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You Win Some, You Lose Some: How Demographic Factors Interact with the Ubiquity of the Framing Effect

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Abstract

The current literature review is a compilation of research that addresses the ubiquity of the framing effect and presents examples of demographic features that hinder or facilitate the susceptibility to it. The framing effect, which was initially empirically studied through the exploration of gain vs. loss frames (Tversky & Kahneman, 1981), is a phenomenon in which discrepancies in the phrasing of the same content can elicit significantly different responses. A variety of frames, contexts, and demographics are discussed to reveal examples where the framing effect is present. Although our susceptibility to the framing effect emerges from underlying cognitive processes, the purpose of the current literature review is to promote awareness of the framing effect by explaining how it is utilized so that we can consciously decrease our susceptibility to our own cognitive biases.

Key Words:
Framing effect, Demographics

From a psychological perspective, a distinguished humanistic quality is the inevitable development of cognitive biases. Cognitive biases, or the cognitive patterns of making judgements from our emotions rather than our rationality, develop from our subjective constructions of reality. Cognitive biases intertwine with our perceptions; thus, the magnitude of our cognitive biases can influence how we perceive the world around us. Furthermore, because our cognitive biases are linked to underlying information processing, the slightest discrepancy in something implicitly processed, such as language, can result in a variety of reactions. There are several different types of cognitive biases, but this particular notion that the discreet manipulation of language can elicit different reactions is relatable and prevalent in daily life. This concept is commonly known as the framing effect.

The framing effect is concisely understood as the idea that if the same content is portrayed in at least two different ways, it will elicit different reactions. However, for the purpose of this literature review, two definitions derived from empirical articles are used to define the framing effect. Primarily, the framing effect is defined as "the product of affective heuristic information processing," and when making decisions "individuals will be influenced by the emotions induced by different frames" (Pu, Peng & Xia, 2017). An extension of the framing effect is defined as the framing of messages "around the costs of engaging in a risky behavior (i.e., loss-framed) or the benefits of avoiding risky

behavior (i.e., gain-framed) influences behavioral outcomes" (Mays & Zhao, 2016).

The origin of the framing effect derives from Prospect Theory. In short, Prospect Theory assumes that people can perceive the same values differently if they are phrased as gains or losses. According to Tversky and Kahneman (1981), "in prospect theory, outcomes are expressed as positive or negative deviations (gains or losses) from a neutral reference outcome, which is assigned a value of zero." Moreover, Prospect Theory is also known as "loss-aversion" theory because individuals are more likely to make risky decisions if the risks are presented as what could be gained rather than what could be lost. In other words, the fear of a large loss is more impactful than the reward of a large gain. Prospect Theory is the foundational theory underlying the framing effect because it introduced the concept of phrasing outcomes as gains vs. losses, but the field of the framing effect is vast because it encompasses a plethora of frames beyond these original two.

Tversky and Kahneman (1981) conducted the foundational empirical study of the framing effect. The purpose of this study was to see how the framing of various hypothetical situations would affect the evaluation of probabilities and outcomes. Participants were first presented with a variety of "decision problems" (indicating that the participant has to make a decision after assessing the problem) and then asked to choose out of the provided answers. The problems presented adopted either a gain frame (highlighting the benefits of a decision) or a loss frame (highlighting the consequences of a decision) to see if people were more influenced by the prospect of positive or negative outcome. The most replicated decision problem presented in the study is widely known as the Asian Disease Problem. The Asian Disease Problem dictates that an outbreak of a rare Asian disease is expected to kill 600 people, but two programs were presented as partial solutions against the disease. Although the programs display the same numerical outcomes, they are framed as a gain or loss and additionally as frequencies or probabilities. The results showed that the gain frame was particularly favored but more importantly that preferences were significantly affected by the frames provided.

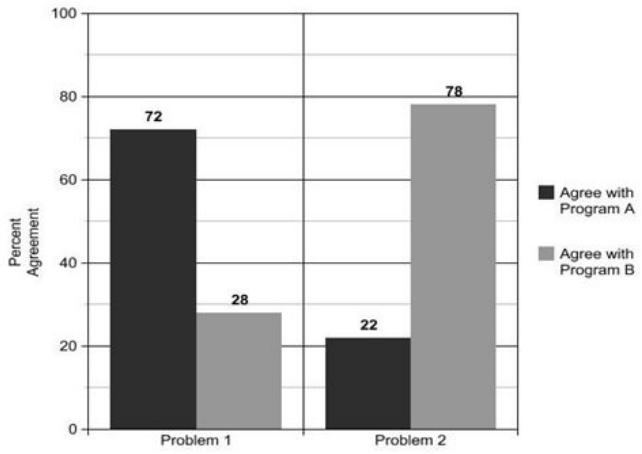

Figure 1. Results from the Asian Disease Problem experiment. From *The Framing of Decisions and the Psychology of Choice* by Tversky & Kahneman (1981). Copyright Alexandra McElhoe 2019.

Overall, unless the values presented were abnormally higher or the risks were presented as abnormally lower, the majority of participants displayed an aversion to risk-taking and chose the options presented as gains rather than losses. Tversky and Kahneman's (1981) study revealed one of the imperfections of human perception by showing that the framing of a problem can significantly influence decision-making.

The purpose of the current literature review is to observe and contemplate the framing effect in a myriad of contexts. Within that, the literature will explore some of the many mediums in which the framing effect is present and consider how the influence of external factors, such as demographic or other situational elements, may alter one's susceptibility to the framing effect. The eclectic research will encourage an awareness of our own cognitive biases and provide a framework for how to use the framing effect in a benevolent manner.

The order in which we explore the framing effect begins with different examples of frames used in marketing to influence consumers followed by demographic external effects on one's susceptibility. The framing effect is widely studied

in the realm of marketing because in order for marketing to be successful, companies and businesses need to frame their products and services based on their target populations. Exploring these frames in a variety of contexts helps clarify which frames are most effective in different industries.

Health

In the context of health services, the framing effect has been particularly prevalent in health-related controversies presented through the media. The media, comprised of the radio, television, music, Internet, mobile mass communication, and more, is a powerful source of information in the present day. However, even if the content of the messages presented in the media are the same, the various portrayals of such controversial topics are capable of eliciting different reactions to the content.

Some areas in which the framing effect has been studied in health services include drug and alcohol use as well as eating habits. In a study focused on the controversy of marijuana legalization, Kim and Kim (2018) found that the media's depiction of the controversy significantly affected consumers' opinions towards the matter. The researchers analyzed over 4,000 articles from states where marijuana was legal or illegal to understand how two distinct narrative styles, an "organizing theme" or a "story tone", affected consumers' opinions towards the legalization of marijuana. The "organized theme", which was comprised of articles that presented facts and national statistics rather than an emotional pull, was further analyzed to see if a political, economic, medical, or social stance was more prevalent amongst the articles. The "story tone", which was comprised of articles that provided the author's positive, negative, or neutral opinion on the controversy, was further analyzed to see if a positive or negative valence of the articles significantly affected opinions on the legalization.

The findings showed that the discourse surrounding controversial topics, such as the legalization of marijuana, largely depended on the framing of the articles. Primarily, the legalization of marijuana as a law enforcement issue was more influential than framing the legalization as a public health or medical issue. Moreover, liberal articles exhibited more positive tones while conservative articles exhibited more negative tones, suggesting that political stance may affect the frame that is used and thus affect consumers' opinions on the subject. The media's portrayal of the legalization of marijuana as more importantly an issue of the law rather than health may lead consumers to not heavily consider the negative health effects of marijuana. Although the results are not experimentally driven, they still represent a relationship between the choice of frames used in the media and consumers' opinions on controversy.

In addition to the legalization of marijuana in the context of health, binge drinking has been examined. More specifically, binge drinking among college students has been examined with the framing effect by testing a variety of different frames that explain the consequences of drinking. In a study by Kingsbury, Gibbons, and Gerrard (2014), college-age participants were exposed to one of four conditions of stories from alumni regarding the results from drinking heavily or lightly. The four conditions were comprised of a combination of gain vs. loss frames and social vs. health frames. The gain-social frame highlighted the positive experiences from not drinking heavily such as successfully asking a crush out on a date. Meanwhile, the gain-health frame highlighted the positive experiences from not drinking heavily such as waking up without a hangover. The loss-social frame highlighted the negative experiences from drinking heavily such as throwing up in front of a crush, and the loss-health frame highlighted the negative experiences from drinking heavily such as going to the hospital from blacking out. After participants were exposed to one of the four conditions, they rated their drinking intentions. Kingsbury et al. (2014) found that the two conditions most influential in evoking less drinking behaviors were the gain frame in a health context (a positive experience from waking up without a hangover) and the loss frame in a social context (a negative experience from throwing up in front of crush). In other words, the researchers concluded that people are more likely to engage in healthier drinking habits when they are told that there are

healthy benefits to lighter drinking and social faux pas consequences from heavy drinking. It is important to consider, however, the limitations that come from using hypothetical scenarios (instead of actual scenarios) as part of the methodology in framing effect studies. In other words, what people think they might do in a hypothetical scenario may be different from what they actually do.

Related to this study, Gerend and Cullen (2008) also observed drinking intentions of participants in an additional temporal context. Like Kingsbury et al. (2014)'s study, college participants were exposed to an alcohol prevention message in one of four conditions. The conditions were comprised of a combination of a gain vs loss frame and a short vs long-term temporal frame. The gain-short condition encouraged avoiding immediate negative health consequences from drinking and the gain-long condition encouraged avoiding long-term negative health consequences from drinking. The loss-short condition warned participants that they would experience immediate negative health consequences from drinking and the loss-long condition warned participants that they would experience long-term negative health consequences from drinking. Of the four conditions, participants showed the lowest drinking intentions after being exposed to the gain-short condition, implying that describing immediate benefits from avoiding negative drinking behaviors was the most effective alcohol prevention message. Moreover, the results showed that the gain and loss frames were moderated by whether the alcohol-related outcomes were short-term or long-term. Participants considered the benefits associated with avoiding a risky health behavior (instead of the consequences of engaging in risky health behavior), but only when those consequences were framed as short-term.

As noted in the previous studies regarding the consequences of binge drinking, college-age participants repeatedly showed lower drinking intention when exposed to frames emphasizing healthy benefits from drinking less. These findings also carry over into other risky health-related behaviors, such as indoor tanning (Mays & Zhao, 2016). Mays and Zhao (2016) exposed participants to one of four framed prevention messages aiming to decrease indoor tanning behaviors. Young adult women completed an online survey using either a gain or loss frame with an additional self-affirmation or control frame. After reading one of the four indoor tanning prevention messages, the participants were instructed to rate their intentions of continuing or quitting indoor tanning as well as their emotional responses to the frames presented. The loss-framed messages encouraged quitting indoor tanning because it induced a salient fear of negative health consequences of indoor tanning. Mays and Zhao's (2016) study suggests that to prevent unhealthy behaviors, the most effective prevention messages need to provoke an emotional response. More specifically, to influence higher intentions to quit a risky behavior like indoor tanning, the prevention messages should utilize a loss frame rather than a gain frame. In contrast to Gerend and Cullen's (2008) study where participants were more influenced by the prevention messages with a gain frame (health benefits from avoiding binge drinking), Mays and Zhao's (2016) participants were more influenced by a loss frame (negative health effects of indoor tanning). This contrast suggests that we can't strictly market with one frame. Instead, marketing must utilize a more versatile strategy in which the frame utilized is specific to its context thus accentuating rather than diminishing the message's content.

The framing effect is also prevalent in the food industry. For example, the frames utilized in marketing healthy living and eating differ between established magazine brands and amateur individual blog postings (Rodney, 2018). Despite how they are marketed differently, healthy living magazines and blogs are effective because the specific frames that they use appropriately cater to their consumers. For example, health magazines tend to use pathogenic frames (analogous to the loss frame) to suggest that unhealthy eating can lead to obesity and other diseases (Rodney, 2018). Meanwhile, individual blogs tend to use positive frames (analogous to the gain frame) to suggest that eating healthier simply improves one's quality of life (Rodney, 2018).

The framing of healthy eating habits can interact with external factors such as gender or perceived stress as well. When observing the interaction between temporal frames and participants' stress levels, the frame alone influenced healthy eating behaviors, but the added layer of perceived stress influenced women (but not men) to engage in unhealthy eating behaviors (Kim & Jang, 2017). Congruent with Mays and Zhao's (2016) study on the message prevention of indoor tanning, Rosenblatt, Bode, Dixon, Murawski, Summerell, Ng and Wakefield (2018) demonstrated that negatively framed prevention messages regarding unhealthy eating were more powerful than the positively framed prevention messages. Additionally, using a graphic-based prevention message was more influential than a text-based message. The health warnings presented with graphics and a negative frame elicited the highest dietary self-control scores. Recent research examining prevention messages towards unhealthy behaviors suggests that fear of consequences is more powerful than desire for benefits (Rosenblatt et al., 2018; Mays & Zhao, 2016), therefore future research should replicate these methodologies in order to generalize these results.

Prevention messages are not the only vehicle used to expose participants to different frames. In the realm of health, informational messages serve as a platform to observe the framing effect. Graham and Abrahamse (2017) examined how negatively framing meat consumption in terms of self-interest or in the interest of the climate affects intentions to consume meat. Participants were given informational paragraphs about meat consumption that adopted one of three possible conditions: no additional information, an additional framed message about self-enhancement (self-interest), or an additional framed message about self-transcendence (altruism). The provision of a framed message alone decreased intention to eat meat but not attitudes towards meat consumption. The framing of the message, however, did affect the attitude towards meat consumption. Those exposed to a self-transcendence passage heavily considered climate consequences while those exposed to the self-enhancement passage more heavily considered health consequences. The findings suggest that message provision alone may only affect attitudes to an extent. More importantly, it is the content of the framed message that reveals our cognitive biases.

The interaction between informational message framing and consumers' prior knowledge can also influence perceptions of food safety. More specifically, prior knowledge of a food safety issue can affect one's susceptibility to the framing effect which can in turn affect the purchasing intention of a controversial food product. In a study by Jin and Han (2014), participants completed a survey of purchase intentions based on their reactions to one of two frames of food safety issues. Jin and Han (2014) found that less prior knowledge results in more panic from mass media coverage on food safety while more prior knowledge results in a more rational approach to issues regarding food safety. Although it is unclear how levels of prior knowledge were measured, the empirical evidence suggests that there is a significant interaction effect between prior knowledge and the strength of the framing effect in purchasing intentions of controversial food products.

One's willingness to engage in healthy or unhealthy behaviors depends largely on how those behaviors are presented. In some health contexts, framing the negative consequences of unhealthy behaviors is more effective (Kingsbury et al., 2014; Mays & Zhao, 2016; Rosenblatt et al.,2018) while other studies show that framing the positive benefits of healthy behaviors is more effective (Gerend & Cullen, 2008; Kingsbury et al., 2014). Additionally, other external factors, such as prior knowledge, influence which frames are more effective in desired consumer behaviors (Graham & Abrahamse, 2017; Jin & Han, 2014; Kim & Kim, 2018). Above all, marketing in the health industry can be successfully executed with the integration of the principles of the framing effect.

Climate Concerns

Like Graham and Abrahamse (2017)'s study on meat consumption and its effects on health and the climate, climate concerns is another realm that can

be influenced by the framing effect. Within the health context, several studies suggest that negative frames are more effective than positive frames. In a climate control context, however, positive framing encouraged higher willingness to pay for green products (Yang, Solgaard, & Ren, 2018). Researchers advertised green electricity with positive or negative frames to residents of Denmark to see which frame would elicit higher willingness to pay for the green product. The effect of positive framing was statistically significant, meaning that participants were more likely to purchase the green electricity product when provided with information highlighting the environmental benefits of the product (Yang et al., 2018). Although this study may not generalize to other cultures, this empirical evidence suggests that framing the benefits of purchasing green products is more impactful in increasing willingness to pay than framing the consequences of not buying green products.

Furthermore, Ayadi and Lapeyre (2014) found that when green products were marketed under different price frames and ecological frames, consumers' willingness to purchase the green products are significantly affected. Green products were financially marketed as price per day, price per month, or aggregate price. Additionally, they were ecologically marketed with either no message, a positive ecological message explaining the benefits of green products, or a negative message explaining the consequences from not using green products. Although there were no significant differences in willingness to pay between the positive and negative ecological messages, the provision alone of an ecological message was more influential than having no ecological message. Additionally, there was no significant difference in willingness to pay between the price per day and price per month frame. However, framing the pricing as an increment of time was more influential than displaying the aggregate price to consumers. Although there are certain contexts in which message framing provision alone is not influential (Graham & Abrahamse, 2017), the study by Ayadi and Lapeyre (2014) suggests that the provision of framed messages is more influential than the specific content of the frames provided.

Climate change is a prevalent issue in the present day, but increasing awareness of climate change may not depend on the amount of information we provide the public, but rather *how* we present this information to the public. By positively framing the benefits of buying more green products and engaging in more green behaviors (rather than negatively framing the fearful consequences of climate change), consumers may be more willing to expand their awareness of climate issues. Moreover, there are some contexts in which the provision of message framing is enough to increase people's green behaviors (Ayadi & Lapeyre, 2014) and other contexts that rely on the specificity of the frames to influence people's green behaviors (Graham & Abrahamse, 2017). To effectively utilize the framing effect in marketing climate control and engagement in green behaviors, the specificity of the product or behavior being marketed needs to be thoughtfully considered in order encourage green behaviors that hinder climate issues such as global warming.

Education

While the framing effect continues to be ubiquitous in the media, advertising, and business around the world, it is also apparent in educational settings. In the United States, an effective educational atmosphere encourages individuality, intellect, creativity, and different opinions. However, despite the education system's pedagogical ambitions within the finite walls of a classroom, this setting does not eradicate our inevitable biases.

For example, the framing effect can influence course evaluations. In 2012, when a science course in Sweden experienced a sudden reduction of course time halfway through the curriculum, Lynöe, Juth and Helgesson (2012) noticed that the students' disappointment with the course resulted in negative evaluations of the teacher despite the teacher having nothing to do with this change (Lynöe, Juth & Helgesson, 2012). Students rated their attitudes towards the course and the teacher before and after the major change in the curriculum took place, and

students inevitably projected their frustration with the course inaccurately onto the teacher. Although the teacher and course content was consistent during the semester, the frustration regarding the change in schedule resulted in the course being framed differently. Lynöe et al. (2012) concluded that negative ratings were higher in magnitude than positive ratings. In other words, when students rated the course as bad, they rated it as "extremely bad" whereas when rating the course as good, they nonchalantly expressed the course as only "pretty good". This real-life example suggests that the magnitude of our cognitive biases may be more extreme when we adopt a negative attitude (in comparison to a positive attitude). This non-experimental case study cannot be widely generalized to all populations, but it reveals a foundational bias where different frames can result in wrongful projection of attitudes and perspectives onto irrelevant factors.

In addition, the framing effect can also influence students' performances. This phenomenon is prevalent in many academic subjects, such as math (Bizon, 2018). Bizon (2018) found that the way a statistical problem is framed to students may influence a student's confidence and thus affect the amount of correct answers they get on a test. Students with and without prior knowledge of statistics were considered for the experiment and were exposed to three different frames before completing statistical problems. The frames included phrasing the statistics problems as difficult or easy, mentioning successes or failures of the problems, and the provision of general or personalized suggestions. Bizon (2018) found that the only categorical frame that elicited a significant change in scores was the difficulty level of the problems. Students performed significantly better when they were told that the problems were phrased as easy rather than hard. Interestingly, even when considering the covariance of prior knowledge of statistics, the different phrasing of difficulty remained a significant factor on students' scores. With this understanding, teachers may be able to increase the efficiency of a student's education by providing non-intimidating frames of assignments. The result of phrasing examinations of one's knowledge as easy, manageable, or simple may help students maintain their intellectual confidence. Unlike Jin and Han's (2014) study, where prior knowledge significantly influenced participant's purchasing intentions of controversial food products, Bizon's (2018) study suggests that the framing of a problem can be more influential than prior knowledge, awareness of successes or failures, or reception of personalized or generalized advice.

Medicine

The framing effect carries over into other professions as well. Even physicians who are highly trained in exhibiting rational decision-making during the process of giving a prognosis are susceptible to cognitive biases. Krieger and Blumenthal-Barby (2015) found that a detail even as small as presenting information in terms of frequency or percentage influenced physicians' medical recommendations. The results suggest that clinical decisions may be made independent from the content of a patient's medical issue. Instead, clinical decisions may be made based on how a patient's medical issue is presented. Clinicians' susceptibility to cognitive biases, such as the framing effect, may result in less-rational clinical decision-making. Fortunately, a heightened awareness of our inevitable susceptibility to certain frames may increase our rational judgement and decision-making (Krieger & Blumenthal-Barby, 2015).

Mass Media

In the realm of the media, the framing of news, particularly controversial news, can influence uninformed readers' and viewers' opinions. Mass media coverage impacts how native citizens perceive polarized topics, such as immigration. In the Netherlands, Bos, Lecheler, Mewafi, and Vliegenthart (2016) investigated how different frames regarding the integration of immigrants affected Dutch citizens' opinions. More specifically, Bos et al. (2016) were curious if the framing or the valence of the statements were more powerful in influencing citizens' attitudes towards immigration. The content of the newspaper article provided to participants was the same, but the

language of the article was either framed under an emancipation frame, a multicultural frame (stressing the socio-economic participation of immigrants), a victimization frame (immigrants are victims of oppression thus hindering them from participating in society), or an assimilation frame (immigrants should adopt societal norms and minimize group distinction). Additionally, the author's voice of the article either portrayed a positive or negative attitude towards the topic. Dutch citizens then rated their level of support towards immigration, their attitude towards immigration, and their behavioral intention regarding immigration. The results suggest that negative frames elicit negative impacts on citizens' levels of support, but not on attitudes or behavioral intentions. Moreover, positive frames didn't elicit positive responses, suggesting that negative frames may be salient in the context of controversial current events. Using a multicultural frame, however, did have a positive impact on attitudes and behavioral intentions. Frame and valence of the news may independently affect dependent variables, but they are still capable of encouraging or repressing political change. Negative coverage of ethnic minorities in mass media can decrease willingness to change the negative stigma surrounding immigration, and furthermore, the multicultural frames that do elicit positive attitudes towards immigration could be utilized more by Dutch politicians (Bos et al., 2016). Congruent with other empirical studies that consider the framing effect in the media, this study by Bos et al. (2016) shows that controversial topics consistently lead consumers to be more susceptible to the frames that they are presented with (Graham & Abrahamse, 2017; Kim & Kim, 2018). This may be due to a variety of demographic differences, or it may be due to a collective bias where uncertainty leads to having more biased opinions rather than logical rationality.

The research reported so far demonstrates that the framing effect is undoubtedly prevalent in a diverse range of industries, including health, medicine, and education. However, what these distinct industries have in common is that they rely not only on which frames are being presented to consumers, but *how* frames are presented to consumers. The presentation of the framing effect is imperative because different combinations of language manipulations are what attracts or deters our cognitive biases. Even a detail as Lilliputian as the font of the language can influence one's susceptibility to the framing effect. For example, a study by Korn, Ries, Schalk, Oganian, and Saalbach (2017) showed that when participants were presented with a problem under a "safety" frame or a "risky" frame, the font of the problem being presented influenced the potency of the frame being perceived. The researchers unintentionally found that when they warned participants that the font of the vignette that they were going to read was going to be less legible, participants' preferences for safe or risk frames were unaffected (Korn et al., 2017). This finding suggests that our conscious awareness of frames may decrease our susceptibility to it. However, without a prior warning, researchers found that a hard-to-read fonts significantly interacted with the framing effect. In other words, participants were less likely to be swayed by the frame presented if it was presented in a less legible format. This may be due to the fact that a hard-to-read font requires more focus and thought than an easy-to-read font, therefore increasing cognitive disfluency and creating less room for cognitive bias. These results suggest that in the realm of marketing, the frames being utilized need to appropriately cater to its industry and furthermore be visually presented in a clear way.

Personal Relationships

Even the realm of personal relationships is affected by the framing effect. Although the framing effect is mostly studied in the domain of marketing, it is nonetheless applicable to the domain of love. One study by Lee and Schwarz (2014), for example, wanted to explore if the metaphorical framing of love affected people's perceptions and evaluations of their own romantic relationships. The two metaphorical frames used were "love is a perfect unity" (suggesting that love is a perfect harmony and that partners are perfect matches for each other) and "love is journey" (suggesting that love is a product of the choice that two people make to progress their relationship despite difficulties). In

addition to the metaphorical frames, the researchers randomly assigned participants to recall either a conflict or a celebration from their relationship (Lee & Schwarz, 2014). After exposure to each independent variable, all participants had to evaluate their satisfaction with their relationship and their satisfaction with life in general. The results showed that the metaphorical love frames significantly affected evaluations of relationships, but not of life in general. The journey frame elicited the same amount of relationship satisfaction regardless of the celebration or conflict recalled, suggesting that the perception of love as a journey minimizes negative attitudes towards conflict. Furthermore, the unity and journey frame elicited different evaluations even if the participants were both instructed to recall conflicts, suggesting that conflicts are more salient in the evaluation of love as a perfect harmony than of love as a journey filled with inevitable conflict. Overall, priming unity as the frame of love results in people believing that they may not have that thus they evaluate their relationships more negatively than those who are primed with love as a journey.

In addition to metaphorical frames of love, neutral and equality frames were also empirically studied within the discourse of same-sex marriage. More specifically, Gainous and Rhodeback (2016) wanted to see if an equality frame encourages African Americans to utilize an egalitarian perspective and therefore express more support towards same-sex marriage. Participants received a one-page news article about the efforts to legalize same-sex marriage in Maine under an equality frame or a neutral frame. The equality frame news article focused on equality, discrimination, and civil rights while the neutral frame news article did not include any value statements. After reading their assigned article, participants reported their opinions about gay rights, attitudes towards homosexuality, beliefs about egalitarianism and traditionalism, religious preferences, and partisanship. The researchers found that the participants exposed to the equality frame relied more heavily on egalitarian values and therefore exhibited more supportive opinions towards same-sex marriage laws. Moreover, the neutral frame had no significant effect on egalitarian scores, thus opinions towards same-sex marriage were not significantly affected. The results indicate that the frame isn't what directly influences opinions towards same-sex marriage. Instead, it is important that the frame increases egalitarian values to increase positive opinions towards same-sex marriage. Like Kim and Kim (2018), oppositions within controversial political topics, such as the legalization of marijuana or gay rights, may be malleable under the influence of different frames.

For our cognitive biases to overpower our rational judgements, frames need to be detected below our conscious awareness. Therefore, our cognitive biases may be eradicated when our tendency to absorb a frame is hindered. When we are required to give more selective attention to framed stimuli, we are utilizing more conscious processing rather than non-conscious preferences. As discussed, hard-to-read fonts are an example of a factor that can hinder the power of the framing effect because it requires a more conscious focus on the content. Similarly, the amount of time people are given to process a frame can influence how much of their decisions come from cognitive bias or methodological thought. If people are given less time to process the information that they are presented with, then they may be more likely to judge the information with less logic. Or, by contrast, specific frames may be what causes people to utilize less time to gather their thoughts, thereby making cognitive biases overpower conscious knowledge. An experiment conducted by Huangfu and Zhu (2014) in China utilized the famous "Asian Disease Problem" to observe the power of positive and negative frames on decision-making. Interestingly, the researchers unintentionally found that positive frames led to quicker processing and therefore more susceptibility to the framing effect. It is difficult to conclude if the study's success in identifying susceptibility to the framing effect is due to the cultural context of the participants or the discovered time processing quality. Despite this unanswered question, we can conclude that our susceptibility to the framing effect is nonetheless influenced by various situational and demographic factors.

Demographics

Now that we've explored a variety of contexts in which the framing effect is present, it is important to consider these situational and demographic factors and how they influence individual perceptions of the framing effect. How people perceive the framing effect greatly affects their susceptibility to it, and people's susceptibility to the framing effect can be mediated by several demographic factors, such as age, gender, race, and personality.

Age

Age is an important factor to consider when analyzing the framing effect because our neurological development is a large component of our cognition and therefore our cognitive biases. The framing effect targets our perceptual, cognitive, and language abilities, three elements that are the effects of our brain maturity and developmental processes. Thus, it is imperative to consider how the susceptibility to the framing effect is apparent across different developmental stages.

The literature on the framing of healthy eating habits has been explored across adults and suggests that the frames of marketing healthy eating significantly affect healthy eating behaviors (Kim & Jang, 2017; Rodney, 2018; Rosenblatt et al., 2018). However, when the framing of healthy eating has been studied using child participants, the results are not congruent (Wyllie, Baxter, & Kulczynski, 2015). Wyllie et al. (2015) studied children between the ages of 6 and 13 years old who were exposed to public service announcements (PSAs) regarding eating habits but under different message frames and linguistic polarities. The first experiment measured childrens' reactions to eating fruit under one of four conditions: more fruit is healthier, more fruit is less unhealthy, less fruit is less healthy, or less fruit is unhealthier. The second experiment utilized the same frames but in the context of eating lollipops rather than fruit. The children displayed more positive attitudes towards the PSA's that used gain-framed messages (the messages which included the word "more") and affirmation-framed messages (the messages which included the word "healthy"). There was no interaction between message frame and message polarity. Given that the framing of PSAs was significantly influential in children's attitudes towards healthy eating behaviors, those who market healthy eating habits for kids should consider the significance of these results so that they can create advertisements that more strategically cater to a younger age group. The researchers also discovered that children below the ages of 9 were not influenced by these linguistic devices because they were not neurologically mature enough to process them. Future research should replicate these effects using graphic-based PSAs to see if that presentational factor elicits a significant interaction effect with various frames.

Cognitive maturity is an integral factor that affects susceptibility to the framing effect. Reyna and Ellis (1994) observed how different age groups of children perceive different frames of risk-taking in order to determine the relationship between cognitive maturity and susceptibility to the framing effect. Using the Asian Disease Problem, Reyna and Ellis (1994) measured preferences from preschoolers, second graders, and fifth graders. The results suggest that younger children do not consider their awareness of risk level into their preferences for different frames as much as older children do. More specifically, older children are more likely to differentiate risk levels than younger children. Like the findings from Wyllie et al. (2015), these significant differences in perceiving risks are most likely the result of older children's superior cognitive functioning, building on the idea that neurological development significantly impacts how the framing effect is perceived.

Interestingly, these conjectures are not applicable to every study examining the framing effect on children. In a study that assessed the effect of positive and negative frames on children's judgements of gambling scenarios, younger children (5-year-olds) showed a trend towards risk seeking while older children (9-year-olds) displayed more risk aversion (Schlottmann & Tring, 2005). Schlottmann and Tring (2005) found that the older childrens' manifestation of risk aversion is like that of adults' risk aversion, suggesting that there are not

as many cognitive differences between the framing effect in older children and adults as past studies suggest (Reyna & Ellis, 1994; Wyllie et al., 2015). It remains unclear whether children and adults process risk aversion in the same way. However, age still elicits significant differences in susceptibility to the framing effect.

In addition to children, the framing effect has been studied in the context of risky behaviors in adolescents (13-17-year-olds) compared to young adults (18-24-year-olds). White, Gummerum, and Hanoch (2016) explored whether adolescents were more likely to share too much personal information on the internet by measuring their preferences in a modified version of the Asian Disease problem. The model used a gambling scenario in the form of an online music quiz that told participants that they had won a music voucher. The participants were given a sure option in which they could keep the voucher (Option A) or a risk option in which they could double their winnings if they provided some personal information (Option B). White et al. (2016) measured the participants' gambling choices and their ratings of sensation from gambling. They found that adolescents were more likely to choose the risky options due to a stronger desire of sensation seeking while young adults were more likely to choose the lower-risk option regardless of sensation seeking scores. The young adults were more likely to take risks only if they were low-risk, suggesting a superior form of judgement and rational decision-making. These results reveal that cognitive maturity affects one's susceptibility to the framing effect such that adolescents make more choices based off of sensation-seeking motivations while young adults' choices are based off of the qualities of the risks presented to them. Online safety training should be modified for different age groups in an effort to diminish risky online behaviors. Since adolescents are more likely to share personal information over the Internet (White et al., 2016), they should be trained to avoid that temptation.

Although cognitive maturity is believed to be completed by the adult developmental stage (University of Rochester Medical Center), younger adults and older adults have been examined under an empirical lens to observe age differences in cognition. To reveal cognitive processes underlying the framing effect, Cooper, Blanco, and Maddox (2017) had younger adults (18-30-year-olds) and older adults (60-88-year-olds) participate in a study that measured exploratory decision-making. The adults participated in a card game where the goal was to "maximize gains" or "minimize losses." Cooper et al. (2017) found that when older adults develop a strategy from a prior task or game in which they experience the effect of their decision to maximize their gains, they learn and improve. Additionally, older adults displayed higher tendencies of risk aversion in comparison to the young adults, but upon learning the rules of the games or magnitude of the risks, the adults showed significant levels of improvement and more willingness to take risks.

Younger and older adults' emotional states also differ under the context of the framing effect. Pu et al. (2017) showed that when presented with life-saving and money-gambling tasks, differences in younger and older adults' emotional valence were observed not only in cognitive processing, but emotional arousal as well (Cooper, Blanco & Maddox, 2017) Consistent with Cooper et al. (2017), older adults displayed risk aversion while young adults displayed high emotional arousal in the life-saving task and low emotional arousal for the money-gambling task. Moreover, in high-emotional arousal tasks, older adults did not show any susceptibility to the framing effect, suggesting that older adults are not as victim to their cognitive biases as younger adults (Pu et al., 2017). It is imperative to integrate these findings highlighting the impact of emotional arousal on the framing effect into marketing and advertising strategies. Specifically, businesses that target young adults should consider using more emotionally arousing frames while businesses targeting older adults should consider using more factual and straightforward frames. The neurological development that corresponds to one's age changes how one responds to the framing effect, thus the

frames being used for different age populations should be appropriately modified.

Gender

While age has proven to be a significant demographic factor that affects one's susceptibility to the framing effect, the impact that gender can have is less clear. In Kim and Jang's (2017) previously mentioned study, the effect of stress made women, but not men, more susceptible to the framing effect in the context of food choices. Moreover, the marketing of healthy living and dieting targets women more than men, leading many studies to fail to consider men's susceptibility to the framing effects within the health industry (Rodney, 2018). Although these patterns are prominent, there are empirical studies outside of the realm of health that suggest otherwise. Ezquerra, Kolev, and Rodriguez-Lara (2018) found that when men and women were tested to see whether or not they would cheat on a game that used a die paradigm, gender did not elicit significant differences in cheating. Men and women were evenly distributed between a gain frame (outcomes determined by how much money they obtain) and a loss frame (outcomes determined by how much money they lose) and were instructed to report the number of times that they rolled a certain number on the die. The presence of the framing effect influenced both genders despite what the specific frames were. Although both genders succumbed to cheating, gender did not significantly influence one's willingness to cheat in either the gain or loss frame. This study did not reveal gender differences in one's susceptibility to the framing effect, but other paradigms, such as the Prisoners' dilemma experiment, demonstrate that women are more likely to be influenced by social frames (Ellingsen, Johannesson, Mollerstrom, & Munkhammar, 2013). The Prisoners' dilemma is a game designed to mutually benefit both players if they cooperate. For example, if both participants randomly select the same option, then they mutually benefit from a monetary prize (50 Swedish kronors). Other selections may result in no prize or smaller prizes, but the largest prize is won by cooperating with the other player. Ellingsen et al. (2013) found that when both players were uncertain about the other's intention, framing the game as a "Community" game rather than as a "Stock Market" game prompted women to be more cooperative with their counterparts. In other words, the researchers noted that women, but not men, believed their counterparts would cooperate more if the activity was under a mutual interest frame (community) rather than a self-interest frame (stock market). The underlying mechanisms of this distinction between men and women is unclear, however, this finding may suggest that women are more likely than men to be trusting in a situation that is framed as mutually beneficial.

Race

Like age, race has also been shown to be a profound demographic factor that affects one's susceptibility to the framing effect. Race has been explored in a variety of ways within the field of the framing effect, such as its role in the presentation of frames. For example, different frames of racial inequity elicit different outcomes when they are presented by a White or Black professor (Littleford & Jones, 2017). In Littleford and Jones' (2017) study, participants were instructed to read about a hypothetical racial diversity course and complete anonymous surveys that measured their evaluations of the professor, their acknowledgement of racial inequality, and their motivation to respond without prejudice. More specifically, participants were presented with an inequity statement focusing on either white privilege or black disadvantage by either a White or Black male professor. The results revealed that the professor's race directly affected students' professor evaluations; White professors were rated as less intelligent while Black professors were rated as more biased. Furthermore, the white privilege frame elicited more responses of acknowledgment of racial disparity than the black disadvantage frame, but only if it was presented by the White professor. Participants also revealed more anxiety towards appearing prejudiced when they had a Black professor rather than a White professor. Thus, the source that is presenting the frames is imperative when considering responses to the framing effect. In this study, racial inequity was

perceived in different ways depending on how it was conveyed and furthermore *who* was conveying it, showing that the strength of the framing effect can depend on factors such as the source of the frames.

Race can be incorporated into other methodological structures of research on the framing effect as well. In the context of college admissions, for example, the way that admission rates are framed to college admissions officials influence affirmative action policies of candidates of different races (Friedrich, Lucas, & Hodell, 2005). Even the meticulous decision to present admittance rates as frequencies rather than proportions can increase race-neutral admissions policies (Friedrich et al., 2005). Moreover, studies show that how applicants of different races are perceived amongst employers can be influenced by the framing effect. One study by Awad (2013) explored whether African American applicants' resumes were evaluated as more competent and positive if they were framed as a contribution to the diversity of a company. Prior to evaluating the applicant, the participants were presented the job policy under a diversity-initiative frame (bringing in diverse perspective into the company) or an affirmative action frame (receiving opportunities for being in a minority category). After the participants rated the applicant's competence and their own political stance, Awad (2013) found no overall significant difference in competence scores between the diversity-initiative and affirmative action frame with one demographic exception: White conservative participants significantly rated the applicant as more competent under the diversity-initiative frame. Other demographic differences in the participants, such as gender, showed no other significant main effects. Overall, this study suggests that the demographics of the participants can be more significant predictors of responses than the frames presented.

Personality

Apart from the prominent demographic qualities explored (race, gender, age), there are disposition-related demographic qualities, such as personality, that also affect one's susceptibility to the framing effect. For example, in the context of the Big 5 Personality Test, those who score higher on conscientiousness and agreeableness display more susceptibility to the framing effect than those who score lower on conscientiousness and agreeableness (Gamliel, Zohar, & Kreiner, 2013). With this in mind, it is imperative to consider the context in which these frames and personality traits were explored. In a study by Gamliel et al. (2013), participants were exposed to positive and negative frames of various social justice issues, and their responses were compared with their personality scores. Those who scored high on conscientiousness and agreeableness not only displayed more susceptibility to the framing effect, but they also displayed more sensitivity to social issues. Therefore, this positive correlation suggests that topics that evoke sensitivity may also increase susceptibility to the framing effect. Exhibiting sensitivity may stem from engaging emotional empathy rather than rational logic, aligning with the principles of the framing effect and how susceptibility to frames is an emotionally driven cognitive bias rather than logically-driven.

In addition to Gamliel et al.'s (2013) study, Nielsen's (2016) study utilizes a frame experiment to understand how personality mediates attitudes towards EU integration. This study presented Danish and Swedish participants with positive and negative frames of EU integration and observed the relationship between reported attitudes and Big Five scores in participants. Nielsen (2016) found positive EU attitudes were positively correlated with extraversion and openness but negatively correlated with neuroticism. Furthermore, personality significantly affected susceptibility to the framing effect in that highly extraverted, open, and agreeable individuals were more likely to change their opinions after receiving the frames. More specifically, extraverted and open individuals were more affected by negative frames while agreeable individuals were more affected by positive frames. Those who scored higher on conscientiousness and neuroticism displayed less susceptibility to the framing effect in that their opinions remained more or less the same regardless of which frame they were presented with. These findings suggest that some personality traits are positively correlated with

susceptibility to the framing effect while others show no relationship.

Although the framing effect is ubiquitous, the magnitude of its influence on certain responses, attitudes, and opinions largely depends on the demographics of those perceiving or presenting the frames. Some demographics features are more influential than the content of the frames themselves, such as the demographics of the source of the frames (Littleford & Jones, 2017) or the demographics of the participants perceiving the frames (Awad, 2013). In other cases, there are neurological hindrances that obstruct participants' susceptibility to the framing effect. Analysis of different age groups consistently found that a lack of cognitive maturation decreased susceptibility to the framing effect because cognitive biases were not fully developed (Cooper, Blanco & Maddox, 2017; Reyna & Ellis, 1994; White et al., 2016). For the framing effect to effectively target different age groups, the presentation of the frame needs to be modified to be age-appropriate, such as using graphically-based rather than text-based for children (Wyllie et al., 2015). Other demographic features, such as gender, do not display strong differentiated effects as age and race, suggesting that gender differences may not be as salient in the framing effect as race and age differences. Further research needs to be conducted and replicated. Demographic features such as age, gender, and race in combination with features such as personality traits reveal that the effectiveness of the framing effect largely depends on the population perceiving or presenting the frames. Therefore, those in the fields of marketing and advertising should adopt these findings and strategically modify their usage of the framing effect to elicit more desired responses from their target populations. Our cognitive biases are malleable victims to our backgrounds, characteristics, and individual differences, and it is important to consider how different external factors can maximize or minimize how we perceive different frames.

Conclusion

The field of research on the framing effect has only recently been explored under an empirical lens. The majority of the studies mentioned were conducted after 2010, therefore the literature has only scratched the surface in understanding the nature of the framing effect and its interactions with demographic characteristics. Regardless, the current literature expands across a broad range of contexts, including controversial political discourse, consumer preferences for different forms of marketing, and examples within specific professions. The wide range of contexts that have been explored demonstrates the ubiquity of the framing effect in human life and suggests that we are more susceptible to our cognitive biases than we might realize. Even subtle differences in the phrasing of language, such as highlighting either the gains or losses of certain outcomes, can tremendously elicit different reactions towards the same content.

The psychological field devoted to the framing effect presents several strengths that make the literature relevant and applicable to the world. Although the foundational research focused on scenarios utilized the gain and loss frames (Tversky & Kahneman, 1981), several other frames have been studied empirically. Previous research has discussed the effects of various frames, such as emotional vs. informational, safe vs. risk, and personalized vs. generalized, social vs. health, and graphic-based vs. text-based. Several demographic groups have been studied within these contexts as well. Demographic features such as age, gender, race, and even personality have been studied to better understand the factors that affect one's susceptibility to the manipulation of language.

Within the methodologies used to study the framing effect, both hypothetical and experiential scenarios have been used to measure participants' susceptibility. Experiments utilizing only hypothetical scenarios can't be as generalized as easily to the naturalistic setting as experiential scenarios, and experiential scenarios restrict researchers from studying the framing effect as broadly. Thus, the integration of hypothetical and experiential methodologies makes the literature a broad comprehension of the phenomenon.

With these strengths in mind, there are still several areas within the field of the framing effect for future research. As previously mentioned, a majority of the studies have been published within the last ten years, suggesting that this field of empirical research is still novel and vastly unexplored. The field needs to continue generating new structures for studies and replicating previous studies to make the results more generalizable. Furthermore, although the literature is an amalgam of hypothetical and experiential methodologies, several of the methodologies have been criticized for being too narrow. Specific experimental designs reveal results for specific instances, but they can't be generalized as well as the studies with more basic methodologies.

Additionally, some studies that aim to discover differences elicited by the framing effect unintentionally discover other underlying effects. Sometimes message provision alone is more effective than the content of the message (Ayadi & Lapeyre, 2014), and other times message provision alone is not enough (Graham & Abrahamse, 2017). Other studies reveal that other factors, such as prior knowledge, are just as important as the message frame presented (Jin & Han, 2014). Confounding variables are inevitable; even the foundational studies, such as Reyna and Ellis' (1994) study on differences in risk-taking between certain age groups, considered demographic factors and cognitive maturity as confounds of the framing effect. However, for the literature to be considered more generalizable, future research should aim to minimize the effect of confounding variables by controlling for them.

Although age, gender, and race are prominently featured in the literature of the framing effect, there are other demographic factors which may also affect one's susceptibility to the framing effect. In a clinical context, research could focus on psychological disorders. Understanding the link between someone with a generalized anxiety disorder and susceptibility to positive or negative frames may provide insight on cognitive behavioral treatments. In an economic context, one's income may affect his or her susceptibility to frames that are related to making or spending money. Whether the goal is to improve therapeutic treatments or marketing techniques, expanding the demographic variables in future research could provide valuable insight into how to effectively influence a population.

Moving forward, there are several ways to improve and expand the field of research dedicated to the framing effect. Despite the newness of the field, several correlations and relationships have already been identified. To strengthen the reliability of these discoveries, it is imperative that the methodologies of these studies are replicated and that new studies continue to be executed. The field effectively incorporates hypothetical and experiential scenarios utilizing the framing effect, therefore another step forward would be to incorporate studies with more complex methodologies and studies with more basic methodologies. For example, Krieger and Blumenthal-Barby's (2015) study on the framing effect and its influence on doctors' prognoses could be simplified by presenting participants with only one medical vignette rather than four unconnected vignettes. By contrast, Cooper et al.'s (2017) study measuring age differences in susceptibility to the framing effect only utilized younger adults (18-30-year-olds) and older adults (60-88-year olds) without accounting for the age groups in between. Integrating a middle-aged group of adults might reveal a clearer trend in age and susceptibility to the framing effect. The combination of complex and basic methodologies would ensure a broader expansion of contexts while still targeting more specified cases. Having the majority of studies be too basic or too complex decreases generalizability, but a balance of both structures would make the studies on the framing effect not only more applicable but also more reliable.

Humans are easily influenced, and everyday there will be instances in which our cognitive biases will inevitably override our rational perception. However, our awareness of the power of the framing effect can make us less victim to its manipulative intentions. By further understanding how the framing effect interacts with our non-conscious thoughts, we can more consciously

be aware of our responses and attitudes towards stimuli. It is also important to clarify that the phrase "manipulative intentions" doesn't strictly embody a negative stigma. There are several examples in which the manipulative intentions of the framing effect can be used for good, such as using graphically-based (rather than text-based) frames to present PSA's that more effectively speak to children (Wyllie, Baxter, & Kulczynski, 2015). The power of language can easily be forgotten, but understanding the nature of the framing effect can help us perceive language more skeptically and articulate language more thoughtfully.

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