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OR MESSAGES UNDER EVALUATION?

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UNDERSTANDING THE INFLUENCE OF OTHERS: CHANGING EVALUATIONS OF MESSAGES OR MESSAGES UNDER EVALUATION?

By

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ABSTRACT

UNDERSTANDING THE INFLUENCE OF OTHERS:
CHANGING EVALUATIONS OF MESSAGES
OR THE MESSAGES UNDER EVALUATION?

By

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Asch (1940) proposed that group standards change how people interpret objects under evaluation. This paper extends his intuition into a two-step model of social influence. In the first step, people interpret a given message differently with knowledge of how others interpret said message than if they did not know about anyone else's interpretation. In the second step, people's interpretation of a message, in turn, influences how their attitudes change. Six studies test (a) if knowing how others thought a newspaper article showed a particular bias in presenting an issue affects how participants, themselves, perceive the extremity of this article's advocated position, and (b) if deviations in participants' interpretation from a control group influences how they change their attitudes toward this issue. In a meta-analytic review of these experiments, this two-step model coincides with participants' reactions when they read newspaper articles opposing an issue, but fails to account for reactions to reading articles supporting an issue. A final experiment shows that the effect of this type of social influence increases when words in a newspaper article possess more ambiguity and disappears when they possess less ambiguity.

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Chapter 1: Theoretical background

Scientific controversies constantly resolve themselves into differences about the meaning of words. – A. Schuster (as cited in Odgen & Richards, 1923)

Before encountering a message for the first time, people may have already heard about that message from others. Friends may have seen and talked about an advertisement, family members might have read someone's speech in the newspaper and commented about it around the dinner table, or colleagues may have read and gossiped about the most recent company memo. After hearing other people give their own perceptions of an ad, speech, or memo, persons may perceive these messages differently than if they previously had not heard anyone else's thoughts. Asch (1940) proposed that this social influence, or change of judgment in response to group standards, was due to "*a change in the object of judgment, rather than in the judgment of the object*" (p. 455, italics in the original). Asch (e.g., 1940; 1948) provided empirical evidence consistent with his contention that contextual features, such as hearing others' opinions or knowing the source of a message, alter a particular object of judgment, specifically a message's meaning.

Asch provided the intuition and broad brush-strokes to guide a different theoretical explanation for social influence and attitude change; however, he never articulated a process by which this type of social influence may occur. This paper expands on how knowledge of others' interpretations may change how people interpret messages and, subsequently, change their attitudes. After explicating the theoretical premise, a single study and 5 replications test if (a) other's interpretations affect how participants interpret the extremity of a newspaper article's advocated position toward some issue, (b) participants change their attitudes in line with their newspaper article

interpretations, and (c) participants evaluate other related issues consistent with their changed attitude. In these experiments, newspaper article topics, advocated positions, and others' interpretations (range and frequency) vary. Because social influences operate increasingly as ambiguity increases (e.g., Crutchfield, 1955; Sherif, 1935), a final experiment keeps the previous variables constant and instead varies the ambiguity of the words in a newspaper article.

Influence of others

In 1948, Asch objected to the theoretical underpinnings of social influence models. He argued that these concepts were created to explain observations of people changing their beliefs or attitudes in a way that was "inadequate to or contradicted the actual demands of the situation" (p. 250). He wrote that authors using prestige suggestion (e.g., Lorge, 1936) and later imitation (e.g., Bandura, 1969) thought of them as "capable of inducing people to accept arbitrary opinions and evaluations regardless of their merit" (p. 250). Asch reflected on Lorge's studies of prestige suggestion (1936) in which he predicted that the amount of prestige held by the attributed source of a message changes a person's reaction to that message. Under this prestige suggestion line of research, scholars could combine foreknowledge of readers' assessments of a source's prestige and their attitudes toward a message to predict readers' final attitudes.

This suggestion or imitation explanation demands multiple assumptions. First, that people weigh and combine contextual features surrounding their exposure to a message's content separately from how they interpret this message (Asch, 1948). Second, interpretations of a message's content remain constant and evaluations of this message change as the number of positive and negative contextual features vary. Third, one could

attribute any source to any message without any residual effects. For instance, if Oprah Winfrey and Michael Jordan have +2 points of source prestige, then either source could be associated with a message to create a positive shift in the readers' final attitudes no matter what topic a message covered.

Although many studies of prestige used a single source, this paper focuses on a situation in which many others provide their interpretations of a message before people have the chance to make their own interpretations and future judgments of the same message. In prestige suggestion or imitation research, the same rationale holds. More sources merely provide more contextual features to consider. With multiple sources, people weight and combine each source's opinion into an overall social influence that creates a shift in people's attitudes. For example, in some evaluative circumstances, people might have a summary report of what others thought about an article before they get to read it. After reading that many others thought the article was biased in favor of a new parking plan on campus, they would read a newspaper article covering this plan in the following manner. A reader would reflect on the credibility of others who told them about the article, evaluate the article's parking plan content, combine the two scores, and report a final evaluation of the parking plan.

Although this rationale prevailed at the time, Asch (1948) argued that this process did not reflect cognition well. Source prestige or credibility is not an attribute that can be indiscriminately associated with any message's content and be expected to create the same effects. In contrast, attributing the message to a specific source provides additional contextual information through which to interpret the message's content.

In contrast to the rationale behind prestige suggestion, Asch (1948) proposed, "the specific content of an event or utterance is a function of the perceived relation between it and its context." Lewis also argued that "the material to be judged is seen in a new light and has consequently changed its meaning... (e.g., suggestion or imitation) operate when the material to be judged is susceptible of more than one meaning... (social influence) can result in a restructuring of the material so that another and perhaps quite contrary judgment is demanded" (Lewis, 1947, p. 233). In her study, a source's prestige "functioned to provide context for the statement. It was often in terms of this context that the statement had its meaning" (Lewis, 1947, p. 243).

A number of cues may be gathered from a context. These cues include source, word order/ agreement (e.g., Gollob, 1968; 1974; Heise, 1969), character balance (Leaf, Kanouse, Jones, & Abelson, 1968; Lerner & Simmons, 1966), wording of questions or instructions (see Kahenman, Slovic, & Tversky, 1982 for a review), situation, and prior attitudes to name a few.

Sometimes features of the rating scale used to evaluate a message can also provide respondents with information, such as norms or standards to which they can compare themselves. For example, previous research (Schwarz, Hippler, Deutsch, & Strack, 1985) showed the effect of response categories on peoples' reports of their behavior and their judgments of them. U.S. participants reported their daily TV viewing habits on a scale that ranged from 30 minutes to more than 2.5 hours (group 1) or 2.5 hours to more than 4.5 hours (group 2). Those in group 1 reported less personal television viewing, yet evaluated TV as more important in their lives and less satisfaction with their leisure activities than those in group 2. Most U.S. viewers watch four hours of television

per day (Nielsen Media Research, 2000) and probably believe that their viewing habits are about average. With a rating scale that ends at 2.5, the researcher provides an extreme of television viewing behavior that falls below most viewers' habits. In trying to compromise between personal habits and not being above normal, those in group 1 are likely to report lower viewing habits, and yet, judge TV is being important in their lives. Group 2 would not face the same concerns, because the high end of their rating scale was higher than most of their viewing habits.

In the previous example, people used end-points of the rating scale as a standard of comparison in evaluating their behavior as well as its ramifications (e.g., the importance of TV viewing in their lives). In this paper, *context* refers to any information pertinent to the subsequent judgment that is not contained in a message. The point is this contextual information can affect the manner in which people construe a message.

Under this definition, others' interpretations become a contextual feature that provides information to help readers disambiguate and interpret messages. For example, with the knowledge of how others interpreted a message, people in turn may interpret the same message differently than if they did not have this information. In sum, the process of interpreting messages involves both content and context.

Content and context

When reading a message, people encounter sets of symbols: letters and punctuation. They must string these symbols into words, phrases, and sentences and then interpret them for their meaning (Kecskemti, 1952), which may be more or less straightforward. Some words may have more potential meanings than other words, i.e., ambiguity (see Eylon & Allison, 2002 for a review). For example, the word "strong" has

19 different entries in a dictionary, whereas "punishment" has one entry (Webster's Revised Unabridged Dictionary, 1998). Consequently, people need to use contextual cues to disambiguate a message's content, e.g., the word "strong," in order to interpret it.

In cross-cultural encounters, one can see the need for common symbol systems when two people using two different character systems try to communicate. A reader who only reads or writes with Cyrillic characters would be hard-pressed to interpret a message written in Chinese characters. Although sharing character systems may help, two people who do not share vocabulary, argots, or experiences may interpret the same message in two different ways.

Even when two people share all the previous linguistic tools, they may still not interpret a message similarly because interpretation is a dynamic process. On first reading a message, people may interpret its meaning in a way that later changes. Over time, people may encounter new messages or simply reflect upon the message. Reflection on a message and reception of new messages may add evidence for consideration, counter-arguments, or social expectations, which may alter one's original interpretation of a message.

Language equivalence and reflection aside, the context in which a person reads a message for the first time may affect his or her interpretation of the message. The interrelated conditions surrounding one's reading of a message's content, e.g. source, situation, prior attitudes, etc., may change how one interprets this message's content. When reading a message, people must organize all of the sensory input into an interpretable format, which may change the meaning of the message's content. In classes covering Gestalt psychology, instructors often demonstrate the impact of sensory

organization on interpretation through a visual exercise. Upon viewing one particular drawing, see Figure 1, some students report seeing an older, disfigured woman and others report seeing a young, attractive woman. The students organize the same set of visual information into two completely different pictures.

In thinking about this process with messages, some students interpret two different "meanings" from the same message's content. When students hear that their classmates see a completely different woman than they do, they often try to convince each other to see this picture in a different way. They may try to show each other how to organize the picture to see the alternate woman. Once students see each of the two women within the drawing, they may be able to change the optical illusion at will. To see a particular woman in the image, students must organize the image "Gestalt-wise: the stimulus is the 'figure,' and everything else is the 'background'" (Kecskemeti, 1952, p. 3; see also Asch, 1948). Other students in the room are contextual features that help their peers interpret this picture in particular ways.

The specific meaning attributed to a message's content depends on the perceived relationship between it and the context surrounding the message's content (Asch, 1948). Context can be directly tied to a message, e.g., coming from a designated source, or can be indirectly primed, e.g., being in a good mood because of something else that preceded one's reading of a message. Context may influence interpretations of a message's content in at least three ways: (a) the extremity of a message's advocated position toward an issue, (b) the dictionary meaning of the words in a message, and (c) the social function of this content.

Extremity

The context may guide how extreme a message's advocated position seems to the reader, i.e., that a message expresses some degree of militancy, conservativeness, bias toward an issue, etc. Asch (1948) examined Lorge's (1936) work to illustrate his point. In Lorge's study, participants read a message about capitalism. Some participants heard that Harry Bridges, a famous union leader wrote the message. Other participants heard that the author was the current president of the U.S. Chamber of Commerce. After reading the message, the participants wrote a description of what the message meant. Participants interpreted the message's advocated position (more or less supportive of capitalistic attempts) differently depending on the source of the message. For example, one participant wrote that this message was an expression of the union leader's complete opposition to capitalist attempts, whereas another wrote that this message was the president's support of capitalist attempts with some modification.

In another study (Burgoon, 1970), participants were split into two groups and evaluated a set of black activists with a history of either militant or non-militant activism. Afterwards, in a separate task, participants from both groups read the same, neutral message about supporting black students on campus, and then they evaluated the message's militancy. Participants rated the message's militancy differently depending on (a) the participants' own racial heritage and (b) which activists they had to evaluate before reading the message. Black readers who evaluated militant activists versus non-militant activists, rated the message as more militant. The white readers who evaluated militant activists rated the message as *less* militant than those who evaluated the non-militant activists. The process of evaluating activists' militancy contributed to how

readers rated the message's militancy, whereas the differences were significantly different from a control group who read the same message, but did not think about anyone beforehand. Both of these studies illustrate how context may influence how a reader interprets the extremity of a message.

Dictionary meaning

Context also may indicate which dictionary meaning should be used for particular words or phrases. By indicating one definition instead of another, the entire meaning of the message may change. If someone asked for a pen over by a mouse, one would likely look for a writing instrument by a computer attachment and not a large containment area next to a fuzzy little animal. In a past experiment, the meaning of 'dislike', e.g., Joe dislikes Bill, was interpreted differently depending on other parts of the sentence. Participants who read the following sentence, "Joe and Bill dislike each other, Bill and Sam dislike each other. How do you think Joe and Sam feel about each other?" (Gerbing & Hunter, 1979, p. 299). They interpreted the content of 'dislike' in the passage in multiple ways: Bill was hard to get along with; Joe, Bill, and Sam are all offensive people; and Joe and Sam share a dislike for Bill to name a few. Other participants, who read similar sentences with the minor difference that Bill and Sam *liked* each other, interpreted 'dislike' between Joe and Bill as dissimilar interests, enemies, and a reason for the dislike. In this experiment the relationship between Bill and Sam changed how participants interpreted the meaning of 'dislike' between Joe and Bill.

Allen and Wilder (1980) conducted three experiments to test how participants' interpretations of the meaning of phrases could be influenced by knowing what other people thought these phrases meant. In these experiments, participants read a sentence

such as "I would never *go out of my way* to help another person if it meant giving up some personal pleasure" (p. 1118, italics in original). The participants marked their interpretations of the italicized phrase on a single item using a 10-point scale anchored with "be inconvenienced" and "risk my life." In a set of three experiments, they found that (a) knowing of other's interpretations of the phrases' meaning influenced how the participants interpreted the phrases' meaning, (b) the participants' chosen meaning could not be explained by simple conformity to a group norm, and (c) their chosen meaning affected how they evaluated (agreement or disagreement) an entire sentence.

Social function

The last context effect is the social function for content in the message. Content serves social functions, a particular kind of work one intends the content to perform, or a service expected by the reader due to his or her relationship to others. Duncker (1938) anticipated Asch's work (e.g., 1948) when he suggested that when he associated an object with a storybook hero, he might have created a new contextual meaning for it. In another study, Lewis (1941) found that participants interpreted the purpose of the content of slogans differently when President Hoover or Roosevelt ranked these slogans.

To illustrate this point, consider the meaning of colors, e.g., green. Most schools in the United States select specific colors to represent the school, for example, Michigan State University's (MSU) colors are green and white. Most students are aware of their school's colors, but may not always think about their school every time they see the color. If you ask MSU students to predict what color t-shirts another MSU student, Henry, might buy, the students may or may not pick green, depending on whether or not they know what colors Henry likes to wear and who is selling the t-shirts. If the students

learn that Henry likes green, needs a t-shirt, and another person from MSU is selling shirts in green and white and orange and white, most students would predict that Henry would buy a green shirt. If, however, the MSU vender is selling shirts in green and white and blue and yellow (the colors of a rival university), the meaning of 'green' may very well change to signify group loyalty.

Findings in a recent study showed that students predicted Henry would buy more green t-shirts from an MSU vender who was selling shirts in green or rival school colors, than when the same MSU vender sold shirt in green or non-rival colors (Smith, 2002). One possible interpretation of this effect is that the alternative t-shirt in rival colors provides a different interpretation to the t-shirt color options. When Henry bought green and white, he was not just supporting his own color preferences, but supporting the home school in the face of a rival.

Understanding how people interpret messages should allow one to make predictions about their subsequent attitude change in a two-step model. Others' interpretations should influence how participants interpret an article, and participants' interpretations, in turn, should influence how they change their attitudes. Whether a message is true, liked, or representative of a person's values is contingent on how this person interpreted the message's content (Asch, 1948; Kecskemeti, 1952). Although this paper could focus on multiple contextual cues and message perceptions, the choice was made to focus on one particular kind of message perception. We examine peoples' perceptions of how strongly a message advocates a particular position on an issue, i.e., the amount and kind of bias the message may portray toward the issue it is addressing.

Interpretations of position extremity

After reading the content of a message, people may make evaluations of how much this message may advocate for or against the issue it is addressing. If a message's content refers to Vision 2020 (a plan to establish perimeter parking around campus and rely on quick mass transit rather than front-door parking), people may interpret this message's advocated position differently, e.g., strongly in favor of Vision 2020, moderately in favor of Vision 2020, or moderately against Vision 2020. People may look to contextual features, such as how others interpreted this message, to disambiguate the message's content in order to interpret the extremity of this message's advocated position, especially if the words used in this message are highly ambiguous (Sherif, 1935; West, 1981).

Range-frequency theory, started within psychophysics research, has been extended to explain how others' interpretations may influence the interpreted extremity of a message's content (Parducci, 1965; 1995). Range-frequency theory posits that the judged value or weight of a stimulus is determined by its location within a distribution of contextual stimuli that are salient at the time of judgment. Carrying this idea to message interpretation, people's evaluation of the extremity of a message's advocated position is contingent on this message's location within the salient distribution of others' interpretations of this message. For example, readers' memory of how others interpreted a newspaper article's advocated position toward Vision 2020 would impact how these readers would interpret how extremely the same newspaper article advocates for or against Vision 2020.

Range-frequency theory rests on two estimated values. The range value (Parducci, 1965; Volkmann, 1951) is an estimate of the relative discrepancy between the message's content and the two end-points of a subjective interpretation scale. The most disparate interpretations from others would set the end-points of a subjective scale in which a person interprets the message. Holding all else constant, the range value increases as the distance between the message's content and each end-point of the subjective scale becomes more un-equal. If the message's content is closer to the positive end-point than the negative end-point, the range value will increase positively. In the opposite case, the range value will increase negatively. The range value, R_{mc}, of Message *m* in Context *c* is given as

$$R_{mc} = (S_m - S_f)/ |S_{max} - S_{min}|,$$

where S_m is the extremity of a message's advocated position, S_{min} and S_{max} are the minimum and maximum interpretations that others provided, and S_f is the observed maximum or minimum that is farthest from the message[1].

The frequency value (Parducci, 1965) is an estimate of the location of the target stimulus described by its rank within a set of stimuli. Holding all else constant, the frequency value increases as the number of others' interpretations falling on either side of the message's content becomes less symmetrical. If others provide more negative than positive interpretations of a message, relative to the message's content, the frequency value will increase positively. In the opposite case, the frequency value will increase negatively. The frequency value, F_{mc}, of Message *m* in Context *c* is given as

$$F_{mc} = (n_n - n_p)/ (N_c - 1),$$

[1] In cases where the message advocates against an issue, the numerator changes. The message is subtracted from the farthest point.

where n_n is the number of interpretations that are more negative than the message and n_p is the number of interpretations that are more positive than the message. N_c is the total number of others' interpretations of the message. Others' interpretations that are equivalent to the message's content are counted with the interpretations between the message and the farther end-point.

Interpretations of messages are influenced by the weighted, linear combination of both range and frequency values. As the range value becomes increasingly negative, a reader will make a more negative interpretation of a message, because this reader interprets this message's content as more representative of the closer, negative end-point of the subjective scale. As the frequency value becomes increasingly negative, a reader will interpret a message as more negative. The reader gives each interpretation provided by others an equivalent space on their subjective interpretation scale. When the frequency value is negative, i.e., more people provide more positive, versus negative, interpretations than the message's content, the amount of space on the subjective scale between the message's content and the positive end of the scale stretches (Parducci, 1995). Subjectively, the positive end is farther away from the message's content, leading to a more negative interpretation of the message's content. Interpretations may move in a positive direction as well: as range and frequency values become increasingly positive, one should interpret the message's content as more positive. The range and frequency values are averaged into a total predicted social influence on one's interpretation of how extreme is a message's advocated position.

To illustrate the predictions, a sample of others' interpretations of a newspaper article is illustrated in Figure 2. The distribution ranges on a scale from 5 to -5. In the first

situation, students either read the message that is rated in the most context-free possible situation as -2 (moderately against Vision 2020, M1 in the figure) or as 2 (moderately in favor of Vision 2020, M2 in the figure) on the same scale. The moderately unfavorable message (M1) within this distribution of others' interpretations would have a range value of .-7 (i.e., (-2 – 5)/ |(-5) – 5|) and a frequency value of -.7 (i.e., (2 – 9)/(11-1)), combining to a –1.4 influence, leading to a more unfavorable interpretation of Vision 2020 than a context free interpretation. The moderately favorable message (M2) within the same distribution would have a range value of .7 (i.e., (2 – (-5))/ |5 – (-5)|) and a frequency value of .3 (i.e., (7 – 4)/(11-1)), combining to a 1.0 influence, leading to a more favorable interpretation of Vision 2020 than a context free interpretation. When comparing the relative influences on the favorable and unfavorable message, the discrepancy between the message interpretations and the context-free interpretation should be higher for the unfavorable message than the favorable message.

Interpretation effects and considerations

Concern over message interpretation stems from an interest in explaining attitude change that results from reading a message. The second step of the proposed model uses the linear discrepancy model (Hunter, Levine, & Sayers, 1976) to predict attitude change. The prediction is that people should change their attitudes in the direction of their interpretation of the message's advocated position. After people interpret a message, they compare this message's advocated position to how they feel about this position. For example, after students interpret the newspaper article's position toward Vision 2020, they would then compare how they feel about Vision 2020 to their interpretation of the article's position toward Vision 2020.

Holding all else constant, attitude change is a function of how much discrepancy exists between the message and the person (e.g., French, 1956; Hunter, Levine, & Sayers, 1976). As discrepancy between the message and the person increases, the person should have proportionally larger changes in their attitude toward their interpretation of the message's advocated position (e.g., French, 1956; Hunter, Levine, & Sayers, 1976). This model is consistent with data obtained in studies of attitude and opinion change experiments (e.g., Danes, Hunter, & Woelfel, 1978; Hoyland & Pritzker, 1957) and group decisions (e.g., Boster, Fryrear, Mongeau, & Hunter, 1982; Boster, Hunter, & Hale, 1991; Boster, Mayer, Hunter, & Hale, 1980). Although some studies have found non-linear results (see McGuire, 1985 for a review), scholars attribute these results to source credibility, issue and ego involvement, and attachment to initial position. In order to control for these issues, as well as in-group/ out-group source effects, sources of other interpretations were made anonymous. Although these variables may moderate the hypothesized relationship, the focal crux of this social influence should be the inherent ambiguity of the message, itself.

Sherif (1935) contented that social influences operate increasingly as ambiguity increases. The message must have inherently some level of ambiguity in order to necessitate the use of contextual information, such as what others thought about a message. In a careful, controlled study Crutchfield (1956) varied his stimuli in two ways: factual to attitudinal and structured to ambiguous. As the ambiguity of these stimuli increased, social influence effects increased. Participants viewed the same stimuli (slides) in groups of five. Participants were asked to make a judgment about each stimulus, one at a time, in a designated order. When participants heard how others judged stimuli before

they made their judgments, the most pronounced social influence effects occurred with the inherently ambiguous slides. The exceptions to this general rule came when participants made judgments about which slides they preferred. In these cases, influence effects dissipated. People do not need others to determine how to interpret their own preferences, so we see ambiguity diminished from the type of question, even if what they are viewing is somewhat ambiguous. In the following experiments, as the ambiguity of a message increases, participants should depend more on contextual features as they determine the extremity of a given message's advocated position toward an issue.

In sum, the hypothesis of this paper is that pre-existing knowledge of how much bias others believe a newspaper article portrays toward the issue it addresses would alter participants' own perceptions of this article as long as the words possess inherent ambiguity. For example, a reader's interpretation of how much a newspaper article supports Vision 2020 would vary depending on whether this reader had pre-existing knowledge of how others interpreted this article. Holding all else constant, the closer a message's content is to the negative end of others' interpretations and asymmetrically further from the positive end, a reader will interpret this message more like the closer (negative) end. As the number of others who interpret a message more positively than a message's content, versus more negatively, increases, readers psychologically will provide space for each additional positive interpretation, pushing the positive end farther away, leaving them to interpret the message more like the subjectively closer (negative) end.

Three experiments examine these predictions. The first experiment tests (a) if pre-existing knowledge of how much bias others believe a newspaper article portrays toward

the issue it addresses alters participants' own perceptions of this article as predicted by the combined range and frequency estimates. Next, it tests (b) if participants change their attitudes about an issue toward the position they believe the newspaper article holds towards this issue. Last it tests (c) if participants' attitude changes also affect their attitudes toward other related issues. Others' interpretations will vary in scope (wide or narrow) and distribution (normal or negative-skew) to induce changes in range and frequency values. The second set of experiments test if the results from experiment 1 replicate with different issues presented with different valences. The third experiment tests if the effect of others' interpretations on the participants' interpretation varies as a function of the ambiguity of the words used in an article.

Chapter 2: Initial Test

Participants

Fifty undergraduate students enrolled in communication courses at a large Midwestern university participated in this study. On average, participants were 21 years old (*SD* = 2.15), in their third year at the college (*SD* = 1.20), female (68%), and drove cars (64%).

Design

The experimental design was a scope (wide or narrow) by distribution (negative-skew or normal) factorial, control-group design. Participants completed an attitude survey before and after processing the newspaper article. Variation in the scope and distribution of others' interpretations of the article induced differences in participants' range and frequency values. All participants read a newspaper article opposing Vision 2020. Ten participants were randomly assigned to each condition.

Procedure

The experimenter told participants that they would be helping her develop stimulus materials for a future study. These materials were newspaper articles from the students' local paper. The students were led to believe that the experimenter needed to know if these articles presented balanced, objective, neutral coverage of an issue prior to using them in a future experiment. Participants heard that other students had read these articles previously. Each participant would then read how 10 other people evaluated one particular newspaper article. Participants would (a) categorize and scale how others evaluated that newspaper article and then (b) provide their own evaluation of the newspaper article.

Before participants began this procedure, they were told that the experimenter needed each student to fill out a short questionnaire in order to find out what pre-existing opinions they had toward the issues that their newspaper article might cover. Hence, participants completed a short questionnaire to measure their pre-existing opinions on a set of issues, including a plan to establish perimeter parking around campus and rely on quick mass transit rather than front-door parking (Vision 2020), new course requirement before declaring a major, diversity on campus, and the quality of campus parking facilities.

After completing this questionnaire participants picked up a second packet. First, participants read how to categorize and scale others' interpretations of one newspaper article. The experimenter explained that 10 other students already had read one newspaper article. Each of these other 10 students wrote down what they thought the article was advocating, in other words, they wrote down if they thought the article covered Vision 2020 in a favorable, unfavorable, or neutral light. The experimenter explained that these other students did not write down if they personally liked the article or Vision 2020, but they wrote down what opinion or bias the newspaper article presented. Participants had no information about the identity of these fictitious students.

The participants read these others' interpretations, and then rated them on a scale that they developed. In order to develop their scale they used a line on the survey to mark where they thought each of the 10 interpretations fell along a continuum from showing a bias in favor or in opposition toward Vision 2020. Participants could mark more than one of the 10 responses in the same place on their scale. After they finished arranging their interpretations, they would identify the most extreme student response (i.e., the ones

furthest to the left and furthest to the right). Once they identified these extremes, participants would label them as "neutral, opposed, or favorable" and qualify whatever they chose with "very, moderately, or mildly." Consequently, some participants produced scales anchored with "very opposed" to "very neutral;" other scales were anchored by "mildly favorable" to "very opposed."

Pilot testing indicated that this elaborate procedure helped participants believe that the experimenter really did not want their opinions about what other people thought. The experimenter simply wanted participants to read these other interpretations and elaborate on them. In the pilot debriefings, participants reported that in other experiments they only report their opinions. They needed affirmation that their role in this study was to help create a stimulus and categorize others' opinions, because, in their minds, "participants" in a study report their opinions.

After finishing their scale, participants rated each of the other 10 student interpretations individually on three standardized scales. Participants provided their opinion of how credible each of the other students were. Next, participants read the newspaper article that the other 10 students read previously. Participants provided their own perception of how the article covered Vision 2020 and whom they believed wrote their article. Last, participants completed the original questionnaire, measuring their attitudes toward topics covered in newspaper articles, a second time.

Those participants in the control group heard that they were to evaluate articles from their local university newspaper. This condition differed from the experiment, in that these participants heard no information about how others interpreted these articles. Sample stimulus materials are available in the Appendix.

Instrumentation

The following indicators were tested for unidimensionality (Hunter & Gerbing, 1982). All indicators that could be tested passed these tests.

Article advocacy. Participants indicated their interpretations of an article's advocacy of an issue with (a) an open-ended question, asking them how they interpreted the newspaper article's meaning and (b) three 9-point, semantic differential items. Items asked participants to rate the extremity of the article's advocated position on Vision 2020 with anchors, *very favorable/very unfavorable*, *strongly like/strongly dislike*, and *strongly support/strongly oppose*. A single summed score for article advocacy was generated, 12 = *strongly supported*, -12 = *strongly opposed, SI* α = .97.

Attitude. Participants indicated their attitudes toward Vision 2020 and other issues covered in their local paper on three 9-point, semantic differential items for each issue. Items asked participants how they felt about an issue, e.g., Vision 2020, with anchors, *very favorable/very unfavorable*, *strongly like/strongly dislike*, and *strongly support/strongly oppose*. A single summed score for each issue was generated, 12 = *strongly supported*, -12 = *strongly opposed*, see Table 1 for reliabilities, means, and standard deviations.

Range and frequency values. Participants scaled what bias others (labeled with letters "a" through "j" to retain anonymity) thought an article exhibited on three 9-point semantic differential items with anchors, *very favorable/very unfavorable*, *strongly like/strongly dislike*, and *strongly support/strongly oppose*. A single summed score for each person was generated, 12 = *strongly supported*, -12 = *strongly opposed,* (a *SI* α =

.98; b *SI* α = .99; c *SI* α = .99; d *SI* α = .98; e *SI* α = .99; f *SI* α = .99; g *SI* α = .98; h *SI* α = .99; i *SI* α = .99; j *SI* α = .99).

To induce different range and frequency values, the scope of each distribution varied. The narrow condition provided others' interpretation four points above and below the message's content; the wide condition spanned seven points above and below the message's content. For normal distribution, an equal number of opinions were more positive and negative than the message; for negative skew distribution, seven opinions were more positive and three opinions were more negative than the content. Table 2 provides student ratings of these interpretations.

The maximum and minimum scores each participant gave the others' interpretations were used to calculate a range value denominator. The range value numerator was calculated by (a) determining which interpretation from the others resided the farthest from the control group's estimate, and then (b) subtracting this interpretation from it. The absolute difference between the extreme interpretations from others served as the range value denominator.

For their frequency value numerator the experimenter counted the number of others' interpretations scaled more positively and negatively than baseline estimates. The number of others evaluated, 10, served for their frequency value denominator.

The two values were averaged into a single predicted social influence score. Descriptive statistics of range value, frequency value, and predicted social influence score may be seen in Table 2.

Others' credibility. Participants indicated the credibility of each of the others who interpreted their newspaper article on a single 5-point scale, 5 = *very credible*, 1 = *very uncredible*. These scores were rescaled, 2 = *very credible*, -2 = *very uncredible*.

Source attribution. Participants identified who they thought wrote their newspaper article in an open-ended question. This information does not appear in the analyses, but is available upon request.

Results

Participants in the control group rated this experimental newspaper article as opposing Vision 2020 (M = -2.90, SD = 7.10), but within sampling error of a neutral rating, t (9) = -1.29, *ns*. Participants interpreted this article's opposition to Vision 2020 differently if they read how 10 other (fictitious) students interpreted this article. On average, participants reading others' interpretations moved 20% up or down the scale used to index the bias represented in the newspaper article (see information by condition in Table 3). Participants in the experimental conditions rated the fictitious 10 students as credible (M = .23, SD = .52), t (39) = 2.86, $p < .05$, without variation between conditions ($F < 1$).

Article interpretation

The social influence hypothesis, see Figure 3, coincided with these data. Each participant's range value (asymmetrical closeness to one endpoint over the other) and frequency value (asymmetrical representation of more positive versus negative interpretations) were averaged to create a predicted social influence score[2]. Their social

[2] The two values were analyzed as separate values within a multiple regression. Using the single averaged score, i.e., the predicted social influence score, accounted for the same amount of variance in participants' message interpretations as the two separate values. Because multiple R and single r were similar, the

influence score, the sum of frequency and range values developed from each participant's exposure to others' interpretations of this article, accounted for how participants' interpretations deviated from the baseline interpretation, r (39) = .44, $p < .05$. Experimental conditions and assessments of the others' credibility accounted for no additional variance ($F < 1$).

Attitude change

All participants' attitudes toward Vision 2020, including those in the control group, became less favorable after reading the newspaper article opposing Vision 2020 (M change = -2.46, SD = 5.61), t (49) = -3.10, $p < .05$. For those exposed to others' interpretations, how their article interpretation deviated from the baseline interpretation predicted how their attitudes toward Vision 2020 changed, r (39) = .41, $p < .05$. The linear discrepancy model fit these data well. The correlation between participants' initial attitude toward Vision 2020 and their attitude change was negative, r (39) = -.21. Additionally, the autocorrelation between the initial and final attitude reports was high (.72).

This two-step model: others' interpretations influence how participants interpret an article and participants' interpretations, in turn, influence how they change their attitudes toward Vision 2020, coincided with this data, X^2 (1, 39) = .01, *ns*, $RMSE$ = .00 (see Figure 3 for model with corrected parameter estimates). Whether participants drove cars on campus or not did not affect this model ($F < 1$).

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decision was made to use the more parsimonious model. Only the predicted social influence score is used in the rest of the manuscript.

Additional effects

For those exposed to others' interpretations, their initial attitudes toward Vision 2020 ($\beta = .21$) and the use of non-motorized vehicles, such as walking, biking, or skating to places on campus ($\beta = .60$) related to their final attitudes toward non-motorized vehicles, $F(2, 37) = 17.86$, $p < .05$, $R = .70$. As approval of the parking plan decreased, their approval of non-motorized vehicles on campus decreased. Their attitudes toward Vision 2020 did not relate to any of their final attitudes toward the other issues (trustee's recent proposal, course requirement, parking facilities, international teaching assistants, advising office, diversity on campus, and science classes).

Discussion

A two-step model of social influence inspired by Asch's (1940) conclusion that group standards change how people interpret objects under evaluation was tested in this experiment. The two-step, causal model received empirical support. Pre-existing knowledge of how biased (fictitious) other people thought a newspaper article was in addressing Vision 2020 affected participants' own perceptions of the article's bias. The way in which participants' perceptions deviated from the control group predicted how participants' attitudes changed toward Vision 2020. The two-step model predicted their article perceptions and their resulting attitude change.

Initial attitudes toward the Vision 2020 parking plan did not influence final attitudes toward other, related issues strongly and did not influence unrelated issues at all. Initial attitudes correlated weakly to one related topic, evaluations of using non-motorized vehicles on campus. As participants reported more initial approval of the Vision 2020 parking plan and using non-motorized transportation, such as walking,

biking, or skating, to places on campus, they reported more final approval toward non-motorized transportation.

Without longer longitudinal studies the long-term impact of changes in attitudes toward Vision 2020 remains hidden. Longer studies provide an additional benefit by allowing scholars to see how long participants' attitude change toward Vision 2020 would be sustained.

Although the model received empirical support in this experiment, replication using newspaper articles that support Vision 2020 as well as presenting both kinds of bias with different issues provides a more rigorous test. The next set of experiments presents these replications.

Chapter 3: Replication

To test how well the two-step model of social influence replicates, five experiments varying article advocacy (supportive or opposing) and issue (implementing the Vision 2020 parking plan, requiring a research methods course before students declare a communication major, and employing international teaching assistants for undergraduate classes) were conducted. The two-step model under investigation may be seen in Figure 3.

These experiments repeated the design, procedure, and instrumentation from Experiment 1. Each experiment used separate samples; within each experiment there were independent groups. The measurement validity and reliability showed no significant changes from Experiment 1 or between experiments. Refer to Table 4 for means, standard deviations, and reliabilities of articles and attitude changes toward issues.

Vision 2020 Support

Participants

Undergraduate students (n = 95) enrolled in communication courses at a large Midwestern university participated in this study. On average, participants were 21 years old (SD = 2.21), in their third year at the college (SD = 1.26), female (62%), and drove cars on campus (59%).

Design, procedure, and instrumentation

The experimental design was a scope (wide or narrow) by distribution (negative-skew or normal) factorial (n = 75), control-group (n = 21) design with random assignment. Variation in the scope and distribution of others' interpretations induced differences in participants' range and frequency values. Participants completed an

attitude survey before and after processing the newspaper article supporting Vision 2020. The procedures for this experiment replicate those used in experiment 1. All indicators passed tests of unidimensionality (Hunter & Gerbing, 1982). Measurement validity and reliability showed no significant changes from Experiment 1.

Results

Participants in the control group rated this experimental newspaper article as supporting Vision 2020 ($M = 8.04$, $SD = 4.54$), $t\,(19) = 8.12$, $p < .05$. Participants interpreted this article's support for Vision 2020 differently if they read how 10 other (fictitious) students interpreted this article. Participants in the experimental conditions rated the fictitious 10 students as credible ($M = .37$, $SD = .42$), $t\,(73) = 7.55$, $p < .05$ without variation between experimental conditions ($F < 1$).

Article interpretation. The social influence hypothesis, see Figure 3, was inconsistent with these data. Their predicted social influence score, the sum of frequency and range values developed from each participant's exposure to others' interpretations of this article, did not account for how article interpretations between experimental and control group participants differed from zero, $r\,(73) = .08$, *ns*.

Under further investigation, almost 30% of the participants ($n = 22$) who read the supportive article held pre-existing attitudes outside of any of the others' interpretations of their article. In this case these participants strongly opposed Vision 2020 ($M = -8.23$, $SD = 4.07$), $t\,(19) = -9.27$, $p < .05$. For those whose held these strong, negative pre-existing attitudes, their predicted social influence score accounted for how their interpretations deviated from the control group's interpretation, $r\,(20) = .30$, *ns*, as in

Experiment 1. Experimental conditions and assessments of the others' credibility accounted for no additional variance ($F < 1$).

For the rest of the participants who read this article ($n = 53$), their pre-existing attitude toward Vision 2020 was supportive ($M = 2.31$, $SD = 5.51$), $t\,(51) = 3.11$, $p < .05$. Their social influence prediction did not account for how their article interpretations deviated from the control group, $r\,(51) = .01$, *ns*. Those in only one condition, narrow scope and normal frequency, estimated their supportive article as much less supportive ($M = -4.07$, $SD = 6.86$) than the control group's interpretation, while all other participants perceived the article similarly to the control group ($M = -.58$, $SD = 4.51$), $F\,(1, 51) = 4.72$, $p < .05$, $r = .29$. Others' credibility accounted for no additional variance ($F < 1$).

Attitude change. All participants' attitudes toward Vision 2020, including those in the control group, became more favorable after reading the newspaper article supporting Vision 2020 (M change = 2.62, $SD = 5.46$), $t\,(93) = 4.64$, $p < .05$. For those exposed to others' interpretations, their deviations from the control group's interpretation of the article predicted how their attitudes toward Vision 2020 changed, $r\,(73) = .29$, $p < .05$. The linear discrepancy model fit these data well. The correlation between participants' initial attitude toward Vision 2020 and their attitude change was negative, $r\,(93) = -.23$. Additionally, the autocorrelation between the initial and final attitude reports was high (.73).

The hypothesized two-step model does not receive empirical support because the first link failed with most of the participants. The mediation model, changes in attitudes mediated through interpretations of a message, coincided with this data, $X^2\,(1,74) = .01$,

ns, *RMSE* = .00 (see Table 5 for corrected parameter estimates). Whether participants drove cars on campus or not did not affect this model ($F < 1$).

Additional effects. Their initial attitudes toward Vision 2020 did not relate to any of their final attitudes toward the other issues. This result differed from Experiment 1.

International Teaching Assistants Opposition

Participants

Undergraduate students ($n = 108$) enrolled in communication courses at a large Midwestern university participated in this study. On average, participants were 21 years old ($SD = 1.38$), in their third year at the college ($SD = .70$), and female (77%).

Design, procedure, and instrumentation

The experimental design was a scope (wide or narrow) by distribution (negative-skew or normal) factorial ($n = 90$), control-group ($n = 18$) design with random assignment. Variation in the scope and distribution of others' interpretations induced differences in participants' range and frequency values. Participants completed an attitude survey before and after processing the newspaper article opposing the employment of international teaching assistants (ITAs). The procedures for this experiment replicate those used in Experiment 1. All indicators passed tests of unidimensionality (Hunter & Gerbing, 1982). Measurement validity and reliability showed no significant changes from Experiment 1.

Results

Participants in the control group rated this experimental newspaper article as opposing the employment of international teaching assistants (ITAs) in undergraduate classes ($M = -7.72$, $SD = 5.60$), $t(16) = -5.85$, $p < .05$. Participants interpreted this

article's opposition toward employing ITAs differently if they read how 10 other (fictitious) students interpreted this article. Participants in the experimental conditions rated the fictitious 10 students as credible (M = .28, SD = .50), t (88) = 5.42, $p < .05$, without variation between experimental conditions ($F < 1$).

Article interpretation. The social influence hypothesis, see Figure 3, coincided with these data, although the effect was within sampling error of zero. Their predicted social influence score, the sum of frequency and range values developed from each participant's exposure to others' interpretations of this article, did not account significantly for how article interpretations between experimental and control group participants differed, r (88) = .18, p = .09. Experimental conditions and assessments of the others' credibility accounted for no additional variance ($F < 1$).

Attitude change. All participants' attitudes toward employing ITAs, including those in the control group, became less favorable after reading a newspaper article opposing ITAs' employment (M change = -1.75, SD = 5.27), t (106) = -3.47, $p < .05$. For those exposed to others' interpretations, their deviations from the control group's interpretation of the article predicted how their attitudes toward employing ITAs changed, r (88) = .22, $p < .05$. The linear discrepancy model fit these data well. The correlation between participants' initial attitudes toward Vision 2020 and their attitude changes was negative, r (88) = -.52. Additionally, the autocorrelation between the initial and final attitude reports was strong (.59).

This two-step model: others' interpretations influence how participants interpret an article and participants' interpretations, in turn, influence how they change their attitudes toward employing ITAs, coincided with this data, X^2 (1,89) = 1.81, *ns*, *RMSE* =

.04 (see Table 5 for corrected parameter estimates). High error associated with the model and limited support for the first link in the chain limits empirical support for the two-step model.

Additional effects. For those exposed to others' interpretations, their initial attitudes toward international teaching assistants ($\beta = .10$) and a trustee's proposal to reimburse students' tuition if students could not understand their teachers ($\beta = .85$) related to their final attitudes toward the trustee's proposal, $F(2, 88) = 162.19, p < .05, R = .89$. Their attitudes toward international teaching assistants did not relate to any of their final attitudes toward the other issues.

International Teaching Assistants Support

Participants

Undergraduate students ($n = 117$) enrolled in communication courses at a large Midwestern university participated in this study. On average, participants were 21 years old ($SD = 2.16$), in their third year at the college ($SD = .66$), and female (78%).

Design, procedure, and instrumentation

The experimental design was a scope (wide or narrow) by distribution (negative-skew or normal) factorial ($n = 97$), control-group ($n = 20$) design with random assignment. Variation in the scope and distribution of others' interpretations induced differences in participants' range and frequency values. Participants completed an attitude survey before and after processing a newspaper article supporting the employment of international teaching assistants (ITAs). The procedures for this experiment replicate those used in Experiment 1. All indicators passed tests of

unidimensionality (Hunter & Gerbing, 1982). Measurement validity and reliability showed no significant changes from Experiment 1.

Results

Participants in the control group rated this experimental newspaper article as supporting the employment international teaching assistants (ITAs) in undergraduate classes (M = 8.50, SD = 4.58), t (18) = 8.30, *ns*. Participants interpreted this article's support of employing ITAs differently if they read how 10 other (fictitious) students interpreted this article. Participants in the experimental conditions rated the fictitious 10 students as credible (M = .34, SD = .47), t (95) = 7.25, $p < .05$, without variation between experimental conditions ($F < 1$).

Article interpretation. The social influence hypothesis, see Figure 3, was inconsistent with these data. Their predicted social influence score, the sum of frequency and range values developed from each participant's exposure to others' interpretations of this article, associated with how participants' interpretations deviated from the control group's interpretation, r (95) = -.33, $p < .05$, in a direction counter to prediction. Experimental conditions and assessments of the others' credibility accounted for no additional variance ($F < 1$).

Under further investigation, 46% of the participants (n = 45) who read the supportive article held pre-existing attitudes outside of any of the others' interpretations of their article. In this case these participants strongly opposed the employment ITAs (M = -7.42, SD = 3.70), t (43) = -13.45, $p < .05$. For those who held these strong, negative pre-existing attitudes, their social influence score associated with how their interpretations deviated from the control group's interpretation counter to prediction,

$r(43) = -.43, p < .05$. Experimental conditions and assessments of the others' credibility accounted for no additional variance ($F < 1$).

For the other half of participants who read this article ($n = 52$), their pre-existing attitude toward employing international teaching assistants was near the scale's neutral, mid-point ($M = -1.13$, $SD = 4.65$), $t\,(50) = -1.75$, *ns*. Their social influence score associated with how their article interpretation deviated from the control group's interpretation counter to prediction, $r\,(50) = -.28, p < .05$. Experimental conditions and assessments of the others' credibility accounted for no additional variance ($F < 1$).

Attitude change. All participants' attitudes toward employing ITAs, including those in the control group, became more favorable after reading a newspaper article supporting their ITAs' employment (M change = 2.84, $SD = 4.86$), $t\,(115) = 6.33, p < .05$. For those exposed to others' interpretations, their deviations from the control group's interpretation of the article did not predict how their attitudes toward employing ITAs changed different from zero, $r\,(95) = .04$, *ns*. Although participants did not exhibit much attitude change, the linear discrepancy model fit these data. The correlation between participants' initial attitudes toward international teaching assistants and their attitude changes was negative, $r\,(96) = -.21$. Additionally, the autocorrelation between the initial and final attitude reports was strong (.65).

Under further investigation, participants seemed to exhibit a different pattern for attitude change if they held pre-existing attitudes very opposed to employing ITAs, $r\,(43) = -.13$, *ns*, versus if they held less extreme pre-existing attitudes, $r\,(50) = .15$, *ns*. Neither of these correlations differed significantly from zero.

Although the first part of the two-step model turned out counter to the prediction, the mediated model coincided with these data, X^2 (1, 96) = .21, *ns*, *RMSE* = .01 (see Table 5 for corrected parameter estimates). The two-step model did not receive empirical support because the first hypothesis was inconsistent with these data.

Additional effects. For those exposed to others' interpretations, their initial attitudes toward international teaching assistants (β = -.10) and a trustee's proposal to reimburse students' tuition if students could not understand their teachers (β = .81) related to their final attitudes toward the trustee's proposal, F (2, 94) = 109.18, $p < .05$, R = .84. Their attitudes toward international teaching assistants did not relate to any of their final attitudes toward the other issues. This result replicated how participants' responded to an article opposing the employment of ITAs.

Statistical Requirement Opposition

Participants

Undergraduate students (n = 48) enrolled in communication courses at a large Midwestern university participated in this study. On average, participants were 21 years old (*SD* = 1.61), in their third year at the college (*SD* = .83), female (68%), and majors in communication (86%).

Design, procedure, and instrumentation

The experimental design was a scope (wide or narrow) by distribution (negative-skew or normal) factorial (n = 39), control-group (n = 9) design with random assignment. Variation in the scope and distribution of others' interpretations induced differences in participants' range and frequency values. Participants completed an attitude survey before and after processing a newspaper article opposing a new requirement to pass a

statistical course before declaring communication as a major. The procedures for this experiment replicate those used in Experiment 1. All indicators passed tests of unidimensionality (Hunter & Gerbing, 1982). Measurement validity and reliability showed no significant changes from Experiment 1.

Results

Participants in the control group rated this experimental newspaper article as opposing a new requirement for students to pass a statistical course before they could declare communication as their major (M = -6.00, SD = 6.16), t (7) = -2.58, $p < .05$. Participants interpreted this article's opposition toward this course requirement differently if they read how 10 other (fictitious) students interpreted this article. Participants in the experimental conditions rated the fictitious 10 students as neutral on credibility (M = .09, SD = .51), t (37) = 1.11, *ns*, without variation between experimental conditions ($F < 1$).

Article interpretation. The social influence hypothesis, see Figure 3, coincided with these data. Their predicted social influence scores, the sum of frequency and range values developed from each participant's exposure to others' interpretations of this article, accounted for how participants' interpretations deviated from the control group's interpretation, r (37) = .36, $p < .05$. Experimental conditions and assessments of the others' credibility accounted for no additional variance ($F < 1$).

Attitude change. All participants' attitudes toward a new statistical course requirement, including those in the control group, became less favorable after reading a newspaper article opposing a statistical course requirement (M change = -1.08, SD = 5.13), t (47) = -1.46, *ns*. For those exposed to others' interpretations, their deviations

from the control group's interpretation was in the right direction of how their attitudes toward employing ITAs changed, r (37) = .23, *ns*, but the correlation was within sampling error of zero. The linear discrepancy model fit these data well. The correlation between participants' initial attitudes toward this requirement and their attitude changes was negative, r (38) = -.31. Additionally, the autocorrelation between the initial and final attitude reports was high (.83).

The two-step model: others' interpretations influence how participants interpret an article and participants' interpretations, in turn, influence how they change their attitudes toward the statistical requirement, coincided with these data, X^2 (1, 38) = .32, *ns*, *RMSE* = .02 (see Table 5 for corrected parameter estimates), although the error was high. Whether participants majored in communication or some other discipline did not affect this model ($F < 1$).

Additional effects. For those exposed to others' interpretations, their initial attitudes toward the new statistical course requirement ($\beta = .24$) and toward the employment of international teaching assistants ($\beta = .31$) related to their final attitudes toward international teaching assistants, F (2, 37) = 4.81, $p < .05$, $R = .46$. In addition, their initial attitudes toward the new requirement ($\beta = -.20$) and toward the new parking plan, Vision 2020, ($\beta = .65$) related to their final attitudes toward Vision 2020, F (2, 37) = 16.74, $p < .05$, $R = .70$. Their attitude change toward the new statistical requirement did not relate to any of their final attitudes toward the other issues.

Statistical Requirement Support

Participants

Undergraduate students (n = 50) enrolled in communication courses at a large Midwestern university participated in this study. On average, participants were 21 years old (SD = 1.61), in their third year at the college (SD = 1.13), female (60%), and majors in communication (77%).

Design, procedure, and instrumentation

The experimental design was a scope (wide or narrow) by distribution (negative-skew or normal) factorial (n = 40), control-group (n = 10) design with random assignment. Variation in the scope and distribution of others' interpretations induced differences in participants' range and frequency values. Participants completed an attitude survey before and after processing a newspaper article supporting a new requirement to pass a statistical course before declaring communication as a major. The procedures for this experiment replicate those used in Experiment 1. All indicators passed tests of unidimensionality (Hunter & Gerbing, 1982). Measurement validity and reliability showed no significant changes from Experiment 1.

Results

Participants in the control group rated this experimental newspaper article as neutral toward a new requirement for student to pass a statistical course before they could declare communication as their major (M = .75, SD = 6.94), t (8) = .28, *ns*. Participants interpreted this article's support of this statistical course requirement differently if they read how 10 other (fictitious) students interpreted this article. Participants in the

experimental conditions rated the fictitious 10 students as credible (M = .34, SD = .37), t (38) = 5.74, $p < .05$ without variation between experimental conditions ($F < 1$).

Article interpretation. The social influence hypothesis, see Figure 3, coincided with these data, however the correlation resides within sampling error of zero. Their predicted social influence score, the sum of frequency and range values developed from each participant's exposure to others' interpretations of this article, did not account significantly for how participants' interpretations deviated from the control group's interpretation, r (38) = .21, *ns*. Experimental conditions and assessments of the others' credibility accounted for no additional variance ($F < 1$).

Attitude change. All participants' attitudes toward a new statistical course requirement, including those in the control group, did not change after reading the newspaper article supporting this requirement (M change = -.04, SD = 3.38), t (48) = -.08, *ns*. Participants seemed to exhibit a different pattern for attitude change if they were in the control group (M change = -1.80, SD = 3.05) versus the experimental group (M change = .40, SD = 3.35); however, neither of these change scores significantly differed from zero.

For those exposed to others' interpretations, their deviations from the control group's interpretation of the article did not predict how their attitudes toward a new requirement changed, r (38) = -.06, *ns*. Even though participants' attitudes did not change dramatically, the linear discrepancy model fit these data well. The correlation between participants' initial attitudes toward the new statistical course requirement and their attitude changes was negative, r (38) = -.43. Additionally, the autocorrelation between the initial and final attitude reports was high (.87).

Although the second path was inconsistent with the two-step model, the mediation model coincided with these data, X^2 (1, 39) = .42, *ns*, *RMSE* = .03 (see Table 5 for corrected parameter estimates), but the error was high. In addition, a participant characteristic did relate to the results. Participants with a communication major held more favorable attitudes toward the new course requirement (M = .35, SD = 3.08) than participants with other majors (M = -1.81, SD = 3.89) t (48) = 1.95, $p < .05$, r = .28.

Additional effects. Their attitude change toward the new statistical requirement did not relate to any of their final attitudes toward the other issues. This result differed from participants' responses to reading an article opposing the same requirement.

Meta-analytic results

Table 5 summarizes the two sets of correlations corrected for measurement reliability (Hunter, Schmidt, & Jackson, 1982) from all the previous experiments, including Experiment 1. The first correlation represents the relationship between participants' predicted social influence scores (the average of their range and frequency values) and their deviation from the control groups' interpretations. The second correlation represents the relationship between their interpretation deviations and their subsequent attitude changes. Across newspaper articles, the predicted social influence score exhibits a small influence ($r_{weighted}$ = .08) on how participants' interpretations deviate from baseline interpretations, while participants' interpretations exhibit a moderate influence ($r_{weighted}$ = .19) on their attitude change. The variance in the correlations between social influence and article interpretation varies enough to investigate for a moderator (Hunter, Schmidt, & Jackson, 1982), X^2 (2, 376) = 27.28, $p <$ .05. An article's valence (support or opposition) seems to be a moderator, r (5) = .70, p <

.05. Splitting the experimental results by article valence decreases the variance between correlations for articles opposing issues, but not those supporting issues.

For articles opposing an issue, the two-step model holds. Others' interpretations influenced how participants interpret an article differently from the control group ($r_{weighted} = .30$). Their interpretation deviations, in turn, influenced how they changed their attitudes ($r_{weighted} = .30$). The predicted model does not hold for newspaper articles supporting an issue. The variance between the results of experiments using supportive articles still exceeds variation expected from sampling error, X^2 (2, 207) = 11.41, $p < .05$, therefore other mediators probably persist[3].

Discussion

These experiments tested if the two-step model of social influence replicated with newspaper articles, which differed in their advocacy (supportive or opposing) and their issue. For those participants who read articles opposing issues: employing international teaching assistants and requiring a statistical course before declaring a communication major, the two-step model held, thereby replicating Experiment 1. The sum of participants' range and frequency values, from their knowledge of other students' perceptions of an article's bias in addressing an issue, predicted how participants' perceptions of an article's advocacy differed from the control group. Their interpretation deviations, in turn, predicted how their attitudes changed toward the article's issue.

The two-step model was inconsistent with data from participants who read articles supporting these same issues. In attempting to investigate this situation, one factor emerged. Some participants, sometimes almost half of the sample, held very negative

[3] The supportive articles also were separated into two groups based on the strength of their pre-existing negative attitudes toward the article topics. This breakdown did not reduce variance between the studies.

attitudes toward the article's issue. Even with splitting the sample on these pre-existing attitudes, no consistent pattern of effects emerged. Sometimes knowledge of others' perceptions influenced those with strong, negative pre-existing attitudes as predicted, but other times others' perceptions had the complete opposite effect. Without a consistent pattern nor any prior reason to expect the causal model to fail with supportive articles, this question remains for future research.

As a final test of the causal model, and its theoretical premise, a final experiment tests if the strength of the predicted social influence varies as the ambiguity of the words used within a newspaper article varies. According to this paper's theoretical premise, others influence how participants disambiguate the meaning of words. Some words inherently present more ambiguity, or different possible meanings, than do others. If words in a newspaper article possess more ambiguity, then others should be able to influence how people interpret the words' meaning. In contrast, if words in a newspaper article possess less ambiguity, others' interpretations should have little impact. To test this fundamental assumption, the last experiment replaces words in one experimental article with synonyms that possess more or less ambiguity.

Chapter 4: Varying Ambiguity

This experiment further tests if people use contextual information, such as knowledge of how other people interpreted words, to disambiguate the words used in these articles. The words in one newspaper article, advocating against the Vision 2020 parking plan, were replaced with synonyms that possessed more or less ambiguity. All participants reviewed the same interpretations from 10 fictitious students. When the words in the newspaper article possess less ambiguity, knowledge of how others students interpreted an article should have less influence on participants' own interpretations. When the words possess more ambiguity, knowledge of how others students interpreted an article should have more influence on participants' own interpretations.

Participants

Undergraduate students (n = 34) enrolled in communication courses at a large Midwestern university participated in this study. Participants were 22 years old (SD = .85), in their fourth year at the college (SD = .26), female (77%), and drove cars on campus (81%).

Design

The experimental design is single factor design (high ambiguity or low ambiguity) with 17 participants randomly assigned to each condition. Participants completed an attitude survey before and after processing a newspaper article opposing Vision 2020. The experiment repeated the same procedure and instrumentation from Experiment 1.

Procedure

The procedure for this experiment mirrored the one used for Experiment 1. Only the words in the newspaper article varied between the two conditions. In order to vary word ambiguity, the experimenter counted the number of dictionary entries, or possible interpretations, for words within the text of article. Synonyms with more entries appeared in the article with high ambiguity (from 7 to 11 entries, with an average 9 entries); synonyms with fewer entries appeared in the article with low ambiguity (from 1 to 4 entries, with an average 2 entries). In both articles, synonyms were provided for the same words; thirty-six words (about 10%) were varied, see Appendix.

All participants read and categorized the same interpretations from other students. These interpretations came from the wide scope and negative-skew distribution induction in Experiment 1. All indicators passed tests of unidimensionality (Hunter & Gerbing, 1982). The measurement validity and reliability showed no significant changes from Experiment 1 or between experiments.

Instrumentation

Article advocacy. Participants indicated their interpretations of a newspaper article's advocacy of an issue with (a) an open-ended question, asking them how they interpreted the article's meaning and (b) three 9-point, semantic differential items. Items asked participants to rate the extremity of the article's advocated position on Vision 2020 with anchors, *very favorable/very unfavorable*, *strongly like/strongly dislike*, and *strongly support/strongly oppose*. A single summed score for article advocacy was generated, 12 = *strongly supported*, -12 = *strongly opposed*, *SI* α = .97.

Attitude. Participants indicated their attitudes toward Vision 2020 and other issues covered in their local paper on three 9-point, semantic differential items for each issue. Items asked participants how they felt about an issue, e.g., Vision 2020 with anchors, *very favorable/very unfavorable*, *strongly like/strongly dislike*, and *strongly support/strongly oppose*. A single summed score for each issue was generated, 12 = *strongly supported*, -12 = *strongly opposed* (average SI α = .97). The change scores were used, (Vision 2020, *SI* α = .90; Trustee proposal, *SI* α = .91; Course requirement, *SI* α = .92; Parking facilities, *SI* α = .97; International teaching assistants, *SI* α = .98; Advising office, *SI* α = .97; Non-motorized transportation, *SI* α = .93; Diversity on campus, *SI* α = .99; Science classes, *SI* α = .61).

Range and frequency values. Participants scaled what bias others, labeled with letters "a" through "j" to retain anonymity, thought an article exhibited on three 9-point semantic differential items with anchors, *very favorable/very unfavorable*, *strongly like/strongly dislike*, and *strongly support/strongly oppose*. A single summed score for each person was generated, 12 = *strongly supported*, -12 = *strongly opposed*, (a SI α = .97; b SI α = .97; c SI α = .98; d SI α = .97; e SI α = .97; f SI α = .98; g SI α = .97; h SI α = .97; i SI α = .98; j SI α = .97). Range and frequency value calculations matched those performed in Experiment 1.

Others' credibility. Participants indicated the credibility of each of the others who interpreted their newspaper article on a single 5-point scale, 5 = *very credible*, 1 = *very uncredible*. These scores were rescaled, 2 = *very credible*, -2 = *very uncredible*.

Source attribution. Participants identified who they thought wrote their newspaper article in an open-ended question. This information does not appear in the analyses, but is available upon request.

Results

Participants in the control group rated this experimental newspaper article as opposing Vision 2020 (M = -2.24, SD = 7.11), but within sampling error of a neutral rating, t (32) = -1.83, *ns* and Experiment 1. Participants interpreted a newspaper article's opposition to Vision 2020 differently if they read how 10 other (fictitious) students interpreted this article. On average, participants reading others' interpretations moved 25% up or down the scale used to index the bias represented in the newspaper article. Participants in the experimental conditions rated the fictitious 10 students as credible (M = .20, SD = .33), t (32) = 3.51, $p < .05$ without variation between experimental conditions ($F < 1$).

Article interpretation

The social influence hypothesis, see Figure 3, coincided with these data. Their predicted social influence score, the sum of frequency and range values developed from each participant's exposure to others' interpretations of this article, accounted for how participants' interpretations deviated from the control group's interpretation. Those reading the article with ambiguous synonyms showed a strong correlation between their social influence score and how their interpretations deviated from the control group, r(15) = .64, $p < .05$. Those reading the article with unambiguous synonyms showed a small correlation, within sampling error of zero, between their social influence score and how their interpretations deviated from the control group, r (15) = -.07, *ns*. As predicted,

words with more inherent ambiguity enhanced the social influence; words with less ambiguity reduced this influence. Experimental conditions and assessments of the others' credibility accounted for no additional variance ($F < 1$).

Attitude change

Across conditions, participants' attitudes toward Vision 2020 did not change after reading a newspaper article opposing Vision 2020 (M change = .70, SD = 4.35), t (32) = .92, *ns*. Their deviations from the control group's interpretation of the article predicted how their attitudes toward Vision 2020 changed, r (32) = .41, $p < .05$. The linear discrepancy model fit these data well. The correlation between participants' initial attitudes toward Vision 2020 and their attitude changes was negative, r (32) = -.28. Additionally, the autocorrelation between the initial and final attitude reports was high (.81).

The two-step model was tested only for those reading the ambiguous article, because the first link diminished, as predicted, with the unambiguous article. For these participants, others' interpretations influence how participants interpret an article (corrected r (15) = .65) and participants' interpretations, in turn, influence how they change their attitudes toward Vision 2020 (corrected r (15) = .30), coincided with these data, X^2 (1,16) = .01, *ns*, *RMSE* = .00. Whether participants drove cars on campus or not did not affect this model ($F < 1$). Although not predicted, when looking between conditions, the relationship between interpretation deviation and attitude change was stronger for those who read the unambiguous article, r (15) = .56, $p < .05$, versus those who read the ambiguous article, r (15) = .28, *ns*.

Additional effects

Their initial attitudes toward Vision 2020 did not relate to any of their final attitudes toward the other issues. This result differed from Experiment 1.

Discussion

The two-step model presented in this paper rests on a fundamental assumption: ambiguity matters. If people use contextual features to disambiguate the meaning of words in a message, then knowledge of others' interpretations should only influence participants' own interpretations to the degree to which these words possess some ambiguity. In this experiment, when the words in one newspaper article were replaced systematically by words with less ambiguity, i.e., fewer dictionary entries, contextual information should have less influence; words that are more ambiguous should necessitate greater use of contextual information.

This assumption coincided with the data. The relationship between participants' range and frequency values, from their knowledge of other students' perceptions, and how participants' perceptions of an article's advocacy differed from the control group changed in relation to word ambiguity. The relationship increased with the ambiguous synonyms and virtually disappeared with the unambiguous synonyms. As ambiguity increases, participants do seem to depend more on contextual features as they determine the extremity of a given message's advocated position toward an issue. This experiment's ambiguous condition exhibited the strongest impact of this type of social influence across all the previous experiments.

Chapter 5: Discussion

When words in messages possess ambiguity, people must use some contextual information to disambiguate their meaning. Knowledge of how other people disambiguated these words may be one such contextual feature. Over sixty years ago Asch wrote that social influence may not just change how people evaluate objects, but influence what objects people think may be under evaluation. Psycho-physics theories were used in an attempting to develop a two-step model to predict how others might influence people's message perceptions in this way. The proposed two-step model makes predictions, which often differ from other models of social influence, e.g., conformity. When tested in multiple experiments, the two-step model coincided with how experimental participants interpreted newspaper articles and subsequently changed their attitudes within two boundary conditions. First, the articles needed to present a negative bias toward the issues they were addressing. Second, the words in the newspaper article needed to possess some ambiguity. The second boundary condition was anticipated theoretically as an underlying assumption of this type of social influence. The first boundary condition was unexpected.

One reason why the two-step model failed to predict reactions to the articles that presented a favorable bias may have to do with the choice of issues. Foremost these issues: course requirements, parking plans, and teaching assistants, all pertain to university administrative decisions. Participants reading the articles supporting these issues were more likely to guess that the author was an administrator than those reading the articles opposing these issues. It is possible that participants did not elaborate as much on articles, which they might have believed to be propaganda from university

administration, versus appeals from their fellow students. Other contextual features that might vary how much people would elaborate on the message itself should be investigated in future research.

The cognition limitation begs yet another point: ambiguity in messages may relate to the cognitive load people bear when reading messages. Persuasion theories that focus on how different amounts of cognition affect persuasive outcomes may be bounded by the amount of ambiguity within the message itself.

Across these experiments, determining if changing people's attitudes toward one issue also affects their attitude toward other issues remains unclear and inconsistent. One reason for this lack of clarity may be the short time span that elapsed between the first attitude report and the final attitude report. On average, 20 minutes lapsed between the two reports. This amount of time may simply be too short to allow related attitudes to change. In addition, experiments with longer durations of time between observations may provide insight into how long these attitude changes may sustain.

Interestingly, participants evaluated the other students who read the newspaper article before they did as relatively credible. Future research should vary the credibility of others providing their interpretations to see if credibility plays a role in this type of social influence. The question remains if anyone might serve as a source to disambiguate a message or this type of social influence is bounded others' credibility.

Limitations

At least three features of these studies limit their internal and external validity: issues, time, and ambiguity measure. The concerns with the issues chosen for these articles and the short duration between pre and post testing were addressed previously.

The ambiguity measure, using the number of entries for each word in the dictionary, is a blunt tool. This method of indexing ambiguity does not address qualitative differences in the type of entries. For example, the word "strong" has twenty-one entries, while "cleave" has two. The entries for "strong" are all relatively similar, e.g., physically powerful, force of character, or effective exercise of authority, etc., however, the entries for "cleave" are direct opposites, i.e., to adhere together or to split apart. In this case, the need to disambiguate a word like "cleave" from two opposite meanings may be more critical than disambiguating the shades of gray in "strong." Without addressing this component of the words used in these messages, the conclusions drawn from these studies are limited.

Future research and implications

The next studies to build on this research will address real others, new issues, and consequences for cognitive theories of social influence. In order to improve ecological validity, these studies will be replicated with people providing their interpretations of a newspaper article, in person. Although some applied circumstances provide anonymous authors for interpretations, e.g., those peer reviewing a medical malpractice suit may see how other doctors interpreted the situation (as malpractice or not) before they read the case, themselves, most likely this information would be provided in person.

In these future studies, additional efforts will be taken to seek out issues that seem to be sponsored by the reader's peer group. In these studies, most participants thought that a peer was the author of the oppositional articles, while administrators were the authors of the supportive articles. As stated earlier, the suspected author of the article may also help disambiguate these articles in ways that currently were not addressed. If

using different issues does help to discover why the model failed with supportive articles, attempts to disentangle mediators and moderators will be pursued.

Last, this line of research may provide insight into existing theories. As stated earlier, the amount of cognitive work implied in disambiguating words in a message may impact dual-processing theories of persuasion (e.g., ELM or HSM, see Eagly & Chaiken, 1993 for a review). When people need to look to contextual cues to disambiguate words in a message, they may attend to these 'peripheral' cues more than if they do not need to disambiguate the message. The need to disambiguate a message may also make processing the message feel more difficult, thereby qualifying the potential utility, credibility, and one's involvement with the message's content. On the other hand, people may elaborate more on the words and content of the message, because they need to disambiguate the message, potentially encouraging more central processing. Future research may be able to clarify when and how message ambiguity may interact with cognitive models of persuasion.

In addition, a theory of organizational communication, strategic ambiguity (Eisenberg, 1984), may be impacted. The idea behind strategic ambiguity is to use symbols for organizational values that inherently possess some ambiguity so that employees may make individual interpretations of these values and think that other employees share these values. This suggestion attempts to balance maximum individuality and organizational cohesion. Other researchers suggest messages like PSAs should be designed with strategic ambiguity (DeJong, Wolf, & Austin, 2001). These studies and future work should provide explanatory and pragmatic guidance for how

messages may be designed with strategic ambiguity and the consequences of this strategy for message effects.

The final experiment provides insight into an interesting decision for message designers. Unambiguous messages may influence attitude change more noticeably than ambiguous messages. Participants' attitude changes after reading the unambiguous message were considerably higher than the changes evidenced in ambiguous experimental conditions. Although an ambiguous message might seem like a reasonable alternative to message designers who do not want to seem didactic, they might be missing out on greater attitudinal change.

In sum, the two-step model articulated within this paper showed promise for accounting for a specific type of social influence. Sometimes, other people may serve a role to disambiguate the meaning of words within a message, thereby influencing what message people will process. By altering what message people process, a subtle form of persuasion may be produced. This persuasive effect should continue until a new set of circumstances stimulates one to re-evaluate the message's meaning. This two-step model may begin to provide an explanation for why ambiguous messages produce unexpected results; when other individuals, who control word of mouth, can spin a message's interpretation.

APPENDIX

Table 1

Summary of Scale Means, Standard Deviations, and Reliabilities in Experiment 1

	Time 1			Time 2			Change		
Variable	*SIα*	*M*	*SD*	*SIα*	*M*	*SD*	*SIα*	*M*	*SD*
Vision 2020	.98	-1.43	6.87	.99	-4.58	7.39	.95	-2.46	5.61
Trustee proposal	.99	4.55	7.15	.99	4.18	7.14	.86	-0.38	2.69
Course requirement	.98	0.58	5.72	.98	0.35	5.42	.92	0.04	3.08
Parking facilities	.98	-4.10	7.40	.99	-4.88	6.66	.94	-0.68	3.50
International teaching assistants	.97	-1.83	4.91	.97	-0.28	5.78	.95	1.36	4.94
Advising office	.97	3.80	4.28	.98	3.08	5.96	.93	-0.50	3.94
Non-motorized transportation	.97	3.55	5.98	.97	3.23	6.14	.96	0.06	4.83
Diversity on campus	.99	7.45	4.25	.99	7.43	4.38	.86	-0.08	1.95
Science classes	.92	-1.40	7.15	.95	-1.03	7.14	.86	0.22	3.90

Table 2:

Descriptive statistics of others' interpretations by experimental conditions.

	Narrow		Wide	
	Normal	Negative skew	Normal	Negative skew
Max	1.8	1.2	4.5	5.0
Min	-7.5	-7.0	-11.0	-9.5
Num positive	5	7	5	7
Num negative	5	3	5	3

Note. This message's content was rated at -2.90. The narrow condition spans four points above and below the content; the wide condition spans seven points above and below the content.

Table 3

Summary of Newspaper Article Interpretations by Condition in Experiment 1

	Scope		
Distribution	Narrow	Wide	Control
Skewed			
M	-7.10	-1.70	-2.90
SD	5.86	7.24	7.11
n	10	10	10
Normal			
M	-1.10	-3.30	
SD	6.35	4.88	
n	10	10	

Table 4

Scale Means, Standard Deviations, and Reliabilities for Variables in Replications

	Support			Opposition	
	V2020	ITA	SR	ITA	SR
Newspaper article					
M (SD)	6.75 (4.97)	9.34 (4.19)	4.60 (5.12)	-8.49 (4.57)	-3.04 (5.98)
SI α	.98	.96	.98	.95	.94
Vision 2020					
M (SD)	2.62 (5.47)	-0.19 (4.99)	-1.36 (4.23)	-0.50 (4.12)	-.71 (4.79)
SI α	.93	.92	.95	.91	.93
Trustee proposal					
M (SD)	0.11 (3.60)	-1.21 (4.06)	-0.40 (2.81)	-0.55 (3.97)	-0.13 (4.13)
SI α	.80	.91	.87	.94	.63
Course requirement					
M (SD)	0.43 (3.67)	0.02 (3.78)	-0.04 (3.38)	-0.44 (3.29)	-1.08 (5.13)
SI α	.89	.93	.88	.89	.94
Parking facilities					
M (SD)	-0.04 (5.17)	-0.06 (4.44)	-0.76 (3.01)	-0.77 (4.94)	0.48 (4.12)
SI α	.88	.89	.85	.93	.93
ITAs					
M (SD)	0.83 (4.46)	2.85 (4.86)	0.92 (3.79)	-1.75 (5.27)	-0.83 (5.21)
SI α	.92	.94	.95	.93	.95
Advising office					
M (SD)	0.57 (3.79)	0.02 (4.38)	0.36 (4.06)	-0.55 (4.21)	0.13 (2.45)
SI α	.87	.95	.96	.95	.85
Non-motorized transportation					
M (SD)	-0.33 (3.56)	0.15 (3.85)	-0.66 (3.01)	0.05 (3.74)	1.10 (4.80)
SI α	.92	.94	.92	.91	.93
Diversity on campus					
M (SD)	-0.89 (4.07)	0.04 (3.07)	-0.04 (3.37)	-0.98 (3.17)	0.31 (3.25)
SI α	.93	.95	.94	.95	.85
Science classes					
M (SD)	0.08 (3.08)	0.26 (3.13)	-0.83 (4.96)	-0.76 (3.29)	-0.37 (3.86)
SI α	.77	.61	.92	.73	.79

Note. All attitudinal variables (this excludes the newspaper article variable) are change scores.

Table 5

Summary of Correlations between Social influence, Interpretations, and Attitude Change

		$r_{PSI, \Delta I}$	$r_{\Delta I, \Delta A}$	n
Opposition				
	Vision 2020	.45	.44	40
	ITA	.19	.25	90
	Course	.38	.26	39
	$r_{weighted}$	.30	.30	169
	s_r^2	.01	.01	
	CI r	$.06 < r_w < .53$	$.06 < r_w < .54$	
Support				
	Vision 2020	.08	.30	74
	ITA	-.33	.04	96
	Course	.21	-.07	40
	$r_{weighted}$	-.08	.11	210
	s_r^2	.05*	.02	
	CI r	$-.32 < r_w < .15$	$-.12 < r_w < .34$	
Total	$r_{weighted}$	.08	.19	379
	s_r^2	.07*	.02	
	CI r	$-.16 < r_w < .33$	$-.04 < r_w < .43$	

Note. $r_{PSI, \Delta I}$ = corrected correlation between predicted social influence score and deviation of interpretation from baseline. $r_{\Delta I, \Delta A}$ = corrected correlation between deviation of interpretation from baseline and attitude change.

*$p < .05$, variance between studies outside of sampling error

Figure 1: Optical illusion: two women may be seen within the same picture.

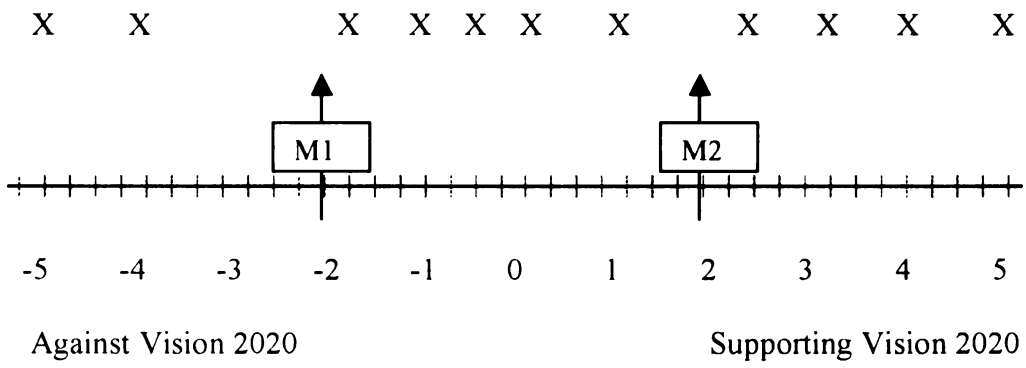
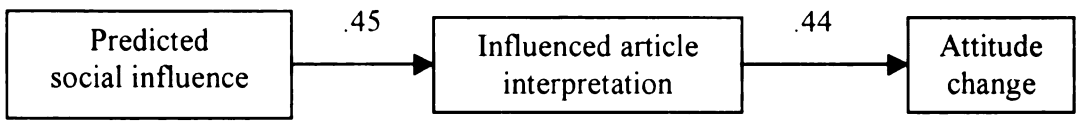


Figure 2: Distribution of others' interpretations (each one is designated by an 'X') of two articles' advocated positions for or against Vision 2020. The two arrows represent the two articles' advocated positions when their respective content is evaluated in the most objective or context-free of circumstances.



X^2 (1,39) = .01, *ns*, *RMSE* = .00

Figure 3: Graphical depiction of the two-step model under investigation. The predicted social influence score, a combination of range and frequency values, influences how participants' interpretations of the newspaper article's bias toward Vision 2020 deviated from the control group. The participants' deviations from the control group predict how their attitudes changed toward Vision 2020. Corrected parameter estimates and goodness-of-fit indices from experiment 1 are presented.

Sample Survey

Evaluating stimulus materials

In this study, we are asking you to help us evaluate some newspaper articles and how others have interpreted these articles in order to develop stimulus materials for another experiment. We are asking you to evaluate other students' interpretations and the article those students read, and to provide us your opinions about a few topics. This study has been developed by researchers in the Department of Communication at Michigan State University. Participation in this study should not take more than 15-20 minutes to complete.

Your participation is strictly voluntary and you may stop at any time. In order to provide you research credit, please sign and print your name at the bottom of this consent form. Do not put your name on the questionnaire. Your answers on the questionnaire will be completely confidential. Your privacy will be protected to the maximum extent allowable by law.
Your participation is voluntary. You may choose not to participate at all, or you may refuse to participate in certain procedures or answer certain question or may discontinue at any time without penalty or benefits to which you are otherwise entitled.

If you have any questions about this study, please contact the investigator, Frank Boster, 355-1514. If you have questions or concerns regarding your rights as a study participant, or are dissatisfied at any time with any aspect of this study, you may contact – anonymously, if you wish – Ashir Kumar, M.D., Chair of the University Committee on Research Involving Human Subjects (UCRIHS) by phone: (517) 355-2180, fax: (517) 432-4503, e-mail: ucrihs@msu.edu, or regular mail: 202 Olds Hall, East Lansing, MI 48824.

Your signature below indicates your voluntary agreement to participate in this study.

Signature **Date**

Printed name (please make it as legible as possible)

PID

Please do not write your name on the survey materials. This consent form will be kept separate from your survey answers in order to protect your privacy.

This study's focus is to obtain interpretations of a newspaper article in order to construct stimulus materials for a future study. Before we get started, we need to know what opinions you might have about issues that these articles may cover. Please provide your opinions on all three scales for each of the following issues. By marking a space closer to either end (e.g., very favorable) indicates that you feel stronger than if you mark the spaces closer to the middle. For example, if I marked how much I really like Granny Smith apples...

Granny Smith Apples

1. very favorable ___ X ___ ___ ___ ___ ___ ___ ___ very unfavorable

Please provide your opinions about the following issues

A. Vision 2020: a plan to establish perimeter parking around campus and rely on quick mass transit rather than front-door parking.

1. very favorable ___ ___ ___ ___ ___ ___ ___ ___ ___ very unfavorable
2. strongly like ___ ___ ___ ___ ___ ___ ___ ___ ___ strongly dislike
3. strongly support ___ ___ ___ ___ ___ ___ ___ ___ ___ strongly oppose

B. Trustee proposal to reimburse students that cannot understand their Professors or TAs up to four weeks before the end of the semester.

1. very favorable ___ ___ ___ ___ ___ ___ ___ ___ ___ very unfavorable
2. strongly like ___ ___ ___ ___ ___ ___ ___ ___ ___ strongly dislike
3. strongly support ___ ___ ___ ___ ___ ___ ___ ___ ___ strongly oppose

C. The new requirement to pass Communication 200 (Communication Research Methods) before being allowed to declare communication as a major.

1. very favorable ___ ___ ___ ___ ___ ___ ___ ___ ___ very unfavorable
2. strongly like ___ ___ ___ ___ ___ ___ ___ ___ ___ strongly dislike
3. strongly support ___ ___ ___ ___ ___ ___ ___ ___ ___ strongly oppose

D. The cost, availability, and conditions of parking student cars on campus.

1. very favorable ___ ___ ___ ___ ___ ___ ___ ___ ___ very unfavorable
2. strongly like ___ ___ ___ ___ ___ ___ ___ ___ ___ strongly dislike
3. strongly support ___ ___ ___ ___ ___ ___ ___ ___ ___ strongly oppose

Please turn the page over...

E. Taking classes with international teaching assistants teaching the lab, discussion, lecture or grading student assignments.

1. very favorable	___	___	___	___	___	___	___	___	___	very unfavorable
2. strongly like	___	___	___	___	___	___	___	___	___	strongly dislike
3. strongly support	___	___	___	___	___	___	___	___	___	strongly oppose

F. The quality, care, and competence of undergraduate student advising staff, procedures, and department.

1. very favorable	___	___	___	___	___	___	___	___	___	very unfavorable
2. strongly like	___	___	___	___	___	___	___	___	___	strongly dislike
3. strongly support	___	___	___	___	___	___	___	___	___	strongly oppose

G. The use of non-motorized transportation (walking, biking, skating, blading, etc.) to places on or off campus

1. very favorable	___	___	___	___	___	___	___	___	___	very unfavorable
2. strongly like	___	___	___	___	___	___	___	___	___	strongly dislike
3. strongly support	___	___	___	___	___	___	___	___	___	strongly oppose

H. Exposed to diversity on campus: diversity in ethnic, racial, cultural, and linguistic backgrounds of students, faculty, and staff.

1. very favorable	___	___	___	___	___	___	___	___	___	very unfavorable
2. strongly like	___	___	___	___	___	___	___	___	___	strongly dislike
3. strongly support	___	___	___	___	___	___	___	___	___	strongly oppose

I. Taking classes covering mathematical, statistical, or scientific content.

1. very favorable	___	___	___	___	___	___	___	___	___	very unfavorable
2. strongly like	___	___	___	___	___	___	___	___	___	strongly dislike
3. strongly support	___	___	___	___	___	___	___	___	___	strongly oppose

Once you have completed marking your opinions, please turn this form into the research staff and retrieve the last form.

Part II:

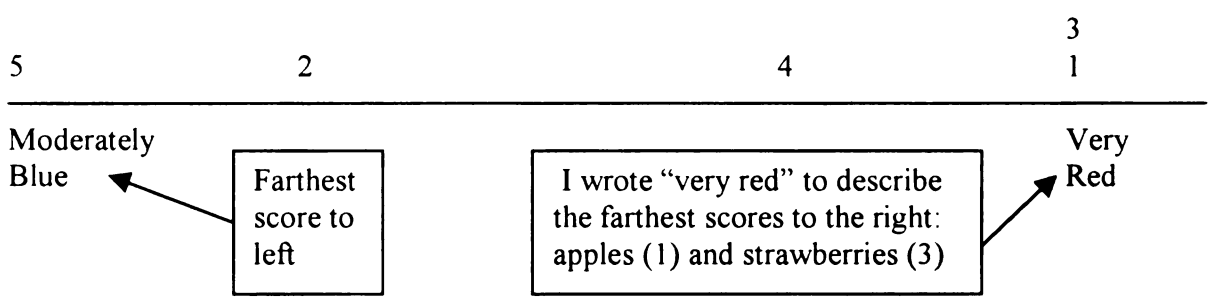
Creating stimulus materials: evaluating how others read the stimulus

In this last form, we are looking for your help with the development of stimulus materials for a future study. In an earlier study, we asked 10 other students to read a section of a newspaper article. Each of the 10 students wrote down what they thought the article was advocating, in other words, they wrote down if they interpreted the article as favorable, unfavorable, or neutral toward Vision 2020. They were asked not to write down if they personally liked the article, but to capture what opinion or bias (if any) might be presented in the newspaper article.

We would like you to read their interpretations and then rate them on a scale that YOU develop.

In order to develop your scale, use the provided line (on the next page) and mark where you think each response falls along the continuum from showing a bias in favor or in opposition toward Vision 2020 (note, you can mark multiple responses in the same place). After you finish arranging their interpretations, identify the most extreme student interpretations (the ones furthest to the left and furthest to the right). Once you identify these interpretations, then label them as "neutral, opposed, or favorable" and qualify whatever you choose with "very, moderately, or mildly."

For example, if I had to rate fruit (apples (1), grapes (2), strawberries (3), cranberries (4), and blueberries (5)) from blue to red, I might make the following scale.



On the next page, instead of "Blue" and "Red" you will mark the interpretations as either "Favored, Opposed, or Neutral" then add modifiers of "Very, Moderately, or Mildly". For example, if someone (B) had written "I think the author kind of likes blueberries" as the most negative comment toward fruit, I might make this scale, placing B on it:

B

Mildly Favored — Very Favored

Understand? If not, **stop**, raise your hand and ask for a researcher to assist you before turning the page over. If you do understand, please turn the page over to develop your own scale.

Here are the previous students' interpretations of the newspaper article.

a. In my opinion, the article was a little against taking out the parking and constructing campus like Vision 2020.

b. I don't think this article is taking a stand on either side of the Vision 2020 debate.

c. The article was completely critical of making Vision 2020 happen.

d. I don't think they are for or against Vision 2020.

e. They mildly oppose putting through Vision 2020 at MSU.

f. I believe the article is a balanced view toward Vision 2020 without a bias in either direction.

g. They are basically saying, Vision 2020 never should occur.

h. I think the article is hostile toward having perimeter parking, in other words Vision 2020.

i. It is definitely against us putting Vision 2020 into place.

j. I believe the article is neutral about developing campus within the Vision 2020 plan.

Neutral, Opposed, Favored

Very, Moderately, Mildly

When you are done please turn the page over.

Now, please rate the same interpretations on three standardized scales. Please use a check mark on the following items to scale their interpretations (***not*** your opinion about their interpretations).

For example, someone might **rate an interpretation** like this.....
"She seems to really like granny smith apples"
1. very favorable ___ X ___ ___ ___ ___ ___ ___ ___ very unfavorable

a. In my opinion, the article was a little against taking out the parking and constructing campus like Vision 2020.

1. very favorable ___ ___ ___ ___ ___ ___ ___ ___ ___ very unfavorable
2. strongly like ___ ___ ___ ___ ___ ___ ___ ___ ___ strongly dislike
3. strongly support ___ ___ ___ ___ ___ ___ ___ ___ ___ strongly oppose

b. I don't think this article is taking a stand on either side of the Vision 2020 debate.

1. very favorable ___ ___ ___ ___ ___ ___ ___ ___ ___ very unfavorable
2. strongly like ___ ___ ___ ___ ___ ___ ___ ___ ___ strongly dislike
3. strongly support ___ ___ ___ ___ ___ ___ ___ ___ ___ strongly oppose

c. The article was completely critical of making Vision 2020 happen.

1. very favorable ___ ___ ___ ___ ___ ___ ___ ___ ___ very unfavorable
2. strongly like ___ ___ ___ ___ ___ ___ ___ ___ ___ strongly dislike
3. strongly support ___ ___ ___ ___ ___ ___ ___ ___ ___ strongly oppose

d. I don't think they are for or against Vision 2020.

1. very favorable ___ ___ ___ ___ ___ ___ ___ ___ ___ very unfavorable
2. strongly like ___ ___ ___ ___ ___ ___ ___ ___ ___ strongly dislike
3. strongly support ___ ___ ___ ___ ___ ___ ___ ___ ___ strongly oppose

e. They are basically saying, Vision 2020 never should occur.

1. very favorable ___ ___ ___ ___ ___ ___ ___ ___ ___ very unfavorable
2. strongly like ___ ___ ___ ___ ___ ___ ___ ___ ___ strongly dislike
3. strongly support ___ ___ ___ ___ ___ ___ ___ ___ ___ strongly oppose

f. They mildly oppose putting through Vision 2020 at MSU.

1. very favorable	___	___	___	___	___	___	___	___	___	very unfavorable
2. strongly like	___	___	___	___	___	___	___	___	___	strongly dislike
3. strongly support	___	___	___	___	___	___	___	___	___	strongly oppose

g. I believe the article is a balanced view toward Vision 2020 without a bias in either direction.

1. very favorable	___	___	___	___	___	___	___	___	___	very unfavorable
2. strongly like	___	___	___	___	___	___	___	___	___	strongly dislike
3. strongly support	___	___	___	___	___	___	___	___	___	strongly oppose

h. I think the article is hostile toward having perimeter parking, in other words Vision 2020.

1. very favorable	___	___	___	___	___	___	___	___	___	very unfavorable
2. strongly like	___	___	___	___	___	___	___	___	___	strongly dislike
3. strongly support	___	___	___	___	___	___	___	___	___	strongly oppose

i. It is definitely against us putting Vision 2020 into place.

1. very favorable	___	___	___	___	___	___	___	___	___	very unfavorable
2. strongly like	___	___	___	___	___	___	___	___	___	strongly dislike
3. strongly support	___	___	___	___	___	___	___	___	___	strongly oppose

j. I believe the article is neutral about developing campus within the Vision 2020 plan.

1. very favorable	___	___	___	___	___	___	___	___	___	very unfavorable
2. strongly like	___	___	___	___	___	___	___	___	___	strongly dislike
3. strongly support	___	___	___	___	___	___	___	___	___	strongly oppose

Now that you have rated the other students' interpretations of our stimulus message, please tell us **how credible you think each of the authors are**. Next to each of the numbers below, please rate the author of the previous statement with the same number.
5 = Very credible, 4 = Somewhat credible, 3 = Neutral, 2 = Somewhat uncredible, 1 = Very uncredible

a.	e.	h.
b.	f.	i.
c.	g.	j.
d.		

Now, please read the newspaper article that everyone else was rating.

The Vision 2020 plan calls for the removal of parking lots along Shaw Lane to make way for green space and academic structures. West circle dorms, the ivy-covered gothic buildings, would be demolished. The plan is to remove all parking from central campus and move parking to remote campus areas, such as Farm Lane and Mount Hope Road.

Unfortunately, parking has been, one of the biggest infrastructure problems faced by students, faculty, and staff members for years. New problems seem to arise each year, as more students arrive on campus. No major parking facilities are available on the north side of campus, and any larger campus flat lots exist only on far reaches of campus. Students have to pay extra to park their cars in a lot that is over 10 minutes away from their dorm. Commuters have to buy a pass just to get a discount at the commuter lot.

Vision 2020 proposes to create a 1,300-space parking lot on Harrison Avenue where Michigan State Police headquarters is located. With the state police headquarters relocated, some people fear that campus safety may be compromised. Many students argue that it is not safe to walk to a bus stop or a parking lot far from the center of campus after working late hours. They argue that reliable public transportation does not exist, currently

Vision 2020 planners rejected suggestions to convert visitor parking to student lots. "Visitor lots contribute significant revenue to the system," he said. "That revenue is what keeps teaching assistant and faculty parking costs reasonable. To build more ramps would be incredibly efficient, but incredibly expensive." Places like the Spartan Stadium surface lot, Trowbridge Road parking ramp, the commuter lot at Mount Hope Road and Farm Lane and others will be needed to make the 2020 plan work. The trend of creating larger plots for black, endless seas of pavement in the far reaches of campus has offered little solution to the parking problems on campus.

Think about whether you think the article supports or opposes Vision 2020. What stance do you think the article sponsors, in your own words (i.e., your interpretation)?

Just to make sure we have your evaluation in both formats, please rate what stance you think the article advocates, concerning Vision 2020, on the following scales:

1. very favorable	___	___	___	___	___	___	___	___	___	very unfavorable
2. strongly like	___	___	___	___	___	___	___	___	___	strongly dislike
3. strongly support	___	___	___	___	___	___	___	___	___	strongly oppose

Please write down who you think was the newspaper article's author (this could be anyone):

Finally, although we realize you have done this once, please mark your opinions about the following topics.

A. Vision 2020: a plan to establish perimeter parking around campus and rely on quick mass transit rather than front-door parking.

1. very favorable	___	___	___	___	___	___	___	___	___	very unfavorable
2. strongly like	___	___	___	___	___	___	___	___	___	strongly dislike
3. strongly support	___	___	___	___	___	___	___	___	___	strongly oppose

B. Trustee proposal to reimburse students that cannot understand their Professors or TAs up to four weeks before the end of the semester.

1. very favorable	___	___	___	___	___	___	___	___	___	very unfavorable
2. strongly like	___	___	___	___	___	___	___	___	___	strongly dislike
3. strongly support	___	___	___	___	___	___	___	___	___	strongly oppose

C. The new requirement to pass Communication 200 (Communication Research Methods) before being allowed to declare communication as a major.

1. very favorable	___	___	___	___	___	___	___	___	___	very unfavorable
2. strongly like	___	___	___	___	___	___	___	___	___	strongly dislike
3. strongly support	___	___	___	___	___	___	___	___	___	strongly oppose

D. The cost, availability, and conditions of parking student cars on campus.

1. very favorable	___	___	___	___	___	___	___	___	___	very unfavorable
2. strongly like	___	___	___	___	___	___	___	___	___	strongly dislike
3. strongly support	___	___	___	___	___	___	___	___	___	strongly oppose

E. Taking classes with international teaching assistants teaching the lab, discussion, lecture or grading student assignments.

1. very favorable	___	___	___	___	___	___	___	___	___	very unfavorable
2. strongly like	___	___	___	___	___	___	___	___	___	strongly dislike
3. strongly support	___	___	___	___	___	___	___	___	___	strongly oppose

F. The quality, care, and competence of undergraduate student advising staff, procedures, and department.

1. very favorable	___	___	___	___	___	___	___	___	___	very unfavorable
2. strongly like	___	___	___	___	___	___	___	___	___	strongly dislike
3. strongly support	___	___	___	___	___	___	___	___	___	strongly oppose

G. The use of non-motorized transportation (walking, biking, skating, blading, etc.) to places on or off campus

1. very favorable	___	___	___	___	___	___	___	___	___	very unfavorable
2. strongly like	___	___	___	___	___	___	___	___	___	strongly dislike
3. strongly support	___	___	___	___	___	___	___	___	___	strongly oppose

H. Exposed to diversity on campus: diversity in ethnic, racial, cultural, and linguistic backgrounds of students, faculty, and staff.

1. very favorable	___	___	___	___	___	___	___	___	___	very unfavorable
2. strongly like	___	___	___	___	___	___	___	___	___	strongly dislike
3. strongly support	___	___	___	___	___	___	___	___	___	strongly oppose

I. Taking classes covering mathematical, statistical, or scientific content.

1. very favorable	___	___	___	___	___	___	___	___	___	very unfavorable
2. strongly like	___	___	___	___	___	___	___	___	___	strongly dislike
3. strongly support	___	___	___	___	___	___	___	___	___	strongly oppose

Last, please fill out some information about yourself

Year in school: freshman sophomore junior senior other

Age: _____ Sex: Male Female

Are you an international student? Yes No

Do you drive on campus? Yes No

Are you a communication major? Yes No

If you have any final comments about our stimulus materials, please feel free to provide them.

Thank you for your participation!

Vision 2020 PRO

The future of MSU's campus has become clearer. Anticipating the completion of the second component of the 2020 Vision project, university officials released maps and information that outlined what campus may look like two decades from now. The 2020 Vision parking plan is to establish perimeter parking around campus and rely on quick mass transit rather than "front-door" parking.

Some of the most valuable land is at the center of campus, and it is used for parking lots. South campus should look similar to north campus 50 years from now. It does not have to be asphalt. Even now, many students are frustrated with the lack of parking because they get tickets all the time. Parking structures can blend into campus to make it look beautiful in a park-like setting.

"It is important we maintain the beauty of campus," he said. "We have done a fabulous job on the north side and we are aggressively working on the area south of the Red Cedar." Although most changes will not impact current students, they should take an interest. "We are looking at how our campus will look in 20 years," he said. "By that time, they will be alumni, but they will be interested in what we do and how it looks."

Improvements in parking and transportation are also part of the plan, which calls for more parking ramps on campus and the addition of ramps adjacent to MSU. The project aims to accommodate facility growth, expand green and open space and balance vehicle traffic with a pedestrian environment. "We are attempting to create the most creative and stimulating area for people to learn: a park-like quality and a naturally occurring landscape." he said. The plan also calls for new bicycle pathways, which will include bike lanes in roadways and 4-foot-wide paths separate from walkways.

ITA CON

It is difficult because students need help and are not getting the teachers who can help students out the most. Charging $180 an hour per semester credit, all semester long, is a long time and a lot of money. Students should not have to pay for a class with a teacher they cannot understand.

First off, approaching the instructor is of little good when you cannot understand them in the first place. Is it the students' fault that most of the teaching assistants are international? Accents are a barrier, even if the TAs can pass English speaking and writing tests.

As for the screening test, it is hard to believe they are effective when ITAs may speak English 'proficiently', they just do not understand much when students speak it to them. An ITA may be able to explain a lab, even grade effectively, but when students have questions for which an ITA was not prepared, everyone gets lost. If the university sits down and thinks about language fundamentals for about two seconds, they would realize that teachers need to understand as well as speak the language they are using.

Students are stressed out by the work it takes to get 'help' from international TAs – it can require hours longer to figure out problems. That extra stress was not a part of the original purchase of the course credit hours, and other students, with domestic TAs, get more teaching per dollar, which is not fair.

ITA PRO

Rubbing shoulders with other cultures in the classroom is a part of the value of being at a university. Learning to understand different accents, learning styles, explanations for an event, and worldviews is an important exercise for every student, in every discipline.

Isn't that why students go to University, so they can meet people with different opinions, different ways of doing things? Most students attune themselves to accent differences quickly: whether the accent comes a person living previously in Russia, China, New York, or Louisiana.

Many of our international teaching assistants are experts in their content area in order to get sponsorship to study at our university and they are willing to teach our students – some of the most intelligent, skilled, and knowledgeable people, world-wide. These teachers can improve the quality of undergraduate education in direct (great command of the course material) and indirect (sharing a diversity of perspectives) ways, thus enhancing the reputation of the students, their education, and the institution from which their degree is confirmed.

Many Americans are ignorant of the rest of the world – but our students have the opportunity in class to learn about different countries and cultures, so they will be more marketable and well-rounded graduates.

Com 200 CON

MSU students in statistics and mathematics classes have a tradition of having a harder time with their courses. University officials admit grades for statistics and math classes are often lower than for other courses, if the students even pass. Communication 200, for example, is basic statistics and research methods course. Most students repeat the course in order to pass. The failure rate is alarming, and many blame the teachers' and department's shortcomings for students' poor performance.

Department officials urge students to talk to their professors when they need help, however, sometimes these professors are harsh and unwilling to help. Two students may take the same course, but have professors who organize their classes differently. This results in an unorganized, careless department and opens the possibility for each professor to teach either harshly or easily. If professors taught a standard curriculum, then perhaps students may go to other students for help as an alternative if they still do not understand what the professor has to say.

Students do not often understand why they are taking the course they have enrolled in. Students complain they will never need the material they are learning. If the university can not explain how these requirements apply to students' lives after MSU, then perhaps

there should be a different requirement. One student grinding through Communication 200 last semester heard another MSU professor remarked he had not used any of the material since he was in college.

In every department there are going to be those who do not see how a particular subject is going to be relevant to the rest of their lives. The fact is, between the department and student advisers, there has been a failure to help students excel in this area. Instead of accepting that math grades are generally lower than grades in other subjects, officials could take steps to find out why this is so and rectify the situation.

Com 200 **PRO**

MSU students in statistics and mathematics classes have a tradition of having a harder time with their courses than they should. University officials admit grades for math classes are often lower than for other courses, if the students even pass. The failure rate is alarming, and many blame the teachers' and department's shortcomings for students' poor performance. But the blame should not lie on the university alone.

Communication 200, for example, is basic statistics and research methods course. The average person should have some knowledge regarding this content before they arrive in college. And despite what some may want to believe, basic statistics and research does get used in day-to-day living.

Department officials, including those in Communication, urge students to talk to their professors when they need help. Some students say their professor is hard to deal with or cannot be understood. There are many ways for students to get around this obstacle, ranging from the Math Learning Center to simply sitting down with the TA or professor during office hours. The responsibility merely lies on the students to actually use them. In the same vein, many students readily admit to simply not doing the homework or not taking advantage of the extra avenues of assistance that are made available. Students need to make sure they use the help they have access to and actually do the work, instead of simply brushing it aside. The theory that practice makes perfect can hold true here as well.

The university needs to do a better job of teaching this material, standardizing classes, and making the purposes of the curriculum known to students. Instead of accepting that math grades are generally lower than grades in other subjects, MSU and its students need to shoulder some of the responsibility together for the students' success in math and statistics.

Con Vision 2020: *vague* (direct)

The Vision 2020 plan *involves clearance* (necessitates removal) of parking lots along Shaw Lane to *allow* (make way) for green space and academic structures. West circle dorms, the ivy-covered gothic buildings, would be demolished. The plan *is to clear* (removes) all parking from central campus and *move* (relocates) parking to *distant* (faraway) campus areas, such as Farm Lane and Mount Hope Road.

Unfortunately, parking has been, *an* (the leading) infrastructure problems faced by students, faculty, and staff members for years. New problems *seem to start* (begin) each year, as more students arrive on campus. No major parking lots are *open* (available) on the north side of campus, and any larger campus flat lots exist only on *distant parts* (far reaches) of campus. Students have to pay extra to park their cars in a lot that is over 10 minutes away from their dorm. Commuters have to buy a pass just to get *a cut* (a discount) at the commuter lot.

Vision 2020 *advances* (proposes) to create a 1,300-space parking lot on Harrison Avenue where Michigan State Police headquarters *is* (resides currently). With the state police headquarters relocated, some people fear that campus safety may be *compromised* (reduced). Many students *maintain* (assert) that it is *not safe* (unsafe) to walk to a bus stop or a *lot* (parking lot) far from the center of campus after working late hours. They *maintain* (argue) that reliable public transportation does not exist, currently.

Vision 2020 planners rejected suggestions to *make* (convert) visitor parking to student lots. "Visitor lots contribute significant revenue to the system," he said. "That revenue is what keeps teaching assistant and faculty parking costs reasonable. To build more ramps would be *impossibly* (unbelievably) efficient, but *impossibly* (unbelievably) expensive." Places like the Spartan Stadium surface lot, Trowbridge Road parking ramp, the commuter lot at Mount Hope Road and Farm Lane and others *will be involved* (are necessary) to *make* (accomplish) the 2020 plan *work* (blank). The trend of creating larger plots for black, endless seas of pavement in the far reaches of campus has offered a modest solution to parking problems on campus.

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