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**Arizona State University
Narrative Networks (N2) – Phase I
Progress, Status and Management Report
Quarterly Progress Report**

Period Covered by the Report

October 1, 2012 through December 31, 2012

Date of Report: January 15, 2013

Project Title: Toward Narrative Disruptors and Inductors: Mapping the Narrative Comprehension Network and its Persuasive Effects

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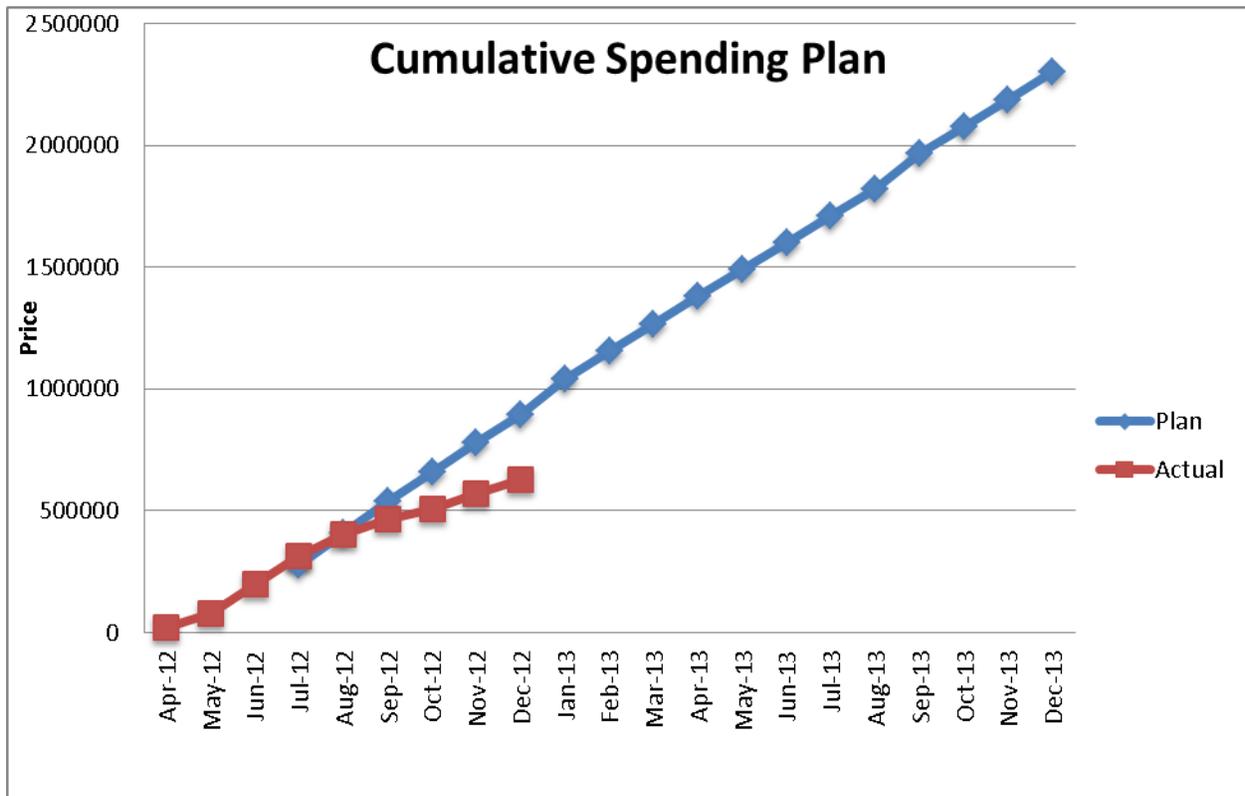
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Technical Information – Financial Management

1. Technical Progress / Quarterly Expenditure Report (Please provide cumulative spending graph).

Figure 1. Cumulative Spending Plan



Please provide October to December 2012 schedule of tasks and events for this report period, with financial expenditures broken down by task.

Task 1.1 – Startup task \$21,552.23

Task 1.2 – Narrative Stimuli \$56,542.83

Task 1.3 – Persuasion Protocol \$24,189.56

Task 1.4 – Multi-model imaging \$0.00

Task 1.5 – Knowledge Capture and Write results \$30,971.69

Task 1.6 – Progress report \$18,557.42

Task 1.7 – Travel \$8,752.87

Total expenditures for the reporting period - \$160,567.86 (estimated)

Actual Cost versus Planned Costs

	<i>Current Cost (\$)</i>	<i>Total Phase 1 Cost (\$)</i>
Plan	\$355,380.00	\$2,303,196
Actual	\$160,567.90	\$626,798
Difference	\$194,812.10	\$1,676,398

2. Technical Progress / Highlights – Observations

Narrative Team

The narrative team made significant progress developing the custom stimulus materials (22 90 second videos), including conducting Focus Group testing and completing all screenplays. Between October 4 and October 9 the Narrative Team (assisted by the Persuasion Team) conducted six focus group sessions. Two sessions included Christian subjects, two sessions included Muslim subjects and two sessions included Hindu subjects. During each session the subjects were shown 6 rough cut videos produced a three different styles: found footage (combination of pre-existing still photographs and moving images with voice over narration); still image/illustrated (still images with posterizing/rotoscoping affect applied with voice over narrative); animatic (hand drawn images with voice over narration). The purpose of the focus group was to assess the suitability of these three styles, as each has different advantages and disadvantages in terms of production, reception and story-telling impact. A secondary function of the Focus Group was to determine whether vertical integration was indicated or if any persuasive effects could be identified. Third, the Focus Groups served as an opportunity to assess the cultural sensitivity of the videos.

We are compiling a separate report of the focus group results. In summary, the Focus Group was deemed a success. Each of the three production styles were well received by the test subjects, indicating that production considerations (budget, time, equipment) could drive the selection of the production style. The still image with rotoscope effect has been selected as the production method best suited to the time, budget and team expertise. Anecdotal evidence of vertical integration was observed as well. For example, the Muslim and Hindu subjects both exhibited less comprehension of the video structured on a Christian master narrative foundation, and sought various models for understanding (such as contemporary television genres) and were very focused on plot inconsistencies and gaps. The Christian subjects, however, did not mention the story gaps and were not at all troubled in comprehending the story. Furthermore, the Muslim subjects readily recognized the parallels between the contemporary stories based on Muslim master narratives and tended to exhibit a greater preference for these videos. Finally, no subjects gave evidence of offense, either by admission or through observed reaction. All participants indicated interest in the broader research project when it was explained.

Two additional, significant lessons were learned through the Focus Group testing. Given the number of ESL participants in the Muslim and Hindu subject pools, diction used in the videos' narration must be simplified. Most ESL subjects did not understand the word "coroner" contributing to story comprehension problems. Second, the pacing of the narration

must be slow and reinforced by the visuals, as these subjects appear to be spending additional cognitive overhead processing the words whereas the native English speakers have no impediments.

Using the lessons learned from the Focus Group, the team proceeded to complete story treatments and final screenplays for all 22 videos (22 videos to be produced for 18 to be used in the experiments.) During the story treatment and screenplay development, the Narrative Team met with the Persuasion Team to discuss the incorporation (or avoidance) of traditional persuasion elements such as Response Efficacy, Ease of Use, Commitment Principle, and similar. After considerable discussion, the stories would not explicitly contain these persuasion elements, as it is the narrative structure and story content that drives vertical integration, the phenomenon under investigation. However, the stories were revised to have at least an implied persuasive element, such as implying that a shortage of organs in the donation system costs lives, and signing up to be an organ donor can be helpful to society.

Neuroscience Team

This quarter the Neuropsychology Team has been working as a group to help refine experimental methods necessary for multimodal neuroimaging of narrative comprehension. Significant progress has occurred along the lines of deciding how to structure the video presentation, imagery phases, and decision components of the experiment. Also, the team has been working in smaller clusters to help produce literature reviews about neuroscience of narrative, multimodal neuroimaging, and multimodal data analysis. Our bioengineer, Zhen Yuan, has been implementing algorithms that we have found in the areas of EEG-guided fMRI, fMRI-guided EEG, and joint independent components analysis. Finally, we have successfully purchased the 256 channel MR-compatible EEG system and it has been delivered. In short, we have made substantial progress and hope to capitalize on our hard work over these first two quarters to meet our milestones effectively in the upcoming phases of the project.

Subjects Team

We have ASU and second level (USAMRMC ORP HRPO) approval for our behavioral (i.e. out of the scanner) research. We have ASU and Barrow approval for our multi-modal imaging research (i.e. in the scanner). USAMRMC ORP HRPO has requested some small changes, to wit:

- ASU waiving informed consent for the prescreening questionnaire;
- A clarification in the prescreening regarding how a participant would know if they have a curvature of the spine (we amended to, has a doctor ever told you your spine is curved);
- A change to the Barrow consent form, where the scanning will take place, indicating the USAMRMC ORP HRPO has the right to review study data for the purpose of protecting human subjects.

Persuasion Team

The Persuasion Team continued to make progress toward its Phase 1 goals in terms of advising the narrative team on design of the stimulus videos, video testing, and the outside-the-scanner persuasion study. The persuasion team regularly attended and actively participated in all full team, the human subjects' team, and the narrative team meetings to refine our experimental design. The persuasion team conducted a total of six focus groups (2 with Christians, 2 with Muslims, 2 with Hindus). Focus group results provided valuable insight about the first 4-5 videos that have been created, how to improve them and potentially future videos, as well as subject recruitment. The persuasion team also conducted a mini-study during this reporting period. In this mini-study we compared individuals who watched two videos to each other or to a no-video control group on several dependent variables of interest to the larger project. We started with a convenience sample of 60 participants (undergraduates from a communication class), but conducted data analysis with only the 46 participants who were raised Catholic or Christian (i.e., since other religions were not represented enough to yield any meaningful comparisons). Results of this mini-study indicate that we have high reliability (.83 to .94) for several of our traditional persuasion measures (in this study had four attitude and two intention measures). Further we had acceptable reliability (.69) for the short versions of both our positive affect measure and negative affect measure. Finally we had low reliability for the short versions of both transportation (.62) and counterarguing (.60). Results also indicate that the video had a significant effect, in the expected direction, on both positive affect and transportation. Unfortunately, there were no differences between the video groups and the control group on any of the attitude or intention items. Implications for this study and findings are discussed next under problems and solutions.

3. Results or Problems and Solutions

Narrative Team

Results of the Focus Group testing are summarized above and will be detailed in the Focus Group report to be submitted separately.

As noted above in the Focus Group summary, basic story comprehension is negatively impacted by language proficiency. Those Focus Group participants that exhibited the least facility with English corresponded to those expressing the greatest amount of confusion about key plot elements. Proposed solution: review scripts for simplified diction; slow pacing of narration to allow for slower language processing and comprehension; reinforce key plot elements with visuals.

As the Focus Group report indicates, there were not any statistically significant indicators of persuasion evident in these studies. Proposed Solution: Focus Group was not structured primarily as a persuasion study and thus a different format and more refined questions will be utilized in future studies. Secondly, the scripts will be revised to ensure that the resolution of the narrative arc relates to an action or principle around which a viewer could be persuaded.

At the close of the reporting period, the Video Team experienced minor setbacks in the realm of administration and personnel. One member had to leave the video team owing to a change in outside commitments and a second team member graduated a semester early. The injury and subsequent absence of the CSC Program Manager impacted the speed of administrative action to replace these two members, as well as to facilitate the contracting procedures to retain necessary production services. Proposed solution: The production schedule has been adjusted to take advantage of weekend availability of a green screen studio, and a casting service has been identified to outsource the substantial administrative burden of casting the videos.

Neuroscience Team

The Neuropsychology Team has drafted an internal document focused on discussing all potential neuroscience issues inherent in the project as well as our solutions. Along with the previously highlighted challenges (potential delays in data collection, artifact removal, data analytic planning, and computational delays) we have discovered new challenges. Our team has worked to address these challenges by developing clear and clever solutions. First, we will highlight our solutions to the four problems mentioned in the previous quarterly report. Afterwards, we will describe some new technical issues that we anticipate in the next quarter.

Our research plan has begun taking shape and we have started staffing our data acquisition team. Zhen Yuan will be in charge of managing the data acquisition team along with Leslie Baxter's laboratory members at Barrow Neurological Institute. We have highlighted artifact removal techniques in our internal document and plan to use this document as a planning tool for removing as much noise as possible from our data. Also, we will be collecting preliminary multimodal data during the equipment setup phase that will allow us to get a handle on artifact removal before we acquire the narrative data. Similarly, we have been developing algorithms and searching the literature for data analytic techniques for multimodal data integration. We have included potential approaches in our internal document. Finally, we have purchased a powerhouse computer to help analyze the data acquired in the project. We have also inquired about potential super computer usage at Arizona State University and that will be an option if necessary.

Moving forward, we anticipate several potential difficulties in the upcoming quarter related to equipment setup at Barrow Neurological Institute, completing the experimental design, handling timing issues regarding stimulus presentation, developing appropriate EEG and fMRI acquisition parameters, and beginning pretests of the narrative stimuli. All of these issues are being planned for appropriately and we are effectively mitigating risks to stay on schedule and be prepared to start official data acquisition during the summer.

Subjects Team

We have made these changes and submitted to both IRB's. ASU has issued the waiver and approved the change to the prescreening (27 December 2012). We are awaiting Barrow's approval, at which time we will send on to Rebecca Reichardt, and she is expected to issue

an approval, per her email on 18 December 2012. Thus no significant challenges have been encountered in this funding period.

Persuasion Team

Persuasion Team Problems and Solution 1: Four of the variables we measured had low or on the cusp of low alphas. This obviously needs to improve in the future. It should be noted that in the first mini-study we used short version of each scale with a sample of items rather than full versions of the scale with every item in order to reduce the demand characteristics of the study. In future mini-studies we will use full scales to increase reliability and/or determine what items have the highest reliability. Given these scales typically have acceptable or higher reliability, this should be a sufficient solution to this problem.

Persuasion Team Problem and Solution 2: A second short-term problem is that we only had a few rough-cut videos to select from when conducting the mini-study. Thus, the persuasion team was not able to test as many videos/conduct as many mini-studies as we hoped during the reporting period. This problem should decrease as the narrative team continues to complete videos. Now that we have the logistics of the mini-study process worked out and all measures selected, we should be able to conduct them fairly quickly in the future.

Persuasion Team Problem and Solution 3: Vertically integrated messages can have a number of possible effects. Fortunately, our mini-study indicates that two of these effects were obtained with the tested videos (i.e., greater positive affect and greater transportation). Unfortunately, the videos did not affect all variables under study, the most concerning of these being the persuasive outcome measures. While these results certainly provide some helpful information, they should be interpreted with caution for several reasons: (1) we studied just two rough cut videos, (2) we had low alphas in some instances, and (3) we had a relatively small sample size of just Christians. To solve/minimize this problem the persuasion team will be work more closely with the narrative team in developing messages. We will also take steps to increase the reliability of our measures and the sample size in our studies. Finally, we will study additional and final cut copies of the videos as soon as they are available.

4. Significant Accomplishments Anticipated During Next Reporting Period

Narrative Team

- Narrative stimulus videos should be completed.
- Focus Group Report will be submitted.
- Theoretical paper on vertical integration will be submitted to a major communication journal.

Neuroscience Team

- Continue refining the Neuroscience Team internal document.
- Host EGI setup with engineers at Barrow Neurological Institute (2/11/13-2/14/13).
- Start pretesting EEG and fMRI versions of a Narrative Comprehension Experiment.

- Test our algorithms with both simulated and real data.
- Data Acquisition Team should be starting to take shape in preparation for summer data collection.

Subjects Team

- Prepare prescreening questionnaire to recruit and solicit participants for our next sets of experiments, to ensure that people meet the substantive criteria to participate (e.g. acceptable levels of familiarity with relevant stories, English fluency, and to match for age and sex across our groups) as well as any medically necessary criteria to participate in the multimodal imaging (e.g. right-handed, and nothing that would disqualify a participant from scanning, such as claustrophobia).
- Solicit ASU students, and members of relevant community religious and cultural organizations to complete prescreening questionnaire.
- Estimate exclusion rate based on initial survey responses and use this data to estimate number of additional people needed to recruit full complement of participants for scans.
- Follow-up with additional solicitations to hit recruiting target.

Persuasion Team

- Conduct additional mini-experiments to test and help fine tune additional videos created by the narrative team as they are developed but before they are implemented in the two main studies.
- This reporting period we tested short versions of the following measures and found them to have low to acceptable reliability: positive affect, negative affect, transportation, and counter-arguing. By the next reporting period we will test the full versions of each of these scales to increase reliability and/or to determine which items in these scales have the highest reliability so these items can be included in the main study. We will also continue to test the attitude and intention items even though they received high or very high reliability.
- The persuasion team will also test at least two additional measures for possible inclusion in the main study: identification with characters and emotional engagement.
- The persuasion team should be able to finalize the study protocol during the next quarter, or once all videos or human subjects selection and recruitment protocol has been finalized. Examples of issues to still be resolved include what behaviors will be included in the final study (we have several ideas in mind but cannot finalize them until the videos are in place), and whether data collection will take place in-person or online.
- The persuasion team is also prepared to conduct additional focus groups on new videos should the narrative team wish to do so after creating the videos.

5. Publications (relevant effort)

There have been no relevant publications during the reporting period.

6. Meetings and Events (please include meetings with subcontractors if applicable)

- PI Meeting in Pinehurst, NC

- Weekly all-hands meetings
- Weekly team meetings

7. Other