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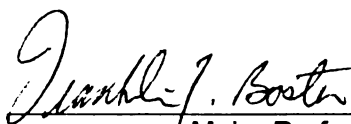
A SPINOZAN MODEL OF PERSUASION

presented by

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A SPINOZAN MODEL OF PERSUASION

By

Christopher J. Carpenter

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ABSTRACT

A SPINOZAN MODEL OF PERSUASION

By

Christopher J. Carpenter

The Spinozan model of persuasion (SMP) was advanced to explain the cognitive processes involved in memory-based versus on-line processing. A 3 (processing instructions: on-line, memory-based, or none) X 2 (weak v. strong arguments) X 2 (easy v. difficult to understand arguments) fully crossed, independent groups design experiment ($N = 360$) was employed to test hypotheses derived from the model. The effect of the inductions on message acceptance was consistent with the SMP given that the *Ss* in the memory-based condition held attitudes more consistent with message recommendations than those in the on-line condition. The data were not consistent with the SMP prediction that the *Ss*' attitudes in the memory-based condition would not be affected by argument strength. The finding that the relationship between attitudes and message recall was substantial in the memory-based condition but not on the on-line condition was consistent with predictions.

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A Spinozan Model of Persuasion

Gilbert (1991) proposed that understanding is believing. He asserted that most people assume that when they consider an argument or piece of information, they are able to suspend judgment of its veracity until they have evaluated it. He called this perspective the Cartesian view because the philosopher Descartes supported it. Gilbert suggested that this perspective is in error and instead claimed that when people comprehend a piece of information, they accept it as true until they have evaluated it. If they do not evaluate the information as they are exposed to it, they are substantially more likely to recall any information that they remember as true. He referred to this proposition as the Spinozan view because the philosopher Spinoza supported this perspective.

Gilbert (1991) described a library metaphor to explain these contrasting processes. In the Cartesian view, every new book that arrived in the library was set aside until it could be tagged fiction or non-fiction. A book that remained untagged was not considered either fiction or nonfiction until it was tagged. If the librarian were asked what type of book the untagged book was, the librarian would be unable to classify the book because it had no tag. In the Spinozan view, the library has adopted an efficiency measure. Because most of the books that enter the library are non-fiction, only fiction books receive any kind of tag and all books with no tag are considered non-fiction. If a book enters the library and is set aside before it is tagged, anyone picking it up will assume it is non-fiction because it remains untagged. Gilbert proposed that the human mind operates like the Spinozan library where information that does not get tagged is assumed to be true. The analog of

fiction versus nonfiction is in perceiving information to be false or true. Unless the mind specifically concludes that a piece of information is false, that piece of information will likely be treated as true.

Several studies have directly tested this view (Gilbert, Krull, & Malone, 1990; Gilbert, Tatarodi, & Malone, 1993). In these tests, Gilbert and colleagues provided people with information that they either labeled as true or false either while distracted or not distracted by being asked to perform an additional task. In their first set of studies (Gilbert et al., 1990), when the subjects were distracted they consistently made errors such that they often recalled information as true even though it had been explicitly labeled as false in previous exposures. They were much less likely to make the opposite error such that they recalled true information as false. In their second set of studies (Gilbert et al., 1993) they found that not only did distracted people incorrectly recall false information as true, they applied that information to jury decisions and to an evaluation of how much they liked a hypothetical individual. As a group, these studies were consistent with Gilbert's (1991) argument that the Spinozan view more accurately represents human information processing than the Cartesian view.

Other studies have demonstrated the consistency of the Spinozan effect. Newhagen (1994) demonstrated that the veracity of verbal information seen in a news broadcast can be similarly disrupted. Also, older people are more susceptible to disruptions causing them to forget negations (Chen & Blanchard-Fields, 2000). This effect has also been demonstrated in the processing of advertising claims (Cowley, 2006; Koslow & Beltramini, 2002) including the disruption of warnings

about an advertising claim being false (Skurnik, Yoon, Park, & Schwarz, 2005).

The Spinozan hypothesis has been found to be a consistent explanation of information processing outcomes.

Taken together, these studies are consistent with the Spinozan model predictions. This research has pointed toward variables that are required to model these processes. Insights from work on memory-based versus on-line processing (Hastie & Park, 1986) will help develop a model of these processes.

Memory-Based Versus On-line Processing

Hastie and Park (1986), explained on-line processing when they wrote, ...information for the operator follows a path from the stimulus environment external to the subject into working memory and directly to the judgment operator. We call tasks of this type on-line judgment tasks because the subject is forming the judgment “on-line” as evidence information is encountered (p. 261).

Opposed to on-line processing is memory-based processing. In memory-based processing, the information skips the judgment operator and goes straight into memory. The result is that after on-line processing, a judgment about the information has already been formed during message exposure and the audience can quickly report their attitude toward the object they were receiving information about. After memory-based processing, the audience has not formed a judgment and they will have to search their memory for information concerning the object and draw their conclusions from that information. Memory-based processing tends to

produce stronger correlations between subjects' attitudes and the valence of the information they recall.

The work of Mackie and Asuncion (1990) demonstrated the effects that on-line versus memory-based processing have on persuasion. They tested several memory-based processing inductions such as instructing the audience to find the verbs in the message, proofreading the message, or memorizing the message. They then compared the responses of the audiences in memory-based processing conditions to an audience who were given on-line instructions that asked the subjects to pay careful attention to the strength of the arguments in the message. In the memory-based processing conditions, they found that there was a much stronger correlation between the amount of positive information versus negative information recalled from the persuasive message and the audience's attitude toward the subject of the message than in the on-line processing conditions. Similar patterns have been found in advertising research (Beattie & Mitchell, 1985; Lichtenstein & Srull, 1985).

Hastie and Park (1986) argued that when people form a judgment using memory-based processing, they evaluate whatever information they can recall and make their judgment based on the recalled information. Their description of memory-based processing assumes a Cartesian view of cognitive processing such that information is stored but is neither accepted nor rejected. Spinozan principles would predict that the reason that the recall-attitude correlation is high is because the audience who processed using memory based processing accepted that information as true. When asked for their attitude, they produced their attitude

based on their impression that what they heard was true. If people really evaluated the information in a Cartesian way while determining their attitude after memory-based processing of the information they heard, their attitude would be based on their cognitive responses to the information they recalled instead of the amount of it they could remember. Cartesian processing would depress the recall-attitude correlation to a size similar to what is found in on-line processing. The following model integrates Gilbert's (1991) Spinozan processing principles and Hastie and Park's distinction between memory-based and on-line processing into a model of cognitive processing of persuasive messages.

Spinozan Model of Persuasion

Gilbert (1991) suggested that his model of Spinozan processing could be used to understand the persuasion process. Other than suggesting this possibility, he did not elaborate on how to model those processes. The Spinozan model of persuasion (SMP) is a model of the effects of Spinozan processing on the persuasiveness of messages. Under memory-based processing when people are exposed to a given piece of information and if they are able to comprehend the information they will accept that the information is persuasive. Their judgments and attitudes will reflect this acceptance of the information to the extent that belief in the validity of that information is related to their attitudes about an object. The predictors of whether or not a piece of information will affect their attitudes is the difficulty they have comprehending and remembering it and how much effort they put into understanding it.

If the audience is forming or updating their attitude on-line based on a message, the persuasiveness of the message will be based on an interaction between the quality of the argument, the audience's difficulty in comprehending it, and the effort they put into that evaluation. Specifically, the effects of persuasive messages during on-line processing are predicted to reflect the principles of cognitive processing that Kruglanski and Thompson (1999) described in their unimodel. They argued that when an audience is processing an argument evaluatively, they base their attitude on the strength of the argument(s) that they are able to comprehend. If they are putting forth a great deal of effort, they will be able to evaluate the strength of information that is either difficult or easy to understand. This information could include processing complex arguments or simple credibility cues. When the audience does not devote much effort to comprehending the information, only information that is easy to comprehend will affect their attitude such as simple credibility cues. Kruglanski and Thompson presented evidence consistent with their prediction that argument strength affects the persuasiveness of the message even when the audience is processing shallowly if the arguments are very simple. They also presented evidence consistent with their prediction that complex credibility cues could affect the persuasiveness of a message when the audience was carefully considering the message and not when they were shallowly processing it.

For example, someone might read a billboard that suggests that drinking beer is fun. If they do not attempt to evaluate the information's veracity and if they comprehend the billboard's message, they will be likely to believe that beer drinking is fun. The next time they require an attitude about beer, they will recall

that beer drinking is fun and their attitude will move toward a more favorable impression of beer consumption based on the extent to which they value fun things. If the subject evaluates the billboard, they will decide whether to maintain their belief that beer drinking is fun or reject it. The result of this on-line evaluation will be based on the strength of the argument in the message.

Two of the SMP's key variables that predict Spinozan processing are processing type and difficulty of understanding the message. These will be examined in more detail next.

Type of Processing

Memory-based processing requires that the audience understand the message arguments but fail to evaluate the message and can happen due to a variety of causes. First, the audience can have little to no expectation that they will need to form an attitude about the subject of the message. If they feel that they will not need an attitude about the described attitude object, they may not evaluate the information in the message on-line. One reason they may not feel that they need an attitude is because they lack involvement in the issue (e.g., Haugtvedt & Petty, 1992). Memory-based processing can also be due to a task induction in which they are given a different judgment to make (e.g., to judge the dynamism of the speaker, Mackie & Asuncion, 1990) or because they are distracted and therefore unable to devote the cognitive resources necessary to do more than simply learn the messages (e.g., Gilbert et al, 1993). In order for an audience to engage in memory based processing they must either be unmotivated to engage in online processing that evaluates the arguments, be unable to do so, or both.

When an audience is processing a persuasive message on-line, they are forming an evaluation of that message as they read or listen to the message. Hastie and Park (1986) argued that for most situations on-line processing is the default. Given that evaluations can be made with very little effort (Zajonc, 1980) it is not surprising that memory-based processing is uncommon. Hastie and Park noted that most attitude change studies almost always induce on-line processing because when the subjects know that they are in a persuasion study they know they are going to have to report an attitude. Though traditional low involvement inductions may not motivate an audience to care about the issue enough to carefully evaluate arguments, if there is some simple cue to use to form an evaluation, the uninvolved audience will still process that simple cue online and form an attitude during message exposure (Petty, Priester, & Wegener, 1994).

Some have argued that on-line processing may be similar to the central processing postulated by the elaboration likelihood model (ELM; Petty et al., 1994). Under their conceptualization, on-line processing that forms an attitude about the message requires substantial cognitive effort whereas memory-based processing requires minimal effort. This suggestion is contradicted by the countless ELM studies demonstrating that people who are not processing centrally form a judgment using simple cues like simple descriptions of source credibility (Kruglanski & Thompson, 1999) or by the sheer number of arguments encountered (Petty & Cacioppo, 1984). These audiences were able to make evaluations on-line without putting forth much cognitive effort. The possibility of making evaluations on-line using minimal cognitive effort is also consistent with Zajonc's (1980) research

findings demonstrating that “preferences need no inferences” (p. 151). Furthermore, memory-based processing could occur when the audience is devoting substantial resources to understanding the message as long as they are not evaluating it. Some information requires a great deal of cognitive effort just to be understood (e.g. dense academic writing). What is important to memory-based versus on-line processing is not how much cognitive effort the audience is spending on the message but whether or not the audience is forming an attitude based on the message during message exposure.

Difficulty of Understanding

The second key variable in the SMP is how difficult it is to understand a message. There are three sources of difficulty of understanding: message related, external, and internal. Message-related sources of difficulty of understanding are variations in the message itself and include how complex the language in the message is and how long the message is (e.g., Hafer, Reynolds, & Obertynski, 1996; Lowrey, 2008; Regan & Cheng, 1973). External sources cause the message to be harder to understand but are not part of the message itself and include distractions like showing slides during an audio recording of a message (Rosenblatt, 1966), nonverbal proximity violations (Stacks & Burgoon, 1981), loud beeping sounds of varying frequencies (Romer, 1979), etc. Some research suggests that people vary in how easily they are distracted by these external sources (Forster & Lavie, 2007). Internal sources are individual differences in how difficult it is for particular individuals to process a message. These can include general variations in ability like intelligence or specific variations such as the amount of prior knowledge

about the topic the audience has. Any of these can contribute to how difficult it is for an individual to process a given message.

The Current Study

In order to test the predictions of the SMP a 3 (processing instructions: memory-based, on-line, or none) X 2 (comprehension difficulty: low v. high) X 2 (argument strength; weak v. strong) fully crossed between subjects experiment was designed. Cognitive effort was held constant and high by inducing high response involvement in all Ss. The SMP predicted that the message acceptance scores of the group in the memory-based condition will only be affected by the difficulty of understanding the message induction such that those exposed to easier to understand arguments will be more persuaded than those exposed to difficult ones. In the on-line processing condition, argument strength and the difficulty of understanding the message were predicted to combine non-additively such that the strong arguments will be more persuasive than weak arguments but that this effect will be larger in the simple message conditions. Given that Hastie & Park's (1986) research suggests that on-line processing is the default type of processing, the group given no processing instructions is expected to produce results similar to the group given on-line instructions.

In addition to the primary SMP predictions, previous findings concerning memory-based versus on-line processing were predicted to be replicated. Hastie and Park (1986) noted that the hallmark of memory-based processing is a strong, positive relationship between the Ss recall of positive information from the message and their attitudes whereas there is a weak relationship during on-line processing. In

this study it is expected that there will be a strong relationship between the recall scores and the message acceptance scores of the *Ss* in the memory-based condition but not the on-line condition. Furthermore, the *Ss* in the memory-based condition will score higher on a recognition of facts from the message scale than the *Ss* in the on-line condition due to their focusing on learning the information. The *Ss* in the on-line processing condition will recall more of the message arguments than the *Ss* in the memory-based condition due to their focus on evaluating the arguments.

Bizer et al., (2006) found that *Ss* who formed on-line attitudes reported that they were more certain about their attitudes than those who formed memory-based attitudes. This effect was predicted to be replicated such that the attitude certainty scores will be higher in the on-line conditions than in the memory-based conditions. Furthermore, attitude certainty scores are predicted to be substantially and positively correlated with need to evaluate scores.

Method

Sample

Ss were 360 undergraduate students at a large Midwestern university. Two were dropped because they admitted on the recall measure that they had not read the message they were assigned. There were 174 male and 183 female Ss. They were recruited from undergraduate communication courses and they were given course credit in exchange for their participation. Their mean age was 20.29, $SD = 2.15$ and ranged from 18-47.

Procedures

Ss logged onto an online data collection website that randomly assigned them to one of the twelve conditions. They first viewed an informed consent form. They were then presented with the cover story and their processing induction instructions. Next, they were presented with the persuasive message. The message was followed by the attitude scale, an argument recall measure, a recognition measure, an attitude certainty measure, a measure of perceived argument strength (La France & Boster, 2001), a measure of perceived difficulty of reading the message, a measure of message elaboration (Reynolds, 1997), and the need to evaluate scale (Jarvis & Petty, 1996).

Design

This experiment employed a 3 (processing instructions: memorization, argument evaluation, or none) X 2 (comprehension difficulty: low v. high) X 2 (argument strength: weak v. strong) fully crossed independent groups design. Ss were assigned randomly to conditions with 30 Ss per cell. Need to evaluate (Jarvis

& Petty, 1996) was also measured as an alternative indicator of their processing type as previous research has found that need to evaluate scores and processing inductions combine additively to affect processing outcomes (Tormala & Petty, 2001).

Materials

In order to keep involvement constant and high in all conditions, all Ss were told that the Communication Department was assisting the Education Department in developing tests of college students' aptitude. Their instructions stated that experts at a later time would view their responses, and that their names would be associated with their responses in case the experts needed to ask follow up questions.

The processing type inductions consisted of three different sets of instructions. The first type was the memorization instructions, which were designed to induce memory-based processing. The Ss in this condition were told that they should read the message that followed very carefully and try to learn the message as well as they could because they were going to be quizzed on their ability to recall the information in the article. The argument evaluation instructions were designed to induce on-line processing. The Ss in this condition were told that they needed to carefully evaluate the quality of the arguments in the message. They were told that they would be asked to write an essay discussing their reasons for their overall impression of the proposal in the message. The no processing instructions did not seek to induce any particular processing type and merely told the Ss that they would be asked some questions about the message.

The message concerned an imaginary political candidate for the President of Ukraine though some of the arguments were based on real proposals from the candidates in the 2010 Ukrainian election (see Appendix A for messages). This topic was chosen in order to prevent *Ss* in the memory-based conditions from simply recalling a previously held attitude rather than constructing one based on what they could recall from the message. Furthermore, the topic minimized variation in previous knowledge about the topic that might affect the *Ss* difficulty of comprehending the message.

The two levels of comprehension difficulty were induced by starting with a moderately complex version of the arguments. Then, using recommendations from Lowrey (2008), more complex language and structure were added to create the difficult to comprehend messages. The language and structure were simplified to create easy to comprehend messages. The two levels were carefully balanced by examining changes to the Flesch Reading Ease score (Flesch, 1948) such that higher scores indicated passages that are easier to read (Appendix A contains the Flesch Reading Ease scores for each message).

Argument strength was induced by giving the strong arguments sound logic with strong support and giving the weak arguments logical errors with weak support. The strong arguments contained well-established evidence from qualified sources whereas the weak arguments contained weakly supportive evidence from dubious sources.

A pre-test was conducted to determine if comprehension difficulty and argument strength were successfully induced. A 2 (low argument strength v. high

argument strength) X 2 (difficult to understand v. easy to understand) independent groups design was employed. The data was collected using an online data collection website. All Ss were instructed that they were going to evaluate both the strength of the argument and how difficult it was to read. The Ss were undergraduate students taking Communication classes (mean age = 20.13, $SD = 1.98$, 76 female, 24 male). Argument strength and perceptions of difficulty were measured using the same items used in the main study.

There was a substantial and statistically significant main effect for the argument strength induction on perceptions of argument strength, $F(1, 94) = 16.30$, $p < .001$, $r = .39$, $r' = .40$ such that strong arguments ($M = 4.25$, $SD = .86$) were perceived as stronger than weak arguments ($M = 3.50$, $SD = .97$). The difficulty induction and the interaction were both insubstantial and not statistically significant predictors of perceptions of argument strength. There was a substantial and statistically significant main effect for the difficulty induction on perceptions of difficulty, $F(1, 96) = 47.74$, $p < .001$, $r = .57$, $r' = .60$ such that the arguments that were difficult to understand ($M = 4.85$, $SD = 1.01$) were rated as more difficult to understand than the arguments that were easy to understand ($M = 3.39$, $SD = 1.12$). Neither the argument strength induction nor the interaction produced a substantial or statistically significant effect on perceptions of difficulty. Based on this pretest, the message inductions were used in the main study.

Instrumentation

A correlation matrix of all measures can be found in Table 1. The first set of questions measured attitudes toward the proposed candidate by asking the Ss to rate

the proposed policy on five, 7-point semantic differential items anchored at wise/ foolish, beneficial/ harmful, desirable/ undesirable, good/ bad, and advantageous/ disadvantageous. Hunter and Gerbing's (1982) centroid method of confirmatory factor analysis found that the scale was internally consistent based on the low $RMSE = .02$. The *Ss* scores on these items were averaged for each *S*. The mean and standard deviation on this scale was $M = 4.59$, $SD = 1.45$ with adequate reliability $\alpha = .95$. The distribution was slightly negatively skewed.

The *Ss* were then asked to recall as many arguments as they could from the message. Their responses were coded for the number of accurately recalled message elements by two trained coders. The two coders' inter-coder reliability was estimated using Ebel's (1951) coefficient, $EC = .90$ and was acceptable. Their scores were averaged together to form an estimate of how many arguments the *Ss* correctly recalled. The number of correctly recalled message elements ranged from zero to 7.5 with $M = 2.86$, $SD = 1.65$ and approximated the normal distribution.

The *Ss* were then given seven multiple-choice questions measuring their ability to recognize the factual information contained in the messages (see Appendix B for items). Confirmatory factor analysis was consistent with the hypothesis of a unidimensional measure ($RMSE = .05$). The scale did, however, have disappointingly low reliability, $\alpha = .53$. There was no combination of items uncovered that increased the reliability so the scale was maintained. Given the low reliability, the measure should be interpreted cautiously. The number of items they correctly responded to was summed for each *S* to create their recognition score,

which ranged from 0 to 7 and was skewed slightly negatively ($M = 4.73$, $SD = 1.63$).

Attitude certainty was measured using five Likert items with 7-point response scales. Two of the items were adapted from Bizer et al.'s (2006) attitude certainty scale and three new ones were written to increase scale reliability (see Appendix C for items). Confirmatory factor analysis found that the scale was internally consistent given that an acceptably low $RMSE = .06$ was obtained. The Ss scores on these items were averaged. The scale approximated the normal distribution and the mean and standard deviation of this scale was $M = 4.18$, $SD = 1.23$ with adequate reliability $\alpha = .88$.

Perceived argument strength was measured next by asking Ss to respond to seven semantic differential items with 7 points (La France & Boster, 2001). Confirmatory factor analysis was consistent with the hypothesis of internal consistency, $RMSE = .03$. The scale was slightly negatively skewed, $M = 4.55$, $SD = 1.32$. The scale was reliable, $\alpha = .94$.

The next scale measured perceived difficulty of comprehending the arguments using five semantic differential items with 7 points. The items were anchored at easy/ hard, simple/ difficult, effortless/ demanding, clear/ confusing, and understandable/ incomprehensible. The acceptable $RMSE = .06$ produced by confirmatory factor analysis is consistent with the hypothesis that the measurement model fit the data. The distribution was somewhat leptokurtic with $M = 3.61$, $SD = 1.42$. The scale was adequately reliable, $\alpha = .92$.

The Ss next responded to Reynolds's (1997) elaboration measure. The scale was composed of twelve items with 7-point response scales. Confirmatory factor analysis of the scale found somewhat weak support for Reynolds's one-factor solution, $RMSE = .13$. Examination of the error matrix did not show that any particular item was contributing to a large portion of the error and no combination of the items reduced the error. Given that Reynolds found a one-factor solution and that the scale was reliable ($\alpha = .87$), the scale was maintained. The scale was distributed normally, $M = 4.20$, $SD = .93$.

Finally, the Ss responded to the 16-item need to evaluate scale using 5-point likert response scales (Jarvis & Petty, 1996). Confirmatory factor analysis of the entire scale was not consistent with good fit as demonstrated by the unacceptably high average error, $RMSE = .13$. Examination of the residual error matrix revealed that the reverse coded items were contributing much of the error. Removal of the six reverse coded items left a ten item scale that demonstrated adequate fit, $RMSE = .06$. The Ss scores on the remaining ten items were averaged for each S. The scale had a mean of 3.1 ($SD = .74$) and approximated the normal distribution. Reliability was adequate, $\alpha = .87$.

Results

The report of the data analysis will proceed by first examining the induction checks to determine if the three inductions had substantial effects on their target variables and relationships among variables. Then the effects of the inductions on the dependent variables will be examined in order to test the primary hypotheses advanced by the SMP. This analysis will be followed by examination of the effects of the inductions on the continuous variables' relationship with attitudes. Then the data concerning the hypothesis that NTE would act as an independent predictor of on-line processing will be examined.

Induction Checks

Argument strength. First, the argument strength induction was predicted to affect perceived argument strength such that strong arguments would be perceived as stronger than weak arguments. A 3 (processing instructions: on-line, memory, no instructions) X 2 (strong arguments v. weak arguments) X 2 (easy to understand v. difficult to understand) ANOVA was conducted to test this hypothesis (see Table 2 for means and standard deviations). The data were consistent with this hypothesis as strong arguments ($M = 5.19, SD = 1.02$) were perceived as stronger than weak arguments ($M = 3.95, SD = 1.29$). This difference was substantial and statistically significant, $F(1,331) = 100.27, p < .001, r = .47, r' = .48$. The mean in the weak argument condition was at the midpoint of the scale, which may indicate that the induction was limited to causing strong arguments to be perceived as particularly strong and weak arguments to be perceived as moderately strong.

There was also a small but statistically significant effect for processing type on perceived argument strength, $F(2, 331) = 3.33, p = .04, \eta^2 = .02$. The effect was such that the highest perceived argument strength was in the memory-based condition ($M = 4.76, SD = 1.20$), the second highest was in the no instructions condition ($M = 4.51, SD = 1.28$), and lowest in the on-line condition ($M = 4.39, SD = 1.46$). Pairwise tests indicated that the difference between the memory-based condition and the on-line condition was statistically significant but modest in size, $t(229) = 2.11, p = .04, r = .14, r' = .14$. The differences between the no-instructions condition and the other two processing conditions were statistically significant. This effect is consistent with the SMP because *Ss* in the on-line condition are expected to be critical and thus less persuaded whereas the *Ss* in the memory-based condition are expected to recall any arguments as persuasive. Given the mean in the no instructions condition was within sampling error of the other two conditions, no conclusions can be drawn from this analysis about which type of processing they were using to form their attitudes.

Though there was no substantial main effect for the difficulty of comprehension induction on perceived argument strength, there was a small but statistically significant interaction between argument strength and the difficulty of comprehension, $F(1, 331) = 5.24, p = .02, r = .10, r' = .10$. The interaction was such that when the arguments were strong, there was a small difference between the means of the easy to understand condition ($M = 5.28, SD = 1.08$) and the difficult to understand condition ($M = 5.11, SD = .97$). There was a larger difference between the means when the arguments were weak such that in the easy to understand

condition the mean ($M = 3.75$, $SD = 1.43$) was lower than in the difficult to understand condition ($M = 4.15$, $SD = 1.10$). Given that this interaction was not a crossover interaction, the effect size derived from the 2-way ANOVA is underestimated. A contrast analysis was applied such that the weak, easy to understand condition was coded -2, the weak difficult to understand condition was coded -1, the strong easy to understand condition was coded 2, and the strong, difficult to understand condition was coded 1. The result was a more accurate estimate of the interaction effect, $F(1, 331) = 104.12$, $p < .01$, $r = .48$, $r' = .50$. There were no other substantial or statistically significant interactions.

Difficulty of comprehension. The difficulty of comprehension induction was predicted to affect perceived difficulty of comprehending the message such that the difficult condition was predicted to be perceived as harder to comprehend than the easier condition. The full factorial ANOVA was run with difficulty of comprehension as the dependent variable to test this hypothesis (see Table 3 for means and standard deviations). The data were consistent with this hypothesis as the message in the difficult to understand condition was perceived to be harder to understand ($M = 4.14$, $SD = 1.35$) than the message in the easy to understand condition ($M = 3.07$, $SD = 1.27$). This difference was substantial and statistically significant, $F(1, 338) = 59.78$, $p < .001$, $r = .38$, $r' = .40$.

There was also a small but statistically significant interaction between processing type and argument strength on perceived difficulty $F(2, 338) = 3.87$, $p = .02$, $\eta^2 = .02$. The interaction was such that when the *Ss* were instructed to process on-line, the weak arguments ($M = 3.39$, $SD = 1.65$) were perceived as easier to

understand than the strong arguments, $r = .13$, $r' = .14$ ($M = 3.80$, $SD = 1.51$). When the Ss were instructed to process in a memory-based fashion, the finding was reversed such that the strong arguments ($M = 3.21$, $SD = 1.37$) were perceived as easier to understand than the weak arguments, $r = -.21$, $r' = -.22$ ($M = 3.74$, $SD = 1.09$). The difference between the effect sizes of argument strength on difficulty perceptions in these two processing conditions was larger than could be attributed to sampling error, $z = 2.52$, $p = .01$. When the Ss were given no specific processing instructions, the means were nearly identical ($M = 3.75$, $SD = 1.26$ for the weak arguments and $M = 3.74$, $SD = 1.51$ for the strong arguments).

Processing Type. There were several predicted indicators of a successful processing induction. First, attitudes were predicted to be substantially correlated with the number of arguments the Ss recalled in only the memory-based condition. Among the Ss in the memory-based condition, there was a substantial and statistically significant relationship between the number of arguments they recalled and their attitudes, $r = .32$, $p = .001$, $r' = .33$. The relationship between attitudes and recall were insubstantial in the on-line condition ($r = .06$, $r' = .07$) and the no instructions condition ($r = .10$, $r' = .11$). The difference between the size of the correlation in the memory-based condition and the no instructions condition was marginally statistically significant, $z = 1.80$, $p = .07$.

Also, attitudes were predicted to be correlated with the number of arguments the Ss recognized on the recognition test, but in only the memory-based condition. Among those in the memory-based condition, there was a substantial relationship between recognition and attitudes, $r = .33$, $p < .001$, $r' = .47$. The relationship

between recognition and attitudes was insubstantial in the on-line condition ($r = .02$, $r' = .03$). In the no-instructions condition there was an unpredicted substantial and statistically significant relationship between the number of arguments correctly identified and the *Ss* attitudes, $r = .31$, $p = .001$, $r' = .44$. The difference in the size of the correlation between the no instructions condition and the on-line condition was statistically significant, $z = 2.30$, $p = .02$.

Finally, it was predicted that the *Ss*' perception of the difficulty of understanding the message should be negatively related to their attitudes only in the memory-based condition. There was a substantial and statistically significant negative relationship between attitudes and the difficulty the *Ss* reported having comprehending the arguments $r = -.32$, $p < .001$, $r' = -.34$. The relationship between perceived difficulty of comprehending the message and attitudes was not substantial for the *Ss* in either the on-line condition ($r = .08$, $r' = .09$) or the no-instructions condition ($r = -.10$, $r' = -.11$). The difference between the size of the relationship between difficulty and attitudes in the memory-based condition and the no instructions condition was marginally statistically significant, $z = 1.78$, $p = .08$.

The evidence is consistent with a successful induction of memory-based processing as the number of arguments recalled, the number of arguments successfully identified, and the difficulty of comprehending the arguments were all substantially related to the *Ss* attitude scores in the memory-based processing condition. Also as predicted, none of these measures were substantially related to attitudes when the subjects were given on-line processing instructions. The type of processing that occurred in the no-instructions condition remains unclear as recall

and difficulty of understanding the message were not substantially related to attitudes but recognition scores were associated with attitudes.

Processing Depth. Finally, the Ss in all conditions were asked to process the message carefully and were told that they might be contacted by experts about their responses. It was predicted that all of the Ss would be engaging in a great deal of cognitive elaboration. The full factorial ANOVA of all the inductions was run with reported elaboration as the dependent variable (see Table 4 for means and standard deviations). There were no substantial or statistically significant effects of the inductions or their interactions based on the 3-way ANOVA. Examination of the means in Table 4 did suggest that the mean in the on-line group ($M = 4.30$, $SD = 1.00$) was higher than in the no instructions group ($M = 4.04$, $SD = .90$). This difference, although modest in size, was statistically significant, $t(218) = 1.96$, $p = .05$, $r = .13$, $r' = .14$. The mean for the memory-based condition ($M = 4.23$, $SD = .86$) was not outside of sampling error of either of the other two processing conditions. Given that the difference between the means of the cognitive elaboration measure in the memory-based condition and the on-line condition was insubstantial and within sampling error of zero, any effect the processing instructions have on the dependent variables cannot be attributed to differences in cognitive elaboration.

The difference between the mean for the entire sample ($M = 4.20$, $SD = .93$) and the midpoint of the scale (4) was statistically significant, $t(328) = 3.82$, $p < .001$ although it is only about a fifth of a standard deviation above the midpoint. This

finding is consistent with the prediction that the *Ss* would be consistently processing deeply regardless of processing instructions.

Effects of the Inductions on the Dependent Variables

Attitudes. It was predicted that in the on-line condition, strong arguments would be more persuasive than weak arguments, but that this difference would be larger when the arguments were easier to understand than when they were difficult to understand. In the memory-based condition it was predicted that argument strength would not affect attitudes but that the arguments that were easier to understand would be more persuasive than the arguments that were harder to understand. The results in the no-instructions condition were expected to be similar to the results in the on-line condition.

A 3 (processing instructions: on-line, memory-based, or none) X 2 (weak v. strong arguments) X 2 (easy v. difficult to understand arguments) factorial ANOVA was calculated with attitude scores as the dependent measure (see Table 5 for means and standard deviations). The main effect for type of processing was statistically significant but modest in size $F(2, 339) = 5.50, p = .004, \eta^2 = .02$. The *Ss* in the memory-based condition ($M = 4.90, SD = 1.34$) were more persuaded than those in the on-line condition ($M = 4.33, SD = 1.55$) or the no instructions condition ($M = 4.54, SD = 1.40$). Examination of the pair-wise comparisons reveals that the difference between the mean in the memory based condition and the on-line condition was statistically significant, $t(231) = 3.02, p = .003, r = .19, r' = .19$ as was the difference between the memory-based condition and the no instructions condition $t(229) = 1.99, p = .05, r = .13, r' = .13$. The difference between the means

in the on-line condition and the no instructions condition was insubstantial and not statistically significant, $t(208) = 1.11, p = .27, r = .08, r' = .08$. This finding is consistent with the hypothesis that when *Ss* are asked to memorize the arguments, they will be more persuaded by them than if they are trying to evaluate the arguments as they were instructed to do in the on-line condition and predicted to do in the no instructions condition.

The main effect for argument strength was substantial and statistically significant $F(1, 339) = 102.18, p < .001, r = .48, r' = .49$. The *Ss* who read strong arguments ($M = 5.28, SD = 1.18$) adopted attitudes more consistent with the message than those who read weak arguments ($M = 3.91, SD = 1.37$). These main effects were qualified by two higher order interactions. Specifically, the interaction between argument strength and difficulty of comprehending the arguments was statistically significant though modest in size, $F(1, 339) = 6.63, p = .01, \eta^2 = .01$. The expected three-way interaction was also statistically significant but modest in size, $F(2, 339) = 3.04, p = .05, \eta^2 = .01$.

The interaction between argument strength and comprehension difficulty was examined within each processing type separately. First, the results in the on-line processing condition were examined. There was a substantial and statistically significant main effect for argument strength on attitude scores, $F(1, 114) = 30.54, p < .001, r = .46, r' = .47$ but the difficulty of understanding the arguments main effect and the interaction were not substantial or statistically significant. This finding is inconsistent with the hypothesis that there would be an interaction

between argument strength and difficulty of comprehension in the on-line condition.

Next, the attitude scores of the *Ss* in the memory-based processing condition were examined. Again, there was a substantial and statistically significant main effect for argument strength, $F(1, 114) = 49.52, p < .001, r = .55, r' = .56$ such that strong arguments were more persuasive than weak. Also, there was no substantial or statistically significant main effect for difficulty of comprehension or an interaction. This finding is not consistent with the hypothesis that there would be a main effect of difficulty in this condition and no effect for argument strength.

In the condition where the audience was not given processing instructions there was a main effect for argument strength on attitudes, $F(1, 112) = 26.59, p < .001, r = .42, r' = .43$. This main effect was qualified by a substantial and statistically significant interaction between argument strength and difficulty of comprehension $F(1, 112) = 12.39, p = .001, r = .28, r' = .29$. When the arguments were strong, the easy to understand arguments were more persuasive than the difficult to understand arguments, $r = .32, r' = .33$. When the arguments were weak, the difficult to understand arguments were more persuasive than the easy to understand arguments, $r = -.31, r' = -.32$. The difference between these two effect sizes is statistically significant, $z = 3.41, p < .001$. This finding is consistent with the prediction that the *Ss* in the no instructions condition would process the message similarly to how the *Ss* in the on-line condition were predicted to respond.

Recall. It was hypothesized that the difficulty induction would make it more difficult for the *Ss* to learn the message arguments. Therefore, there should be a

main effect for the difficulty of understanding the message on the Ss ability to recall the arguments accurately. It was also hypothesized that the Ss in the on-line condition would recall the message arguments better than those in the memory-based condition. A 3 (processing instructions: on-line, memory-based, or none) X 2 (weak v. strong arguments) X 2 (easy v. difficult to understand arguments) factorial ANOVA was calculated with recall scores as the dependent measure (see Table 6 for means and standard deviations). The predicted main effect for difficulty was substantial and statistically significant, $F(1, 346) = 23.34, p < .001, r = .25$ such that difficult to understand arguments ($M = 2.46, SD = 1.61$) were not as well recalled as the easy to understand arguments ($M = 3.26, SD = 1.60$).

There was also an unpredicted statistically significant though modest in size interaction between processing type and arguments strength on the number of accurately recalled arguments, $F(2, 346) = 5.64, p = .004, \eta^2 = .03$. The effect was such that in the on-line condition, more arguments were accurately recalled in the weak argument condition ($M = 3.32, SD = 1.47$) than in the strong argument condition, $r = .25$ ($M = 2.50, SD = 1.74$). The effect was reversed in the memory-based condition as strong arguments ($M = 3.25, SD = 1.62$) were more easily recalled than weak arguments, $r = -.17$ ($M = 2.69, SD = 1.64$). The difference between these two effects was statistically significant, $z = 3.28, p < .001$. In the no instructions condition, the means in the two argument strength conditions were nearly identical ($M = 2.77, SD = 1.60$ for the weak arguments and $M = 2.64, SD = 1.70$ for the strong arguments). The simple effects in this interaction parallel the effect of the inductions on perceptions of how difficult to understand the messages

were. There were no other substantial or statistically significant main effects or interactions. The lack of a clear main effect for processing type is inconsistent with the processing type hypothesis concerning recall.

Recognition The comprehension difficulty induction was predicted to reduce recognition of the arguments. There was also a main effect for processing type prediction such that the *Ss* in the memory-based condition were predicted to recognize more of the information from the messages than those in the on-line condition. A 3 (processing instructions: on-line, memory-based, or none) X 2 (weak v. strong arguments) X 2 (easy v. difficult to understand arguments) factorial ANOVA was calculated with recognition scores as the dependent measure (see Table 7 for means and standard deviations). There was a small and marginally statistically significant effect of the difficulty induction on recognition scores, $F(1, 335) = 3.35, p = .07, r = .10, r' = .14$. The effect was such that easy to understand arguments ($M = 4.88, SD = 1.60$) were recognized more accurately than difficult to understand arguments ($M = 4.57, SD = 1.66$). This finding was consistent with the hypothesis that difficult to understand arguments would be harder to recognize. When corrected for measurement error, the size of the effect of the difficulty induction on recognition was comparable to the effect of the difficulty induction on recall.

There was also an unexpected small but statistically significant effect of the argument strength induction on recognition $F(1, 335) = 4.92, p = .03, r = .12, r' = .16$. The effect was such that when the arguments were strong ($M = 4.92, SD = 1.59$) they were more easily recognized than when they were weak ($M = 4.54, SD =$

1.66). This effect was particularly surprising because the recognition test was the same for both conditions and only covered the factual parts of the arguments that were not varied between argument strength conditions (e.g. the name of the 2005 revolution).

The argument strength effect on recognition was qualified by a small but statistically significant interaction between processing type and argument strength, $F(2, 335) = 3.34, p = .04, \eta^2 = .02$. The interaction was such that the effect of argument strength was largely confined to the memory-based condition. Specifically, in the memory-based condition, more arguments were accurately recognized in the strong arguments condition ($M = 5.32, SD = 1.47$) than in the weak arguments condition ($M = 4.34, SD = 1.67$). This difference was substantial, $r = .30, r' = .41$. In the on-line condition there was little difference in recognition scores based on argument strength ($M = 4.93, SD = 1.58$ for the weak arguments and $M = 4.83, SD = 1.50$ for the strong arguments, $r = -.03, r' = -.04$). There was also little difference in recognition scores based on argument strength in the no instructions condition ($M = 4.33, SD = 1.67$ for the weak arguments and $M = 4.61, SD = 1.73$ for the strong arguments, $r = .08, r' = .11$). The difference between the size of the effect of argument strength on recognition in the memory-based condition and the no instructions condition was marginally statistically significant, $z = 1.71, p = .09$. There were no other substantial or statistically significant main effects of the inductions or their interactions on recognition scores. The lack of a main effect for processing type is inconsistent with the prediction that those in the

memory-based condition would score higher on the recognition test than those in the on-line condition.

Attitude Certainty. It was predicted that Ss in the on-line condition would report that they were more certain of their attitudes than the Ss in the memory-based condition. A 3 (processing instructions: on-line, memory-based, or none) X 2 (weak v. strong arguments) X 2 (easy v. difficult to understand arguments) factorial ANOVA was calculated with attitude certainty scores as the dependent measure (see Table 8 for means and standard deviations). There was a small but statistically significant main effect for the difficulty of understanding the arguments induction $F(1, 339) = 7.62, p = .03, r = .15, r' = .16$ such that difficult to understand arguments ($M = 4.00, SD = 1.17$) produced lower attitude certainty scores than easy to understand arguments ($M = 4.36, SD = 1.28$). Although the main effect for processing type was statistically insignificant, a planned comparison found that the mean for the on-line condition ($M = 4.33, SD = 1.22$) was somewhat higher than the mean for the memory-based condition ($M = 4.04, SD = 1.19$). This difference was marginally statistically significant, $t(232) = 1.89, p = .06, r = .12, r' = .13$. This difference, though small, was in the direction predicted. The mean attitude certainty scores of the Ss in the no instructions condition ($M = 4.15, SD = 1.28$) was within sampling error of the other two processing conditions. There were no other substantial or statistically significant effects on attitude certainty.

The Effects of the Inductions on the Dependent Variables' Relationship with Attitudes

Recall. Examining the association between recall and conformity to message recommendations indicates that there are substantial differences among conditions. Although the expected effect of the processing induction on the attitude-recall correlation was found (see induction checks), recall also combines non-additively with the some of the other experimental treatments to affect attitudes.

Specifically, a stronger recall-attitude correlation was found in the strong argument conditions (.61, $r' = .63$) than in the weak argument conditions (.17, $r' = .17$). The difference between these two correlations was larger than could be attributed to sampling error, $z = 4.97, p < .001$. The difference between these two correlations cannot be attributed to differential variance as the standard deviation of the mean of attitudes was lower in the strong arguments condition ($SD = 1.18$) than in the weak arguments condition ($SD = 1.37$). Although the standard deviation of the mean of the recall scores was slightly higher in the strong arguments condition ($SD = 1.69$) than in the weak arguments condition ($SD = 1.57$), the difference was trivial.

Furthermore, a stronger recall-attitude correlation was found in the difficult to understand condition (.33, $r' = .34$) than in the easy to understand condition (.02, $r' = .02$). The difference between these two correlations was larger than could be attributed to sampling error, $z = 2.99, p = .003$. The difference in the size of these correlations cannot be attributed to differential variance as the standard deviation of the mean of the attitude measure in the difficult condition ($SD = 1.37$) was lower than it was in the easy condition ($SD = 1.53$). The standard deviation of the mean of the recall scores was higher in the difficult condition ($SD = 1.60$) than the easy

condition ($SD = 1.55$) but the difference was trivial.

The argument strength X recall interaction and the comprehension difficulty X recall interaction must be qualified by a powerful recall X argument strength X comprehension difficulty interaction. As Table 9 indicates, when arguments were strong a substantial recall-attitude correlation was observed at both levels of difficulty of understanding. When, however, arguments were weak, difficult to understand arguments produced no evidence of a recall-attitude association. On the other hand, when arguments were both weak and easy to understand, negative association was observed. That is, the more Ss recalled the less they conformed to message recommendations. The difference between the two correlations in the weak conditions was statistically significant, $z = 2.09$, $p = .04$.

Recognition. Examination of the correlation between recognition of the arguments and the Ss attitudes reveals substantial variation in the size of this association among the conditions. As noted previously when the induction checks were being examined, recognition was substantially correlated with attitudes in the memory-based condition and the no instructions condition but not the on-line condition. There was also an effect of the argument strength induction on the attitude-recognition association. Similar to the attitude-recall correlation, attitudes and recognition were substantially correlated in the strong arguments condition ($.42$, $r' = .58$) but not the weak arguments condition ($-.03$, $r' = .04$). In all of the strong argument conditions, the association is positive and in most of the weak argument conditions the association is within sampling error of zero (see Table 10 for the correlations in every condition). The exception to this pattern is that in the

no processing instructions condition when the arguments were weak and difficult to understand, the relationship between recognition and attitudes is substantial and positive.

Perceived Difficulty of Understanding the Message. As noted previously in the induction checks section of the results, the relationship between the Ss perceived difficulty of understanding the message and attitudes was substantial in the memory-based processing condition but not in the other processing conditions. The relationship between perceived difficulty and attitudes varies substantially as a result of the other inductions' interaction with processing type as well. Specifically, the relationship between perceived difficulty and attitudes is substantial when the Ss were in the on-line processing condition and were reading easy to understand, strong arguments (see Table 11 for the correlations in every condition). In both the memory-based condition and the no instructions condition, the relationship between perceived difficulty and attitudes was only ample when the arguments were both difficult to understand and strong. The correlations between perceived difficulty and attitudes were insubstantial and with in sampling error of zero in the other conditions.

Cognitive Elaboration. The relationship between elaboration and attitudes is affected by the processing type induction such that the relationship is modest in the memory-based processing condition ($.20, r' = .22$) but insubstantial in the on-line condition ($-.04, r' = -.04$) and the no instructions condition ($-.03, r' = -.03$). The difference between the strength of this relationship in the memory-based condition and the on-line condition is marginally statistically significant, $z = 1.77, p = .08$.

The relationship between elaboration and attitudes was also qualified by argument strength such that the correlation was positive when the arguments were strong (.35, $r' = .38$) and negative when they were weak (-.20, $r' = -.22$).

The impact of argument strength on the elaboration-attitude correlation varies with processing type (see Table 12 for the correlations in every condition). Specifically, in both the on-line processing condition and the memory-based condition, when the Ss read strong arguments, the correlation was consistently positive (.39, $r' = .43$ & .31, $r' = .34$ respectively). When the Ss read weak arguments the correlation was negative in the on-line condition (-.23, $r' = -.25$) and near zero in the memory-based condition (.05, $r' = .06$). The difference between these two correlations is not, however, larger than could be attributed to sampling error, $z = 1.47$, $p = .14$. This pattern is consistent with the Spinozan hypothesis because more cognitive elaboration did not affect the attitudes of the Ss in the memory-based condition who read weak arguments but it did cause the Ss in the on-line condition to be less persuaded by the arguments. The no-instructions condition reveals a more complex interaction. Specifically, in the strong argument conditions, the relationship between elaboration and attitudes was positive in both the easy to understand condition and the difficult. On the other hand, when the arguments were weak, there was a substantial negative relationship between elaboration and attitude when the arguments were easy to understand but almost no relationship when the arguments were difficult to understand.

Need to Evaluate

NTE was predicted to be an independent indicator of on-line versus memory-based processing such that higher scores on the NTE were predicted to be associated with a greater likelihood of on-line processing. First, given that on-line processing was predicted to be associated with greater attitude certainty, NTE was predicted to be correlated with attitude certainty. The data were consistent with this hypothesis, $r = .20, p < .001, r' = .23$.

In order to explore the effects of NTE on attitudes, the relationship between NTE and attitudes was explored under different conditions of the inductions. First, the relationship between NTE and attitudes was affected by the argument strength induction such that when the arguments were weak, NTE and attitudes were uncorrelated ($r < .001$) but when they were strong there was a modest correlation between NTE and attitudes ($r = .2, p = .01, r' = .22$). The difference in the strength of this relationship cannot be attributed to differential variance in NTE as the difference between the standard deviations was trivial (.02). When the arguments were easy to understand, there was again almost no correlation between attitudes and NTE ($r = -.03, r' = .03$) but there was a modest correlation when the arguments were difficult to understand ($r = .18, p = .02, r' = .20$). This difference in the strength of the relationship between NTE and attitudes across levels of difficulty cannot be attributed to differential variance as the difference between the standard deviations of the mean of NTE in the two levels of difficulty was trivial (.04). Examination of the relationship between NTE and attitudes under different conditions of both difficulty and argument strength reveals that NTE is positively related to attitudes when the arguments are strong and difficult to understand but the

relationship is within sampling error of zero in the other three conditions of argument strength and difficulty of understanding the message (see Table 13 for the correlations at different levels of argument strength and difficulty of understanding). This finding suggests that increases in the likelihood of on-line processing are helpful primarily in detecting strong arguments when the message is difficult to understand.

Discussion

In order to investigate the effects of memory-based versus on-line processing on persuasion, a 3 (processing instructions: on-line, memory-based, or none) X 2 (weak v. strong arguments) X 2 (easy v. difficult to understand arguments) independent groups design experiment was employed. The effects of these inductions on attitudes, recall of the arguments, recognition of the message information, perceived difficulty of comprehending the arguments, and cognitive elaboration were examined. The results will be discussed by first examining if the data were consistent with the hypotheses that were derived from the SMP.

Hypotheses Testing

Attitude-recall relationship First, the SMP predicted that the recall-attitude correlation would be stronger in the memory-based condition than in the on-line condition and the no instructions condition. The evidence was consistent with this hypothesis. There were, however, unanticipated effects. Specifically, in all processing conditions there was a substantial correlation between recall and attitudes when the arguments were strong. When the arguments were weak and difficult to understand, there was no substantial relationship between recall and attitudes. When the arguments were weak and easy to understand, there was a negative relationship between recall and attitudes. It appears that in general, when arguments are strong, the more of them the audience can recall, the more persuaded they will be. When the arguments are weak, the relationship depends on how difficult they are to understand. If the arguments are easy to understand, recalling more of them allows the audience to see the weakness of the position advocated. If

the arguments are difficult to understand, the audience's attitude is unaffected by recalling the weak arguments, possibly because they do not understand what they recall or the implications of what they recall.

Attitude-recognition relationship. Although previous research had not examined the relationship between recognition of message elements and attitudes, it was predicted that, like recall, recognition would be correlated with attitudes in the memory-based condition but not the on-line or no-instructions condition. As predicted, there was a substantial relationship between recognition and attitudes in the memory-based condition, but not in the on-line condition. The substantial relationship between recognition and message acceptance in the no instructions condition was not predicted. The no instructions condition was expected to produce results similar to the on-line condition as on-line processing was assumed to be the default mode of processing. It appears that when the *Ss* are left to decide how they will process a persuasive message, some of their results point toward on-line processing (a low attitude-recall correlation), and some toward memory-based processing (a substantial attitude-recognition correlation that was within sampling error of the size of the correlation in the memory-based condition).

The finding that recognition was substantially correlated with attitudes in the no instructions condition but recall was insubstantially correlated with attitudes in that condition may indicate that recognition scores do not function the same way as recall scores in this context. Some research suggests that recognition tests measure the degree to which an audience was exposed to a message and recall tests measure how well they learned a message (Shapiro, 1994). In this study, the

recognition test may have been measuring different aspects of processing in the different processing conditions. In the on-line condition, recognition scores may have been lowered by some of the *Ss* focusing on the arguments and not the factual information. These *Ss* who scored lower on the recognition test may have been reading the arguments very carefully despite their low recognition scores. In the memory-based condition and the no instructions condition, low scores on the recognition test may be related to an overall decrease in carefully reading the message. The *Ss* in the memory-based condition and the no instructions condition had no reason to focus on memorizing the arguments instead of the factual information so the recognition test may be measuring how well they learned the message in general. In these conditions, recognition may act as a general message exposure measure. If an audience does not learn the message they cannot be persuaded by it (McGuire, 1968). The positive relationship between recognition and attitudes in the no instructions and memory-based conditions may be the result of minimal persuasion occurring when the audience did not read the message carefully enough to understand it and more persuasion occurring when they did carefully read the message.

Argument strength also affected the strength of the relationship between recognition and attitudes. In all of the strong argument conditions there was a consistently substantial and positive relationship between recognition and attitudes. In most of the weak argument conditions, there were only insubstantial relationships between recognition and attitudes. The exception to this pattern was the condition in which *Ss* were not given processing instructions and the arguments

were weak but difficult to understand. In this case, the relationship was substantial and positive. The general pattern suggests that the more the audience is processing carefully enough to learn the factual information in the article, the more persuaded they would be by strong arguments. On the other hand, processing carefully enough to recognize more information does not have a reciprocal negative effect on attitudes when the arguments are weak.

Attitude-difficulty of comprehension relationship. One of the unique predictions of the SMP was that the difficulty of understanding the message should have a strong direct effect on the persuasiveness of the message when the Ss were engaging in memory-based processing but not in on-line processing. This prediction was made because in memory-based processing, the ability of the Ss to learn the message is the primary predictor of its persuasiveness whereas in the on-line conditions the Ss ability to learn the message is predicted by the interaction between argument strength and the difficulty of understanding the arguments. The effect of the processing induction on the difficulty- attitude correlation was consistent with this hypothesis. In the memory-based condition the more difficult the arguments were perceived to be to understand, the less the Ss held message-congruent attitudes. The relationship between difficulty of understanding and attitudes was insubstantial in the other two processing conditions. This finding was, however, further moderated in unpredicted ways.

Specifically, in the memory-based and the no instructions conditions, the negative relationship between attitudes and difficulty of understanding was only ample when the arguments were both difficult to understand and strong. When the

Ss were assigned to the on-line condition with arguments that were easy to understand and strong, the relationship was also negative and substantial. These findings were not predicted by the SMP. Given that the sample sizes are relatively small in these individual conditions, compared to the comparison based solely on processing type, replication is required before rejecting the more parsimonious explanation offered by examining only the effect of the processing instructions on the attitude-difficulty correlation.

Attitude-cognitive elaboration relationship. Reynold's (1997) measure of cognitive elaboration was designed to measure the kind of cognitive elaboration that is usually associated with evaluating message arguments. It was surprising then, that in the memory-based condition, this measure would be positively associated with attitudes. Examination of Reynold's items reveals that most of them do not contain an evaluative component. Many of them simply refer to cognitive effort or thinking and many of the Ss assigned to the memory-based condition may have interpreted them to be referring to the effort they put into memorizing the arguments. This interpretation helps makes sense of the positive correlation between elaboration and attitudes in the memory-based condition because putting more effort into memorizing the arguments was predicted by the SMP to have a direct positive effect on attitudes. When the arguments were not processed on-line, they were predicted to be recalled as persuasive. The insubstantial correlations between elaboration and attitudes in the on-line and no instructions conditions were as predicted given that elaboration should interact with argument strength to affect attitudes when the Ss are processing evaluatively.

The predicted interaction between argument strength and cognitive elaboration did emerge in the on-line condition. When the *Ss* read weak arguments, more elaboration was negatively associated with message acceptance. For these *Ss*, expending more cognitive effort makes it easier to see how weak the arguments are and reject them. For the *Ss* in the on-line condition who read strong arguments, more cognitive elaboration was associated with more positive attitudes towards the message advocacy. They were better able to appreciate the strong arguments with increased cognitive elaboration.

The relationship between elaboration and attitudes was also affected by argument strength in the memory-based condition. Specifically, there was a strong, positive relationship between elaboration and attitudes in the strong arguments condition. On the other hand, there was almost no relationship between cognitive elaboration and message acceptance in the weak arguments condition. This outcome suggests that although *Ss* who produce their attitudes on-line or use a memory-based process are both more persuaded by strong arguments when they exert more cognitive effort, only the *Ss* in the on-line condition are more likely to reject weak arguments due to exerting more cognitive effort. The *Ss* in the memory-based condition were less likely to evaluate the message when they expended more cognitive effort because they expended their cognitive effort on memorizing the arguments rather than evaluating the weakness in the arguments.

In the no processing instructions condition, the relationship between elaboration and attitudes was more complex. Like the other processing conditions, when the arguments were strong, the relationship between elaboration and message

acceptance was positive regardless of the difficulty of understanding condition they were assigned. On the other hand, when the arguments were weak, the relationship was affected further by the difficulty of understanding induction. For the Ss in the no instructions condition who read weak and easy to understand arguments, increased message elaboration resulted in less message acceptance. Yet, when the arguments were weak and difficult to understand, there was no substantial relationship between elaboration and attitudes. It appears that although the Ss in the no instructions condition were likely to realize strong arguments were strong when they put effort into analyzing them, effort only helped them recognize weak arguments were weak when they were easy to understand.

Effects of the inductions on attitudes. The SMP predicted that the attitudes of the Ss in the memory-based condition would not be affected by argument strength but would instead be affected by the difficulty of processing induction. The data were not consistent with this hypothesis as the Ss in the memory-based condition produced more message-consistent attitudes when the arguments were strong than when they were weak. They were unaffected by the difficulty induction. The Ss in the on-line condition were similarly affected by argument strength. On the other hand, the Ss in the memory-based condition were, in every condition, more persuaded by the message than the Ss in the comparable on-line condition. This pattern of findings suggests that although Spinozan processes are not powerful enough to make weak arguments as persuasive as strong ones, Spinozan processes may provide strong and weak arguments a persuasive boost that they would not get if they were being processed on-line.

In the on-line condition there was an interaction predicted between argument strength and difficulty of processing such that strong arguments were predicted to be consistently more persuasive than the weak arguments, but that this difference would be larger when the arguments were easier to read. Although examination of the means for the *Ss* in the on-line condition in Table 5 does show that the weak arguments were slightly less persuasive when they were harder to understand than when they were easier to understand, this difference was not larger than could be attributed to sampling error. It may be that the response involvement induction was so strong that the *Ss* in the on-line condition made the effort to evaluate carefully the strength of the message arguments, even when they were difficult to understand.

Stiff (1986) argued for an elastic capacity model of processing such that when the audience is motivated to process carefully they will have an excess of processing capacity if the message does not require much effort to be evaluated. He argued that in such conditions, the audience would be able to evaluate both the strength of the message and other cues such as source credibility. These conditions might be similar to the on-line condition with easy to understand arguments. Applying Stiff's model would predict that the *Ss* in the on-line, easy to understand arguments condition would be affected by peripheral cues like source credibility as well as argument strength. While none were induced in this study, future work should examine this possibility. Stiff argued that when the processing demands are greater, there will not be enough left over processing capacity to attend to the peripheral cues. The on-line condition with difficult to understand arguments might

be a case where this effect occurs. Stiff's model would predict minimal impact of peripheral cues in such a condition.

The *Ss* in the no instructions condition were predicted to react the same way as those in the on-line condition given Hastie and Park's (1986) claim that on-line processing is the default. The data from the *Ss* in this condition were consistent with the prediction of an interaction between difficulty and argument strength. When the arguments were difficult to understand, the *Ss* were slightly more persuaded by strong arguments than weak. When the arguments were easy to understand, they were much more persuaded by strong arguments than weak. According to the results of the elaboration measure, the *Ss* in the no instructions condition were elaborating somewhat less than those in the on-line condition. Perhaps the *Ss* in the on-line condition were not as affected by the difficulty induction because they were elaborating more than the *Ss* in the no instructions condition. When the *Ss* were elaborating moderately in the no instructions condition, they may have been more susceptible to the effects of the difficulty of understanding induction. It is possible that in the no instructions, difficult to understand condition, the processing demands of evaluating the arguments exceeded the amount of cognitive resources the *Ss* were willing to devote to processing the message. This finding is consistent with the unimodel (Kruglanski & Thompson, 1999) prediction that at a moderate level of elaboration, argument strength and difficulty of understanding the message interact such that argument strength will have a substantial effect when the arguments are easy to understand but not when they are difficult to understand.

Effects of the inductions on attitude certainty. Based on Bizer et al.'s (2006) findings, it was hypothesized that the attitudes of the Ss in the on-line condition would be held with greater certainty than those in the memory-based condition. The data were consistent with this hypothesis as the Ss in the on-line condition did report slightly higher attitude certainty than those in the memory-based condition. This finding provides a counterpoint to the finding that memory-based processing increases persuasion. As Bizer et al. noted, attitudes held with more certainty are more resistant to counter-persuasion. Thus, although memory-based processing may make arguments more persuasive, the attitudes that are formed may not remain consistent with the message when the audience encounters opposition arguments. Future research is needed to explore the effects of memory-based versus on-line processing longitudinally to determine if attitudes formed using memory-based processing are less resistant to change than those formed on-line.

There was also an unanticipated main effect of difficulty of understanding on attitude certainty such that the Ss who read the easier to understand messages reported higher attitude certainty than those who read the harder to understand messages. One way to interpret this finding is that people feel less confident in their new attitude when they are not as confident that they understood all of the information upon which it is based.

Effects of the inductions on recall and difficulty of understanding. It was hypothesized that due to the Ss in the on-line condition focusing on the arguments in order to evaluate them, they might recall more of them than those in the memory-based condition. There was no evidence of a main effect for processing instructions

on recall. Mackie and Asuncion (1990) found that more arguments were recalled in the on-line condition than the memory-based condition in their first study but not their second. It may be a relatively small effect that requires more power to be detected (their study 1 had 21 *Ss* per cell for this comparison, their study 2 had 26 *Ss* per cell for this comparison). Also, Mackie and Asuncion did not induce their arguments to be particularly strong or particularly weak. In this study, the on-line *Ss* only recalled more arguments than the memory-based subjects when the arguments were weak. The finding was reversed when the arguments were strong. Perhaps Mackie and Asuncion's arguments were perceived to be weak in their first study. They did not indicate if the arguments they used were strong or weak and they did not report what those arguments were. In general, the attitude scores in their studies did change in a direction consistent with the messages their *Ss* saw, but they usually did not change past the mid-point of the scale. Although the finding that the attitude change was in the direction advocated by the message is consistent with the possibility that the arguments were strong, the finding that most of their *Ss* did not change their overall stand on the topic is consistent with weak arguments. Future work examining message recall under different processing inductions should induce high and low argument strength to determine if the pattern of recall found here can be replicated.

This interaction might be explained by the possibility that when *Ss* are trying to learn arguments, making them weak makes them harder to understand than if they are strong. Weak arguments have poor logical structure and may therefore be more difficult to comprehend. The *Ss* reading these weak arguments may have had

to expend more cognitive effort on sense-making than those who read strong arguments. This may have reduced the amount of cognitive resources available for memorization. This possibility may explain why the weak arguments were harder to recall than strong arguments in the memory-based condition. On the other hand, when the audience is trying to evaluate the arguments on-line, weak arguments may be recalled more easily because they are so easy to reject; whereas strong arguments are harder recall because their lack of flaws results in *Ss* spending less time thinking about them. This interpretation is consistent with the identical interaction between processing type and argument strength with difficulty of processing as the dependent variable. *Ss* in the memory-based condition reported that the weak arguments were harder to understand and than the strong arguments. Those in the on-line condition reported that the weak arguments were easier to understand than the strong arguments. When focusing on how much of the message the audience learns, the data are consistent with an interpretation such that weak arguments makes evaluative processing easier but strong arguments make memorization easier.

Effects of the inductions on recognition. The data were not consistent with the hypothesis that the *Ss* in the memory-based condition would accurately recognize more parts of the message than those in the on-line condition. There was an unexpected interaction that demands further examination. In the memory-based condition, scores on the recognition test were higher in the strong arguments condition than in the weak. Given that the audience perceived the weak arguments as more difficult to understand than the strong, it is unsurprising that the weak

arguments were less likely to be recognized accurately. Perhaps the on-line Ss did not show a parallel finding because the recognition test focused on the factual information of the message and the on-line Ss were more heavily focused on the arguments concerning why the proposed candidate would be successful. Given the low reliability of the recognition test, null findings should be interpreted with additional caution.

Effects of NTE. Given that NTE is thought to be a personality variable that predicts on-line processing, it was expected to be associated with attitude certainty. As predicted, it was modestly and positively associated with attitude certainty. Although, examination of Table 1 shows that the correlation between attitude certainty and cognitive elaboration (.37) is stronger than the correlation between NTE and attitude certainty (.22). The difference between these two correlations is statistically significant, $z = 2.01, p = .05$. The likelihood of the audience devoting substantial cognitive resources to elaboration of a message seems to be a stronger predictor of attitude certainty than their tendency to evaluate messages. It is also worth noting that NTE and cognitive elaboration were not substantially correlated. One may have a tendency to engage in evaluative thinking, but it is not necessarily translated into extensive elaboration of a given message. This result is consistent with the SMP claim that evaluative processing does not necessarily require extensive cognitive elaboration. One can make an evaluative judgment using simple heuristics or careful processing.

NTE was also measured as an alternative index of on-line processing. Given that NTE is not necessarily associated with greater cognitive effort it was predicted

that there would be an interaction between the effects of the argument strength induction, the difficulty of processing induction, and NTE on attitudes. Specifically, when the arguments are strong, there should be a positive relationship between NTE and attitudes because as NTE scores increase, Ss are expected to be increasingly likely to evaluate the strength of the arguments. When the arguments are weak, the relationship should be negative as higher NTE people are more likely to engage in evaluative processing and thus reject weak arguments. Given that NTE does not necessarily cause more cognitive elaboration, these relationships should be stronger when the arguments are easy to understand than when they are difficult. The data were not consistent with these hypotheses as the only condition in which there was a substantial relationship between NTE and attitudes was when the arguments were strong but difficult to understand. It may be the case that when the arguments are very easy to understand, most people will engage in evaluative processing sufficient to notice that the arguments are strong or weak. Yet, when the arguments are difficult, only those who chronically engage in evaluative processing will be able to appreciate the strong arguments.

Summary of Evidence Consistent with the SMP

At the heart of the Spinozan interpretation of memory-based processing of a persuasive message versus the traditional, Cartesian approach (e.g. Hastie & Park, 1986; Lichtenstein & Srull, 1985) is the question of what happens when Ss who are producing their attitudes in a memory-based fashion are asked to report them. The traditional approach suggests that they recall the information they have on the subject and then evaluate it immediately to produce their attitude. The SMP argues

that they do not evaluate that information and that they recall it as persuasive because they did not evaluate the information at the time of information exposure. The data were not wholly consistent with either approach. The robust effect of the argument strength induction under conditions of memory-based processing suggests that the information was evaluated by the *Ss* before they reported their attitude. On the other hand, the *Ss* in the memory-based conditions did report consistently more message acceptance than the *Ss* in the on-line conditions. If the audience merely recalls information and then evaluates it as the traditional model suggests, it is unclear why they should be more persuaded by that information than if they had evaluated it during message exposure.

What this combination of findings suggests is a weaker form of the SMP. Although Spinozan processes do provide a boost to the persuasiveness of the recalled arguments, they are not strong enough to overwhelm how obvious it was that the weak arguments were truly specious. Gilbert's (1991) original research focused on beliefs, not attitudes. He did find evidence that misremembered beliefs were used to form an evaluation (Gilbert et al., 1993), but he found that the change in evaluation was caused by an increase in how believable the information was. It is possible that the Spinozan effects of learning information without evaluating it are limited to the believability of the information rather than the general persuasiveness of an argument. Future research needs to examine the believability of each piece of recalled information to determine if the persuasiveness boost that learned, but not evaluated, arguments get is mediated by believability judgments.

Limitations

One possible limitation of this study is that the topic was chosen to reduce any pre-existing attitudes in order to examine the effects of the processing inductions without any interference from previously held attitudes. In particular, previously held attitudes could limit the impact of recall on attitudes in memory-based conditions. It is easier for *Ss* to simply recall and report their old attitude rather than try to update their attitudes with the new information they just learned. It is uncertain then, if memory-based processing would provide an increase in message acceptance if the audience had pre-existing attitudes that would have to be changed rather than shaped by the message.

Mackie and Asuncion's (1990) studies used topics for which the audience would have had pre-existing attitudes and they found a strong attitude-recall correlation in their memory-based condition and not their on-line condition. There were not, however, any differences in overall attitude change between the memory-based condition and the on-line condition. Their work is consistent with the possibility that memory-based processing does not increase the persuasiveness of a message when there are pre-existing attitudes. On the other hand, their study had very low power to detect the modest sized effect for processing type on attitudes found here. This study had 120 *Ss* per cell to detect the main effect for processing type whereas Mackie and Asuncion had 26 *Ss* per cell and 21 *Ss* per cell in their two studies. Future research with adequate sample sizes is needed to explore the effect of pre-existing attitudes on memory-based processing.

Future Directions

There are a number of studies needed to explore some of the more intriguing findings uncovered here. First, the unpredicted variation in the attitude-recall correlation based on argument strength and difficulty of processing needs to be replicated and probed further. Due to the focus on cognitive responses by most persuasion researchers, the attitude-recall relationship has been neglected and the finding of strong attitude-recall correlations in some of the on-line conditions demands further examination. Future research would benefit by using long messages such as those used here to allow sufficient variation in comprehension.

The way people construct their attitudes in situations of memory-based processing requires further examination. One possible way to examine this type of processing would be to use a thought-listing task, but to ask *Ss* to report the thoughts they had while making a decision on the first attitude scale item rather than while they read the message. It is possible that recalling unevaluated information produces more positive thoughts during attitude formation based on Spinozan processes. This type of research would also help distinguish between the proposed SMP explanation and the traditional explanation of how attitudes are constructed during memory-based processing.

This study and previous research (Lichtenstein & Srull, 1985; Mackie & Asuncion, 1990) have demonstrated that *Ss* will process a persuasive message in a memory-based fashion when an experimenter instructs them to. The next step is to determine what kinds of messages can be included in persuasive experiments to induce the audience to avoid evaluating the arguments and process in a memory-

based fashion without an experimental instruction. Such a message treatment would have to maintain the audience's focus on the message enough for them to learn the message but at the same time discourage evaluation of it. In advertising, the message might begin by asking the audience to think of ways that they use a type of product and then inform them of the benefits of their brand. The focus on generating uses might prevent evaluation of the advertisement's claims.

An unexpected finding from Mackie and Asuncion's first study suggests another possibility. That study had four conditions. They had an on-line condition with no source information, a memory-based condition with no source information, a high expertise source condition, and a low expertise source condition. They found that when a high expertise source was used, the relationship between recall and attitudes was substantial even though the audience had not been given memory-based processing instructions. Perhaps when the source has high expertise on the topic, the audience is less likely to try to evaluate the message using counter-arguing and instead focus on simply understanding what the speaker is saying. Further research is needed to determine if the attitude-recall relationship with a high expertise source replicates and if it can be explained as a type of memory-based processing.

Conclusion

The Spinozan model of persuasion was proposed and tested. The data were inconsistent with some aspects of the model and a revised model was proposed. Future research will be able to determine if it will have utility in understanding the persuasion process.

Appendix A

Strong and Difficult to Understand Arguments (Reading Ease = 10.1)

The superlative candidate for President of Ukraine is Varoslav Khmelnyt. He has numerous socio-political policies that will be of assistance to superceding his aspiration of progressing Ukraine from the 85th in the hierarchy of developed nations to the top 30.

Exponentially accelerating the disjointing of Ukraine from Russia is advocated by Khmelnyt. Ukrainians are fatigued by Russia's interference in Ukrainian geopolitical maneuvering. The popular Orange Revolution of 2005 endeavored to frustrate the efforts of Russian-friendly Ukrainian politicians who had undertaken to illicitly engineer the election in their favor, thus maintaining close ties with Russia. The Orange revolution was spearheaded by Khmelnyt; he aided in the restoration of unprejudiced and impartial elections to Ukraine, and promoted the independence of Ukraine from Russia. Denser integration with Europe is now promoted by Khmelnyt by his support of the admittance of Ukraine into the European Union, a progression generally lauded as necessary to the advancement of expansion in Ukraine's economic sectors.

During the unforgiving winter of 2009, the flow of natural gas into Ukraine was discontinued by Russia. Khmelnyt demonstrated outstanding leadership by undertaking to travel to Russia and negotiating the recontinuation of an abundant supply of natural gas into Ukraine. Presently, he has expanded beyond this stratagem, favoring vigorous energy independence in pursuance of frustrating additional attempts by Russia to dominate Ukraine as an "energy hostage" recurrently in the future. It is contended by the United Nations panel on Eastern European Energy that his proposition to provide energy independence from Russia is pivotal in order to reach the ambition of stabilizing the Ukrainian economy.

A sustained multi-pronged campaign in opposition to corruption in the Ukrainian parliamentary system of government was originated by Khmelnyt. Dissatisfaction is increasingly germinating amongst many Ukrainians concerning the rampant and impetuous corruption amongst their elected officials. Khmelnyt is a proponent of constituting an independent anti-corruption bureau that would be modeled after analogous successful agencies in other countries. Oxford political scientist Dr. Richard Billingsworth expounded that such a bureau would be a key first step towards strengthening the people's faith in democracy and expanding the efficacy in which the Ukrainian government functions.

The economic circumstances in Ukraine are dire, potentially calamitous. Levels of unemployment were reached in Ukraine that were even more excessively elevated than during the break-up of the Soviet Union. After extensive consultations with preeminent economists, a sweeping jobs package was proposed by Khmelnyt. The manufacturing foundation of Ukraine is largely based on steel production, and

without diversifying the economy it will be difficult for Ukraine to convalesce from the global economic stagnated recession. In particular, a policy that Ukraine substantially augments their green technology manufacturing is advocated by Khmelnyt. Ukraine retains many industrial factories that could uncomplicatedly be adapted for this proposition, and which would put people to work very expeditiously in employment situations that disburse a very reasonable living wage. The market for electricity generating windmills and other green energy commodities is expanding precipitately in Europe due to commitments to reduce greenhouse gases. This expansion will help diversify their economy, make Ukraine less susceptible to fluctuations in the price of steel exports, and so augment the economy with an undeniably robust boost. Khmelnyt's support of increased trade with Europe will safeguard that if Ukraine expands into green technology, Ukrainian manufacturers will have access to those important markets.

Ukraine also has a deteriorating Acquired Immunodeficiency Syndrome (AIDS) dilemma. It is estimated by The World Health Organization (WHO) a department of the United Nations that they have the most accelerated growth in their human immunodeficiency virus (HIV) infected population in the world. Despite the magnitude of the predicament, previous Ukrainian leaders, including those competing with Khmelnyt for the Presidency, have consistently rejected any systematic proposals to initiate widespread sex education programs. Conversely, a comprehensive HIV education and prevention program endorsed by WHO has been proposed by Khmelnyt. The implementation of expanded safe sex education programs throughout Ukraine's schools and introduction expansive campaigns targeted to the general public are also advocated by Khmelnyt. Based on programs that have been shown to be effective in several similar neighboring countries in Eastern Europe, this program has the additional benefit that the intervention was adapted to be sensitive to local cultural beliefs. Khmelnyt believes that prevention is the key to decelerating the expansion of HIV in Ukraine, and ultimately eliminating the scourge of AIDS. This program also received the enthusiastic support of the Red Cross's panel on AIDS prevention.

Strong and Easy to Understand Arguments (Reading Ease = 53.4)

Varoslav Khmelnyt would be the ideal President of Ukraine. He has good ideas for Ukraine. These will help him reach his goal of moving Ukraine from the 85th most developed nation to the top 30.

First, he wants a bigger split of Ukraine from Russia. Ukrainians tire of Russia's getting involved in their affairs. The popular Orange Revolution of 2005 stopped the efforts of Russian-friendly Ukrainian politicians who tried to rig the election. Those politicians had wanted to keep close ties with Russia. Khmelnyt helped lead the Orange revolution to restore fair elections to Ukraine. He also promoted the independence of Ukraine from Russia. Today he favors stronger ties with Europe by supporting the entrance of Ukraine into the European Union. This idea is necessary to improve economic growth in Ukraine.

Second, Russia cut off the natural gas flow into Ukraine during the bad winter of 2009. Khmelnytsky showed strong leadership by going to Russia and getting natural gas flowing into Ukraine again. He has since moved beyond this plan. He now favors stronger energy independence to stop Russia from holding Ukraine as an “energy hostage” again. The United Nations panel on Eastern European Energy thinks that his plan to provide energy independence from Russia is key to stabilizing the Ukrainian economy.

Third, Khmelnytsky is fighting corruption. Many Ukrainians are angry about the corruption of many of their leaders. Khmelnytsky wants to make an independent anti-corruption bureau. It would be based on agencies in other countries that worked well. Oxford political scientist Dr. Richard Billingsworth says that such a bureau would be a key first step towards strengthening the people’s faith in democracy and helping the Ukrainian government work well.

Fourth, the economy of Ukraine is weak. Unemployment is higher than it was during the break-up of the Soviet Union. After talking with top economists, Khmelnytsky proposed a big jobs plan. Ukraine’s industries are mostly making steel. Without diversifying the economy it will be hard for Ukraine to recover from the global recession. Khmelnytsky wants Ukraine to expand their green tech production. Ukraine has many factories that could easily be adapted to green tech production. It would put people to work fast in jobs that pay a good living wage. Europe is greatly expanding their efforts to reduce greenhouse gases. Their efforts are quickly growing the market for electricity generating windmills and other green energy products. If Ukraine moves into this market it will help diversify their economy. Ukraine would rely less on the price of steel exports. This change would give the economy a much needed boost. Khmelnytsky’s support of increased trade with Europe will help make sure that if Ukraine expands into green tech, they will have access to those important markets.

Fifth, Ukraine has a growing AIDS problem. The World Health Organization (WHO) found that they have the fastest growing HIV infection rate in the world. Despite the size of the problem, previous Ukrainian leaders, as well as other candidates for President, have not started sex education programs. Khmelnytsky, on the other hand, supports an HIV education and prevention program endorsed by WHO. Khmelnytsky wants to start safe sex education programs in schools. He also wants safe-sex campaigns for the general public. This program will be based on others that have worked in similar countries in Eastern Europe. The programs also have the added benefit that they were adapted to be sensitive to local cultural beliefs. He thinks that prevention is the key to slowing the spread of HIV in Ukraine, and of ultimately stamping it out. This program has also received the strong support of the Red Cross’s panel on AIDS prevention.

Weak and Difficult to Understand Arguments (Reading Ease = 16.1)

The superlative candidate for President of Ukraine is Varoslav Khmelnyt. He has numerous socio-political policies that will be of assistance to superceding his aspiration of progressing Ukraine from the 85th in the hierarchy of developed nations to the top 30.

Exponentially accelerating the disjointing of Ukraine from Russia is advocated by Khmelnyt. Ukrainians are fatigued by Russia's interference in Ukrainian geopolitical maneuvering. Khmelnyt promotes the distancing Ukraine from Russia has been promoted by Khmelnyt because he supports requiring that only the Ukrainian language be spoken on the entirety of Ukrainian television stations. It has also been favored by Khmelnyt that Ukrainian universities implement guidelines such that all Ukrainian Universities only administer entrance examinations in Ukrainian. This change in linguistic requirements will obstruct Russia from interfering in Ukrainian affairs by reducing the underpinning of support for Russians living in Ukraine. When the popularity of Russians is reduced in Ukraine, Ukraine is able to develop faster. It is believed by many members of Khmelnyt's political party that such policies will effectively keep Ukraine independent.

During the unforgiving winter of 2009, the flow of natural gas into Ukraine was discontinued by Russia. Khmelnyt has consistently articulated the position that Russia will be unlikely to discontinue the natural gas distribution into Ukraine again. He contends that even under the circumstances where Russia does discontinue the continuous flow of natural gas into Ukraine again, Ukraine should accumulate their savings of currency reserves to make whatever payments Russia demands. He envisions that exploring and searching for other sources of energy reserves or alternative energy sources would be a misapplication of the government's efforts. Ukraine has always received its natural gas allotment from Russia so they should experience minimal difficulties in obtaining natural gas in the future.

Khmelnyt is also endeavoring to lead the fight against corruption. A sustained multi-pronged campaign in opposition to corruption in the Ukrainian parliamentary system of government was originated by Khmelnyt. Dissatisfaction is increasingly germinating amongst many Ukrainians concerning the rampant and impetuous corruption amongst their elected officials. Propositions have been put forth by Khmelnyt supporting the creation of a committee to create a statement on possible resolutions to the corruption problem. Many intractable problems have been solved by examining potential solutions therefore this committee is guaranteed to successfully find a resolution to the corruption difficulties. Some of the wealthiest businesspeople in Ukraine have provided preferentiality to this solution to the bribery and corruption problem.

The economic circumstances in Ukraine are dire, potentially calamitous. Levels of unemployment were reached in Ukraine that were even more excessively elevated than during the break-up of the Soviet Union. An extensive economic plan has been constructed by Khmelnyt for Ukraine. It has been proposed by Khmelnyt that the preeminent stratagem for stimulating the economy would be to enlarge taxes on small businesses. By implementing this policy, the government would expand their currency reserves to prepare for the contingency of the economy substantially declining further. When businesses are faced with increased taxation, they work increasingly rigorously to sustain profitability. Therefore, these harder working small businesses will consequentially encourage economic growth and substantially increase the number of available employment opportunities for the unemployed and the underemployed. Khmelnyt has also chosen to champion the restriction of exports of Ukrainian products to other countries. He has confidence that this policy of restricted trade will provide valuable assistance to Ukrainian businesses by encouraging them to focus on the distribution and marketing of products that Ukrainians find appealing. It has been argued by Khmelnyt that this policy will help Ukraine build a strong domestic market because only when people in a country buy domestically produced products will the entirety of the economy expand.

Ukraine also has a deteriorating Acquired Immunodeficiency Syndrome (AIDS) dilemma. It is estimated by The World Health Organization (WHO) a subdivision of the United Nations that Ukraine has the most accelerated growth in their human immunodeficiency virus (HIV) infected population in the world. Despite the magnitude of the predicament, a comprehensive HIV prevention program has not been constructed in Ukraine. A proposition has been constructed by Khmelnyt for the implementation of more draconian penalties for heroin abusers who inject the drug intravenously using needles. Given a portion of those suffering from AIDS are intravenous injection heroin addicts, reducing their numbers will eliminate the AIDS crisis. Khmelnyt argues that one is either for strengthening and expanding anti-drug laws or one is in favor of spreading AIDS via intravenous drug users. The Ukrainian Society for Stricter Drug Laws and the leadership of the Orthodox Church have enthusiastically campaigned for the prevention of AIDS by this strategy.

Weak and Easy to Understand Arguments (Reading Ease = 60.9)

Varoslav Khmelnyt would be the ideal President of Ukraine. He has several ideas for Ukraine. These will help him reach his goal of moving Ukraine from the 85th most developed nation to the top 30.

First he favors a bigger split of Ukraine from Russia. Ukrainians tire of Russia's getting involved in their affairs. The popular Orange Revolution of 2005 tried to stop the efforts of Russian-friendly Ukrainian politicians who had tried to rig the election in their favor. Khmelnyt wants to distance Ukraine from Russia by making a law saying that only the Ukrainian language can be spoken on all Ukrainian TV stations. He also favors a policy such that all Ukrainian Universities only give

entrance exams in Ukrainian. This will keep Russia from getting involved in Ukrainian affairs by reducing support for Russians who live in Ukraine. When Russians are less popular in Ukraine, Ukraine can develop faster. Many members of his political party think that such laws will keep Ukraine independent.

Second, Russia cut off the natural gas flow into Ukraine during the bad winter of 2009. Khmelnyt believes that Russia will not cut off the natural gas flow again. He says that even if Russia does cut off the gas flow, Ukraine should put aside more money to pay off Russia. He feels that finding other sources of energy would be a waste of the government's time. Ukraine has always gotten its natural gas from Russia so they should always be able to get it in the future.

Third, Khmelnyt is fighting corruption. Many Ukrainian people are growing angry about all the corruption amongst their leaders. This is weakening faith in government. Khmelnyt wants to create a committee to make a report on some solutions to the corruption problem. Many problems have been solved by trying to make solutions so this committee is sure to succeed. Some of the richest people in Ukraine like this answer to the bribery and corruption problem.

Fourth, the economy of Ukraine is weak as unemployment is as high as it has been since the break-up of the Soviet Union. Khmelnyt has made an economic plan for Ukraine. He thinks that the best way to grow the economy would be to raise taxes on small businesses. This way the government could save more money in case the economy gets worse. When businesses pay more taxes, they work harder to make money. The harder working small businesses will in turn help economic growth and raise the number of jobs available. Khmelnyt also wants to restrict exports to other countries. He thinks this will help Ukrainian businesses focus on selling products that Ukrainians like. He says that this will help Ukraine build a strong local market. This is because when people in a country buy their own products, the entire economy grows.

Fifth, Ukraine also has a big AIDS problem. The United Nations says that they have the fastest growing number of people with HIV in the world. Despite this problem, Ukraine does not have a complete HIV prevention program. Khmelnyt wants stricter penalties for heroin users who use needles. Some of the people who have AIDS are needle using drug addicts. If there are less of them it will solve the AIDS problem. He says that one is either for strong anti-drug laws or one wants to spread AIDS via drug users. The Ukrainian Society for Stricter Drug Laws and the leaders of the Orthodox Church like this proposal a lot.

Appendix B

Recognition Items

1. What was the candidate's name?

- a. Yushchenko
- b. Khmelnyt
- c. Yanukovych
- d. Kmelnovich

2. What office is the candidate running for?

- a. Prime Minister
- b. President
- c. Head of Parliament
- d. Parliamentary Executive

3. The candidate described in the message wanted to move Ukraine's ranking as a developed nation from what to what?

- a. 60th to the top 20
- b. 85th to the top 10
- c. 85th to the top 30
- d. 60th to the top 5

4. What was the name of the revolution in 2005?

- a. Yellow Revolution
- b. Green Revolution
- c. Orange Revolution
- d. Velvet Revolution

5. During which winter did Russia temporarily cut off the flow of natural gas to Ukraine?

- a. 2007
- b. 2008
- c. 2009
- d. 2010

6. According to the message, unemployment is higher in Ukraine now than it was during what other period?

- a. World War II

- b. The Cultural Revolution
- c. The break-up of the Soviet Union
- d. Right after 9/11/2001

7. According to what organization does Ukraine have the fastest growing AIDS population?

- a. Red Cross
- b. Centers for Disease Control
- c. World AIDS Forum
- d. World Health Organization

Appendix C

Attitude Certainty Scale

1. I am sure that my attitude towards Khmelnyt for President of Ukraine is correct.
2. I feel confident that my attitude towards Khmelnyt for President of Ukraine is the most accurate attitude possible.
3. I feel very certain that my attitude about Khmelnyt for President of Ukraine is correct.
4. I believe that if someone challenged my views on Khmelnyt for President of Ukraine, I would be able to easily defend my point of view.
5. I do not think that my attitude towards Khmelnyt for President of Ukraine is going to change.

Table 1

Correlation Matrix of Continuous Variables

	1	2	3	4	5	6	7	8
1 Attitude		0.16	0.32	0.14	0.83	-0.13	0.01	0.03
2 Recall	0.16		0.78	0.28	0.07	-0.47	0.53	0.09
3 Recognition	0.23	0.57		0.23	0.28	-0.49	0.50	0.03
4 Attitude Certainty	0.13	0.26	0.16		0.12	-0.30	0.42	0.25
Perceived Argument								
5 Strength	0.78	0.07	0.20	0.11		-0.06	0.00	-0.02
6 Perceived Difficulty	-0.12	-0.45	-0.34	-0.27	-0.06		-0.37	-0.07
7 Elaboration	0.01	0.49	0.34	0.37	0.00	-0.33		0.20
8 Need to Evaluate	0.03	0.08	0.02	0.22	-0.02	-0.06	0.17	

Note. The correlations below the triangle are the raw correlations. Those above the triangle have been corrected for measurement error.

Table 2
Effects of the Inductions on Perceived Argument Strength

Argument Strength	<u>Difficulty</u>	
	Easy	Difficult
On-line		
Strong	5.02 (1.19)	5.23 (.96)
Weak	3.47 (1.61)	3.95 (1.20)
Memory-Based		
Strong	5.65 (.93)	5.25 (1.01)
Weak	4.08 (1.07)	4.20 (.98)
No Instructions		
Strong	5.18 (1.02)	4.86 (.91)
Weak	3.69 (1.52)	4.31 (1.11)

Table 3

Effects of the Inductions on Perceived Difficulty of Understanding the Message

Argument Strength	<u>Difficulty</u>	
	Easy	Difficult
On-line		
Strong	3.23 (1.42)	4.35 (1.41)
Weak	2.73 (1.46)	4.06 (1.57)
Memory-Based		
Strong	2.60 (1.23)	3.81 (1.33)
Weak	3.26 (.86)	4.24 (1.09)
No Instructions		
Strong	3.28 (1.46)	4.20 (1.43)
Weak	3.28 (1.07)	4.21 (1.28)

Table 4

Effects of the Inductions on Reported Message Elaboration

Argument Strength	<u>Difficulty</u>	
	Easy	Difficult
On-line		
Strong	4.18 (.76)	4.25 (.94)
Weak	4.41 (1.27)	4.35 (1.03)
Memory-Based		
Strong	4.31 (.93)	4.36 (.92)
Weak	4.35 (.80)	3.93 (.75)
No Instructions		
Strong	3.99 (.98)	3.98 (.87)
Weak	4.26 (.95)	3.95 (.80)

Table 5

Effects of the Inductions on Attitudes

Argument Strength	<u>Difficulty</u>	
	Easy	Difficult
On-line		
Strong	5.02 (1.18)	5.07 (1.18)
Weak	3.41 (1.61)	3.87 (1.49)
Memory-Based		
Strong	5.84 (.94)	5.50 (1.11)
Weak	4.23 (1.16)	4.02 (1.19)
No Instructions		
Strong	5.52 (1.06)	4.74 (1.31)
Weak	3.56 (1.27)	4.37 (1.22)

Table 6

Effects of the Inductions on Recall

Argument Strength	<u>Difficulty</u>	
	Easy	Difficult
On-line		
Strong	2.72 (1.86)	2.28 (1.62)
Weak	3.85 (1.15)	2.77 (1.57)
Memory-Based		
Strong	3.29 (1.40)	3.21 (1.84)
Weak	3.05 (1.69)	2.33 (1.52)
No Instructions		
Strong	3.38 (1.70)	1.88 (1.35)
Weak	3.27 (1.59)	2.27 (1.47)

Table 7

Effects of the Inductions on Recognition

Argument Strength	<u>Difficulty</u>	
	Easy	Difficult
On-line		
Strong	4.79 (1.68)	4.87 (1.33)
Weak	5.35 (1.56)	4.48 (1.50)
Memory-Based		
Strong	5.15 (1.61)	5.48 (1.33)
Weak	4.48 (1.60)	4.20 (1.75)
No Instructions		
Strong	4.92 (1.60)	4.26 (1.83)
Weak	4.57 (1.48)	4.10 (1.84)

Table 8

Effects of the Inductions on Attitude Certainty

Argument Strength	<u>Difficulty</u>	
	Easy	Difficult
On-line		
Strong	4.35 (1.11)	4.17 (1.12)
Weak	4.53 (1.43)	4.28 (1.21)
Memory-Based		
Strong	4.50 (1.19)	3.87 (1.21)
Weak	4.03 (1.31)	3.79 (.98)
No Instructions		
Strong	4.56 (1.32)	3.95 (1.15)
Weak	4.17 (1.28)	3.92 (1.34)

Table 9

Effects of the Inductions on the Attitude Certainty- Attitude Correlation

Argument Strength	<u>Difficulty</u>	
	Easy	Difficult
Strong	0.52 (.55)	0.68 (.73)
Weak	-0.29 (-.31)	0.02 (.02)

Note. Correlations corrected for measurement error (r') are in parentheses.

Table 10

Effects of the Inductions on the Recognition- Attitude Correlation

Argument Strength	<u>Difficulty</u>	
	Easy	Difficult
On-line		
Strong	.35 (.38)	.24 (.26)
Weak	-.12 (-.13)	-.09 (-.10)
Memory-Based		
Strong	.39 (.43)	.54 (.59)
Weak	-.18 (-.20)	.13 (.14)
No Instructions		
Strong	.36 (.39)	.50 (.55)
Weak	-.15 (-.16)	.46 (.50)

Table 11

Effects of the Inductions on the Perceived Difficulty- Attitude Correlation

Argument Strength	<u>Difficulty</u>	
	Easy	Difficult
On-line		
Strong	-.43 (-.46)	-.02 (-.02)
Weak	.04 (.04)	.18 (.19)
Memory-Based		
Strong	-.16 (-.17)	-.56 (-.60)
Weak	.20 (.21)	-.26 (-.28)
No Instructions		
Strong	-.26 (-.28)	-.52 (-.56)
Weak	.14 (.15)	.22 (.24)

Table 12

Effects of the Inductions on the Elaboration- Attitude Correlation

Argument Strength	<u>Difficulty</u>	
	Easy	Difficult
On-line		
Strong	.33 (.36)	.44 (.48)
Weak	-.19 (-.21)	-.29 (-.32)
Memory-Based		
Strong	.24 (.26)	.39 (.43)
Weak	-0.002	.07 (.08)
No Instructions		
Strong	.37 (.41)	.35 (.38)
Weak	-.49 (-.53)	-.05 (-.06)

Table 13

Effects of Argument Strength and Difficulty of Understanding on the NTE- Attitude

Correlation

Argument Strength	<u>Difficulty</u>	
	Easy	Difficult
Strong	.11 (.12)	.26 (.29)
Weak	-.14 (-.15)	.14 (.15)

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