Liking

Comprehension data was recoded to represent either a correct answer (one) or an incorrect answer (zero). Results from the two comprehension questions were added together to give each participant a total comprehension score of questions answered correctly (zero, one or two). This process was then repeated for treatment two.

The liking dependent variable required combination and aggregation as well to make it more readily digestible. For treatment one, there were five semantic differential questions graded on a seven-point scale representing different adjectives associated with liking. Adding these numbers up resulted in raw liking scores of five through 35. There were two problems with this data. First, the way it was recorded in Qualtrics, lower numbers represented more liking while higher numbers indicated less liking. Not only is this counterintuitive, but also is directionally opposite of the comprehension data. The 5-35 scale also presents challenges in data analysis as the scale is nowhere near the other data collected. This was then recoded so that 30-35 would become zero, 24-29 would be one, 17-23 would be two, 11-16 would be three and 5-10 would be four. These data points were chosen to correspond with a five-point scale of strongly dislike, dislike, indifferent, like and strongly like, respectively. Once recorded, this process was repeated

for the data in treatment two. This data was simplified to account for knowledge shortfalls on behalf of the author, as the extent of his practice in statistics is limited.

Data Analysis

First, descriptive statistics were recorded to generally describe the population of the survey. This also was done for the comprehension and liking data using descriptive statistics and cross tabs. The next step was to determine the most appropriate analysis tool to use for this research. This process revealed a difference in the desired method of analysis and what could actually be done. Linear regression is used to predict the value of a variable based on the value of another variable, which was the original intent of this research. The purpose was to answer RQ1: How do the qualities of the reader and medium predict message comprehension and liking? To do this, however, there are a series of assumptions that must be met. The first step is to check to make sure all variables are at the interval or ratio level. For the dependent variables, comprehension is at the ratio level as there is a true zero (number of questions correct). For the purposes of this study, the author is operating under the assumption that liking is at the interval level. While a semantic differential scale is generally considered to be ordinal data, it can be argued that indifference to the treatment can be interpreted as a true zero, thus making it a higher level. All independent variable — treatment, age, generation, military, defense industry, age and telework — are at the appropriate levels for linear regression as well. However, there are a number of other stipulations that must be met (Laerd Statistics, 2023):

- Is there a linear relationship?
- Are there any statistical outliers?

- Is there independence of observation using Durbin-Watson?
- Is there homoscedasticity?
- Are residuals (errors) of regression line normally distributed?

It is clear all these conditions cannot be satisfied by the present research. Given the low numerical scale of round numbers, plots revealed little information about linearity and outliers. That, however, does not mean the data is unusable. If linear regression cannot be used, predictions cannot be made, so the research question needed to be changed:

RQ1': Is there a statistically significant relationship between the qualities of the reader and medium, and comprehension and liking?

This is a question that can be answered with analysis of variance (ANOVA), which is used to determine if there is a statistical difference in means between two groups (variables). To properly answer RQ1', 12 hypotheses will need to be tested:

H1: There is a statistically significant relationship between the type of media and comprehension.

Null: There is no statistically significant relationship between the type of media and comprehension.

H2: There is a statistically significant relationship between the type of media and liking.

Null: There is no statistically significant relationship between the type of media and liking.

H3: There is a statistically significant relationship between age and comprehension.

Null: There is no statistically significant relationship between age and comprehension.

H4: There is a statistically significant relationship between age and liking.

Null: There is no statistically significant relationship between age and liking.

H5: There is a statistically significant relationship between generational cohort and comprehension.

Null: There is no statistically significant relationship between generational cohort and comprehension.

H6: There is a statistically significant relationship between generational cohort and liking.

Null: There is no statistically significant relationship between generational cohort and liking.

H7: There is a statistically significant relationship between military status and comprehension.

Null: There is no statistically significant relationship between military status and comprehension.

H8: There is a statistically significant relationship between military status and liking.

Null: There is no statistically significant relationship between military status and liking.

H9: There is a statistically significant relationship between defense industry and comprehension.

Null: There is no statistically significant relationship between defense industry and comprehension.

H10: There is a statistically significant relationship between defense industry and liking.

Null: There is no statistically significant relationship between defense industry and liking.

H11: There is a statistically significant relationship between telework frequency and comprehension.

Null: There is no statistically significant relationship between telework frequency and comprehension.

H12: There is a statistically significant relationship between telework frequency and liking.

Null: There is not no statistically significant relationship between telework frequency and liking.

For each hypothesis, the same procedure was followed. First, a one-way between subjects ANOVA was conducted for the dependent and independent variables. In each hypothesis, this process needed to be done twice, once for the first treatment and another time for the second treatment. Once the ANOVA was conducted, the F and p values were recorded. If the p value was greater than .05, the result was recorded as not statistically significant and the null hypothesis was accepted. If the p value was less than .05, the variables were reported as statistically significant. The n , mean and standard deviation values were then recorded, which were used to evaluate how the variables were statistically significant. For statistically significant relationships, Cross Tabs was utilized

to further investigate the reason behind the p value. Namely, what were the distributions within the independent variables age, generational cohort, military status, defense industry and telework status for media viewed, comprehension and liking.

CHAPTER 4

Findings

Statistically Significant Results

Twenty-four analysis of variance (ANOVA) models were generated to test H1-12, of which 11 yielded statistically significant relationships. Before conducting these tests, however, the descriptive statistics for message type, comprehension and liking were examined. The most interesting finding from this exercise was participants receiving the text treatment were nearly twice as likely to get all questions correct than those receiving the video treatment. While not as significant, those that got the image treatment also were more likely to get a perfect comprehension score than those that watched a video.

ANOVA backed this finding up, but only to an extent. There was no statistical significance between message type and comprehension for the first treatment, but there was for the second. This represented a trend throughout the research, as there was no statistically significant relationship between media, age, military status, defense industry and telework status when set against comprehension in the first treatment, yet there was significance between all the independent variables and comprehension in the second. There was, however, congruity between both treatments for age, military status and defense industry with liking. ANOVAs revealed statistically significant relationships in each of these pairings for both treatment one and two. When an employee began working at a company with respect to pandemic seems to have no bearing on comprehension or liking. Results and some possible explanations why are offered further in this chapter.

Demographic Information

The combined paid and unpaid surveys elicited 147 responses, which ultimately yielded 134 useable results. The 13 omitted surveys were disallowed because the participants did not complete all the questions. Results were from throughout the United States, with the majority coming from the Northeast region. Of the respondents, 88 identified as working in the defense industry and 61 were veterans. The majority of the participants had started working for their employer within the past six years, as 50 respondents began after Jan. 1, 2020, and 40 between Jan. 1, 2017, and Dec. 31, 2019. Most participants were born between 1997 and 2012, or 1981 and 1996 with 49 and 42 respondents, respectively. There were 32 participants born between 1965 and 1980. At least some amount of telework was reported in the majority of the respondents, with only 20 respondents reporting they did not telework at all. Seventy-two participants were female and 61 were male, with the vast majority (121) identifying as white. A demographic table is located in Appendix C.

Comprehension and Liking Data

Data was analyzed in two parts, the first of which examined general results of comprehension and liking data among the two treatments, particularly with respect to medium type received. Treatment one (text, image or video) corresponded to the first set of two comprehension questions and five liking questions, which were graded on a seven-point semantic differential scale. The same analysis was conducted with treatment two. To properly analyze the data, some of it needed to be condensed into single categories. Comprehension questions were recoded into either correct or incorrect, with a zero being recorded for incorrect answers and one for correct answers. This was re-labeled, and participants received a score of zero, one or two (correlating to the total number of

questions they got correct for each treatment). In total, there were 46 participants each for text and image in treatment one, while 42 received the video prompt. The split was 45-44-45, respectively, for treatment two. Results are in the table below:

Table 1

Descriptive Statistics by Medium Type

| Treatment 1 | Frequency | Percent |
|--------------------|------------------|----------------|
| Text | 46 | 34.3 |
| Image | 46 | 34.3 |
| Video | 42 | 31.3 |
| Total | 134 | 100 |
| Treatment 2 | | |
| Text | 45 | 33.6 |
| Image | 44 | 32.8 |
| Video | 45 | 33.6 |
| Total | 134 | 100 |

The results of the comprehension data were then analyzed in Cross Tabs according to which media message type they received. The results also were combined into one table as a means to discern comprehension levels. It is worth noting that this information is not representative of a cumulative score for each individual participant. Rather, this shows which treatments yielded all incorrect scores, all correct scores or half correct scores.

This information is available in the table below.

Table 2

Cross Tabs Treatment vs. Comprehension

| Treatment | None Correct | One Correct | Two Correct | Total |
|------------------|---------------------|--------------------|--------------------|--------------|
| Text | 2 | 25 | 19 | 46 |
| Image | 0 | 32 | 14 | 46 |
| Video | 5 | 31 | 6 | 42 |
| Total | 7 | 88 | 39 | 134 |

| Treatment 2 | | | | |
|---------------------------|----|-----|-----|-----|
| Text | 8 | 13 | 24 | 45 |
| Image | 6 | 16 | 22 | 44 |
| Video | 9 | 19 | 17 | 45 |
| Total | 23 | 48 | 63 | 134 |
| Treatment Combined | | | | |
| Text | 10 | 38 | 43 | 91 |
| Image | 6 | 48 | 36 | 90 |
| Video | 14 | 50 | 23 | 87 |
| Total | 30 | 136 | 102 | 268 |

For the most part, the results were fairly unremarkable with the majority of participants getting one question correct. The most striking data from this was participants who received the text treatment were nearly twice as likely to get all four questions correct than those that received the video treatment (43-23). Even the image treatment to an extent showed a greater propensity for higher achievement, thus it is not unreasonable to conclude there is less comprehension associated with receiving a video treatment.

As for the liking responses, these required considerable more data scrubbing as a result of the survey design. First, data were combined into one category for each treatment. Results were simply added together for all questions, meaning liking scores ranged anywhere from five to 35 with lower scores indicating greater liking. This presented an issue, however, as both the scale was much larger and directionality of feelings reversed when compared to the comprehension data. Graphs of the raw numbers are included below.

Figure 1

Descriptive Statistics for Liking 1

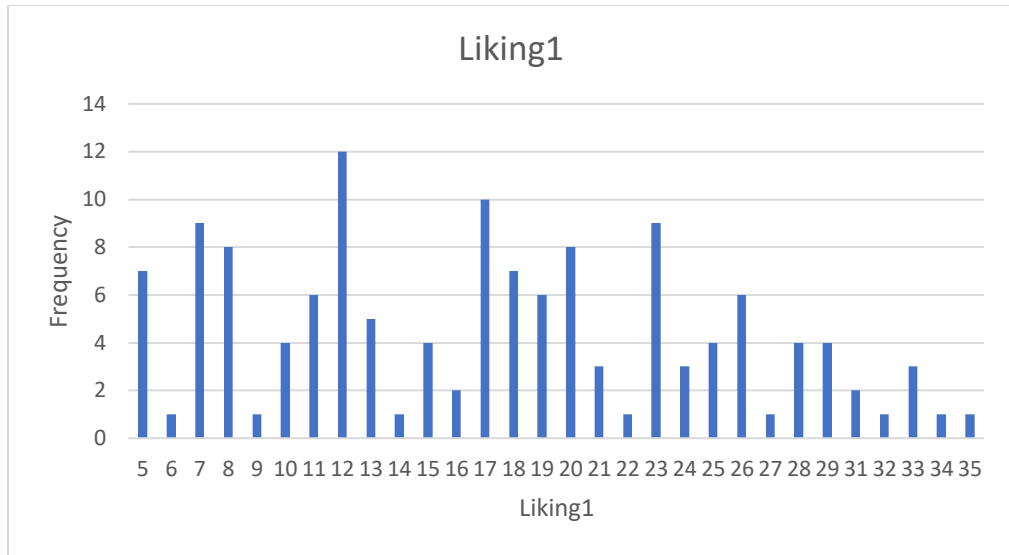
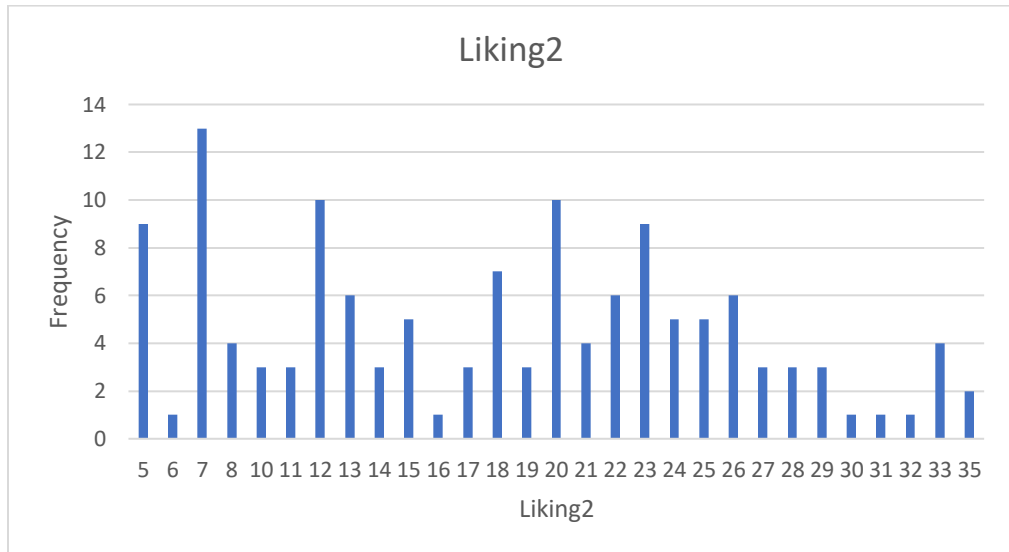


Figure 2

Descriptive Statistics for Liking 2



The charts show fairly favorable results with respect to liking, as most of the participants liked or were indifferent to the media type they received. A cross tabs examination of this information revealed minimal differences between media type received and liking. These tables are located in Appendix C. As noted, this data needed to be recoded, though, so that lower numbers indicated less liking just as lower numbers indicated less

comprehension. The scale also needed to be reduced, so a five-point scale was implemented. The recoded data is in alignment with earlier results, however, it provides a much clearer picture. For both treatment one and treatment two, there was no real preference on media type and responses to each type of treatment, whether it was text, image or video, was more favorable than unfavorable. Cross Tabs results for each treatment are below.

Table 3

Cross Tabs Treatment vs. Liking

| Liking 1 | | | | | | |
|--------------------|----------------|---------|-------------|------|-------------|-------|
| Treatment 1 | Strong dislike | Dislike | Indifferent | Like | Strong like | Total |
| Text | 1 | 8 | 19 | 7 | 11 | 46 |
| Image | 2 | 6 | 15 | 14 | 9 | 46 |
| Video | 5 | 8 | 10 | 9 | 10 | 42 |
| Total | 8 | 22 | 44 | 30 | 30 | 134 |

| Liking 2 | | | | | | |
|--------------------|----------------|---------|-------------|------|-------------|-------|
| Treatment 2 | Strong dislike | Dislike | Indifferent | Like | Strong like | Total |
| Text | 2 | 10 | 17 | 6 | 10 | 45 |
| Image | 1 | 9 | 8 | 16 | 10 | 44 |
| Video | 6 | 6 | 17 | 6 | 10 | 45 |
| Total | 9 | 25 | 42 | 28 | 30 | 134 |

Analysis of Variance (ANOVA)

a. Medium type

This research reports mixed and inconclusive results concerning the relationship between type of media and comprehension. Subjects were randomly assigned to respond to two different media on two different topics. In the first treatment, a one-way between subjects ANOVA was run for treatment one with type of media as the independent

variable and comprehension as the dependent variable. Results of the ANOVA showed a significant difference between type of media (text, image or video) and comprehension; $F(2,131) = 5.408, p .006$. Scheffe post-hoc analysis revealed that video ($n = 42, M = 1.0238, SD = 0.51741$) has significantly less comprehension than both text ($n = 46, M = 1.3696, SD = 0.57189$) and image ($n = 46, M = 1.3044, SD = 0.46522$) treatments. Text and image are not significantly different from each other.

Table 4

One-way ANOVA for Treatment 1 vs. Comprehension 1

| Treatment | <i>n</i> | Mean | Standard Deviation |
|------------------|-----------------|-------------|---------------------------|
| Text | 46 | 1.3696 | 0.57189 |
| Image | 46 | 1.3043 | 0.46522 |
| Video | 42 | 1.0238 | 0.51741 |
| Total | 134 | 1.2388 | 0.53704 |

Table 5

Scheffe Post Hoc Test for Treatment 1 vs. Comprehension 1

| Treatment 1 | | Mean Difference | Standard Error | Sig. |
|--------------------|-------|------------------------|-----------------------|-------------|
| Text | Image | 0.06522 | 0.10844 | 0.835 |
| | Video | 0.34576* | 0.111 | 0.009 |
| Image | Text | -0.06522 | 0.10844 | 0.835 |
| | Video | 0.28054* | 0.111 | 0.044 |
| Video | Text | -0.34576* | 0.111 | 0.009 |
| | Image | -0.28054* | 0.111 | 0.044 |

**The mean difference is significant at the 0.05 level*

Interestingly enough, these results did not hold when a one-way ANOVA was run between treatment two and comprehension two. Results of the ANOVA did not show a significant difference between type of media (text, image or video) and comprehension; $F(2,131) = .887, p .415$. A number of factors could explain the difference in results,

including sampling or design error on the part of the researcher. It also could be test fatigue as well, as being asked to do a similar task twice could lead to lapses in attention or concentration. Thus, with respect to H1, the results are inconclusive. For treatment one, since the p value is less than the alpha value (.05), the null hypothesis that there is not a statistically significant relationship between the type of media and comprehension is rejected. For treatment two, however, the researcher fails to reject the null hypothesis.

I also wanted to understand if subjects' liking or format preference was associated with media type, so one-way between subjects ANOVAs were conducted with type of media as the independent variable and liking as the dependent variable. Results in each instance revealed no statistical significance between media type and liking, confirming the null hypothesis that there is no statistically significant relationship between the type of media and liking. Findings were nonsignificant with treatment one and liking $F(2,131) = .384, p .682$ and treatment two and liking, $F(2,131) = 1.279, p .38$.

b. Age

I also wanted to understand if subjects' age was associated with comprehension or liking. As it was for H1, there were split results when testing H3. A one-way between subjects ANOVA was run for age and comprehension one that revealed no statistical significance between variables; $F(4,129) = 1.057, p .380$. When the same process was repeated for comprehension two, however, the results were statistically significant; $F(4,129) = 9.141, p <.001$. One interesting finding is that Scheffe post-hoc analysis revealed that younger participants between 11 and 26 years old ($n = 49, M = 1.7551, SD = .52164$) had significantly more comprehension on the second treatment than both middle age participants between 27 and 42 years old ($n = 42, M = 1.0714, SD = 0.71202$)

and older participants between 43 and 58 years old ($n = 32$, $M = .9688$, $SD = 0.73985$).

Middle age and older participants are not significantly different from each other. Results are listed in the tables below:

Table 6

One-way ANOVA for Age vs. Comprehension 2

| Year Born | <i>n</i> | Mean | Standard Deviation |
|------------------|-----------------|-------------|---------------------------|
| 1997-2012 | 49 | 1.7551 | 0.52164 |
| 1981-1996 | 42 | 1.0714 | 0.71202 |
| 1965-1980 | 32 | 0.9688 | 0.73985 |
| 1946-1964 | 9 | 1.1111 | 0.78174 |
| 1928-1945 | 2 | 1 | 1.41421 |
| Total | 134 | 1.2985 | 0.74622 |

Table 7

Scheffe Post Hoc Test for Age vs. Comprehension 2

| Year Born | | Mean Difference | Standard Error | Sig. |
|------------------|-----------|------------------------|-----------------------|-------------|
| 1997-2012 | 1981-1996 | .68367* | 0.14064 | <.001 |
| | 1965-1980 | 0.78635* | 0.15201 | <.001 |
| | 1946-1964 | 0.64399 | 0.24255 | 0.14 |
| | 1928-1945 | 0.7551 | 0.48248 | 0.654 |
| 1981-1996 | 1997-2012 | -0.68367* | 0.14064 | <.001 |
| | 1965-1980 | 0.10268 | 0.15694 | 0.98 |
| | 1946-1964 | -0.03968 | 0.24567 | 1 |
| | 1928-1945 | 0.07143 | 0.48406 | 1 |
| 1965-1980 | 1997-2012 | -0.78635* | 0.15201 | <.001 |
| | 1981-1996 | -0.10268 | 0.15694 | 0.98 |
| | 1946-1964 | -0.14236 | 0.25235 | 0.988 |
| | 1928-1945 | -0.03125 | 0.48748 | 1 |
| 1946-1964 | 1997-2012 | -0.64399 | 0.24255 | 0.14 |
| | 1981-1996 | 0.03968 | 0.24567 | 1 |
| | 1965-1980 | 0.14236 | 0.25235 | 0.988 |
| | 1928-1945 | 0.11111 | 0.52284 | 1 |
| 1928-1945 | 1997-2012 | -0.7551 | 0.48248 | 0.654 |
| | 1981-1996 | -0.07143 | 0.48406 | 1 |

| | | | |
|-----------|----------|---------|---|
| 1965-1980 | 0.03125 | 0.48748 | 1 |
| 1946-1964 | -0.11111 | 0.52284 | 1 |

**The mean difference is significant at the 0.05 level*

This result mirrors the outcome from treatment type vs. comprehension previously discussed where there was a difference in treatment one vs. treatment two, although the difference is more likely because of sampling error in this instance. It is plausible that younger survey participants have greater attention or stamina to stay on the task despite being asked to do two similar assignments in succession. Possibly, they are less susceptible to test fatigue than their more senior cohorts. However, a deeper look at these results reveal sampling error as the likely cause. Cross tabs of age vs. treatment two and age vs. comprehension two were performed; the results are in the tables below. A closer look at the numbers show when participants were randomly assigned treatments by Qualtrics, the order in which participants by age took the survey was just so that younger partakers received significantly more text and image treatments than video treatments. As this study and previous research have shown, there is a statistically significant relationship between text and image treatments and greater comprehension. The two Cross Tabs back up this data, as younger participants received significantly more text and image treatments and displayed a significantly higher level of comprehension than their peers in other age groups.

Table 8

Cross Tabs Age vs. Treatment 2 and Comprehension 2

| Treatment | Year Born | | | | | Total |
|-----------|-----------|-----------|-----------|-----------|-----------|-------|
| | 1997-2012 | 1981-1996 | 1965-1980 | 1946-1964 | 1928-1945 | |
| Text | 20 | 13 | 9 | 3 | 0 | 45 |

| | | | | | | |
|--------------------------|----|----|----|---|---|-----|
| Image | 20 | 13 | 8 | 2 | 1 | 44 |
| Video | 9 | 16 | 15 | 4 | 1 | 45 |
| Total | 49 | 42 | 32 | 9 | 2 | 134 |
| Questions Correct | | | | | | |
| Zero | 2 | 9 | 9 | 2 | 1 | 23 |
| One | 9 | 21 | 15 | 4 | 0 | 48 |
| Two | 39 | 12 | 8 | 3 | 1 | 63 |
| Total | 49 | 42 | 32 | 9 | 2 | 134 |

Two one-way between subjects ANOVAs were run for age and liking to test H4. Results in each instance revealed strong statistical significance between age and liking; $F(4,129) = 10.219, p < .001$ for liking 1 and $F(4,129) = 8.450, p < .001$ for liking two. Scheffe post-hoc analysis revealed that younger participants between 11 and 26 years old ($n = 49, M = 3.0816, SD = 1.01728; n = 49, M = 3.0408, SD = 1.01979$) had significantly more liking on both treatments than both middle age participants between 27 and 42 years old ($n = 42, M = 1.8571, SD = 0.95180; n = 42, M = 1.9286, SD = .99738$) and older participants between 43 and 58 years old ($n = 32, M = 1.9063, SD = 1.22762; n = 32, M = 1.8125, SD = 1.28107$). Middle age and older participants are not significantly different from each other. A Cross Tabs analysis, unlike in the example of age vs. comprehension, reveals sampling error is not the likely cause of statistical difference between groups. In both treatment one — which is more normally distributed than treatment two with type of medium received — and treatment two, younger participants showed predominately like or dislike regardless of treatment received. Middle- and older-age participants were significantly more indifferent or dislike. Results are listed in the tables below.

Table 9

One-way ANOVA Age vs. Liking 1

| Year Born | n | Mean | Standard Deviation |
|------------------|----------|-------------|---------------------------|
| 1997-2012 | 49 | 3.0816 | 1.01728 |
| 1981-1996 | 42 | 1.8571 | 0.9518 |
| 1965-1980 | 32 | 1.9063 | 1.22762 |
| 1946-1964 | 9 | 2.7778 | 0.83333 |
| 1928-1945 | 2 | 2.5 | 0.70711 |
| Total | 134 | 2.3881 | 1.17563 |

Table 10

Scheffe Post Hoc Test for Age vs. Liking 1

| Year Born | | Mean Difference | Standard Error | Sig. |
|------------------|-----------|------------------------|-----------------------|-------------|
| 1997-2012 | 1981-1996 | 1.22449* | 0.21874 | <.001 |
| | 1965-1980 | 1.17538* | 0.23643 | <.001 |
| | 1946-1964 | 0.30385 | 0.37725 | 0.957 |
| | 1928-1945 | 0.58163 | 0.75042 | 0.963 |
| 1981-1996 | 1997-2012 | -1.22449* | 0.21874 | <.001 |
| | 1965-1980 | -0.04911 | 0.24409 | 1 |
| | 1946-1964 | -0.92063 | 0.38210 | 0.221 |
| | 1928-1945 | -0.64286 | 0.75287 | 0.947 |
| 1965-1980 | 1997-2012 | -1.17538* | 0.23643 | <.001 |
| | 1981-1996 | 0.04911 | 0.24409 | 1 |
| | 1946-1964 | -0.87153 | 0.39249 | 0.3 |
| | 1928-1945 | -0.59375 | 0.75820 | .961 |
| 1946-1964 | 1997-2012 | -0.30385 | 0.37725 | 0.957 |
| | 1981-1996 | 0.92063 | 0.38210 | 0.221 |
| | 1965-1980 | 0.87153 | 0.39249 | 0.3 |
| | 1928-1945 | 0.27778 | 0.81319 | 0.998 |
| 1928-1945 | 1997-2012 | -0.58163 | 0.75042 | 0.963 |
| | 1981-1996 | 0.64286 | 0.75287 | 0.947 |
| | 1965-1980 | 0.59375 | 0.75820 | 0.961 |
| | 1946-1964 | -0.27778 | 0.81319 | 0.998 |

**The mean difference is significant at the 0.05 level*

Table 11

Cross Tabs Age vs. Treatment 1 and Liking 1

| | Year Born | | | | | Total |
|------------------|-----------|-----------|-----------|-----------|-----------|------------|
| | 1997-2012 | 1981-1965 | 1965-1980 | 1946-1964 | 1928-1945 | |
| Liking | | | | | | |
| Strong dislike | 1 | 2 | 5 | 0 | 0 | 8 |
| Dislike | 3 | 13 | 6 | 0 | 0 | 22 |
| Indifferent | 8 | 19 | 12 | 4 | 1 | 44 |
| Like | 16 | 5 | 5 | 3 | 1 | 30 |
| Strong like | 21 | 3 | 4 | 2 | 0 | 30 |
| Total | 49 | 42 | 32 | 9 | 2 | 134 |
| Treatment | | | | | | |
| Text | 13 | 16 | 12 | 5 | 0 | 46 |
| Image | 19 | 15 | 9 | 1 | 2 | 46 |
| Video | 17 | 11 | 11 | 3 | 0 | 42 |
| Total | 49 | 42 | 32 | 9 | 2 | 134 |

Table 12

One-way ANOVA Age vs. Liking 2

| Year Born | <i>n</i> | Mean | Standard Deviation |
|--------------|------------|---------------|--------------------|
| 1997-2012 | 49 | 3.0408 | 1.01979 |
| 1981-1996 | 42 | 1.9286 | 0.99738 |
| 1965-1980 | 32 | 1.8125 | 1.28107 |
| 1946-1964 | 9 | 2.2222 | 1.20185 |
| 1928-1945 | 2 | 2.5 | 0.70711 |
| Total | 134 | 2.3358 | 1.2074 |

Table 13

Scheffe Post Hoc Test for Age vs. Liking 2

| Year Born | | Mean Difference | Standard Error | Sig. |
|-----------|-----------|-----------------|----------------|-------|
| 1997-2012 | 1981-1996 | 1.11224* | 0.21874 | <.001 |
| | 1965-1980 | 1.22832* | 0.23643 | <.001 |
| | 1946-1964 | 0.81859 | 0.37725 | 0.374 |
| | 1928-1945 | 0.54082 | 0.75042 | 0.976 |
| 1981-1996 | 1997-2012 | -1.11224* | 0.21874 | <.001 |
| | 1965-1980 | 0.11607 | 0.24409 | 0.995 |
| | 1946-1964 | -0.29365 | 0.38210 | 0.970 |

| | | | | |
|-----------|-----------|-----------|---------|-------|
| | 1928-1945 | -0.57143 | 0.75287 | 0.971 |
| 1965-1980 | 1997-2012 | -1.22832* | 0.23643 | <.001 |
| | 1981-1996 | -0.11607 | 0.24409 | 0.995 |
| | 1946-1964 | -0.40972 | 0.39249 | 0.911 |
| | 1928-1945 | -0.68750 | 0.75820 | 0.945 |
| 1946-1964 | 1997-2012 | -0.81859 | 0.37725 | 0.374 |
| | 1981-1996 | 0.29365 | 0.38210 | 0.970 |
| | 1965-1980 | 0.40972 | 0.39249 | 0.911 |
| | 1928-1945 | -0.27778 | 0.81319 | 0.999 |
| 1928-1945 | 1997-2012 | -0.54082 | 0.75042 | 0.976 |
| | 1981-1996 | 0.57143 | 0.75287 | 0.971 |
| | 1965-1980 | 0.68750 | 0.75820 | 0.945 |
| | 1946-1964 | 0.27778 | 0.81319 | 0.999 |

*The mean difference is significant at the 0.05 level

Table 14

Cross Tabs Age vs. Treatment 2 and Liking 2

| Liking | Year Born | | | | | Total |
|------------------|------------------|-----------|-----------|-----------|-----------|--------------|
| | 1997-2012 | 1981-1965 | 1965-1980 | 1946-1964 | 1928-1945 | |
| Strong dislike | 0 | 2 | 7 | 0 | 0 | 9 |
| Dislike | 5 | 13 | 4 | 3 | 0 | 25 |
| Indifferent | 9 | 16 | 13 | 3 | 1 | 42 |
| Like | 14 | 8 | 4 | 1 | 1 | 28 |
| Strong like | 21 | 3 | 4 | 2 | 0 | 30 |
| Total | 49 | 42 | 32 | 9 | 2 | 134 |
| Treatment | | | | | | |
| Text | 13 | 13 | 9 | 3 | 0 | 45 |
| Image | 19 | 13 | 8 | 2 | 1 | 44 |
| Video | 17 | 16 | 15 | 4 | 1 | 45 |
| Total | 49 | 42 | 32 | 9 | 2 | 134 |

c. Generational Cohort

I wanted to see whether participants' generational cohort was associated with comprehension and liking. When one-way between subjects ANOVAs were run for the independent variable generational cohort, there was no statistical significance in relation

to comprehension or liking. For comprehension one, $F(3,130) = 1.911, p .131$; for comprehension two, $F(3,130) = .807, p .492$; for liking one, $F(3,130) = .438, p .727$; and for liking two, $F(3,130) = 1.273, p .286$. This results in confirmation of the null hypotheses for H5 and H6, meaning there is no statistical significance between generational cohort and both comprehension and liking.

d. Military Status

I wanted to see whether participants’ military status was associated with comprehension and liking. For military status, one-way between subjects ANOVAs yielded differentiating results. For comprehension one, there was no statistical significance; $F(1, 132) = .19, p .889$. There was statistical significance in comprehension two, however; $F(1,132) = 7.903, .006$. A comparison of means suggests that those who were in the military ($n = 61, M = 1.4918, SD = .72164$) have more statistically significantly comprehension than those not in the military ($n = 73, M = 1.1370, SD = .73248$). Results are recorded in the table below.

Table 15

One-way ANOVA Military Status vs. Comprehension 2

| Veteran | N | Mean | Standard Deviation |
|----------------|----------|-------------|---------------------------|
| Yes | 61 | 1.4918 | 0.72164 |
| No | 73 | 1.137 | 0.73248 |
| Total | 134 | 1.2985 | 0.74622 |

As it was with age, the difference between comprehension one and comprehension two is more likely because of sampling error as opposed to actual differences in the groups or survey fatigue. For military status, there were 12 more non-veterans than veterans that took the survey. A Cross Tabs analysis shows that while there were drastic differences in

treatment type between groups, those that got text or image are fairly equivalent (44-45). However, there were 28 non-veterans that received the video treatment as opposed to 17 veterans that received the treatment. These numbers are backed up by the comprehension two data, as 35 veterans got all questions correct as opposed to just 25 non-veterans. A review of the Cross Tabs data for treatment and comprehension two backs up this assertion and reasoning as to why there is no statistical significance in this data for military status. The media viewed were far more evenly distributed in the first treatment, which resulted in a normal distribution of comprehension results.

Table 16

Cross Tabs Military Status vs. Treatment and Comprehension

| Military Status | | | |
|------------------------|-----|----|-------|
| Treatment 1 | Yes | No | Total |
| Text | 20 | 26 | 46 |
| Image | 21 | 25 | 46 |
| Video | 20 | 22 | 42 |
| Total | 61 | 73 | 134 |
| Treatment 2 | | | |
| Text | 18 | 27 | 45 |
| Image | 26 | 18 | 44 |
| Video | 17 | 28 | 45 |
| Total | 61 | 73 | 134 |
| Comprehension 1 | | | |
| Zero | 1 | 6 | 7 |
| One | 44 | 44 | 88 |
| Two | 16 | 23 | 39 |
| Total | 61 | 73 | 134 |
| Comprehension 2 | | | |
| Zero | 8 | 15 | 23 |
| One | 15 | 33 | 48 |
| Two | 38 | 25 | 63 |
| Total | 61 | 73 | 134 |

For both treatments, there was a strong statistical significance between military status and liking; $F(1,132) = 19.964, p < .001$ for treatment one, and $F(1,132) = 22.299, p < .001$ for treatment two. Looking at each of the means for treatment one suggests significantly more liking among those who served in the military ($n = 61, M = 2.8525, SD = 1.1667$) than those who did not ($n = 73, M = 2, SD = 1.04083$). These numbers were very similar in the second treatment with respect to military ($n = 61, M = 2.8361, SD = 1.19972$) and non-military ($n = 73, M = 1.9178, SD = 1.05084$) participants. Cross Tabs analysis backs up these results, as those who are veterans showed considerably more liking than non-veterans, whose predominant response was indifference. A likely explanation to this result is the content itself. The messaging and visuals are centered on military history, which naturally lends itself to be more popular among those who have served than those who have not. These results are recorded in the tables below.

Table 17

One-way ANOVA Military Status vs. Liking 1

| Veteran | <i>n</i> | Mean | Standard Deviation |
|----------------|-----------------|-------------|---------------------------|
| Yes | 61 | 2.8525 | 1.16671 |
| No | 73 | 2 | 1.04083 |
| Total | 134 | 2.3881 | 1.17563 |

Table 18

Cross Tabs for Military Status vs. Liking 1

| | Military Status | | |
|-----------------|------------------------|----|-------|
| Liking 1 | Yes | No | Total |
| Strong like | 3 | 5 | 8 |
| Dislike | 5 | 17 | 22 |
| Indifferent | 13 | 31 | 44 |
| Like | 17 | 13 | 30 |

| | | | |
|-------------|----|----|-----|
| Strong like | 23 | 7 | 30 |
| Total | 61 | 73 | 134 |

e. Defense industry

I wanted to see whether participants' working in the defense industry was associated with comprehension and liking. For defense industry, one-way between subjects ANOVAs yielded differentiating results with respect to comprehension. For comprehension one, there was no statistical significance; $F(1, 132) = .111, p .740$. There was statistical significance in comprehension two, however; $F(1, 132) = 8.652, p .004$. A comparison of means suggests that those who are in the defense industry ($n = 88, M = 1.43318, SD = .72390$) have more statistically significant comprehension with respect to the second treatment than those not in the defense industry ($n = 46, M = 1.0435, SD = .72897$). This information was further analyzed using cross tabs, which did not reveal any clear answers as to why there may be statistical significance in the second data set but not the first. The most likely answer is because of the differences in sample size, with nearly double the population coming from the defense industry. It would be interesting to see how these results would or would not change with a larger, more equal sample size. Results are recorded in the table below.

Table 19

One-way ANOVA Defense Industry vs. Comprehension 2

| Defense Industry | <i>n</i> | Mean | Standard Deviation |
|-------------------------|-----------------|-------------|---------------------------|
| Yes | 88 | 1.4318 | 0.72390 |
| No | 46 | 1.0435 | 0.72897 |
| Total | 134 | 1.2985 | 0.74622 |

Table 20

Cross Tabs Defense Industry vs. Treatment and Comprehension

| Defense Industry | | | |
|-------------------------|-----|----|-------|
| Treatment 1 | Yes | No | Total |
| Text | 28 | 18 | 46 |
| Image | 31 | 15 | 46 |
| Video | 29 | 13 | 42 |
| Total | 88 | 46 | 134 |
| Treatment 2 | | | |
| Text | 27 | 18 | 45 |
| Image | 33 | 11 | 44 |
| Video | 28 | 17 | 45 |
| Total | 88 | 46 | 134 |
| Comprehension 1 | | | |
| Zero | 4 | 3 | 7 |
| One | 58 | 30 | 88 |
| Two | 26 | 13 | 39 |
| Total | 88 | 46 | 134 |
| Comprehension 2 | | | |
| Zero | 12 | 11 | 23 |
| One | 26 | 22 | 48 |
| Two | 50 | 13 | 63 |
| Total | 88 | 46 | 134 |

For both treatments, there was a strong statistical significance between defense industry and liking; $F(1,132) = 11.212, p < .001$ for treatment one, and $F(1,132) = 22.299, p < .001$ for treatment two. Looking at each of the means for treatment one suggests significantly more liking among those who work in the defense industry ($n = 88, M = 2.6250, SD = 1.21591$) than those who do not ($n = 46, M = 1.9348, SD = .95224$). These numbers were very similar in the second treatment with respect to defense industry ($n = 88, M = 2.6250, SD = 1.19686$) and non-defense industry ($n = 46, M = 1.7826, SD = 1.03092$) participants. While it certainly is likely population sample is a factor — as it was for comprehension — in this statistical significance, a more likely explainer is the content. A Cross Tabs examination shows that there is a significant overlap between

military status and defense industry. Of the 88 defense industry employees that took the survey, 61 also identify as veterans. Given the previous results, it stands to reason that there would be a statistically significant relationship between defense industry employees and liking as well. Results are recorded in the table below.

Table 21

One-way ANOVA for Defense Industry vs. Liking

| Liking 1 | | | |
|-------------------------|----------|-------------|---------------------------|
| Defense Industry | N | Mean | Standard Deviation |
| Yes | 88 | 2.625 | 1.21591 |
| No | 46 | 1.9348 | 0.95224 |
| Total | 134 | 2.3881 | 1.17563 |
| Liking 2 | | | |
| Defense Industry | N | Mean | Standard Deviation |
| Yes | 88 | 2.625 | 1.19686 |
| No | 46 | 1.7826 | 1.03092 |
| Total | 134 | 2.3358 | 1.2074 |

Table 22

Cross Tabs for Defense Industry vs. Military Status

| Defense Industry | | | |
|-------------------------|------------|-----------|--------------|
| Military Status | Yes | No | Total |
| Yes | 61 | 0 | 61 |
| No | 27 | 46 | 73 |
| Total | 88 | 46 | 134 |

f. Telework Status

I wanted to see whether participants' current experience with telework was associated with comprehension and liking. When one-way between subjects ANOVAs were run for the independent variable telework frequency, there was no statistically

significant relationship with liking in either treatment; liking one, $F(5,128) = 1.352, p .247$, and liking two, $F(5,128) = 1.352, p .118$. This results in a failure to reject the null hypotheses for H12, meaning there is no statistical significance between telework status and liking. There is some evidence that comprehension and telework status are associated, with comprehension one just missing the threshold for statistical significance; $F(5, 128) = 2.196, p .059$. There is strong evidence of a statistically significant relationship between comprehension two and telework status; $F(5,128) = 2.698, p .024$. ANOVA results are listed in the tables below.

Table 23

One-way ANOVA for Telework Status vs. Comprehension

| Comprehension 1 | | | |
|------------------------|----------|-------------|---------------------------|
| Telework days | N | Mean | Standard Deviation |
| 0 | 20 | 1.25 | 0.44426 |
| 1 | 11 | 1.1818 | 0.60302 |
| 2 | 13 | 1.5385 | 0.51887 |
| 3 | 24 | 1.2917 | 0.55003 |
| 4 | 45 | 1.0667 | 0.53936 |
| 5 | 21 | 1.381 | 0.49761 |
| Total | 134 | 1.2388 | 0.53704 |
| Comprehension 2 | | | |
| Telework days | N | Mean | Standard Deviation |
| 0 | 20 | 1.05 | 0.60481 |
| 1 | 11 | 1.2727 | 0.64667 |
| 2 | 13 | 1.0769 | 0.86232 |
| 3 | 24 | 1.4167 | 0.71728 |
| 4 | 45 | 1.5556 | 0.69267 |
| 5 | 21 | 1 | 0.83666 |
| Total | 134 | 1.2985 | 0.74622 |

Despite the statistical significance for comprehension two, there is no statistical significance between the six groups according to the Scheffe post hoc analysis. Once

again, the most likely explanation for the differences between treatments is the sample size. That said, given how close the first set of comprehension data was to statistical significance, it would be interesting to see what these results would look like with a much larger sample size.

CHAPTER 5

Conclusions

This project started with a very simple problem: What is the best way for an employer to communicate with its workforce? This was chosen because it is a practical problem that professionals working in the field of communications have reported. The current solutions for this issue are ineffective, often relying on multiple duplications of efforts to get the same message out. One message may need to be distributed via email, social media, video monitors, text message, website posts and news articles, each time being reformatted to fit the specific media. If there was a way that trends within a population could be leveraged, this could yield tremendous dividends with respect to time and resource allocation.

As research progressed on this topic, it became abundantly clear that while the question “what is the best way to communicate with one’s employees” is a simple query, the issue is extremely complex. What makes an effective message? Does it grab your attention or elicit a response? Concepts like simplicity, specificity, structure, purpose and word choice are likely factors. Given there are so many different factors that go into an effective message, this research elected to focus on some of the most basic — comprehension, liking and medium. The qualities of the receiver, though, are an equally important part of this equation. The characteristics this study chose to focus on were done so for a number of reasons. First, the defense industry is the field in which the researcher works, and gauging military status as an independent variable as well is a logical addition. Furthermore, this is an area that is relatively understudied in the academic and public domain. Most studies conducted on the defense industry are done

so by an organization and remain within its respective fence line. As will be mentioned later, there are a number of reasons as to why this is a difficult population to study. As for the remaining population traits, those were dictated by recent world events. There are significant concerns among those working in government communications about the effect the Covid-19 pandemic had on new professionals and those just starting out at an organization. This also is an industry, due to the sensitive nature of its work, that had little to no telework before the pandemic. It is for these reasons the independent variables of hire date, age and telework are of particular interest.

Some of the most profound parts of this learning experience came during the process of gathering survey participants. Simply stated, survey research is hard — particularly if you are trying to tap into a population outside of a university. There is a reason why most academic research is conducted with college students; it's a readily accessible, cost-effective group of participants. There were a number of challenges with the distribution of this survey unique to this population. First, defense industry workers are naturally skeptical. They have a level of cybersecurity training greater than the average survey participant, which makes them extra leery of unsolicited requests — particularly ones that require them to click a foreign link. Even if they believe the research, they may be skeptical the researcher is who they say they are. Each of the three survey methods had their benefits and flaws. The SENEDIA connection, in theory, could yield a large, ideal population for the intent of this research. Emails, however, are easily ignored and at the organizational or corporate level, bureaucracy has a tendency to leech its way into places it typically should not belong. The LinkedIn survey provided some promising results in terms of percentages, but was labor and time intensive. A large team

of actual people would be needed to gather meaningful data using this method, as you could not just use bots. Given the skepticism of the population, any detection of using artificial intelligence to gather results could severely compromise the integrity and distribution ability of the survey. This being nonprobability sampling also carries bias risk. As a probability sampling method, the MTurk method proved more reliable — to an extent. It was certainly a faster and more effective sampling method, however, this is a population specifically motivated to take surveys. There is an element of “the squeaky wheel gets the grease” with this group. There also is the financial element of doing research through MTurk. The costs for this survey were kept within reason, however, using this method could get expensive pretty quickly.

More quantitative research needs to be conducted if the field of communications is going to progress. This study was an earnest attempt to do just that. The purpose was to take a readily observable problem in the field and try to solve it through data analysis and statistically recognizable trends. While this research does not accomplish that goal, hopefully it provides possible in-roads to future exploration. At face value, this study found statistically significant relationships between a number independent variables with message comprehension and liking. There are mixed and inconclusive results between independent variables media type, age, military status, defense industry and telework status, and the dependent variable comprehension. In each case, there was statistical significance in the second treatment but not the first. Could this be a result of test fatigue? Maybe level of education among defense industry employees or veterans? There were statistically significant relationships between age, military status and defense industry with liking in both treatments. In almost every case, though, there are reasons

beyond the face value that explain these statistically significant relationships. The leading explanation are the limitations of the study, most notably sample size and research design. It is for these reasons the results are deemed inconclusive. Future research should structure the analysis to understand the differential effects of the treatments. It also would be useful to randomize the order in which each treatment was received so that results for comprehension and liking could be aggregated. Overall, greater statistical knowhow would benefit this research tremendously.

This is why the most significant contributions from this study are not in its findings, but rather in its attempt to develop a quantitative method for future research. Those that come next should fine tune all aspects of the survey, but the most important issue to address is the sample size. As previously discussed, this is a difficult population to survey. A much larger audience would provide greater insight into the variables identified. In this instance, it is impossible to tell if these statistically significant variables truly are significant — probably not. Repeating this study with much larger sample would provide definitive answers, though. Combining the nonprobability and probability samples in this survey limits what can be said about the results. It would have been better to do the sampling in one shot. A possibility for future research is to try to conduct it at a major expo, like Sea Air Space. There, you could hand out business cards with QR codes linking to the survey for participants to scan. Future research also should work on survey design instruments so that information can be analyzed using linear regression. The ultimate goal of this research remains predicting what types of populations respond best to different messages so that as a communications professional you know how to effectively tailor messaging. Future research should look to go beyond

these one-off exchanges, too. Rather than just examining how two variables interact with one another, investigate the interplay between multiple variables. For example, what effect does message type have on comprehension with age and military status as predictors. The content is an area that could be explored as well. Both message types were very similar (by design) in terms of content. What would happen if they had different foci, like one military/historical and the other home improvement or an emergency message? Do members of the defense industry react differently to different content than the general public? It stands to reason that liking and military status were so strongly related because of the content featured. Hopefully, though, this research is just the beginning. Methods and instruments should be replicated and refined. Understudied populations, like the defense industry, should be further explored to see if there are any major differences from the general public.

While the intent of this study was to investigate an internal, organizational communications issue, the potential implications for this type of research are wide-reaching — particularly in Rhode Island. As a defense contractor in corporate communications for more than five years, I have had the opportunity to observe how government installations interact with academia and industry. In recent years, there has been a large push from all parties to collaborate more on research. These groups working together is not necessarily new, but their relationship often was limited by a number of barriers. A common refrain from industry and academia was that it was too difficult to work with the government because of the amount of security protocols that were in place, which is understandable given the sensitivity often associated with military technology development. The government side rightfully has a number of concerns about allowing

contractors access to sensitive information. Recently, though, there have been a number of initiatives — Other Transactional Authority (OTA), NavalX Tech Bridges, Cooperative Research and Development Agreements (CRADAs), Educational Partnership Agreements (EPAs) — to allow more opportunities for collaboration. Some of these methods are new altogether, others have been around for a while but are becoming more prevalent. A simple and possibly overlooked, yet critical question emerges: How are these groups going to communicate with one another? Are there any communication differences between those working in industry, academia or government? Understanding whether or not the qualities of these individuals affect message comprehension and liking could lead to better communication plans. This, in turn, contributes to the overall goal for these groups, which is to gather the best minds to solve some very difficult engineering problems. These people could be absolutely brilliant, but if they cannot properly convey their ideas to one another, the efforts could fail.

Proper communication extends beyond the technical and engineering fields, though. In Rhode Island, NUWC Division Newport represents the state's second largest employer (NUWC Division Newport, 2023). Factor in Naval Station Newport, the homeporting of US Coast Guard Ships and a new National Oceanic Atmospheric Administration (NOAA) base there, and it is undeniable the military has a major presence in Rhode Island (Anderson, P., 2023). Their responsibilities extend beyond simply being tenants, though, as they must be good stewards of the sea and one of Rhode Island's greatest resources, Narragansett Bay. Part of being good stewards is working with local and state governments, as well as environmental and academic agencies, to ensure the health and longevity of this resource. If these groups are not on the same page, the

consequences could be substantial. What if, though, there are differences in communications patterns between these groups based on their individual qualities? Would knowing them create better cohesion? Understanding the most effective ways to conduct environmental communications based on the qualities of the individuals involved could have long-lasting implications.

The overarching point here is the beauty and complexity in communications resides in nuance — nuance in the message, nuance of the communicator. It is these minute distinctions that can make such a large difference in message understanding and liking. A misinterpreted eyebrow raise or a word with different connotations based on culture can drastically affect these variables. At the same time, some communications patterns can make no difference. There are universal languages that are understood no matter the qualities of the individual. This is what makes explorations of nuance utterly critical to communications professionals. It is not merely enough to just explore this phenomenon, though. It must be properly researched, documented and, perhaps most importantly, quantified to create new and lasting knowledge. According to NOAA, more than 80% of the world’s oceans are “unmapped, unobserved and unexplored” (NOAA, January 2023). It is not a stretch to consider how human beings communicate to be equally unmapped, unobserved and unexplored.

APPENDICES

Appendix A — Telework Communications Satisfaction Survey

You have been invited to participate in a special survey. The purpose is to create new knowledge of how best to communicate with employees working in the defense industry. On the next page, you will need to read and agree to participate in the research.

Informed Consent

You are being asked to take part in a research study. The purpose of the research study is to create new knowledge of how best to communicate with employees working in the defense industry. Please read the following before agreeing to be in the study. If you agree to be in this study, it will take you approximately five minutes to complete this survey. Questions will be asked about message comprehension and liking. There are no known risks or benefits.

Your responses will be strictly anonymous. The responses may be used in the research paper titled, “The Impact of Individual Qualities on Message Comprehension and Liking in the Defense Industry.” The decision to participate in this study is entirely up to you. You may refuse to take part in the study at any time without affecting your relationship with the investigators, the University of Rhode Island (URI), Southeastern New England Defense Industry Alliance (SENEDIA) or your employer.

Your decision will not result in any loss of benefits to which you are otherwise entitled. You have the right not to answer any single question, as well as to withdraw completely from the survey at any point during the process.

You have the right to ask questions about this research study and to have those questions answered by me before, during or after the research. If you have questions about the study, at any time feel free to contact Renee Hobbs from the Harrington School of Communications at the University of Rhode Island (URI) at (401) 874-5918.

Additionally, you may contact the URI Institutional Review Board (IRB) if you have questions regarding your rights as a research participant. Also contact the IRB if you have questions, complaints or concerns which you do not feel you can discuss with the investigator. The University of Rhode Island IRB may be reached by phone at (401) 874-4328 or by e-mail at researchintegrity@etal.uri.edu. You may also contact the URI Vice President for Research and Economic Development by phone at (401) 874-4576.

If you would like to keep a copy of this document for your records, please print or save this page now. You may also contact the researcher to request a copy.

By clicking on the arrow below to be taken to the survey, you indicate that you have read and understand the above and volunteer to participate in this study.

Treatment One

You will be looking at two types of messages. The first will appear after this screen and be followed by three questions. (See Figure 3 for three treatments)

1. Which of the following statements best summarizes the message you just viewed? (check one)

- A message commemorating NUWC Division Newport's 150th anniversary that highlights the critical work done at the Naval Torpedo Station from 1925-1950
- A message commemorating NUWC Division Newport's 140th anniversary that highlights the critical work done at the Naval Torpedo Station from 1925-1950
- A message commemorating NUWC Division Newport's 150th anniversary that highlights the critical work done at the Naval Torpedo Station from 1905-1925
- None of the above

2. According to the message, where should employees at this organization go for the latest Command news? (check one)

- Portal News
- NewPortal
- Porthole
- Providence Journal

3. Offer your rating of this message according to the following scale:

| | | | | | | | | |
|-------------|-------|-------|-------|-------|-------|-------|-------|--------|
| Appealing | _____ | _____ | _____ | _____ | _____ | _____ | _____ | |
| Unappealing | | | | | | | | |
| Good | _____ | _____ | _____ | _____ | _____ | _____ | _____ | Bad |
| Powerful | _____ | _____ | _____ | _____ | _____ | _____ | _____ | Weak |
| Exciting | _____ | _____ | _____ | _____ | _____ | _____ | _____ | Boring |
| Helpful | _____ | _____ | _____ | _____ | _____ | _____ | _____ | |
| Unhelpful | | | | | | | | |

You will now be shown another message, followed by another set of questions. (See Figure 4 for treatments)

4. What three things did the station make major strides with during the time period mentioned in the second example of workplace messaging? (check one)

- Guncotton, electricity and missiles
- Gunpowder, missiles and electricity
- Torpedoes, steam engines and guncotton
- Torpedoes, electricity and guncotton

5. According to the message, between what two years did the station make major strides?
(check one)

- 1849 and 1859
- 1859 and 1869
- 1869 and 1879
- 1879 and 1889

6. Offer your rating of this message according to the following scale:

| | | | | | | | | |
|-------------|-------|-------|-------|-------|-------|-------|-------|--------|
| Appealing | _____ | _____ | _____ | _____ | _____ | _____ | _____ | |
| Unappealing | | | | | | | | |
| Good | _____ | _____ | _____ | _____ | _____ | _____ | _____ | Bad |
| Powerful | _____ | _____ | _____ | _____ | _____ | _____ | _____ | Weak |
| Exciting | _____ | _____ | _____ | _____ | _____ | _____ | _____ | Boring |
| Helpful | _____ | _____ | _____ | _____ | _____ | _____ | _____ | |
| Unhelpful | | | | | | | | |

7. Do you work in the defense industry? (Check one) NOTE: The defense industry is defined as anyone who works on research and development, as well as design, production, delivery, and maintenance of military weapons systems, subsystems, and components or parts, to meet U.S. military requirements.

- Yes
- No

8. Are you currently or have you ever been in the military? (check one)

- Yes
- No

9. When did you begin working at your current employer? (check one)

- After Jan. 1, 2020
- Between Jan. 1, 2017 and Dec. 31, 2019
- Between Jan. 1, 2012 and Dec. 31, 2016
- Before Jan. 1, 2012

10. In what year where you born? (check one)

- 1997-2012
- 1981-1996
- 1965-1980
- 1946-1964
- 1928-1945

11. On average, how many days per week do you telework?

- 0
- 1
- 2
- 3
- 4
- 5

12. What is your gender? (check one)

- Male
- Female
- Non-binary / third gender
- Prefer not to say

13. What is your race? (check one)

- White
- Black or African American
- American Indian or Alaska Native
- Asian
- Native Hawaiian or Pacific Islander
- Hispanic, Latino or Spanish
- Other: _____

We thank you for your time spent taking this survey.

Your response has been recorded.

Appendix B — Figures

Figure 3

Text only treatment

Commemorating NUWC Division Newport's 150th anniversary

Everyone does their part to support the war effort as work at the Naval Torpedo Station becomes utterly critical from 1925-1950.

Visit NewPortal for the latest Command news!

Image treatment

Please study the image below carefully.



Moving image (video) treatment

You will now be shown a video. Please click play and watch carefully. The "next" button will appear at the bottom of this page after the video finishes playing.

Link to video: <https://www.youtube.com/watch?v=y-5VWBIFwQg>

Figure 4

Text only treatment

Commemorating NUWC Division Newport's 150th anniversary
Station makes major strides with guncotton, electricity and torpedoes between 1879 and 1889

Visit NewPortal for the latest Command news!

Image treatment

Please study the image below carefully.



Moving image (video) treatment

You will now be shown a video. Please click play and watch carefully. The "next" button will appear at the bottom of this page after the video finishes playing.

Link to video: <https://www.youtube.com/watch?v=CUGqTC9unQc>

Appendix C — Additional tables

Table 24

Demographic Information

| Hire Date | Freq. | Percent | Telework Days | Freq. | Percent |
|-------------------------------|--------------|----------------|--|--------------|----------------|
| After Jan. 1, 2020 | 50 | 37.3 | 0 | 20 | 14.9 |
| Jan. 1, 2017 to Dec. 31, 2019 | 40 | 29.9 | 1 | 11 | 8.2 |
| Jan. 1, 2012 to Dec. 31, 2016 | 24 | 17.9 | 2 | 13 | 9.7 |
| Before Jan. 1, 2012 | 20 | 14.9 | 3 | 24 | 17.9 |
| Total | 134 | 100 | 4 | 45 | 33.6 |
| Military Status | | | 5 | 21 | 15.7 |
| Yes | 61 | 45.4 | Total | 134 | 100 |
| No | 73 | 54.5 | Gender | | |
| Total | 134 | 100 | Male | 61 | 45.4 |
| Defense Industry | | | Female | 72 | 5.7 |
| Yes | 88 | 65.7 | Non-binary/ third gender | 1 | 0.7 |
| No | 46 | 34.3 | Total | 134 | 100 |
| Total | 134 | 100 | Race | | |
| Year Born | | | White | 121 | 90.3 |
| 1997-2012 | 49 | 36.6 | African American or Black | 2 | 1.5 |
| 1981-1996 | 42 | 31.3 | Asian | 4 | 3 |
| 1965-1980 | 32 | 23.9 | Native Hawaiian or Pacific Islander | 1 | 0.7 |
| 1946-1964 | 9 | 6.7 | Hispanic, Latino or Spanish | 4 | 3 |
| 1928-1945 | 2 | 1.5 | Other | 2 | 1.5 |
| Total | 134 | 100 | Total | 134 | 100 |

Table 27**Cross Tabs Liking vs. Treatment**

| Liking | Treatment 1 | | | | Treatment 2 | | | |
|---------------|--------------------|-----------|-----------|------------|--------------------|-----------|-----------|------------|
| | Text | Image | Video | Total | Text | Image | Video | Total |
| 5 | 2 | 1 | 4 | 7 | 4 | 1 | 4 | 9 |
| 6 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| 7 | 3 | 4 | 2 | 9 | 4 | 4 | 5 | 13 |
| 8 | 5 | 2 | 1 | 8 | 2 | 2 | 0 | 4 |
| 9 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| 10 | 1 | 1 | 2 | 4 | 0 | 2 | 1 | 3 |
| 11 | 1 | 4 | 1 | 6 | 0 | 3 | 0 | 3 |
| 12 | 3 | 6 | 3 | 12 | 4 | 5 | 1 | 10 |
| 13 | 3 | 0 | 2 | 5 | 1 | 3 | 2 | 6 |
| 14 | 0 | 0 | 1 | 1 | 0 | 2 | 1 | 3 |
| 15 | 0 | 3 | 1 | 4 | 1 | 2 | 2 | 5 |
| 16 | 0 | 1 | 1 | 2 | 0 | 1 | 0 | 1 |
| 17 | 3 | 7 | 0 | 10 | 0 | 1 | 2 | 3 |
| 18 | 4 | 2 | 1 | 7 | 2 | 2 | 3 | 7 |
| 19 | 1 | 2 | 3 | 6 | 2 | 0 | 1 | 3 |
| 20 | 4 | 2 | 2 | 8 | 4 | 2 | 4 | 10 |
| 21 | 0 | 1 | 2 | 3 | 2 | 0 | 2 | 4 |
| 22 | 1 | 0 | 0 | 1 | 4 | 1 | 1 | 6 |
| 23 | 6 | 1 | 2 | 9 | 3 | 2 | 4 | 9 |
| 24 | 1 | 1 | 1 | 3 | 2 | 2 | 1 | 5 |
| 25 | 0 | 3 | 1 | 4 | 2 | 2 | 1 | 5 |
| 26 | 3 | 1 | 2 | 6 | 2 | 3 | 1 | 6 |
| 27 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 3 |
| 28 | 3 | 0 | 1 | 4 | 3 | 0 | 0 | 3 |
| 29 | 1 | 1 | 2 | 4 | 0 | 1 | 2 | 3 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 31 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 1 |
| 32 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| 33 | 0 | 1 | 2 | 3 | 1 | 1 | 2 | 4 |
| 34 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 35 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 2 |
| Total | 46 | 46 | 42 | 134 | 45 | 44 | 45 | 134 |

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