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Editorial Board

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Journal Contents

FROM THE EDITOR'S DESK

We have officially made it through another academic year. As the Spring semester comes to an end, I find myself reflecting on all that has happened since Spring 2021. We have been through a lot of ups and downs, and we have seen a lot of changes and shifts in ourselves, our family and friends, and our society.

As we change, our work changes. The research changes. I think that to be true for the research in the Spring 2022 issue. Undergraduate research continues to be relevant to the world we live in and a glimpse of the world to come.

I have had the opportunity to work on this journal for nearly two years now, and it has truly been a pleasure to read, edit, and engage with such quality research from undergraduate students. It has given me such hope and optimism for our field and its future. I'd like to thank the students who work so hard to contribute to psychological research and the readers that support them. This work is so important, and I am forever grateful that I got to be a part of it.

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THE INFLUENCE OF SUBJECTIVE HAPPINESS AND KINDNESS ON PERSEVERANCE

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Abstract – Facing opposition and times of difficulty is quite inevitable in the lives of many. Whether it be daily trivial problems or a life-changing situation, all humans are likely to be confronted with adversities at some point in their life. Being able to persist in these circumstances is a highly valuable asset which plays a beneficial role in adverse situations. Individuals cannot simply give up in the face of adversity; being able to acknowledge life's challenges and healthily cope is necessary to cultivate more positive experiences. This study explored the association between happiness, kindness, and perseverance among young adults. In a within-subjects design, 92 undergraduate college students completed a series of questionnaires designed to measure their levels of subjective happiness, kindness, and perseverance. Results from bivariate correlation tests indicate that happiness and perseverance are significantly and positively related (p < .001), as are kindness and perseverance (p = .007). Following the results is a discussion over the variables in relation to the broaden-and-build theory rooted in positive psychology, which suggests that individuals broaden their mindset as a result of experiencing positive emotions. With this broadened mindset, individuals build and strengthen their personal psychological resources, which in turn improves their probability of successfully coping and surviving difficult situations. Lastly, limitations of the study are discussed, as are considerations for future research.

Keywords: Subjective happiness, kindness/generosity, persverance

While we may always hope to receive as many goods and as little harms as possible while living the human experience, life undoubtedly comes with hurdles. In times of adverse situations, some may healthily cope and bounce back while others may dwell and allow their circumstances to hold them back. Many of us may hope to have what it takes to be resilient and quickly recover from misfortune and persist during hard times, but how can we know who may be more apt to persevere during less-than-fortunate circumstances? What factors may determine who is most likely to push forward despite difficulty and opposition? More simply stated: What factors increase one's likelihood to persevere?

One factor to investigate could be subjective happiness – an individual's subjective evaluation of their overall happiness or unhappiness (Lyubomirsky & Lepper, 1999). It may sometimes seem that happy people often do better in life than unhappy people in general (i.e., they have more positive experiences, handle situations better, receive more opportunities, etc.).

Perhaps happiness may lead some individuals to be more likely to persist in times of hardship. One reason for this could possibly be that happier people are more resilient in certain situations. Positive emotions (e.g., happiness) have been shown to help people create more desirable outcomes as well as predict growth in one's ego-resilience (Cohn et al., 2009). Pro-social behaviors (e.g., kindness) are also a factor worth investigating in determining one's likelihood to persist through hard times. Promoting kindness and compassion in individuals through loving-kindness meditation (LKM) has been linked to increases in positive emotions as well as resilience (Fredrickson et al., 2008; Hutcherson et al., 2008). For example, LKM was found to promote compassion and resiliency in healthcare providers (Seppala et al., 2014).

The following is an in-depth look at these three variables (subjective happiness, kindness, and perseverance) and how they may relate to one another in existing literature. Furthermore, an overview of positive psychology's broaden-and-build theory (Fredrickson,

2004) is suggested as a theoretical framework which can be used to connect these variables of interest.

Subjective Happiness and Kindness

In the field of psychology, researchers often use the term happiness interchangeably with subjective well-being (SWB; Haybron, 2008; Proctor, 2014). The experience of positive emotions (e.g., happiness) has been linked to many benefits in past research regarding optimal well-being and human flourishing (Eldeleklioğlu, 2015; Xu & Roberts, 2010). The current study examines happiness through the lens of positive emotions. Emotions such as love, pleasure, joy, contentment, and interest are often associated with one's level of happiness (Fredrickson 1998; 2004). Additionally, research suggests that happier individuals are more likely to achieve a variety of better outcomes across multiple domains in life, including health, work, and love (Lyubomirsky et al., 2005). Happiness, or SWB, has a generative capability that produces a variety of beneficial effects ranging from individual health and longevity, increased success in the workplace, and improvement of social relationships (Diener & Tay, 2017).

Research also indicates a link between SWB and prosocial behaviors (e.g., being a better friend, neighbor, and citizen; Jebb et al., 2020). For the present study, the variable of kindness can also be described as prosocial and helping behaviors (see Thielmann et al., 2020), as kindness and prosocial behaviors both refer to actions that benefit others. Studies suggest that donating to charity, helping a stranger, and participating in volunteer activities (i.e., prosocial behaviors) are strong predictors of increased SWB and positive affect (Jebb et al., 2020; Oishi et al., 2007). It is interesting to question whether prosocial behaviors increase happiness or happier moods increase prosocial behaviors. Aknin et al. (2012) suggested that the relationship between positive mood and prosocial behaviors is circular (i.e., bi-directional). Thus, individuals in a positive mood are more likely to help others, and in turn, helping others cultivates a more positive mood. Although the foregoing studies have linked happiness and acts of kindness through prosocial behaviors, little has been done linking them to perseverance. Based on the aforementioned positive outcomes that arise in relation to these variables, we postulate that there could also be a link between individuals possessing these positive emotions and behaviors and the positive outcome of persisting through hardship.

Perseverance: A Look at Resiliency

Plenty of past research shows the various benefits of subjective happiness and well-being (Eldeleklioğlu, 2015; Lyubomirsky et al., 2005; Xu & Roberts, 2010).

With the multitude of emotional, social, and physical positive life outcomes that happiness produces, it is reasonable to suggest that it is also linked to increased psychological resources such as perseverance and resiliency. While there has been research to connect these variables (see Cohn et al., 2009), more research would provide greater support for this hypothesis. Von Culin et al. (2014) have examined associations between the variables of happiness and grit. The researchers utilized the Orientations to Happiness Scale (Peterson et al., 2005) which identifies the degree to which individuals feel motivated to pursue pleasure, engagement, and meaning in life, as well as the Short Grit Scale (Duckworth & Quinn, 2009). They found that differences in what make an individual happy may influence individual differences in grit (i.e., perseverance; Von Culin et al., 2014). These findings inspired the present research as studies where these variables are connected in the literature are limited. As we were similarly interested in variables that might influence one's likelihood to persevere in adverse situations, the aforementioned research guided the development of the present study.

Additionally, while happiness and kindness are also shown to be correlated, we propose that kindness alone can influence one's level of perseverance. Studies have shown that meditation with a focus on kindness can build psychological resources such as ego-resilience (Fredrickson et al., 2008), however, this relationship was due to the meditation inducing positive emotions which, in turn, produced the increase in resilience. Little research has been done to show a link between kindness and perseverance without the addition of happiness. Due to a possible link between happiness and perseverance, and a supported link between happiness and kindness, we aim to test whether there is also a significant positive relationship linking kindness and perseverance.

Broaden-and-Build Theory

The link between the variables of happiness, kindness, and perseverance are believed by the authors to be rooted in positive psychology. The broaden-and-build theory, proposed by Fredrickson (1998; 2001; 2004), suggests that positive emotions such as joy, interest, contentment, and love broaden an individual's momentary thought-action repertoire. These feelings of joy, interest, contentment, and love spark urges to play, explore, integrate, and create a cycle of these urges within close and safe relationships; an individual's mindset is broadened because of these positive emotions. Conversely, negative emotions spark narrowed mindsets and action tendencies (e.g., attacking or fleeing). Additionally, through the broadening of individuals'

momentary thought-action repertoire, the experience of positive emotions encourages the discovery of innovative and creative actions, ideas, and social connections, which sequentially build the individual's personal resources. These resources may range from physical and intellectual, to social and psychological. Essentially, these built resources serve as personal assets that can later be utilized to improve one's probability of successfully coping and surviving difficult situations (i.e., persevering). Thus, this theory suggests that "positive emotions are evolved adaptations that function to build lasting resources" (Cohn et al., 2009, p. 2).

This theory also offers an explanation as to how daily positive emotions (e.g., happiness) induced through loving-kindness meditation (LKM), a meditational technique used to increase the feelings of warmth and caring for oneself and others (Salzberg, 1995), can lead to increased levels of ego-resilience in the future (Fredrickson et al., 2008). It is important to note that this theory is also associated with a kindness component, as the current study is aiming to further explore this variable in connection with happiness and perseverance. With increased positive emotions, a feeling of ego-resilience was also increased; in turn, individuals with a higher level of ego-resilience were more likely to experience positive emotions when faced with stressors compared to their less resilient counterparts (Fredrickson et al., 2008). This enabled them to have a better ability to bounce back in situations of adversity and stress and continue to grow (Ong et al., 2006; Tugade & Fredrickson, 2004). Findings that short-term effects of positive emotions lead to long-term growth by broadening and building lasting resources provides great insight for the field of psychology. Additionally, the broaden-and-build theory implements LKM to also strengthen resiliency within individuals. A randomized control trial of LKM has shown that individuals who learn to generate feelings of love and compassion also build resources (e.g., ego-resilience, a psychological resource; Fredrickson et al., 2008). By extending warm feelings to others, the mind-training practice of LKM cultivates broadened attention as well as shifts momentary fleeting emotional states, which perfectly aligns with the broaden-and-build theory's goal.

This theory provides an explanation for a possible link between happiness, kindness, and perseverance. Perhaps positive emotions (e.g., happiness) and acts of kindness are significant features that broaden and build one's personal resources, leading to increased perseverance and resiliency. If this is the case, we should aim to cultivate happiness and kindness to better cope with and handle adverse situations.

Overview of Present Study

Gaining a better understanding of the relationships between the three presented variables can provide great insight on why happiness and kindness may lead to greater perseverance within an individual. No one lives a life without adversity or conflict—encountering difficulties and opposition is inevitable. Greater knowledge over the association of these variables can help to promote persistence and perseverance in times of hardship. However, this suggested theory is relatively new, and while there are a handful of studies investigating links between happiness and broadened resources, there is less looking into the role of kindness alone. Studies showing the direct influence of kindness being associated with perseverance are nearly non-existent. While LKM broadened personal resources, it only did so due to inducing positive emotions which, in turn, created these resources. These findings show that kindness, happiness, and perseverance may be linked, however, the direct link between kindness and broadened resources is lacking. We aim to explore whether kindness is only likely to lead to increased ego-resilience and a better ability to persist because of the positive emotions gained via happiness, or if they could each possess separate links.

Research linking these three variables in a single correlational study design is limited. To address this lack of connection, we propose a study on how subjective happiness and kindness share a relationship with and influence perseverance. The present study draws inspiration from the broad field of social psychology as well as positive psychology with the broaden-and-build theory as the theoretical foundation of the research (Fredrickson, 1998). Additionally, personality psychology is also considered with the component of perseverance as a main variable of interest.

Hypotheses

For the present study, we propose two hypotheses. As the broaden-and-build theory suggests that more positive emotions are related to more positive outcomes (e.g., increased ego-resiliency; Fredrickson 1998; 2001; 2004), and there is a positive relationship between positive mood and prosocial behaviors (Aknin et al., 2012), we hypothesize that there is a significant positive relationship between subjective happiness and perseverance as well as kindness and perseverance:

H1: Higher levels of subjective happiness will correlate with higher levels of perseverance.

H2: Higher levels of kindness will correlate with higher levels of perseverance.

Method

Participants

A total of 92 (62 female and 30 male) undergraduate students enrolled in general psychology courses at a small midwestern university were conveniently recruited to complete the present study. The average age of participants was approximately 21 years old (M = 20.96, SD = 4.62), with an age range of 18-42 years old. Most participants identified as college freshman (63%), followed by sophomore (20%), junior (15%), and senior (2%) classification. A majority of the participants self-identified as White/Caucasian (87%), followed by Asian/Asian-American (8%), Black/African American (3%), and Hispanic/Latino(a) (2%). It was a requirement for participants to be between the ages of 18 and 65 to avoid sampling from a vulnerable population. Compensation in the form of research and/or extra credit for academic coursework was afforded by instructors to those enrolled in the general psychology courses. Participation was voluntary and anonymous, and all participants were treated in accordance with the ethical guidelines proposed by the American Psychological Association and Institutional Review Board (IRB).

Design

The research design of this study was correlational as it studied the relationship between subjective happiness, kindness, and perseverance. All participants responded to survey questions regarding their subjective levels of happiness, kindness, and perseverance. There were no groups or manipulations used in this study, and all participants responded to the same survey questions, thus, the design of the study utilized a within-subjects approach.

Materials

Participants completed three survey questionnaires to measure the variables of interest: subjective happiness, kindness, and perseverance.

Subjective Happiness

To test the participant's subjective happiness, the Subjective Happiness Scale was used (Lyubomirsky, 1999). This survey contains four items that were rated using a 5-point Likert type scale with higher scores indicating more overall subjective happiness. The rating scale for each statement ranged from 1 (strongly disagree) to 5 (strongly agree) with 3 indicating the participant was neutral toward the claim. The four items included: "In general, I consider myself to be a happy person; Compared to most of my peers, I consider myself to be happier; Some people are generally very happy. They enjoy life regardless of what is going on, getting the most out of everything; Some people are generally not

very happy. Although they are not depressed, they never seem as happy as they might be (reverse scored item)." A composite score was created by averaging the responses to the four items; Cronbach's Alpha was .85, indicating a strong reliability.

Kindness

To measure kindness, the Values in Action Inventory was used (Peterson & Seligman, 2006). This survey contains seven items which were rated on a 5-point Likert type scale ranging from 1 (strongly disagree) to 5 (strongly agree) with higher scores on the survey indicating more kindness/generosity performed by the participant. The scale measured one's kindness/generosity level based on the following items: "I am never too busy to help a friend; I go out of my way to cheer up people who appear down; I love to make other people happy; I helped a neighbor in the last month; I get as excited about the good fortunes of others as I am about my own; I call my friends when they are sick; I love to let others share the spotlight." A composite score was created by averaging the responses to the seven items; Cronbach's Alpha was .81, indicating a strong reliability.

Perseverance

The variable of perseverance was also measured using the Values in Action Inventory (Peterson & Seligman, 2006). This survey contains five items rated on a 5-point Likert type scale ranging from 1 (strongly disagree) to 5 (strongly agree) with higher scores indicating more persistence/perseverance. The five items included: "I don't quit a task before it is finished; I am a goal-oriented person; I finish things despite obstacles in the way; I am a hard worker; I don't get sidetracked when I work." Originally, a composite score was created by averaging the responses to the five items which revealed Cronbach's Alpha as .39, indicating weak internal consistency. Due to this low reliability result, we removed the first item (i.e., "I don't quit a task before it is finished") to increase reliability. After removing this item, Cronbach's Alpha was .81, indicating strong reliability.

Procedure

To collect data for this study, instructors were contacted via email and asked for permission to recruit students enrolled in their courses. This provided a strong convenience sample for the current research. The instructors were sent a recruitment message and later posted it on Blackboard as an announcement for students, which contained a link to the online survey. Participants were then able to take the online survey in any setting they chose. Upon clicking the link, participants were directed to a consent form to read thoroughly. While a formal signature was not required,

the consent form contained a message stating: "By clicking the 'Next' button and continuing, I understand that I am not giving up any legal rights and I am between the ages of 18 and 65." Participants were then given a reminder that their participation is both voluntary and anonymous, and they may skip any questions and withdraw from the study at any time.

If participants chose to proceed, they answered the questionnaires for subjective happiness, kindness, and perseverance. The surveys took approximately 10-15 minutes to complete. Upon completion, participants were directed to a debriefing form which described the purpose of the study as well as provided contact information should they have any additional questions. Lastly, they were thanked for their participation. Throughout this procedure, all participants were treated ethically in accordance with the IRB guidelines.

Results

Bivariate correlations were conducted to examine the possible relationship between subjective happiness and perseverance as well as the possible relationship between kindness and perseverance. Results indicate that subjective happiness and perseverance are positively related, $r(92) = .48$, $p < .001$. That is, as subjective happiness increases, perseverance also increases. This finding supports hypothesis 1. Results also indicate that kindness and perseverance are positively related, $r(92) = .28$, $p = .007$. That is, as kindness increases, perseverance also increases. This finding supports hypothesis 2.

Discussion

The current study sought to better understand what factors might influence one's likelihood to persevere in adverse situations. The specific factors that were examined were subjective happiness, kindness, and perseverance. Research linking these three variables in a single correlational study design is limited. More research was, and is, needed to further test direct connections between the mentioned variables. To address this lack of connection, the present study explored how subjective happiness and kindness might share a direct relationship with and influence perseverance.

We hypothesized that participants who rate themselves higher in subjective happiness would also rate themselves higher in perseverance. This hypothesis was supported. Results indicate that the more subjectively happy one is, the more likely they are to persevere. This may be due to Fredrickson's broaden-and-build theory (1998; 2001), which suggests that individuals broaden their mindset as a result of experiencing positive emotions, such as happiness. With a broadened mindset, individuals build and strengthen their social and

psychological personal resources, which in turn improves their probability of successfully coping and surviving difficult situations (i.e., persevering). Therefore, it is possible that participants in the present study who perceived themselves to be happier have broadened their personal resources as a result, which has helped increase their likelihood to persevere. However, the opposite causal direction is also possible. Therefore, it may be that increased levels of perseverance affect levels of happiness; that is, individuals could possess increased psychological resources leading to more positive emotions being experienced in return.

Our second hypothesis was also supported by the current findings. That is, individuals who rated themselves as kinder also scored higher on the scale of perseverance. One possibility is that performing kind acts for others, as well as oneself, promotes one's chances of shifting their mindset into a more positive state when faced with difficult. However, it is also possible that participants already experienced more positive than negative emotions, leading to more kind actions being displayed. Studies associated with the broaden-and-build theory also implement loving-kindness meditation (LKM; a meditation tool to promote kindness; Salzberg, 1995) to strengthen resiliency within individuals. A randomized control trial of LKM indicated that individuals who learn to generate feelings of love and compassion also build resources (e.g., ego-resilience; Fredrickson et al., 2008). Therefore, by extending warm feelings to others, the mind-training practice of LKM helps to cultivate broadened attention as well as shift momentary fleeting emotional states, which perfectly aligns with the broaden-and-build theory's goal.

Limitations and Future Research

While the hypotheses of this study were supported and positive relationships were found between happiness, kindness, and perseverance, there were also limitations involved. One limitation is that this study utilized a convenience sample of college students for participation. While we did not intend to target only young adults as the population, that is the primary demographic of students enrolled in general psychology courses. As this convenience sample was not representative of the entire population in terms of age, race, class, or gender, future research should aim to reach a more diverse sample. Obtaining a sample with more varied individuals would lead to results with increased generalizability, which would translate better to larger populations. As hardship and difficult situations are not exclusive to individuals of only one age, class, or ethnicity, it is pertinent to examine if these results are similar for a more diverse sample of individuals.

An additional limitation regards the scales that were used in this study. The chosen measure for subjective happiness, the Subjective Happiness Scale (Lyubomirsky, 1999), and the measure for kindness, the Values in Action Inventory (Peterson & Seligman, 2006), both revealed strong reliability in this study. However, when measuring individual perseverance with the Values in Action Inventory, a low reliability was found (Cronbach's Alpha = .39). After removing one of the five items from the composite score due to the lack of strong internal consistency, increased reliability was found (Cronbach's Alpha = .81). Future research may consider other scales to measure perseverance in order to ensure stronger internal consistency and reliability.

A third limitation to the current study regards the data collection process taking place during the coronavirus health pandemic (COVID-19). The experience of COVID-19 is certainly acknowledged as having a profound impact on many people. Although this variable was not measured directly, it may have influenced individuals' responses for other measures studied. Data collection for the present study began in March of 2020. This may have been a confusing time in many students' lives as news regarding COVID-19 began to quickly spread; however, data was collected right before universities around the globe began closing. Furthermore, businesses had not begun to shut down and mandatory isolation, mask requirements, and social distancing protocols were not yet in effect. Therefore, we believe these findings are still generalizable, as participants completed the surveys soon before the effects of the health pandemic began to spread. While confounding influences of the current health pandemic were not directly accounted for in the present study, future research is warranted given the support for both hypotheses. Additionally, future research replicating the current work once the health pandemic has ended would also prove beneficial for the field. The research would help to examine whether one's propensity to be happier, kinder, and persevere may differ in times of global hardship or remain consistent.

The application of this research, specifically the broaden-and-build theory, holds significant implications for clinical work. Implementing more positive thinking to help shift clients' mindsets may help to increase their experience of positive emotions and broadened social and psychological resources. Additionally, practicing LKM may prove beneficial in increasing one's tendency to think and act kindlier toward themselves and others. For example, it has been found that practicing LKM for only 10 minutes improved healthcare workers' well-being, resiliency, and compassion towards patients (Seppala et al., 2014). Introducing individuals to these practices can have significant and meaningful implications on their well-being.

The present study was able to provide significant findings for what variables might potentially affect one's likelihood to persevere while also supporting the broaden-and-build theory. It may be that being happier and kinder leads to broadened personal resources, specifically psychological, which allows individuals to better cope in times of difficulty. To further understand how these variables are connected, as well as how increased well-being may help individuals to remain persistent, future research is strongly encouraged. Potential directions for future research include incorporating a sample with more diversity in terms of age, academic experience and/or career, and ethnicity as well as collecting data at a time after the global coronavirus pandemic has become less of a threat to investigate whether these findings remain consistent. These directions may prove beneficial to the field.

References

Aknin, L. B., Dunn, E. W., & Norton, M. I. (2012). Happiness runs in a circular motion: Evidence for a positive feedback loop between prosocial spending and happiness. *Journal of Happiness Studies, 13*(2), 347-355. https://doi:10.1007/s10902-011-9267-5

Cohn, M. A., Fredrickson, B. L., Brown, S. L., Mikels, J. A., & Conway, A. M. (2009). Happiness unpacked: Positive emotions increase life satisfaction by building resilience. *Emotion, 9*(3), 361–368. https://doi.org/10.1037/a0015952

Diener, E., & Tay, L. (2017). A scientific review of the remarkable benefits of happiness for successful and healthy living. In *Happiness: Transforming the Development Landscape* (pp. 90-117). Thimphu, Bhutan: The Centre for Bhutan Studies and GNH.

Duckworth, A. L., & Quinn, P. D. (2009). Development and validation of the short grit scale (Grit–S). *Journal of Personality Assessment, 91*(2), 166–174. https://doi.org/10.1080/00223890802634290

Eldeleklioğlu, J. (2015). Predictive effects of subjective happiness, forgiveness, and rumination on life satisfaction. *Social Behavior and Personality: An International Journal, 43*(9), 1563–1574. https://doi-org.ezproxy.fhsu.edu/10.2224/sbp.2015.43.9.1563

Fredrickson, B. L. (1998). What good are positive emotions? Review of general psychology: Journal of Division 1, of the American Psychological

Association, 2(3), 300–319. https://doi.org/10.1037/1089-2680.2.3.300

Fredrickson, B. L. (2001). The role of positive emotions in positive psychology. The broaden-and-build theory of positive emotions. *The American Psychologist, 56*(3), 218–226. https://doi.org/10.1037//0003-066x.56.3.218

Fredrickson, B. L. (2004). The broaden–and–build theory of positive emotions. *Philosophical Transactions of the Royal Society of London. Series B: Biological Sciences, 359*(1449), 1367-1377. https://doi:10.1098/rstb.2004.1512

Fredrickson, B. L., Cohn, M. A., Coffey, K. A., Pek, J., & Finkel, S. M. (2008). Open hearts build lives: Positive emotions, induced through loving-kindness meditation, build consequential personal resources. *Journal of personality and social psychology, 95*(5), 1045–1062. https://doi.org/10.1037/a0013262

Haybron, D. M. (2008). Philosophy and the science of subjective well-being. In *The Science of Subjective Well-Being* (pp. 17–44). essay, Guilford Press.

Hutcherson, C. A., Seppala, E. M., & Gross, J. J. (2008). Loving-kindness meditation increases social connectedness. *Emotion, 8*(5), 720–724. https://doi.org/10.1037/a0013237

Jebb, A. T., Morrison, M., Tay, L., & Diener, E. (2020). Subjective well-being around the world: Trends and predictors across the life span. *Psychological Science, 31*(3), 293–305. https://doi.org/10.1177/0956797619898826

Lyubomirsky, S., & Lepper, H. S. (1999). A measure of subjective happiness: Preliminary reliability and construct validation. *Social Indicators Research, 46*(2), 137-155. https://doi:10.1023/a:1006824100041

Lyubomirsky, S., King, L., & Diener, E. (2005). The benefits of frequent positive affect: Does happiness lead to success? *Psychological Bulletin, 131*(6), 803-855. https://doi:10.1037/0033-2909.131.6.803

Oishi S., Diener E., Lucas R. E. (2009) The optimum level of well-being: Can people be too happy? In: Diener E. (eds) *The Science of Well-Being. Social Indicators Research Series*, vol 37. Springer, Dordrecht. https://doi.org/10.1007/978-90-481-2350-6_8

Ong, A. D., Bergeman, C. S., Bisconti, T. L., & Wallace, K. A. (2006). Psychological resilience, positive emotions, and successful adaptation to stress in later life. *Journal of Personality and Social Psychology, 91*(4), 730–749. https://doi.org/10.1037/0022-3514.91.4.730

Peterson, C., Park, N., & Seligman, M. E. P. (2005). Orientations to happiness and life satisfaction: The full life versus the empty life. *Journal of Happiness Studies, 6*(1), 25–41. https://doi.org/10.1007/s10902-004-1278-z

Peterson, C., & Seligman, M. E. (2006). *The Values in Action (VIA) Classification of Strengths. A Life Worth Living: Contributions to Positive Psychology,* 29-48.

Proctor, C. (2014). Subjective well-being (SWB). *Encyclopedia of Quality of Life and Well Being Research,* 6437–6441. https://doi.org/10.1007/978-94-007-0753-5_2905

Salzberg, S. (1995). *Loving Kindness: The Revolutionary Art Of Happiness.* London: Shambhala.

Seppala, E. M., Hutcherson, C. A., Nguyen, D. T., Doty, J. R., & Gross, J. J. (2014). Loving kindness meditation: A tool to improve healthcare provider compassion, resilience, and patient care. *Journal of Compassionate Health Care, 1*(1). https://doi:10.1186/s40639-014-0005-9

Thielmann, I., Spadaro, G., & Balliet, D. (2020). Personality and prosocial behavior: A theoretical framework and meta-analysis. *Psychological Bulletin, 146*(1), 30–90. https://doi.org/10.1037/bul0000217

Tugade, M. M., & Fredrickson, B. L. (2004). Resilient individuals use positive emotions to bounce back from negative emotional experiences. *Journal of personality and social Psychology, 86*(2), 320–333. https://doi.org/10.1037/0022-3514.86.2.320

Von Culin, K. R., Tsukayama, E., & Duckworth, A. L. (2014). Unpacking grit: Motivational correlates of perseverance and passion for long-term goals. *The Journal of Positive Psychology, 9*(4), 306–312. https://doi.org/10.1080/17439760.2014.898320

Xu, J., & Roberts, R. E. (2010). The power of positive emotions: It's a matter of life or death-subjective well-being and longevity over 28 years in a general population. *Health Psychology, 29*(1), 9–19. https://doi.org/10.1037/a0016767

THE EFFECTS OF VISUAL AND SPATIAL INFORMATION
ON THE UNRELIABILITY OF MEMORY

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Abstract – A plethora of research has demonstrated the effects of leading questions on memory. However, less research has looked at individual differences of a person's susceptibility to leading questions. This current project tested the relationship between an individual's visuospatial sketchpad capabilities and susceptibility to false memories. Participants' visuospatial sketchpad processes were tested using a mental rotation task (Shepard & Metzler, 1971). False memories, due to leading questions, were assessed using the Loftus and Palmer (1974) paradigm, with two different delay periods (30 seconds and 48 hours). The results did not replicate the findings of Loftus and Palmer. However, of the two-time delay conditions, participants' estimates of car speed were significantly faster in the 48-hour condition. Future research is proposed to answer why the results showed the participants in longer delays reporting fast speeds and why the Loftus and Palmer (1974) study was not replicated.

According to Alan Baddeley (1999), "Memory does not comprise a single unitary system, but rather an array of interacting systems, each capable of encoding or registering information, storing it, and making it available by retrieval" (p. 19). As a result, memory is important for many different psychological tasks, such as decision making, perception, problem-solving, storage of information, planning, and learning. In other words, memory is important to a myriad of everyday functions. There are different types of memory such as sensory memory, short-term or working memory, and long-term memory. Sensory memory includes memory for sensory information such as touch, smell, sound, taste, and sight. Short-term memory or working memory stores small amounts of information for a short period of time whereas long-term memory is where information is stored for longer periods of time after a process of encoding (Atkinson & Shiffrin, 1968).

The Constructive Nature of Memory

Since the days of Sir Frederic Bartlett (1932), researchers have known memory is not completely accurate and can be altered. McClelland (2011) proposed the Complementary Learning Systems Theory that relied on the constructive nature of memory regarding memory formation. That is to say, there is not just a single learning system involved when forming memories and that, in fact, there are more that act as fragments to form a larger memory. In addition, some, like De Brigard (2014) have, while studying the constructive nature of memory, begun to theorize that the mind's inability to perfectly recall events is, in fact, the way the mind should work and is not a flaw or failure of memory. In fact, De Brigard goes so far as to say that the mind's ability to perfectly recall an event, or failure to misremember an event, should be considered problematic because the human mind would not be able to properly encode the exact details and information necessary to fully reconstruct an event in its entirety. That is to say, the mind's inability to perfectly recall events exactly as they happen is not a malfunction of human memory but is a positive adaptive feature resulting from the mind's ability to 'fill in the gaps' when it is unable to fully encode every detail related to an event.

Bartlett's classic study of constructive memory relied heavily on the concept of a schema, which he defines as "an active organization of past reactions, or past experiences, which must always be supposed to be operating in any well-adapted organic response" (Bartlett, 1932, p. 201). Essentially, a schema is a mental blueprint of certain events, objects, people, etc. For example, when thinking about a professor's office, most might envision that office containing a bookshelf with

books and other scholarly material in the bookshelf (Nakamura, 1994). The findings of Bartlett led to the understanding of adaptive constructive processes that can result in memory errors (Schacter, 2012). Daniel Schacter coined the phrase "adaptive constructive processes" and defines them as useful but often causing alterations, inaccuracies, or misconceptions within memory. In other words, these processes are functional and important to memory but can have negative effects, such as individuals falsely identifying or recalling something that did not actually happen. In addition, Schacter (1999) highlights that there are also seven "sins" of memory. Those sins include "transience, absentmindedness, blocking, misattribution, suggestibility, bias, and persistence" (p. 183). Essentially, absentmindedness, blocking, and transience are all forms of forgetting and misattribution, suggestibility, and bias are forms of falsifications, and persistence is a memory that an individual wants to forget but is unable to. Understanding these seven sins and how the mind forgets, and forms falsified memories, can aid researchers to a better understanding of how memory can be altered under certain circumstances (i.e., eyewitnesses to a crime and leading questions).

Eyewitness Testimony and False Memories

Because of the constructive nature of memory, individuals are susceptible to the creation of false memories, thus, making the individual's eyewitness testimony in court rather unreliable (Loftus, 1977). The susceptibility of individuals to false memories is apparent in a study conducted by Shaw and Porter (2015) where the participants were convinced that they had been involved in a crime when they, in fact, had not. This study reinforced the idea that people are susceptible to the creation of false memories as had been observed by previous studies.

As a result of the extensive research on the mind's susceptibility to false memories, there have been two types of attempts to rectify or minimize the occurrence of false memories: (1) warning participants that false memories can arise from performing a certain activity, or (2) giving a memory test after allowing participants more opportunities to memorize or encode the information. Surprisingly, these methods have been unsuccessful (Mullet & Marsh, 2015). In other words, even though the participants were aware of the possibility of gaining false memories, the participants still had false memories. For example, participants developed false memories even after researchers warned of the possibility of false memories and after the participants studied a practice list with a description of the Deese/Roediger-McDermott (DRM) illusion in its entirety. The DRM is

when participants are presented with a list of words that are related in some way, and when asked to recall the words on the list, participants might recall words that are also related but were not presented in the original list (Gallo et al., 1997). For instance, a participant may be given a list that includes motor, brakes, hood, engine, windshield, but they may also recall the word car when it was not included in the list.

One of the main issues with false memories is that, because the individual believes the memory is accurate, the individual is often oblivious to error; false memories seem real to the individual to the point where the individual is unable to distinguish whether or not the memory is factual (Mullet & Marsh, 2015). A variety of factors exist that could influence the creation of false memories. One factor is the emotional state of an individual. Once believed to be a signal of only true memories, strong emotional attachment to memories may not always indicate reliable memories and can actually be false (Laney & Loftus, 2008). However, according to Mullet and Marsh (2015), individuals can correct false memories once the individuals realize the error and understand the correct information, making false memories similar to other kinds of errors. Despite this, in cases of eyewitness testimony, the witnesses do not have the chance to correct false memory.

In addition, there are other factors that can negatively affect the eyewitness's memory of an event. For example, most eyewitnesses are not prepared when a crime happens; eyewitnesses are only able to witness the crime one time and only for a short period of time. Additionally, the perpetrators tend to hide their identity when committing the crime. Violent events can elicit fear in an individual and this fear can cause the witness to concentrate only on certain aspects of the situation thus blocking important details from the individual's memory (Baddeley, 1999). For instance, when witnesses focus their attention on the weapon rather than everything else in the situation, this is known as weapon focus (Loftus et al., 1987).

An additional way that false memories can be created is that witnesses can be influenced when someone makes suggestions or leads them to a certain answer. As Hastie et al. (1978) found, (1) the reliability of eyewitness testimony is reduced after advising the witnesses to make inferences and (2) advising the witness to infer about an item that the witness may have seen will increase the witness's confidence that he or she actually saw the item. Essentially, witnesses are more prone to false memories when told to guess, and when they are led to a certain answer, the witnesses are more likely to choose the desired answer.

Leading Questions and the Loftus and Palmer Paradigm

According to Loftus and Palmer (1974), "a leading question is simply one that, either by its form or content, suggests to the witness what answer is desired or leads him to the desired answer" (p. 585). As a result, leading questions have been shown to alter memories and influence responses from individuals regarding events they witnessed. In other words, Loftus and Palmer found in their study that by asking certain questions regarding an event, a person's memory can be reconstructed or altered. In this study, participants were asked to watch several different videos that included automobile collisions. After the participants watched the films, they were then asked to fill out a questionnaire. The main question that the researchers asked had to do with how fast the cars were going in the videos. In the questionnaires, the researchers used leading questions that included words like smashed, collided, bumped, and contacted instead of the word hit. Essentially, words like smashed and collided made the participants report higher speeds when answering the question of how fast the cars were going compared to bumped or contacted. Loftus (2005) has revisited neuroimaging on many occasions and more recently, has discussed how neuroimaging has been used to further study the misinformation effect present in the leading question study.

Loftus and Palmer (1974) demonstrated how leading questions can cause individuals to have erroneous recollections of an event. A key feature of the events, however, is the spatial component (i.e., how the car travels through space); this can be linked to spatial aspects of memory. Currently, it is believed that communication as well as cognition can be significantly affected by spatial skills and that practicing and rehearsing such skills can improve performance on these spatial tasks (Wright et al., 2008; see, e.g., Baenninger & Newcombe, 1989). If a link can be found between the visuospatial capabilities and a lowered susceptibility to leading questions, and with the findings that visuospatial performance can be improved, the findings of the current study may influence future research. More specifically, the findings of the study might influence research into how one can prepare and become more resilient to the effects of leading questions on the formation of false or inaccurate recollections of certain events.

Baddeley's Working Memory Model

Working memory is a concept detailed by Alan Baddeley (1999). Baddeley describes working memory "as a system that allow[s] several pieces of information to be held in mind at the same time and interrelated" (p. 45-46) (also see Baddeley & Hitch 1974). One way of explaining working memory and its importance is to examine how one reads a simple sentence. In order to understand any sentence, including this one, the reader must be able to remember the words at the beginning and the middle of the sentence along with the end in order for the sentence to make sense. Without working memory, each word would be read out of context and, thus, would not mean anything other than its individual definition. Working memory is a system or model composed of four different components, as detailed by Baddeley (2000): the phonological loop, the visuospatial sketchpad, the episodic buffer, and the central executive. The phonological loop deals with verbal information and storing different sounds in one's short-term memory. The visuospatial sketchpad, on the other hand, stores visual information and allows people to "see" with their mind's eye. The episodic buffer stores information temporarily from the other two systems as well as from long-term memory. Lastly, the central executive is the part of working memory that controls the other three, previously mentioned parts, and is relatively hard to define and investigate (Matlin, 2005). For the sake of this paper, only the central executive and the visuospatial sketchpad will be further discussed as the phonological loop and episodic buffer are not of central focus in the study.

Central Executive

The central executive, according to Baddeley (1996), is one of the most important components in the working memory model. However, it is the least studied compared to the phonological loop and visuospatial sketchpad. The central executive is crucial in the working memory model because its job is to determine whether the information is important enough to keep or reject. In other words, the central executive filters out the information that is not needed so that the more important incoming information can be stored. To clarify, the central executive does not store information itself but merely incorporates the information from the visuospatial sketchpad, phonological loop, and episodic buffer within the working memory model (Baddeley, 2000). Some researchers have concluded that the central executive is located within the frontal lobe from a neuropsychological perspective (Smith & Jonides, 1997). However, due to the complexity of the frontal lobe and other functions, it is hard to determine the central executive's exact location within the frontal lobe. While the central executive is one of the more complex components of the working memory model, one way of measuring the capacity of the central executive is via the working memory span task created by Daneman and Carpenter (1980). This working memory span task

consists of a person reading a set of sentences, and then after reading the last sentence, the participant is asked to remember the word at the end of each sentence. The capacity of the central executive is often correlated to comprehension capacity. However, the central executive is limited in its capacity as it mainly serves to control the other systems of the working memory model (Baddeley, 1999). In other words, the phonological loop and, more importantly, regarding this study, the visuospatial sketchpad would not be able to function without the presence of the central executive.

Visuospatial Sketchpad

The visuospatial sketchpad is a component of Baddeley's (1999) Working Memory Model that stores visual and spatial information. In other words, the capability of one's visuospatial sketchpad could help determine the reliability of an individual's memory. However, the visuospatial sketchpad does have a limited amount of space for information, which could cause difficulty in recovering certain memories (Baddeley, 1999). In other words, with such limited space in the visuospatial sketchpad, an individual would have difficulty in recovering spatial information without proper representation as a result of too much information. As a result, it is only possible to perform one visuospatial task at a time (Baddeley, 1999; Baddeley et al., 1973). According to Engle and Oransky (1999), a limitation to the understanding of the visuospatial sketchpad is that there is more research on the phonological loop (another component of Baddeley's Working Memory Model) than there is on the visuospatial sketchpad. Therefore, the current study will add to current research and focus on whether the visuospatial sketchpad can prevent memory from being influenced by leading questions.

Mental Rotation Test

Shepard and Metzler (1971) developed a mental rotation test to assess the visuospatial sketchpad capabilities of individuals. The purpose of Shepard and Metzler's study was to test the mental rotation of participants to observe the time it took for the subjects to complete the mental rotation test. More specifically, a mental rotation task consists of the subjects looking at pairs of rotated two-dimensional pictures portraying three-dimensional objects and determining whether the pairs are the same or different. To complete this task, participants must form a mental image of the object and rotate that object mentally while comparing it to another object and deciding whether or not the objects are the same.

In recent years, psychologists have employed visual perception methods to research mental imagery. By doing so, researchers have concluded that people rotate mental images in a similar way to how they rotate physical objects (Matlin, 2005). Specifically, for both mental images and physical objects, higher degrees of rotation require longer amounts of time. Shephard and Metzler's (1971) findings have been replicated several times (e.g., Bauer & Jolicoeur, 1996; Cooper & Lang, 1996; Jordan & Huntsman, 1990; Newcombe, 2002; Wright et al., 2008).

Purpose of the Current Experiement

The purpose of this experiment is to expand upon the present research. While there are numerous studies regarding the effects of leading questions on memory and the visuospatial sketchpad, there are very few if any studies that explore the link or relationship between visuospatial sketchpad capabilities and susceptibility to leading questions. As a result, this relationship is an area that warrants further exploration. The current study's hypotheses include:
1. High spatial functioning will lead to lower susceptibility to leading questions;
2. Longer delay periods will result in higher susceptibility to leading questions;
3. The effect of spatial functioning on susceptibility to leading questions will be moderated by the delay period, with longer delays relying more heavily on the visuospatial sketchpad.

Experiment 1: Loftus and Palmer (1974) Paradigm and Mental Rotation

Method

Participants

The participants consisted of 140 students from general psychology courses at Fort Hays State University. Of the 140 participants, 45 were male (32.14%) and 95 were female (67.86%). In response to a question asking for their racial and ethnic backgrounds, 107 participants identified as Caucasian (76.43%), 19 as Hispanic (13.57%), nine as African American (6.43%), and five as other (3.57%). The mean age of the participants was 19.42 (age range 18-25 years).

Figure 1. Screenshot of car wreck video from study.

Procedure

The participants watched the Loftus and Palmer (1974) car crash video. The video portrayed two cars racing with one of the cars crashing into another one (see Figure 1 for screenshot of video). Afterward, the participants were asked to fill out a questionnaire using the Loftus and Palmer (1974) paradigm. Along with basic demographic questions, the questionnaire required the participants to briefly describe what happened in the video in their own words and then answer the questions.

The independent variables for the study were the delay time between watching the video and filling out the questionnaire and the wording used for the leading questions. The participants were first split according to either a 30-second or 48-hour delay after the video. These time delays were chosen partly out of convenience but also in order to better measure any possible significant differences between a very short time period after the event and a much a longer time period after the event. In regard to the wording of the questions, the participants were split into either the "contacted" or "smashed" condition randomly. The "contacted" group answered questions that used the word "contacted" to indicate the crash (How fast were the cars going when they contacted each other?). The "smashed" group answered questions that used the word "smashed" to indicate the crash (How fast were the cars going when they smashed into each other?).

After the questionnaire, the participants were asked to take a mental rotation test developed by Wright et al. (2008) (see Figure 2 for an example stimulus). This mental rotation test consisted of 32 pairs of two-dimensional representations of three-dimensional
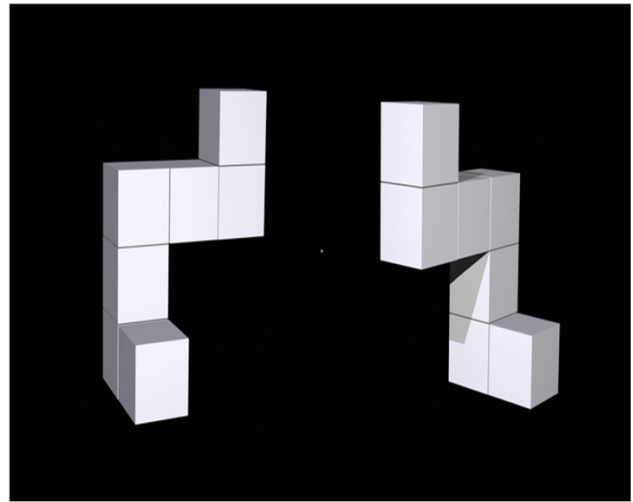

Figure 2. Example of the mental rotation task used in the study.

objects, where the participants had to circle either (a.) or (b.) to indicate whether the rotated pairs of objects were the same or different, respectively. The mental rotation test was inspired by Shepard and Metzler's (1971) original mental rotation test. Participants received one point for each correct answer during the mental rotation test, with a possible range of 0 to 32. Participant scores were then subjected to a median split. This procedure created a high mental rotation level and a low mental rotation level.

Results

To test the hypotheses (high spatial functioning will lead to lower susceptibility to leading questions, longer delay periods will result in higher susceptibility to leading questions, and the effect of spatial functioning on susceptibility to leading questions will be moderated by the delay period, with longer delays relying more heavily on the visuospatial sketchpad), a 2 (leading questions [contacted, smashed]) x 2 (delay [30 seconds, 48 hours]) x 2 (mental rotation ability [low, high]) between-subjects analysis of variance (ANOVA) was performed on car speed estimates. There was not a main effect for the contacted/smashed variable, which failed to replicate the results of Loftus and Palmer (1974), $F(1,97)=0.16$, $p=.689$. However, a significant difference existed between the 30-second and 48-hour delay conditions, $F(1,97)= 6.28$, $p=.014$. Participants in the 30-second condition (M=39.46, SD=14.41) reported slower car speeds than participants in the 48-hour condition (M=46.85, SD=17.95) (see Figure 3). Additionally, there was also not a main effect of mental rotation ability, $F(1,97)= 0.08$, $p=.774$. The leading questions by mental rotation ability interaction was not significant, $F(1, 97)-0.67$, $p=.415$. And, finally, the three-way interaction was not significant, $F(1, 97)=1.66$, $p=.201$.
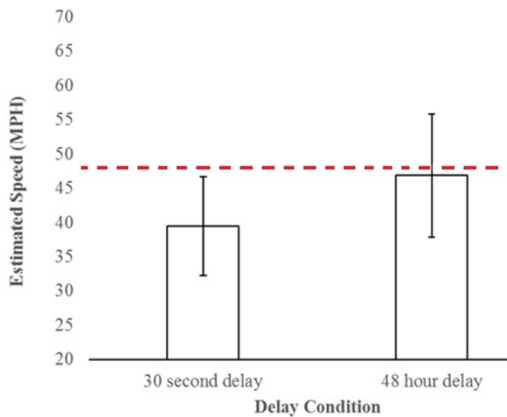
Figure 3. Effects of delay condition on estimated speed in miles per hour. Red dotted line

indicates mean for generic estimates of car wreck speeds in Experiment 2.

Discussion

Experiment 1 yielded surprising results, as the experiment did not replicate the findings of Loftus and Palmer (1974), and the mental rotation ability had no effect on the participant's susceptibility to the leading questions. The leading questions did not seem to influence the participants' speed estimates. It is unclear why the results were not replicated. As for the results regarding the mental rotation test, I decided to use a different measurement of visuospatial sketchpad capabilities to see if that would yield different results (see Experiment 3). However, I did not predict a main effect for the time delay variable. It is possible that participants' schemas for car accidents also contain a set speed expectation (e.g., most car accidents happen at 60 mph). This could explain the higher speed estimates in the 48-hour delay condition. Participants in the 48-hour delay condition may have relied more heavily on their schemas for car accidents, with high-speed estimates, than participants in the 30-second delay condition. This idea is further explored in Experiment 2.

Experiment 2: Schemas

Due to the unexpected results in Experiment 1, another study was conducted to better understand why the participants in the 48-hour condition reported significantly higher car speeds than the participants in the 30-second condition. The focus of Experiment 2 was to assess the schemas of individuals regarding how fast cars typically travel when they are involved in a collision. The results from Experiment 2 were intended to help explain whether the participants in the 48-hour condition in Experiment 2 relied on their schemas when responding to the questionnaire. A schema is "generalized knowledge or expectation, which is distilled from past experiences with an event, an object, or a person" (Matlin, 2005, p. 506). For example, the schema

in this study would be that the vehicles involved in a car crash typically travel at faster speeds than the vehicles that are not involved in a car crash. According to Markman (1999), schema theories are beneficial to describing how complicated experiences are processed by individuals.

To test the schemas of the participants, I asked participants to fill out an online questionnaire. The questionnaire included demographic questions and one question testing the participants' schemas of a car crash. The question stated, "How fast, in miles per hour, do you typically think a car is going when it wrecks?" The answers to this question were then compared to the 30-second and 48-hour delay conditions to try and answer why the participants in the 48-hour condition reported faster speeds than in the 30-second condition

Method

Participants

The participants consisted of 25 students from two psychology courses at Fort Hays State University. Of the 25 participants, 23 identified as female (92.00%). Participants were slightly older than traditional college-age, with an average age of 26.72 (age range 19-49). In response to a question asking for their racial and ethnic backgrounds, 20 participants identified as Caucasian (80.00%), two as African American (8.00%), two as Hispanic (8.00%), and one as Asian (4.00%).

Procedure

Participants were asked to fill out an online questionnaire to assess their schemas of how fast vehicles are usually traveling when involved in a collision. The participants were to respond to demographic questions (age, gender, race/ethnicity, etc.) before responding to the question, "How fast, in miles per hour, do you typically think a car is going when it wrecks?". The results were taken and compared to the results from the 48-hour and 30-second conditions from Experiment 1.

Results

To test whether the general estimates of car wreck speed were significantly different from the estimates provided in the 30-second and 48-hour conditions from Experiment 1, two separate one-sample t-tests were performed. The first one-sample t-test compared the mean from the 30-second condition from Experiment 1 (M=39.46, SD=14.41) with general estimates of car wreck speed from Experiment 1. The second test compared the mean from the 48-hour condition (M=46.85, SD=17.95) in Experiment 1 with general estimates of car wreck speed from Experiment 2.

A significant difference existed between the mean from the 30-second delay condition in Experiment 1 and

the reported answers to generic car wreck speeds from Experiment 2, t(24)=2.58, p=.016. Participants in Experiment 2 reported significantly higher estimates for car wreck speeds (M=47.80, SD=16.16) than the mean of the 30-second delay condition from Experiment 1 (M=39.46, SD=14.41). There was not a significant difference between the mean from the 48-hour delay condition in Experiment 1 (M=46.85, SD=17.95) and the reported answers to generic car wreck speeds from Experiment 2 (M=47.80, SD=16.16), t(24)= 0.29, p =.771.

Discussion

As hypothesized, a significant difference existed between the schema study responses and those from the 30-second delay condition, and there was no significant difference in the responses from the schema test and those from the 48-hour condition. As a result, the schemas of the individuals in the 48-hour condition may have influenced their responses, which is why they reported higher speeds in miles-per-hour than those in the 30-second condition who did not rely as heavily on schemas. After determining that the schemas of the participants may have resulted in the failure to replicate the results of Loftus and Palmer (1974), another experiment was proposed to once again attempt to replicate the results.

Experiment 3: Loftus and Palmer (1974) Paradigm and Corsi Block Test

Along with the results of both Experiments 1 and 2, another experiment was conducted using the Corsi block-tapping test. This test was used instead of the mental rotation task as another means of measuring visuospatial ability in order to see whether it would yield different results. In this test, participants are asked to repeat the actions of the researchers as they clicked on a sequence of equally separated blocks (this is similar to the Simon Says game), which was created by Phillip Corsi (1972). The Corsi block-tapping test is a measure that has been used widely and has shown to be effective in measuring visuospatial capability (Kessels et al., 2000).

Method

Participants

The participants consisted of 151 students from general psychology courses at Fort Hays State University. Of the participants, 108 identified as female, and 43 identified as male. In response to a question asking for their racial and ethnic backgrounds, 104 participants identified as Caucasian (69%), four as African American (3%), 25 as Hispanic (17%), and 18 as other (12%). The average age of the participants was 20.25 (SD = 4.45).

Procedure

The procedure of Experiment 3 was similar to Experiment 1. Participants were asked to fill out general demographic questions about their age, ethnicity, gender, and classification in school. Participants were then asked to watch a short car crash video from Loftus and Palmer (1974). After watching the video, participants were asked to complete the Corsi test, which was created by Phillip Corsi (1972). As stated above, participants must mimic a sequence of clicks on equally separated squares. Then, participants were also asked to answer questions using the Loftus and Palmer (1974) paradigm. In this study, the participants were randomly split into the "smashed" and "contacted" groups by the day of their birthday. For example, participants that stated their birthday was on day one to fifteen were placed in the "smashed" group, and participants that stated their birthday was on day sixteen to thirty-one were placed in the "contacted" group.

Results

Data were analyzed using an independent-samples t-test to compare speed estimates between the "smashed" and "contacted" conditions. Results showed a statistically significant difference in the predicted direction, with the smashed condition (M = 50.91) having higher speed estimates than the contacted condition (M = 43.35), t(113) = -2.34, p = .021.

To test the possible interaction between Corsi performance and question condition (smashed or contacted), a 2 x 2 between-subjects ANOVA was performed. Corsi performance was split into low (0 to 5) and high (7 and higher); participants who scored 6 on the Corsi test were not analyzed since it was the modal response and presented difficulties with the median split. Results of the ANOVA showed no main effect for Corsi performance, F(1, 81)=0.41, p=.522. There was a main effect for question condition, F(1, 81)=8.68, p=.004, which is consistent with the results from the independent sample t-test describe above. However, there was no interaction, F(1, 81)=0.43, p=.513.

Discussion

The results of Experiment 3 did successfully replicate the results of Loftus and Palmer (1974) in that the results indicated that participants' speed estimates for the car crash were influenced by the leading questions. However, similar to Experiment 1, the measurement of the visuospatial sketchpad capabilities, this time using the Corsi block test, did not yield a significant effect on the participants' susceptibility to leading questions. Thus, there seems to be no support for

the idea that the greater the visuospatial sketchpad capabilities are for an individual the less susceptible they will be to leading questions.

General Discussion

These experiments were conducted with the hopes of discovering how visuospatial sketchpad ability could make one less susceptible to leading questions. As discussed earlier, memory is constructive, which means that it is impossible to perfectly recall past events (McClelland et al., 2011). As a result of the constructive nature of memory, many studies have been conducted that show how memories can be incorrectly recalled by means of suggestion or the use of leading questions (Gallo et al, 1997; Loftus & Palmer, 1974; Mullet & Marsh, 2015; Shaw & Porter, 2015). In addition, as I have discussed previously, working memory consists of four separate but inter-dependent systems, one of which is the visuospatial sketchpad (Baddeley, 2000). The visuospatial sketchpad stores visual and spatial information, which may be beneficial for individuals who witness a crime or accident regarding what happens and where it happens. Therefore, the hypothesis for Experiment 1 was that a higher visuospatial ability may correlate with better memory recall and lower susceptibility to leading questions. Experiment 1 used the Loftus and Palmer (1974) paradigm to test the effects of leading questions on the participants' memories of a mock car crash shown in a video. In addition, a mental rotation test, developed by Wright et al. (2008) and inspired by Shepard and Metzler's (1971) original mental rotation test, was used to assess the visuospatial sketchpad capabilities of the participants. However, in Experiment 1, there was not a statistical relationship between mental rotation performance and false memory. Surprisingly, in Experiment 1, an unexpected difference existed between the 30-second and 48-hour delay conditions for estimated car speed during the video, in that participants reported faster car speeds in the 48-hour condition than in the 30-second condition.

Experiment 2, a small follow-up to these results, showed support for the hypothesis that longer time delays (i.e., the 48-hour condition), may lead to a person's memory for the car video reverting to a schema for how fast cars are going when they crash. Experiment 2 tested whether the participants' previous assumptions of how fast vehicles are typically traveling when crashing influences how they perceive an automobile collision and reflect upon it as time has passed. To measure this, the schemas of participants were measured. Most of the participants described their general ideas of automobiles crashing typically at high speeds. As a result, when more time passed from when participants watched the car crash video in Experiment 1, it can reasonably be inferred that the participants relied more on their schemas of car crashes, which may explain the differences between the results of the 30-second condition and the 48-hour condition.

Experiment 3 was conducted to examine why the hypothesis in Experiment 1 was not supported, and to further explore the relationship between an individual's visuospatial sketchpad capability and memory in relation to leading questions. The objectives of Experiment 3 were to replicate the Loftus and Palmer (1974) paradigm more accurately since it was not replicated in Experiment 1, and to use another method to test participants' visuospatial sketchpad capabilities more accurately. Unlike Experiment 1, the results of Experiment 3 did replicate those from Loftus and Palmer (1974). However, there was not a significant relationship between the Corsi block test performance and one's susceptibility to leading questions. Following the results of the three studies, one can reasonably assume that there is not a significant relationship between one's visuospatial sketchpad capabilities, as measured by the mental rotation task or the Corsi block test, and susceptibility to leading questions measured by the Loftus and Palmer paradigm.

Limitations

There were limitations in these studies that need to be considered. The sample size is rather small due to the restrictions on participant availability and could be considered a convenience sample because participants only included those who were readily available (i.e. General Psychology students). As a result, the findings cannot be generalized to the population as a whole. Future researchers will want to include a larger sample that includes more diversity. Additionally, several data points were eliminated from the study because participants failed to properly indicate speed in miles per hour for the question regarding how fast the cars were traveling. In other words, the participants would answer the question with "fast" or "very fast" instead of indicating a speed in miles per hour. In addition, in Experiment 1, there were two options on the mental rotation test ("a" for same and "b" for different). Several participants chose one answer ("a") for every answer. These were not excluded from the study, but suspicions could be raised on whether or not these participants took the study seriously. According to Yuille et al. (2010), more research must be conducted in order to assess the accuracy of laboratory eyewitness studies as opposed to field studies. In other words, since the participants were in a laboratory setting, the participants might have behaved differently in the laboratory setting than if they had experienced a real automobile collision. In addition,

the laboratory setting could have affected the quality of the sound of the video. In other words, the sound quality of the video (older video) did not properly represent what would happen in an actual automobile collision that participants would witness today.

Despite these limitations, I did use two different methods to collect data: online and in person. Along with this, I also used two different tests to assess the participants' visuospatial sketchpad capabilities such as the mental rotation task and the Corsi block test. Although Experiment 1 and Experiment 3 did not support the hypothesis that individuals with higher-functioning visuospatial skills are less likely to be affected by leading questions, there are some future directions for this topic of research. It seems as though visuospatial sketchpad capabilities do not affect one's susceptibility to leading questions. However, there might be other factors in play when it comes to one's sensitivity to leading questions. As a result, researchers may need to use different types of stimuli to assess memory. Overall, the results of this study add valuable information to previous literature on memory. Specifically, a novel contribution of this work is a focus on the effect of visuospatial capabilities on short-term memory, which has been given limited attention in the literature to date. Therefore, given the findings of the current study more research on this topic and the connection between visuospatial capabilities and memory is warranted.

References

Atkinson, R., & Shiffrin, R. (1968). Human memory: A proposed system and its control processes. In K.W. Spence & J.T. Spence (Eds.), *The Psychology of Learning and Motivation*, (pp. 89-195). New York: Academic Press.

Baddeley, A. (1996). Exploring the central executive. *The Quarterly Journal of Experimental Psychology Section A, 49*(1), 5-28.

Baddeley, A. (1999). *Essentials of Human Memory*. Hove: Psychology Press.

Baddeley, A. (2000). The magic number and the episodic buffer. *Behavioral and Brain Sciences, 24*, 117-118.

Baddeley, A., Grant, S., Wright, E., & Thompson, N. (1973). Imagery and visual working memory. In P.M.A Rabbitt & S. Dornic (Eds.), *Attention and performance* (pp. 205 217). London: Academic Press.

Baddeley, A. & Hitch, G. (1974). Working memory. *Psychology of Learning and Motivation, 8*, 47-89. https://doi.org/10.1016/S0079-7421(08)60452-1

Baenninger, M., & Newcombe, N.S. (1989). The role of experience in spatial test performance: A meta-analysis. *Sex Roles, 20*, 327-344.

Bartlett, F. C. (1932). Remembering: A study in experimental and social psychology. *British Journal of Educational Psychology, 3*(2), 187-192.

Corsi, P. M. (1972). Human memory and the medial temporal region of the brain. Doctoral Thesis at McGill University (Canada).

Daneman, M., & Carpenter, P.A. (1980). Individual differences in working memory and reading. *Journal of Verbal Learning and Verbal Behavior, 19*, 450-466.

De Brigard, F. (2014). Is memory for remembering? Recollection as a form of episodic hypothetical thinking. *Synthese, 191*(2), 155-185.

Engle, R.W., & Oransky, N. (1999). Multi-store versus dynamic models of temporary storage in memory. In R.J. Sternberg (Ed.), *The Nature of Cognition* (pp. 515-555). Cambridge, MA: MIT Press.

Gallo, D. A., Roberts, M. J., & Seamon, J. G. (1997). Remembering words not presented in lists:Can we avoid creating false memories? *Psychonomic Bulletin & Review, 4*, 271–276. https://doi.org/10.3758/BF03209405

Hastie, R., Landsman, R., & Loftus, E. F. (1978). Eyewitness testimony: The dangers of guessing. *Jurimetrics Journal, 29*, 1-8.

Kessels, R., Van Zandvoort, M., Postma, A., Kappelle, L., & De Haan, E.. (2000). The Corsi block-tapping task: Standardization and normative data. *Applied Neuropsychology, 7*(4), 252-258.

Laney, C., & Loftus, E. F. (2008). Emotional content of true and false memories. *Memory, 16*(5), 500-516.

Loftus, E.F. (1977). Shifting human color memory. *Memory and Cognition, 5*, 696-699. https://doi.org/10.3758/bf03197418

Loftus, E. F., & Palmer, J. C. (1974). Reconstruction of automobile destruction: An example of the interaction between language and memory. *Journal of Verbal Learning and Verbal Behavior, 13*(5), 585-589.

Loftus, E. F., Loftus, G. R., & Messo, J. (1987). Some facts about "weapon focus." *Law and Human Behavior, 11*(1), 55. https://doi.org/10.1007/BF01044839

Matlin, M. (2005). *Cognition* (pp. 43-290). Hoboken, NJ: John Wiley & Sons.

Markman, A.B. (1999). *Knowledge Representation*. Mahwah, NJ: Erlbaum.

McClelland, J. L. (2011). Memory as a constructive process: The parallel-distributed processing approach. *The Memory Process: Neuroscientific and Humanistic Perspectives, 129*, 151.

Mullet, H. G., & Marsh, E. J. (2015). Correcting false memories: Errors must be noticed and replaced.

Memory & cognition, 44(3), 403-412. https://doi.org/10.3758/s13421-015-0571-x

Nakamura, G. V (1994). Scene schemata in memory for spatial relations. *American Journal of Psychology 7*(4), 481-497. https://doi.org/10.2307/1422996

Schacter, D. L. (1999). The seven sins of memory: Insights from psychology and cognitive neuroscience. *American psychologist, 54*(3), 182. https://doi.org/10.1037//0003-066X.54.3.182

Schacter, D. L. (2012). Adaptive constructive processes and the future of memory. *American Psychologist, 67*(8), 603. https://doi.org/10.1037/a0029869

Shaw, J., & Porter, S. (2015). Constructing rich false memories of committing crime. *Psychological Science, 26*(3), 291-301.

Shepard, R. N., & Metzler, J. (1971). Mental rotation of three-dimensional objects. *Science,171*(3972), 701-703.

Smith, E.E., & Jonides, J. (1997). Working memory: A view from neuroimaging. *Cognitive Psychology, 33,* 5-42.

Wright, R., Thompson, W.L., Ganis, G., Newcombe, N.S., & Kosslyn, S.M. (2008). Training generalized spatial skills. *Psychonomic Bulletin & Review, 15*(4), 763-71. https://doi.org/10.3758/PBR.15.4.763

Yuille, J., Ternes, M., & Cooper, B. (2010). Expert testimony on laboratory witnesses. *Journal of Forensic Psychology Practice, 10*(3), 238-251. https://doi.org/10.1080/15228930903550590

Exploring the impact of information and need for cognition on attitude differences

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Abstract – Use of online platforms as a primary source for information has gained popularity within the last decade. With the rise of internet use, social networking sites (SNS) have become widely used as common resources for news consumption. One type of news often shared through SNS, especially in recent years, is information regarding law enforcement. Due to conflicting perceptions regarding law enforcement and the prevalence of this topic discussed in the media, the role information overload plays in attitude towards the news content should be explored. The current study examined the effects of information load and need for cognition on attitudes towards law enforcement through self-created vignettes displayed as social media posts and online articles. A total of 106 participants completed a series of surveys examining their need for cognition as well as attitudes towards police legitimacy before and after reading positive information about local law enforcement. Results from a multiple regression analysis indicate that the need for cognition did not predict attitudes toward law enforcement, but high quantities of information predicted more negative attitudes toward law enforcement. Implications and future research directions are included.

Keywords: Information load, need for cognition, social media, social networking sites

Social media has expanded astronomically in recent decades and currently prevails as one of the primary information sources. The amount of time spent on social media platforms by the population only continues to grow, with the average user spending approximately 145 minutes on social media per day, as of 2020 (Tankovska, 2021). Specifically, the daily time spent on social media by individuals in the United States was 2 hours and 3 minutes. Additionally, recent trends show social media as a predominant resource for sharing and consuming news. About 68% of American adults receive at least some of their news through social media (Shearer & Matsa, 2018).

Large amounts of news consumption from social media platforms have the potential to cause complications for some readers. For example, users may experience incidental news consumption (Boczkowski et al., 2017) and encounter information they did not intend to read and did not actively search for. Based on algorithms used on social media cites, news-related information may automatically appear within one's media platform, and readers may scan through this type of incidental information numerous times throughout a day, while not spending much time interpreting and processing the information (Boczkowski et al., 2017). With an excess of news being available to users on various platforms, this type of incidental news consumption can lead viewers to potentially experience information overload (Pentina & Tarafdar, 2014).

The Impact of Low vs. High Quantities of Information (Information Overload)

Information overload can generally be described as a state of affairs where there is too much information available (Bawden & Robinson, 2009) and can be operationalized as "a situation of too much news arriving in too many different formats" (Pentina & Tarafdar, 2014, p. 212). The hindrance of too much information has been well documented in past literature, even in the context of social media, which is applicable to the present study (see Fu et al., 2020). Information overload may lead to adverse effects including diminished decision-making quality, confusion, and frustration (Hwang & Lin, 1999; Jacoby et al., 1974). This overload of information may come in the context of multiple sources with diverse or repetitive information being available simultaneously or a single source with extensive information. Previous

literature suggests that there is increased processing difficulty in sources with lengthier information as it requires a greater amount of processing resources (Kruglanski & Thompson, 1999; Pierro et al., 2005). Thus, the higher demands of cognitive processing with higher quantities of information can be more taxing on readers compared to lower quantities (Kruglanski et al., 2006).

Research additionally suggests that the strength of attitude change can differ for higher versus lower amounts of information. For example, Pierro et al. (2005) found consistent support for prior findings that higher information (i.e., more complex cognitive processing) leads to an increased persuasive impact when there is high processing motivation compared to low motivation. However, less information (i.e., easier processing) leads to an increased persuasive impact under low processing motivation only. Thus, those with high personal involvement with presented issues are more likely to be persuaded by higher information and those with low personal involvement with presented issues are more likely to be persuaded by less information. Furthermore, higher informational stimuli coupled with an individual's high personal involvement with presented issues is associated with significantly enhanced attitude persistence and its connection to behavioral intentions as well as behavior that is consistent with held attitudes (Pierro et al., 2011). This research provides great insight on the differing effects that higher quantities and lower quantities of information pose on attitudes.

Need for Cognition

Similar to personality differences, individuals may differ in their preference for how they make sense of the world (Cohen et al., 1955). Cohen et al. first described the need for cognition (NFC) as the tendency to organize the external stimulus in a meaningful way to make sense of the environment. For example, individuals with a high NFC preferred more structured and concrete stories over ambiguous stories. Individuals are able to enjoy the story more depending on the amount of information the individual requires as well as how they are able to structure the story. Cacioppo and Petty (1982) developed a scale based on the construct of NFC which expanded on Cohen et al.'s study. The NFC measures an individual's trait in the tendency to enjoy thinking and intrinsic motivation to undertake mentally challenging tasks. Individuals low in NFC show varying degrees of engagement in information processing activity. As can be expected, individuals high in NFC are more likely to gather information, seek for a wide range of complex social issues, and form opinions (Cacioppo et al., 1996). In addition, due to intrinsic pleasure in taking cognitively taxing challenges, individuals in high cognitive need are

motivated to process higher levels of information. An additional study also showed that individuals high in NFC are prone to show positive attitudes after persuasive messages and maintain the attitude over time (Haugtvedt & Petty, 1992).

If individuals have varying degrees of threshold (i.e., differing levels in need for cognition) before experiencing cognitive fatigue, and if preference towards tasks is dependent on the amount of cognitive complexity in tasks, it is possible for individuals to form a different attitude after reviewing varying amounts of information about a social issue. Unlike unfamiliar issues, individuals often have pre-formed opinions about social issues (e.g., social justice). On one hand, when individuals react to already familiar issues, the impact of NFC may be reduced such that there may not be a difference between individuals with high or low NFC. On the other hand, if NFC is an individual trait that motivates individuals to consistently seek active cognitive processing and a tendency to be persuaded only after more effortful review of information, individuals high and low in NFC may show a significant difference in attitude after reviewing persuasive messages.

Current Study

Recent studies have concluded that, in general, social media users are not strongly influenced by the discussions they see surrounding controversial topics on social media; therefore, they do not allow the information they view that does not align with their pre-existing beliefs to impact their already formed attitudes regarding the topic (Workman, 2018). Rather, this commentary may act as a confirmation of their already held beliefs. In other words, Workman (2018) found that discussions held on social media over a controversial topic made no statistical difference in the sentiment of the social media users. This may be due to additional cognitive strain when attempting to process information that is dissimilar to one's existing beliefs, causing users to selectively read information in order to diminish the effects of information overload. While positive results have been shown through law enforcements' use of social media, such as highlighting the social benefits and positive work performed by the law, the area remains largely unexplored. Specifically, little has been done to examine the role of information load on perceptions of an organization. However, if individuals are increasingly exposed to only like-minded information sources, it is possible that the society may become more fragmented and polarized into two extreme positions.

To test the role of information load on perceptions of an organization, the current study manipulates quantities of information to examine the

relationship between the number of passages and the attitudinal effects surrounding perceptions of law enforcement. Information regarding law enforcement officers is a controversial topic that is emphasized and sensationalized across media platforms. Although previous literature has documented that citizens generally hold positive perceptions of law enforcement (Simpson, 2017), other literature suggests that trust in law enforcement is low and citizens perceive police to be unfair (Callanan & Rosenberger, 2011; Evans & Williams, 2017). Due to the known conflicting perceptions regarding law enforcement among citizens and the prevalence of this topic within the media, attitude towards law enforcement officers served as the topic for news information within the present research study.

It is easy to experience information overload through social networking sites (SNS), and its impact can create fatigue, irritation, or an emotional response to opposing ideas. In addition, the use of social media can fuel information overload by incessant barrage of news content. If one considers people as news consumers, this process of consumption could be described as "information overload through socially-mediated information selection and organization" (Pentina & Tarafdar, 2014, p. 212). Holton and Chyi (2012) argued that readers feel information overload more frequently by reading on social media, such as Facebook, compared to getting news through television and their phones. However, within the last decade, it has become much easier to access news through phones. Traditional theory on information overload states the consequences of this phenomenon, such as experiencing information fatigue, where the individual is simply tired of receiving and processing information (Oppenheim, 1997), and cognitive strain, characterized by excessive and ineffective attempts to analyze all of the information a consumer is presented with (Malhotra et al., 1982). Unlike processing information by in-person discussion, when readers process news through their social media sites, comments from other media users can form additional ideas and impact the manner in which they process the information they are consuming. Applying these characteristics of information processing to the context of online news consumption, the prevalence of information overload can be attributed to the sheer number and variety of news sources and the limited time available to process them (Pollar, 2003). People may not be accustomed to processing and making sense of the influx of information, especially with the news articles or headlines that readers 'stumble upon' (Boczkowski et al., 2017) rather than discovering through deliberate search and retrieval of the information. If readers are overwhelmed by the amount of information given to them, they may rely more on speedy cognitive processing; for example, they may solely rely on information that conforms to their current beliefs. When the news information conforms to their existing beliefs, they will not experience much conflict between their beliefs and what they are reading on SNS. On the other hand, if readers are processing information they are in opposition to, they may experience cognitive conflict due to their pre-existing ideas opposing the information they are now being presented with.

Being exposed to the many facets of social media (e.g., likes, comment, shares, etc.) can have strong influences on the opinions of the social media user in some cases. Contrary to Workman's (2018) study cited previously, prior research has also shown a strong relationship between comments viewed regarding news articles and how readers perceive the opinion of the public (Lee, 2012), as well as the persuasive effects of negative comments presented on mock-up Facebook pages (Winter et al., 2015). Furthermore, research has shown that the attitudes of readers towards the topic of a news article, as well as the valence of their thoughts, are directly affected by the valence of the comments they are reading (Winter, 2019). This demonstrates that the news and comments made regarding an initial media post can heavily influence the opinion and thoughts of the reader. Due to differing findings being discovered regarding the influence of controversial news on social media users, our study aims to also investigate how different conditions affect the attitude of the reader. Based on previous research, the goal of the present study is to expand on the idea of social media and explore the impact of information overload on attitude formation. The current study manipulated types of online articles and social media posts with positive information about local law enforcement, along with corresponding comments, to explore whether the quantities of information would influence the attitudes toward legitimacy of law enforcement officers. In addition, individuals' need for cognition was expected to influence the attitudes toward legitimacy of law enforcement after reviewing positive information. The hypotheses of the present study are as follows.

H1: Individuals with high levels of need for cognition will display more positive attitudes toward legitimacy of law enforcement after reading positive passages about law enforcement.

H2: Individuals reviewing high quantities of positive information will display more positive attitudes toward legitimacy of law enforcement.

Method

Participants

The current study examined the effects of the quantities of information and need for cognition on attitudes toward law enforcement. We created a series of messages that represent posts found in a diverse set of online media platforms (e.g., Facebook, Twitter, online newspaper articles, etc.). All messages described a decline in crime rates in a community. A total of 106 participants partook in this study. Our sample included 38 women between the ages of 23 and 66 (M = 32.95, SD = 10.45) and 68 men between the ages of 18 and 67 (M = 35.03, SD = 10.65). The majority of the participants were Caucasian (79.2%), followed by Black (8.5%), and Asian (5.7%). The majority of participants held Master's degrees (64.2%), followed by Doctorate degrees (17.9%), and Bachelor's degrees (9.4%). Participants were recruited using an online survey platform (i.e., Amazon's Mechanical Turk) and each participant was paid $0.25 after completing the study. Participants received one of two conditions — low quantities of information or high quantities of information. In the low quantity of information condition, participants read two messages whereas participants in the high quantity of information condition read six messages. All APA ethical guidelines were strictly followed during the data collection process.

Measures and Design

Demographic Questions

Participants responded to a series of basic demographic questions (e.g., age, gender, ethnicity), along with additional police-related demographic information traditionally related to law enforcement attitudes (Reynolds et al., 2018). Participants were asked to indicate if they have served as a law enforcement officer in the past (yes-no), if they have any family or friends who are law enforcement officers (yes-no), and if they have previously been arrested (yes-no). Participants were also asked to indicate the way(s) they typically consume media.

Variables

News and Media Stimulus

To explore differences in the attitudes towards law enforcement based on information load, participants were randomly assigned to one of two conditions from the MTurk dashboard: two media vignettes (i.e., low information condition), or six media vignettes (i.e., high information condition). A series of news/media articles were constructed for the study to mimic typical online media consumption, including SNS (e.g., Twitter, Facebook, and Instagram posts), as well as online news

articles. SNS posts also included likes, shares, and following comments in agreement to the original post. Participants in the high information condition received six media articles (three social media posts and three news articles) outlining positive law enforcement work whereas those in the low information condition received only two prompts (one social media post and one online news article) outlining positive law enforcement work. To ensure participants spent time viewing each post, a pre-set timer was applied during study manipulation. Participants were required to remain on the page for an allotted amount of time (1 minute 15 seconds per each news article vs. 30 seconds per each social media post). This time was determined based on the average time spent to read each type of story in a pilot test.

Need for Cognition Scale (NFC)

Cacioppo and Petty (1982) developed a 34-item scale, but the current study utilized a shortened 18-item version of this scale (Cacioppo, Petty, & Kao, 1984). Past studies show high internal consistencies, with Cronbach's alpha ranging between .80-.90 (Cacioppo et al., 1996).

Respondents were asked to indicate how well each of these statements described them using a 5-point Likert type scale (1 = not at all like me, 5 = a lot like me). An example item included: "I like to have the responsibility of handling a situation that requires a lot of thinking." Individuals who scored high in the NFC scale enjoy cognitive tasks and tend to seek more information for pleasure.

Attitudes Towards Police Legitimacy Scale (APLS)

The APLS (Reynolds et al., 2018) is a 34-item scale designed to measure everyday individuals' views toward police legitimacy on a 7-point Likert type scale (1 = strongly disagree, 7 = strongly agree). The scale is inclusive of multiple aspects contained within police legitimacy, such as trust and confidence, normative alignment, and community involvement of law enforcement. The APLS was utilized as the outcome variable of the current study.

Results

The mean score for attitudes toward law enforcement (APLS) was 2.56 (SD = 1.05), and Cronbach's alpha for the current sample was .97. The mean score for need for cognition (NFC) was 2.97 (SD = .29), and Cronbach's alpha for the current sample was .88. The study also included a 1-item question about political ideology (How would you describe your political ideology; 1 = very liberal, 6 = very conservative), which indicated a mean score of 4.25 (skewness = -1.00; kurtosis = .24).

To test the hypotheses, a multiple regression analysis was conducted utilizing NFC and information load as predictors and attitude toward law enforcement as criterion. The information load was dummy coded (low information = 0, high information = 1). As summarized in Table 1, the overall multiple regression model was significant, $R2 = .11$, $F (2, 103) = 6.11$, $p = .003$. NFC did not predict attitudes, $\beta = .02$, $t (1, 103) = .26$, $p = .80$, but the high information condition predicted a more negative attitude towards law enforcement, $\beta = -.32$, $t (1, 103) = -3.48$, $p = .001$. The mean attitude score for each of the two information conditions were as follows: MLow = 2.92, MHigh = 2.24.

Table 1.

Multiple regression using attitudes towards law enforcement as outcome

Predictor	b	Std. Error	95% CI	β	t	p
Need for cognition	.09	.33	[-.58, .75]	.02	.26	.80
Information quantities	-.68	.20	[-1.07, -.29]	-.32	-3.48	.001
Constant	3.34					

$R^2 = .11$

F-ratio = 6.11, $p < .05$

N = 105

Discussion

The current study sought to explore the effects of information load on perceptions of an organization by asking participants about their attitudes towards law enforcement. First, we hypothesized that individuals with high levels of need for cognition would display more positive attitudes towards legitimacy of law enforcement. This hypothesis was not supported; the need for cognition did not interact with information load, and therefore did not predict attitudes toward law enforcement. As one possible explanation, the failure to support this hypothesis may be due to cognitive dissonance, which is a psychological inconsistency among cognitions (Festinger, 1957). Participants may have experienced these inconsistencies when reading highly positive news regarding law enforcement, as the initial attitudes of the sample were negative. Holding these negative perceptions to begin with and subsequently reading high quantities of information displaying positive behaviors by law enforcement that did not align with

their pre-existing beliefs may have caused an inverse effect on their attitudes toward law enforcement.

Our second hypothesis was that after reviewing high quantities of positive information, individuals would display more positive attitudes toward legitimacy of law enforcement. This hypothesis was also not supported; the high quantities of information condition predicted a more negative attitude toward law enforcement. These findings indicate that participants formed more negative attitudes after reading a heavier load of positive information. We believe there are two factors that may have influenced this finding: the social movement occurring during data collection and the demographics of the participants. The collection of data for the present study took place only two months after the death of George Floyd, which occurred in May of 2020. This event led to a significant global uproar in the Black Lives Matter movement due to the spread of a viral video of law enforcement officers' role in the death of Floyd. This case of extreme police brutality might have impacted the overall impression of law enforcement for the participants in the study, allowing for a more negative attitude even after reading multiple positive stories regarding local law enforcement. Additionally, the demographics of our sample were highly skewed in terms of education and political ideology, indicating highly educated participants and initial negative attitudes toward law enforcement. Having to process high quantities of information that is in opposition to their pre-existing beliefs may have caused this effect due to cognitive dissonance, as discussed earlier.

Limitations and Future Directions

A primary limitation of the current study regards the skewness of the sample. The participants were highly educated and held a similar political ideology (i.e., more negative attitudes toward law enforcement). While it was not the researchers' intent to target such a skewed audience, this was an unanticipated limitation due to utilizing an online survey platform (i.e., Amazon's Mechanical Turk). As this sample was not representative of the entire population in terms of education levels and social views, future research should aim to reach a more diverse sample. Obtaining a sample with more varied individuals would lead to results with increased generalizability, which would translate better to larger populations. Additionally, a more systematic comparison between story formats (e.g., news articles vs Facebook posts) may prove beneficial in future research. Although the current study included likes, comments, and shares on the mock SNS posts created for the surveys, individuals consuming this information in reality would

see much more diverse comments and views, rather than all in support of one opinion.

Though the original research hypotheses were not supported in the direction that was expected, the present study was still able to provide significant findings for the effects of information load and need for cognition on attitudes towards law enforcement. Particularly, the current study found a negative impact of information overload on attitudes toward an organization when individuals are reading posts online that are potentially contradicting to their beliefs. To further understand how these variables are connected, future research is strongly encouraged. Furthermore, current findings expand on the existing literature discussing information overload. Implications from these findings show that it may be important to consume information in moderate or lower quantities as opposed to higher quantities. Trying to consume a higher load of information in a given time period may lead to more negative attitudes experienced by consumers. Future studies should examine the changes in attitudes in a more systematic comparison of information loads, as well as include more various framed information towards an organization (e.g., neutral and negative perspectives). Further research could prove beneficial in understanding how individuals perceive affective news and the influence it holds on their attitudes.

Conclusion

The present study was able to provide significant findings for the effects of information load and need for cognition on attitudes toward law enforcement. Due to the increasing amount of time that people spend online as well as social media serving as a prominent resource for sharing information and news consumption, it is important to test how an influx of information influences our attitudes. The possibility of experiencing information overload, cognitive fatigue, and cognitive dissonance are negative side effects that accompany the consumption of information in an online format. Our research shows that to prevent the experiences of information overload and cognitive dissonance, it may be beneficial to consume online news in lower quantities, rather than higher information conditions.

References

Aiello, L. M., Barrat, A., Schifanella, R., Cattuto, C., Markines, B., & Menczer, F. (2012). *Friendship prediction and homophily in social media.* ACM Transactions on the Web, 6(2), 1-33. https://doi.org/10.1145/2180861.2180866

Bawden, D., & Robinson, L. (2009). The dark side of information: Overload, anxiety and other paradoxes and pathologies. *Journal of Information Science, 35*(2), 180–191. https://doi.org/10.1177/0165551508095781

Boczkowski, P., Mitchelstein, E., & Matassi, M. (2017). Incidental news: How young people consume news on social media. *Proceedings of the 50th Hawaii International Conference on System Sciences.* 1785-1792. https://doi.org/10.24251/hicss.2017.217

Brown, J. J., & Reingen, P. H. (1987). Social ties and word-of-mouth referral behavior. *Journal of Consumer Research, 14*(3), 350-362. https://doi.org/10.1086/209118

Cacioppo, J., & Petty, R. (1982). The need for cognition. *Journal of Personality and Social Psychology, 42*(1), 116–131. https://doi.org/10.1037/0022-3514.42.1.116

Cacioppo, J. T., Petty, R. E., Feinstein, J. A., & Jarvis, W. B. G. (1996). Dispositional differences in cognitive motivation: The life and times of individuals varying in need for cognition. *Psychological Bulletin, 119*(2), 197-253. https://doi.org/10.1037/0033-2909.119.2.197

Cacioppo, J. T., Petty, R. E., & Kao, C. F. (1984). The efficient assessment of need for cognition. *Journal of Personality Assessment, 48*(3), 306-307. doi:10.1207/s15327752jpa4803_13

Callanan, V., & Rosenberger, J. (2011). Media and public perceptions of the police: Examining the impact of race and personal experience. *Policing & Society, 21*(2), 167–189. https://doi-org.ezproxy.fhsu.edu/10.1080/10439463.2010.540655

Evans, D. N., & Williams, C. L. (2017). Stop, question, and frisk in New York City: A study of public opinions. *Criminal Justice Policy Review, 28*(7), 687–709. https://doi-org./10.1177/0887403415610166

Festinger, L. (1957). A theory of cognitive dissonance. Stanford University Press.

Fu, S., Li, H., Liu, Y., Pirkkalainen, H., & Salo, M. (2020). Social media overload, exhaustion, and use discontinuance: Examining the effects of information overload, system feature overload, and social overload. I*nformation Processing & Management, 57*(6), 1-15. https://doi.org/10.1016/j.ipm.2020.102307

Gilpin, D. (2010). Organizational image construction in a fragmented online media environment. *Journal of Public Relations Research, 22*(3), 265-287. https://doi.org/ 10.1080/10627261003614393

Grimmelikhuijsen, S. G., & Meijer, A. J. (2015). Does Twitter increase perceived police legitimacy? *Public Administration Review, 75*(4), 598-607. https://doi.org/10.1111/puar.12378

Haugtvedt, C. P., & Petty, R. E. (1992). Personality and persuasion: Need for cognition moderates the persistence and resistance of attitude changes.

Journal of Personality and Social Psychology, 63(2), 308–319. https://doi.org/10.1037/0022-3514.63.2.308

Holton, A. E., & Chyi, H. I. (2012). News and the overloaded consumer: Factors influencing information overload among news consumers. *Cyberpsychology, Behavior, and Social Networking, 15*(11), 619–624. https://doi.org/10.1089/cyber.2011.0610

Hwang, M. I., & Lin, J. W. (1999). Information dimension, information overload and decision quality. *Journal of Information Science, 25*(3), 213–218. https://doi.org/10.1177/016555159902500305

Jacoby, J., Speller, D. E., & Kohn, C. A. (1974). Brand choice behavior as a function of information load. *Journal of Marketing Research, 11*(1), 63–69. https://doi-org.ezproxy.fhsu.edu/10.2307/3150994

Kossinets, G., & Watts, D. (2009). Origins of homophily in an evolving social network. *American Journal of Sociology, 115*(2), 405-450. https://doi.org/10.1086/599247

Kruglanski, A. W., Erbs, H.-P., Pierro, A., Mannetti, L., & Chun, W. Y. (2006). On parametric continuities in the world of binary either ors. *Psychological Inquiry, 17*(3), 153–165. https://doi.org/10.1207/s15327965pli1703_1

Kruglanski, A. W., & Thompson, E. P. (1999). Persuasion by a single route: A view from the unimodel. *Psychological Inquiry, 10*(2), 83–109. https://doi.org/10.1207/s15327965pl100201

Lee, E. (2012). That's not the way it is: How user-generated comments on the news affect perceived media bias. *Journal of Computer-Mediated Communication, 18*(1), 32-45. http://doi.org/10.1111/j.1083-6101.2012.01597.x

LexisNexis Risk Solutions. (2014). Survey of law enforcement personnel and their use of social media. Retrieved from http://www.lexisnexis.com/risk/downloads/whitepaper/2014-social-media-use-in-law-enforcement.pdf

Malhotra, N. K., Jain, A. K., & Lagakos, S. W. (1982). The information overload controversy: An alternative viewpoint. *The Journal of Marketing, 46*(2), 27–37. https://doi.org/10.1177/002224298204600204

Mcpherson, M., Smith-Lovin, L., & Cook, J. M. (2001). Birds of a feather: Homophily in social networks. *Annual Review of Sociology, 27*(1), 415-444. doi:10.1146/annurev.soc.27.1.415

Oppenheim, C. (1997). Managers' use and handling of information. *International Journal of Information Management, 17*(4), 239–248. https://doi.org/10.1016/S0268-4012(97)00002-9

Pentina, I., & Tarafdar, M. (2014). From "information" to "knowing": Exploring the role of social media in contemporary news consumption. *Computers in Human Behavior, 35*, 211-223. https://doi.org/10.1016/j.chb.2014.02.045

Pierro, A., Mannetti, L., Erb, H.-P., Spiegel, S., & Kruglanski, A. W. (2005). Informational length and order of presentation as determinants of persuasion. *Journal of Experimental Social Psychology, 41*(5), 458–469. https://doi.org/10.1016/j.jesp.2004.09.003

Pierro, A., Mannetti, L., Kruglanski, A. W., Klein, K., & Orehek, E. (2011). Persistence of attitude change and attitude-behavior correspondence based on extensive processing of source information. *European Journal of Social Psychology, 42*(1), 103–111. https://doi.org/10.1002/ejsp.853

Pollar, O. (2003). *Surviving Information Overload: How To Find, Filter, and Focus on What's Important.* USA: Crisp Learning.

President's Task Force on 21st Century Policing. (2015). *Final Report Of The President's Task Force On 21st Century Policing.* Washington, DC: Office of Community Oriented Policing Services. Retrieved from https://cops.usdoj.gov/pdf/taskforce/Taskforce_finalreport.pdf

Reynolds, J. J., Estrada-Reynolds, V., & Nunez, N. (2018). Development and validation of the Attitudes Towards Police Legitimacy Scale. *Law and Human Behavior, 42*(2), 119–134. https://doi.org/10.1037/lhb0000281

Shearer, E., & Matsa, K. E. (2018, September 10). *News Use Across Social Media Platforms.* Pew Research Center. https://www.journalism.org/2018/09/10/news-use-across-social-media-platforms-2018/

Simpson, R. (2017). The Police Officer Perception Project (POPP): An experimental evaluation of factors that impact perceptions of the police. *Journal of Experimental Criminology, 13*, 393–415. https://10.1007/s11292-017-9292-4

Snow, J., & Mann, M. (2013). Qualtrics survey software: Handbook for research professionals. Qualtrics Labs, Inc.

Tankovska, H. (2021, February 8). Daily time spent on social networking by internet users worldwide from 2012 to 2020. *Statista.* https://www.statista.com/statistics/433871/daily-social-media-usage-worldwide/.

Winter, S. (2019). Impression-motivated news consumption. *Journal of Media Psychology, 31*(4), 203-213. https://doi.org/10.1027/1864-1105/a000245

Winter, S., Brückner, C., & Krämer, N. C. (2015). They came, they liked, they commented: Social influence on Facebook news channels.

Cyberpsychology, Behavior, and Social Networking, 18(8), 431-436. https://doi.org/10.1089/cyber.2015.0005

Workman, M. (2018). An empirical study of social media exchanges about a controversial topic:Confirmation bias and participant characteristics. *The Journal of Social Media in Society, 7*(1), 381-400. Retrieved from

https://thejsms.org/index.php/TSMRI/article/view/355

Yoo, E., Rand, W., Eftekhar, M., & Rabinovich, E. (2016). Evaluating information diffusion speed and its determinants in social media networks during humanitarian crises. *Journal of Operations Management, 45*, 123-133. https://doi.org/10.1016/j.jom.2016.05.007

RACE PREDICTS PERCEPTIONS OF SIGNIFICANT LEARNING BEFORE AND DURING THE COVID-19 PANDEMIC

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Abstract – Our study examined college students' reports of significant learning experiences before and after the remote learning period associated with the COVID-19 pandemic. The extent to which race predicted different perceptions of experiences was also examined. Participants were 127 undergraduate students who completed an anonymous online survey. First, they reported the extent to which they had experienced each of Fink's (2013) six types of significant learning while in college. Next, they responded to items intended to measure the effect of COVID-19 on each type of learning in Fink's taxonomy. Results revealed that with respect to overall perceptions of significant learning in college, White students reported experiencing higher levels of all six types of significant learning compared to Black students. Furthermore, students overall reported a decrease in foundational knowledge, integration skills and caring about learning and an increase in learning about the self as a result of the remote learning period associated with the pandemic. Finally, when reflecting on the effects of COVID-19, Black students reported larger increases in the Human Dimension category (i.e., learning about themselves and others) than their White counterparts.

The quality of the college student learning experience can be assessed in various ways. Most often, there is an emphasis placed on the amount of academic knowledge gained by the student. This knowledge may indeed serve as one indicator of learning; however, many educators recognize that this form of learning is not enough (e.g., Amiran, 1989). Fink (2013) defines significant learning as that which creates lasting change and has an important impact on the learner's life. He proposes a Taxonomy of Significant Learning that encompasses both academic learning (i.e., Foundational Knowledge, Integration, and Application) and learning associated with personal growth (i.e., Human Dimension, Caring, and Learning How to Learn). In contrast to the well-known Bloom's Taxonomy (Bloom, 1965), Fink's Taxonomy (Fink, 2013) extends beyond the cognitive domain. It allows for students to be in more than one category of learning simultaneously, and the different learning categories work to influence each other. The more types of learning the student engages in, the more significant the learning experience (see Figure 1).

Since its original proposal in 2003, Fink's taxonomy (2013) has been used by educators to redesign both undergraduate and graduate level courses with the

Figure 1

Fink's Taxonomy of Significant Learning (Fink, 2013)
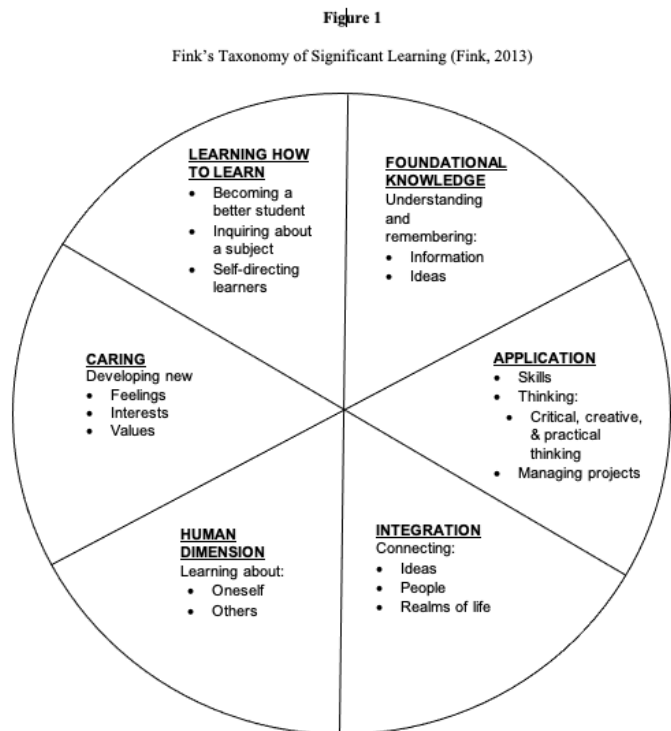
aim of increasing significant learning experiences (Krueger et al., 2011; Levine et al., 2008; Marrocco, 2014). Instructors from various disciplines have been successful at increasing significant learning outcomes associated with Foundational Knowledge, Application, Human Dimension, and Learning How to Learn through the implementation of modified course assignments (Levine et al., 2008). Additionally, other significant learning outcomes, such as those associated with the Caring and Integration dimensions, have been increased through activities such as reflective journaling and studying written work from other cultures (Fink, 2013).

Although research suggests that college courses can be designed to enhance other types of learning beyond Foundational Knowledge, many significant learning experiences occur outside of the classroom. An examination of twenty-two courses that effectively promote significant learning revealed that several of Fink's categories of learning take place via activities such as internships, fieldwork, service learning, and undergraduate research (Fink, 2013). Specifically, these types of "outside of the classroom" opportunities serve as the basis for the formation of significant learning experiences, which instructors may later supplement with classroom discussion or reflective assignments (Fink, 2013).

Previous research suggests that students who are members of racial and ethnic minorities encounter certain disadvantages that can negatively impact the quality of their college learning experiences, and thus their significant learning experiences. For instance, Sweat et al. (2013) found that minority students at a Midwestern university reported less exposure to certain high-impact practices than their White counterparts, including undergraduate research and internships. Furthermore, using data from 69,722 undergraduates from 108 institutions who participated in the spring 2015 American Health Association National College Health Assessment survey, Stevens et al. (2018) found that the percentage of students who reported experiencing discrimination was highest for Black students, at 15.6%. This was more than three times the percentage of White students, who reported the lowest rate of 4.6%. Of the total students who reported experiencing discrimination, 20% reported that the discrimination had negatively impacted their academic performance, and that negative impact was greater for minority students than for White students (Stevens et al., 2018). Moreover, minority students may also have to cope with feelings of marginalization while simultaneously experiencing feelings of tokenism. Indeed, tokenism itself may contribute to marginalization. This is particularly true for

students attending predominantly white institutions (Han et al., 2018).

In addition to working to improve the experiences of students of racial and ethnic minorities, many faculty members now find themselves tasked with the challenge of creating significant learning experiences for their online students, given the need for remote learning due to COVID-19. The literature reveals mixed results about whether the quality of online courses (as measured by exam grades and final grades) differs from that of face-to-face classes. Some studies find no significant difference between the two instructional formats (e.g., Neuhauser, 2002; Stack, 2015). Some studies find higher learning outcomes for students in traditional face-to-face classes in comparison to students in online courses (e.g., Coates et al., 2013; Hurlbut, 2018). Further, some studies find higher learning outcomes for online learning. A meta-analysis conducted by the U.S. Department of Education found that online students perform better than students in the face-to-face format (Means et al., 2009).

One of the major limitations plaguing previous research about the effectiveness of online courses is the presence of self-selection bias (e.g., Moten et al., 2013). Namely, in many of the studies that compare online courses to traditional face-to-face learning, students were not randomly distributed across the different instructional formats. This makes it difficult to determine whether the differences reported are a function of the instructional mode or a function of student characteristics. Even though self-selection may prove problematic for the interpretation of research results, it does appear to benefit students. Previous research indicates that students who willingly enroll in online courses perform better, display higher levels of satisfaction with the course, and have lower fail rates than students who do not have the option to self-select (Pathak et al., 2019; Racca & Robinson, 2016).

Many of the previous studies that have examined the quality of online learning experiences have done so using exam grades, quiz scores, grade point average, or final grades in the course (e.g., Coates et al., 2004; Hurlbut, 2018; Joyce et al. 2015; Neuhauser, 2002; Pathak, 2019; Racca & Robinson, 2016; Stack, 2015). Few studies have measured the quality of online learning, in comparison to the face-to-face format, by examining other aspects of the student learning experience beyond Foundational Knowledge (e.g., Guidera, 2003). Thus, other important learning outcomes that may be particularly relevant for the goal of providing significant learning opportunities for all students have not been adequately studied. Our study sought to address this gap

in the literature. Additionally, the shift to online learning, both in general and in response to the COVID-19 pandemic, places a new focus on how the online instructional format may impact the significant learning experiences of different students. We sought to investigate the significant learning experiences of college students before and after the transition to online delivery brought about by the COVID-19 pandemic. Specifically, we were interested in the reported prevalence of significant learning experiences, as defined by Fink (2013), during students' time in college before the pandemic as well as their perceptions of the extent to which the shift to remote instruction impacted the various types of significant learning. We also examined the extent to which race predicted different perceptions of these experiences.

Method

Participants

We recruited 127 undergraduate students who attended colleges that made a transition to remote learning during the Spring 2020 semester as a result of the COVID-19 pandemic. Students responded to the online questionnaire in May and June of 2020, immediately following the completion of the Spring 2020 semester. Students identified as White (n = 78), Black (n = 38), Latinx/Hispanic (n = 5), Native Hawaiian or Pacific Islander (n = 1), and two participants chose not to list their race/ethnicity. The sample included 30 male and 94 female students, with one student identifying as transgender and two choosing to not self-identify. Participant age ranged from 18 to 49 (M =30, SD = 4.7). Students reported income statuses of low (n = 31), middle (n = 71), upper middle (n = 23), and high (n = 2). A total of 49 participants indicated that they were first-generation college students (FGCS), while 78 indicated that they were non-FGCS. All participation was voluntary. Some students received course credit for participating.

Materials and Procedures

All participants completed an anonymous online survey. After consenting to participate, students began the survey by responding to 18 researcher-created items that asked them to rate the extent to which they believed they had experienced the six types of learning as classified in Fink's (2013) taxonomy. Specifically, participants responded to three items that corresponded to each one of the six taxa (see Appendix A), using a scale that was anchored at 1 (Strongly Disagree) and 5 (Strongly Agree). For example, one of the three items intended to measure Foundational Knowledge was "I developed an in-depth understanding of topics in my classes," to which participants responded on a scale of 1

(Strongly Disagree) to 5 (Strongly Agree). The three items for each learning type were separated by section. At the beginning of each section, there was a short notation informing participants of the type of learning experience that was being assessed. This notation also requested that participants think about their experiences in college thus far when rating the items. This was meant to encourage them to respond to the statements in a general sense, not just in reference to the most recent semester.

Following the completion of the 18 items, participants encountered a notation in the survey that indicated that they were going to be asked questions about the impact of the COVID-19 remote learning period on their learning experiences. This notation also requested that they think about their experiences before the pandemic in comparison to their experiences after the shift to remote instruction. Participants then responded to seven researcher-created items that were intended to measure the impact of COVID-19 on each type of learning in Fink's taxonomy (two items were used to assess the Human Dimension taxon). Specifically, students were asked to rate the extent to which COVID-19 impacted each type of learning by responding on a scale of 1 (very negative impact) to 5 (very positive impact). The midpoint of the scale (3) corresponded to no change in learning. Each scale consisted of statements that were specific to that particular item (see Appendix A). For instance, the question item "To what extent did COVID-19 impact how much you cared about the topics in your courses?" had an associated scale that was anchored at 1 (I cared significantly less about the topics in my courses during the COVID-19 remote learning period.) and 5 (I cared significantly more about the topics in my courses during the COVID-19 remote learning period).

Following the items that assessed the impact of COVID-19, participants responded to nine demographic items including age, ethnicity, gender, type of college/university, GPA, major, income status, and student classification (i.e., FGCS vs non-FGCS). Lastly, they viewed the debriefing page.

Results

We conducted between-groups ANOVAs to determine the differences in student reports of significant learning by race. The ANOVAs indicated that compared to Black students, White students reported experiencing higher levels of all six categories of significant learning prior to the COVID-19 pandemic. Specifically, they reported more foundational knowledge, $F(1,126) = 4.405$, p.=002, greater caring about learning, $F(1,126) = 5.078$, p<.001, more integration skills, $F(1,126) = 4.776$, p<.001, more application skills, $F(1,126) = 3.051$, p=.02, more learning about self & others, $F(1,126) = 3.29$, p=.01, and

greater learning about learning, F(1,126) = 3.86, p=.003 (see Figure 2). No significant differences in reports of learning emerged across the other race categories.

Figure 2

Student Reports of Significant Learning as a Function of Race/Ethnicity

Figure 3

Overall Perceptions of the Impact of COVID-19 Remote Instruction on Significant Learning

Note: Means sharing the subscript b did not differ from the midpoint (3) of the scale, reflecting no perceived change in learning. Means with the subscript a reflect a perceived decrease in learning, while the mean with the subscript c reflects a perceived increase in learning.

Figure 4

Race Differences in Perceptions of the Impact of COVID-19 Remote Instruction on Significant Learning

To examine student perceptions of the impact of COVID-19 remote instruction, we conducted a series of one-sample t-tests to compare mean impact scores for each type of learning to the midpoint of the scale (3) denoted as no change in learning. Results revealed that students reported a decrease in foundational knowledge, t(126) = -10.30, p<.001, a decrease in integration skills, t(126) = -4.43, p<.001, and a decrease in caring about learning, t(126) = -7.66, p<.001, as these means were significantly lower than the midpoint. Furthermore, they reported an increase in learning about the self, t(126) = 5.31, p<.001, as this mean was significantly higher than the midpoint. No change was reported for learning application skills, learning about learning and learning about others, as these means did not differ from the midpoint (see Figure 3). Finally, compared to their White counterparts, Black students were more likely to report that they experienced an increase in learning about themselves, t(114) = -3.28, p<.001 and others, t(114) = -1.954, p<.05, as a result of COVID-19 remote instruction (see Figure 4).
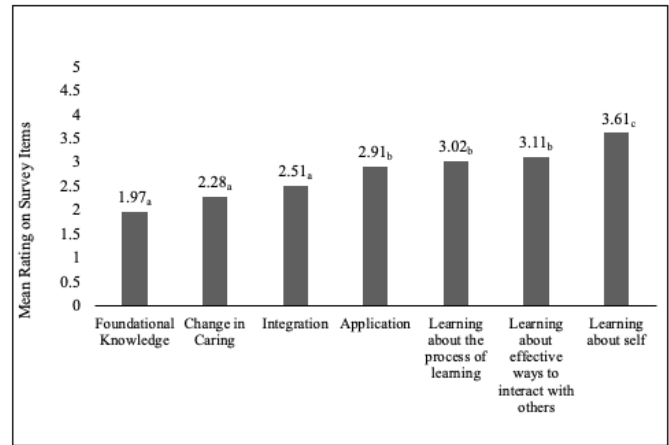
Exploratory analyses indicated no differences in significant learning as a function of major, age, gender, SES or FGCS status.

Discussion

Our findings suggest there is a need to increase minority students' access to the types of learning experiences that impact their lives in lasting and meaningful ways. Results indicated that with respect to their overall learning experiences in college, White students reported higher levels in all six of Fink's significant learning categories compared to students who identified as Black. This suggests that White students feel that they have gained more factual knowledge, experienced a greater degree of personal investment in their courses, made more connections between different people, ideas, and realms of life, gained more skills, learned more about themselves and others; and learned more about what it means to be an effective learner than Black students. In sum, our findings indicate that White students perceive that they are deriving more from their college learning experiences than black students, as it relates to significant learning.

One limitation of our study is that we had small numbers of participants in race categories other than Black and White, restricting our statistical power to make comparisons across these groups. Future research should recruit larger numbers of students from diverse racial

and ethnic groups to examine possible differences in significant learning experiences.

It is important to note that our findings reflect students' perceptions of their learning experiences while in college. This presents a second possible limitation, as perceptions do differ from actual experiences. That said, if Black students are reporting that they feel they have engaged in lower levels of significant learning than White students, then this may indicate that there are larger forces at work in the college learning environment that may be impacting these perceptions, namely systemic bias, or other forms of discrimination (e.g., Han et al., 2018; Stevens et al., 2019; Sweat et al., 2013). Additionally, student perceptions of school experiences can impact their academic motivation. For example, Dotterer & Lowe (2015) found that perceived discrimination among racial and ethnic minorities was associated with reduced academic motivation and less engagement at school. As such, the differences in perceptions of significant learning for Black students, compared to those of White students, provide useful information in helping to better understand their college experiences.

In addition to suggesting differences in student perceptions of significant learning based on race, the results of our study also indicate that remote instruction impacts Fink's six learning types in various ways. Specifically, results indicated that there was a decrease in Foundational Knowledge, Caring, and Integration during remote instruction, suggesting that students felt that they cared less, learned less, and made fewer connections between ideas, people, and realms of life during the COVID-19 remote learning period. There was also an increase in perceived learning about themselves. It is possible that this increase is due to the fact that the adversity faced by many during the COVID-19 remote learning period may have provided an opportunity for personal growth and greater self-awareness. This may have been particularly true for Black students, as they reported the highest increase in this category. Black students also reported the highest increase in learning about effective ways to interact with others. It is possible that in response to the difficulties posed by remote learning, Black students felt a greater need to seek out community as a coping resource.

The findings of our study contribute to an understanding of challenges and inequities that students of color may experience on college campuses, as well as provide insight as to areas in need of focus as institutions of higher education work to promote the goals of inclusion and equity. Furthermore, our findings may prove useful to faculty in helping them to adjust their instructional approaches to better maximize all types of significant learning whether teaching in person or through remote instruction.

References

Amiran, M. R. with the General College Program Assessment Committee, 1989. The GCP and Student Learning: A Report to the Campus. Fredonia: State University College of New York at Fredonia.

Bloom, B. S. (1956). *Taxonomy Of Educational Objectives. Vol. 1: Cognitive Domain.* New York: McKay, 20, 24.

Coates, D., Brad, H., Kane, J., & Michelle, V. (2004). "No significant distance" between face to face and online instruction: Evidence from principles of economics. *Economics of Education Review, 23*(5), 533–546. http://dx.doi.org/10.1016/j.econedurev.2004.02.002

Dotterer, A., & Lowe, K. (2015). Perceived discrimination, parenting, and academic adjustment among racial/ethnic minority adolescents. *Journal of Applied Developmental Psychology, 41*, 71-77. http://dx.doi.org.winthropuniversity.idm.oclc.org/10.1016/j.appdev.2015.08.003

Fink, D. L. (2013). *Creating Significant Learning Experiences: An Integrated Approach to Designing College Courses.* San Francisco, CA: Jossey-Bass.

Guidera, S. G. (2003). Perceptions of the Effectiveness of Online Instruction in Terms of the Seven Principles of Effective Undergraduate Education. *Journal of Educational Technology Systems, 32*(2–3), 139–178. https://doi.org/10.2190/K148-9EDA-B842-U3PA

Han, S., Dean, M., & Okoroji, C. (2018). Minority student experiences in a living and learning community on a predominantly white college campus. *Journal of Ethnographic & Qualitative Research, 13*(2).

Hurlbut, A. R. (2018). Online vs. traditional learning in teacher education: A comparison of student progress. *American Journal of Distance Education, 32*(4), 248–266. http://dx.doi.org/10.1080/08923647.2018.1509265

Joyce, T., Crockett, S., Jaeger, D. A., Altindag, O., & O'Connell, S. D. (2015). Does classroom time matter? *Economics of Education Review, 46*, 64-77.

Krueger, K. P., Russell, M. A., & Bischoff, J. (2011). A health policy course based on Fink's Taxonomy of Significant Learning. *American Journal of Pharmaceutical Education, 75*(1), 1–7. https://doi.org/10.5688/ajpe75114

Levine, L. E., Fallahi, C. R., Nicoll-Senft, J. M., Tessier, J. T., Watson, C. L., & Wood, R. M. (2008). Creating significant learning experiences across disciplines. *College Teaching, 56*(4), 247–254. Professional Development Collection. https://doi.org/10.3200/CTCH.56.4.247254

Marrocco, G. F. (2014). Fostering significant learning in graduate nursing education. *Journal of Nursing Education, 53*(3), 177–179. https://doi.org/10.3928/01484834-2014022302

Means, B., Toyama, Y., Murphy, R., Bakia, M., Jones, K., Office, E., & SRI International. (2009). Evaluation of evidence-based practices in online learning: A meta-analysis and review of online learning studies. US Department of Education.

Moten, J. Jr., Fitterer, A., Brazier, E., Leonard, J. & Brown, A. (2013). Examining online college cyber cheating methods and prevention measures. *The Electronic Journal of e-Learning, 11*, 139-146.

Neuhauser, C. (2002). Learning style and effectiveness of online and face-to-face instruction. *The American Journal of Distance Education, 16*(2), 99-113.

https://doi.org/10.1207/S15389286AJDE1602_4

Pathak, B. K. (2019). Study of eLearning outcomes: The role of late registration and self-selection. *E-Journal of Business Education and Scholarship of Teaching, 13*(1), 13–19.

Racca, J. C., & Robinson, S. N. (2016). One course may not fit all: Online accounting course offerings. *Journal of Higher Education Theory & Practice, 16*(2), 38–45.

Stack, S. (2015). Learning outcomes in an online vs traditional course. *International Journal for the Scholarship of Teaching and Learning, 9*(1).

Stevens, C., Liu, C. H., & Chen, J. A. (2018). Racial/ethnic disparities in US college students' experience: Discrimination as an impediment to academic performance. *Journal of American college health, 66*(7), 665-673.

Sweat, J., Jones, G., Han, S., & Wolfgram, S. M. (2013). How does high impact practice predict student engagement? A comparison of white and minority students. *International Journal for the Scholarship of Teaching and Learning, 7*(2).

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Appendix A

The following items are intended to measure the extent to which you feel you have <u>developed foundational knowledge</u> in your college classes. **When rating the following items, please think about your experience in college up to this point.**

    1.   I developed an in-depth understanding of concepts in my classes.

strongly agree   somewhat agree   neither agree nor disagree   somewhat disagree   strongly disagree

    2.   I developed knowledge that gave me basic info/ideas needed for <u>doing well in other classes.</u>

strongly agree   somewhat agree   neither agree nor disagree   somewhat disagree   strongly disagree

    3.   I developed knowledge that gave me basic info/ideas <u>about society and the world</u>.

strongly agree   somewhat agree   neither agree nor disagree   somewhat disagree   strongly disagree

The following items are intended to measure the extent to which you have experienced <u>a change in how much you cared about something.</u> When rating the following items, please think about your experience in college up to this point.

    4.   I developed a desire to be a better student.

strongly agree   somewhat agree   neither agree nor disagree   somewhat disagree   strongly disagree

    5.   I became excited about the topics in my courses.

strongly agree   somewhat agree neither agree nor disagree   somewhat disagree strongly disagree

    6.   I developed new interests and/or values.

strongly agree   somewhat agree   neither agree nor disagree   somewhat disagree strongly disagree

The following items are intended to measure the extent to which you feel you <u>developed integration skills.</u> When rating the following items, please think about your experience in college up to this point.

    7.   I developed an ability to see connections between different ideas.

strongly agree   somewhat agree   neither agree nor disagree   somewhat disagree strongly disagree

8.   I developed an ability to see connections between different types of people.

strongly agree   somewhat agree   neither agree nor disagree   somewhat disagree   strongly disagree

9.   I developed an ability to see connections between different realms of life (i.e., school & work, or school & leisure life).

strongly agree   somewhat agree   neither agree nor disagree   somewhat disagree   strongly disagree

The following items are intended to measure the extent to which you feel you have <u>learned to engage in a new behavior.</u> When rating the following items, please think about your experience in college up to this point.

10. I learned effective oral communication skills.

strongly agree   somewhat agree   neither agree nor disagree   somewhat disagree   strongly disagree

11. I learned problem-solving and decision-making skills.

strongly agree   somewhat agree   neither agree nor disagree   somewhat disagree   strongly disagree

12. I learned how to use technology effectively.

strongly agree   somewhat agree   neither agree nor disagree   somewhat disagree   strongly disagree

The following items are intended to measure the extent to which you feel you <u>learned something important about your own self and/or others.</u> When rating the following items, please think about your experience in college up to this point.

13. I acquired a better understanding of myself.

strongly agree   somewhat agree   neither agree nor disagree   somewhat disagree   strongly disagree

14. I acquired a better understanding of others.

strongly agree   somewhat agree   neither agree nor disagree   somewhat disagree   strongly disagree

15. I learned how to become an effective leader.

strongly agree   somewhat agree   neither agree nor disagree   somewhat disagree   strongly disagree

The following items are intended to measure the extent to which you feel you <u>have learned something about the process of learning</u>. When rating the following items, please think about your experience in college up to this point.

16. I learned how to be a better student.

strongly agree   somewhat agree   neither agree nor disagree   somewhat disagree   strongly disagree

17. I learned how to take charge of my own learning.

strongly agree   somewhat agree   neither agree nor disagree   somewhat disagree   strongly disagree

18. I learned how to use a method of inquiry, such as the scientific method.

strongly agree   somewhat agree   neither agree nor disagree   somewhat disagree   strongly disagree

Next, we would like you to think about how the switch to remote learning may have impacted your college learning experiences. When answering the following items, please think about your time in college AFTER the switch to remote learning because of COVID-19 and compare that to your experience before the pandemic.

19. To what extent did COVID-19 impact how much information you were able to learn from your courses this semester?
    1. My learning was **significantly reduced** during COVID-19.
    2. My learning was **reduced a little**.
    3. My learning was **not impacted** by COVID-19.
    4. My learning **increased a little**.
    5. My learning **significantly increased** during COVID-19.

20. To what extent did COVID-19 impact how much you cared about the topics in your courses this semester?
    1. I **cared significantly less** about the topics in my courses during COVID-19.
    2. I still **cared, but not as much.**
    3. COVID-19 **did not impact** how much I cared about the topics in my courses.
    4. I **cared more, but only by a little**.
    5. I **cared significantly more** about the topics in my courses during COVID-19.

21. To what extent did COVID-19 impact your ability to see connections between different perspectives, different types of people, and different realms of life?

1. My ability to see these connections was **significantly reduced** during COVID-19 remote learning.
2. My ability to see these connections was **reduced a little**.
3. My ability to see these connections was **not impacted** by COVID-19.
4. My ability to see these connections **increased a little**.
5. My ability to see these connections **significantly increased** during COVID-19 remote learning.

22. To what extent did COVID-19 impact how much you were able to learn about yourself this semester?
    1. I **learned significantly less** about myself during the COVID-19 remote learning period.
    2. I **learned less** about myself, **but only by a little**.
    3. There was **no change** in how much I learned about myself.
    4. I **learned a little more** about myself.
    5. I **learned significantly more** about myself during the COVID-19 remote learning period.

23. To what extent did COVID-19 impact how much you learned about effective ways to interact with others?
    1. I **learned significantly less** about effective ways to interact with others during the COVID-19 remote learning period.
    2. I **learned less** about interacting effectively with others, **but only by a little**.
    3. There was **no change** in how much I learned about interacting with others during the COVID-19 remote learning period.
    4. I **learned a little more** about how to interact effectively with others.
    5. I **learned significantly more** about effective ways to interact with others during the COVID-19 remote learning period.

24. To what extent did COVID-19 impact how much you learned about engaging in a new behavior (e.g., using new technology, problem-solving skills, etc.)?
    1. I **learned significantly less** about how to engage in a new behavior during the COVID-19 remote learning period.
    2. I **learned less** about engaging in a new behavior, **but only by a little**.
    3. There was **no change** in how much I learned about engaging in a new behavior during the COVID-19 remote learning period.
    4. I **learned a little more** about how to engage in a new behavior.
    5. I **learned significantly more** about how to engage in a new behavior during the COVID-19 remote learning period.

25. To what extent did COVID-19 impact how much you learned about the process of learning (i.e., how to be a better student, the best way to learn new material, etc.)?

    1. I **learned significantly less** about the process of learning during the COVID-19 remote learning period.

    2. I **learned less** about the process of learning, **but only by a little**.

    3. There was **no change** in how much I learned about the process of learning during the COVID-19 remote learning period.

    4. I **learned a little more** about the process of learning.

    5. I **learned significantly more** about the process of learning during the COVID-19 remote learning period.

POSITIVE SIBLING RELATIONSHIPS AND THEIR IMPACT ON COLLEGE ADJUSTMENT

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Abstract – Sibling relationship quality has been shown to positively influence major life transitions. However, minimal research has been conducted on how sibling relationships may impact adolescents as they enter and transition into college. Do siblings play a role in development as adolescents encounter new and challenging experiences such as college? This correlational study aimed to examine whether or not there was a relationship between sibling relationship quality and college adjustment among adolescents. A total of 58 adolescent college students who were new to college participated in this study. Participants answered questions regarding their relationships with their siblings (Fok et al., 2014) and their college adjustment levels (Shevlin et al., 2020). Although variables of sibling relationship quality were not correlated with variables of college adjustment, sibling closeness was correlated relationship quality. This study has implications for sibling relationships and college adjustment.

College adjustment is a new and challenging time in adolescent development. Adolescent researchers have identified that the period of adolescence has lengthened, and students in college are emerging into adulthood later than students who do not attend college (Arnett, 2000; Darlow et al., 2017). With any adjustment period, strong social support can reduce negative impacts during times of stress (Alvan et al., 1996). Sibling relationships are one such form of social support that impacts adolescent development for better or worse (Branje et al., 2004; Harper et al., 2016; Kretschmer & Pike, 2010). Studies show that positive sibling relationships can improve mental development and behaviors in late adolescence (Kretschmer & Pike, 2010; Kumar et al., 2015). However, little research has been conducted on how positive sibling relationships can improve mental development as adolescents adjust to college. Previous research on sibling relationships suggests that positive sibling support is linked to less externalizing behaviors in adolescence (Branje et al., 2004). It is also evident that positive sibling relationships can improve adolescents' self-esteem and self-efficacy and can decrease the risk of developing depression and anxiety (Kumar et al., 2015). Sibling relationships have a major impact on adolescent adjustment, and the quality of those relationships can greatly impact college students. Therefore, the purpose of this study was to examine the relationship between the quality of sibling relationships and college adjustment. The hypothesis of the study was that positive sibling relationships will be associated with fewer college adjustment issues among adolescents.

Sibling Relationships and College Adjustment

Sibling relationships are one of the longest-lasting relationships people have. Siblings play a role in many different stages of a person's life, including childhood, adolescence, and adulthood (Branje et al., 2004; Kumar et al., 2015). During adolescence, sibling relationships can impact an individual based on the quality of the relationship. This applies to many aspects of sibling relationships such as support, affection, and values. Supportive siblings can increase adolescent confidence (Kumar et al., 2015) and decrease adolescent problem behavior (Branje et al., 2004). Sibling affection predicts adolescent behavior outcomes and, more specifically, increases prosocial behaviors (Harper et al., 2016). Siblings' values can impact value formation in adolescence, however, there may not be a strong relationship between values and sibling relationship quality. For example, Kretschmer and Pike (2010) conducted a study with 368 adolescent participants and found that there was a strong link between sibling values and adolescent value formation. However, this study did not examine the impact that sibling relationships may have on other features of development, such as the

encountering of new experiences. All of these aspects of sibling relationships have the possibility of impacting transitions that adolescents experience in life. Although previous research has demonstrated that life transitions can improve sibling relationships and decrease sibling conflict (Jensen et al., 2018), current research has not put enough emphasis on how sibling relationships may impact transitions, such as college adjustment among adolescents.

Adjusting to college is a major life transition for adolescents who have never experienced college life before. There are multiple factors that impact college adjustment, including parent-adolescent relationships, mentor relationships, and social support. For example, adolescents with controlling parents exhibit more depression and anxiety and experience poorer academic and social adjustment (Darlow et al., 2017). In contrast, adolescents with positive relationships with a mentor experience better college adjustment. Lenz (2014) conducted a study in which they had 80 freshman college students fill out a questionnaire about their college adjustment concerning their relationship with a mentor. They found that there is a strong relationship between mentor relationships and college adjustment, however, the study did not examine how different relationships in adolescents' lives impact college adjustment. Adolescents with positive social support from friends, romantic partners, and family have improved college adjustment (Lee et al., 2020). However, some previous research has indicated that adolescents' relational health with their peers and community does not impact college adjustment (Lenz, 2014), and this is the case with adolescents' socio-economic status as well (Smrithi & Jeffrin, 2015). College continues to be a substantial transition for adolescents, and sibling relationships could play a role in this area of adolescents' lives.

The Present Study

Sibling relationships impact adolescent development (Kumar et al., 2015), and this impact could extend to college adjustment. Because siblings are so prominent in adolescents' lives, their impact on college adjustment should be considered. Positive sibling relationships could improve college adjustment in adolescents. Therefore, the present study tested the following hypothesis: Adolescents with positive sibling relationships will experience fewer college adjustment issues than those with negative sibling relationships. For the purpose of this study, adolescence was defined by individuals who were 18 years or older. Sibling relationship quality was assessed via a questionnaire, and college adjustment was assessed via a questionnaire.

Method

Participants

This study used convenience sampling from a population of new students at Concordia University, Nebraska. This study included both males and females who have at least one living sibling. It included individuals who have just transitioned into college in the past year (e.g., first or second semester freshmen or transfer students who have not experienced life on campus before at a college). The study excluded anyone who does not have any siblings, as well as anyone who no longer has a living sibling. The study also excluded individuals who have already been in college for a year or longer. Of the entire participant pool, there were 64 responses. Due to early attrition, six participants did not complete the survey, totaling the sample to 58 new college students. Some participants were compensated as part of extra credit for a general education course, while other participants volunteered to participate without receiving compensation. In response to a question on gender, 21 participants identified as male (36.2%) and 37 participants identified as female (63.8%). The average number of siblings that the participants indicated having was 2.52 siblings (SD = 1.84 siblings).

Measures

Brief Family Relationship Scale

In order to measure sibling relationship quality, participants filled out an adapted version of the Brief Family Relationship Scale (Fok et al., 2014). An example item asks participants to rate their agreement with the statement: "In our family we really get along well with each other." We adapted that to better serve the purpose of this study by stating, "In my relationship with my sibling(s), we really get along well with each other." This questionnaire includes three subscales with a different number of items in each scale. The scales examine factors that impact sibling relationships such as cohesion, expressiveness, and conflict. The cohesion subscale measures the amount of support and togetherness the participants feel between their siblings. The expressiveness subscale measures how open the participants feel they are or can be with their siblings. The conflict subscale measures the level of conflict between the participants and their sibling(s) (Fok et al., 2014). Participants used a 5-point Likert scale to answer the questions. The scale includes responses from 1 (strongly disagree) to 5 (strongly agree). Seven items were averaged into a mean score for the cohesion subscale (Cronbach α = .873), three items were averaged into a mean score for the expressiveness subscale (Cronbach α = .732), and six items were averaged into a

mean score for the conflict subscale (Cronbach α = .879). All of the items on the scale were also averaged into a mean total score. This questionnaire provides information for the quality of sibling relationships based on specific aspects of the relationship.

International Adjustment Disorder Questionnaire

In order to measure college adjustment, participants filled out an adapted version of International Adjustment Disorder Questionnaire (Shevlin et al., 2020). For example, a sample item asks participants to indicate whether or not they have experienced "…Financial problems (e.g., difficulty paying bills, being in debt)." To better align with college-related problems, it instead stated, "…Financial problems (e.g., difficulty paying tuition, being in debt)." Another example stated, "…School problems (e.g., difficulty with course work, deadline pressure, course difficulty, keeping up with assignments, problems with professors, group work)." This questionnaire includes three sections that each have a different number of items per section. In the first section, participants checked each box that applied to them. In the second and third sections, participants used a 5-point Likert scale to rate their problems relating to adjustment with the exception of item 16, where participants checked one box (yes or no). The ratings range from 0 (not at all) to 4 (extremely). The seven items that asked participants to rate their problems relating to adjustment were averaged into a mean score for the general adjustment scale (Cronbach α = .853). Three items relating to the participants' adjustment problems in the past month were averaged into a mean score for the adjustment (past month) scale (Cronbach α = .812). High scores signify more problems related to adjustment.

Demographics

Participants also were asked to answer some demographic information as a part of the study. They answered questions regarding their age, gender, the number of siblings they have, and the placement of their siblings.

Closeness

Participants were asked to rate the closeness they felt towards their siblings (1 = not close at all; 7 = extremely close). This was intended to measure how close they felt toward their siblings concerning affection. For participants who reported more than one sibling (n = 39, 67.24%), their closeness ratings for each of their siblings was averaged into a mean score for the closeness scale.

Procedure

Upon receiving the link to the survey, participants proceeded to a page where they indicated their age. If they were 19 years or older, they read an informed consent document. Because the age of majority in Nebraska is 19 years, if they were 18, they were sent to a page to provide their parent's contact information so the parent could give parental assent. If they were 17, they were redirected to the end of the survey. For those who agreed to participate or received parental assent and then agreed, they proceeded to a page to complete the BFRS (Fok et al., 2014) and the IADQ (Shevlin et al., 2020). Following the completion of the two questionnaires, the participants answered a demographic questionnaire. At the end of the study, participants were directed to a page where they indicated whether or not they received extra credit for their participation. If they did receive extra credit, they provided their class and professor's name. If they did not receive extra credit, they proceeded to the end of the study. Participants were then thanked and given contact information of the researcher if they had any questions.

Design and Data Analysis

Upon receiving the link to the survey, participants proceeded to a page where they indicated their age. If they were 19 years or older, they read an informed consent document. Because the age of majority in Nebraska is 19 years, if they were 18, they were sent to a page to provide their parent's contact information so the parent could give parental assent. If they were 17, they were redirected to the end of the survey. For those who agreed to participate or received parental assent and then agreed, they proceeded to a page to complete the BFRS (Fok et al., 2014) and the IADQ (Shevlin et al., 2020). Following the completion of the two questionnaires, the participants answered a demographic questionnaire. At the end of the study, participants were directed to a page where they indicated whether or not they received extra credit for their participation. If they did receive extra credit, they provided their class and professor's name. If they did not receive extra credit, they proceeded to the end of the study. Participants were then thanked and given contact information of the researcher if they had any questions.

Results

Pearson's correlations were conducted to examine the relationship among sibling relationship quality and college adjustment. As shown in Table 1, there was no association found between cohesion and general adjustment (p = .342) as well as between cohesion and adjustment in the past month (p = .354).

Table 1

Pearson's Correlations for Closeness, BFRS, and IADQ Scores

Variable	1	2	3	4	5	6
1. Closeness	—					
2. BFRS Cohesion	.781***	—				
3. BFRS Expressiveness	.456***	.520***	—			
4. BFRS Conflict	.415**	.544***	.272*	—		
5. IADQ Adjustment (Past Month)	-.022	-.132	-.139	-.002	—	
6. IADQ General Adjustment	-.017	-.136	-.272	-.183	.624***	—

Note. Closeness scores were computed as the average closeness scores across all siblings. Brief Family Relationship Scale (BFRS) included subscale scores of cohesion, expressiveness, and conflict, as well as the total score. International Adjustment Disorder Questionnaire (IADQ) included scores for general adjustment and adjustment over the past month. High scores on the BFRS indicate more cohesion and expressiveness, and less conflict. High scores on the IADQ indicate more problems relating to adjustment.

*p < .05. **p < .01. ***p < .001

There was also no correlation between expressiveness and general adjustment (p = .053) and expressiveness and adjustment in the past month (p = .332). Additionally, there was no association found between conflict and general adjustment (p = .200), and the same results were found between conflict and adjustment in the past month (p = .990). As also shown in Table 1, closeness was associated with cohesion (r = .781, p < .001), expressiveness (r = .456, p < .001), conflict (r = .415, p < .01), and the average sibling relationship scores (r = .693, p < .001). However, there was no association between closeness and adjustment scores (ps > .05). Therefore, the hypothesis that positive sibling relationships would be related to fewer college adjustment issues among adolescents was not supported. These results suggest that sibling relationship quality does not predict college adjustment scores.

Discussion

The purpose of this study was to examine the relationship between sibling relationship quality and college adjustment. Previous literature has found that adolescents who have positive relationships with mentors experience better college adjustment (Lenz, 2014), and this support, along with support from peers, friends, and family have an impact as well (Lee et al., 2020). However, the present study found that the positive relationships that adolescents have with their siblings does not affect how well they adjust to college. There was no significant difference in college adjustment for individuals who have positive relationships with their siblings and for those who do not. Thus, the present study did not support the hypothesis that adolescents who have positive relationships with their siblings will experience fewer college adjustment problems. The present study has implications for research on sibling relationships and college adjustment. This study also has sampling and methodological limitations and implications for future research.

Implications

Although the present study did not find support for the hypothesis, this study has implications for sibling relationships and college adjustment. This study examined how sibling relationships may impact adolescents as they adjust to college. Although the study found no difference in college adjustment based on sibling relationships, there was support for the measure used concerning sibling closeness. Previous research has found that affection from siblings can increase prosocial behaviors (Harper et al., 2016). While the present study may not support this directly, the results indicate that sibling closeness does predict more cohesion and expressiveness as well as less conflict. This increases the validity of the BFRS (Fok et al., 2014). However, these results do not indicate anything significant in relation to college adjustment.

Regarding college adjustment, the present study did not confirm the findings of previous research. For instance, Lee et al. (2020) found that adolescents who receive support from various people in their lives experience better college adjustment. However, the present study did not confirm this finding. Although the present study did not establish a relationship between sibling relationship quality and college adjustment, it is important to recognize the many factors that impact college adjustment. Previous research has found that adolescents with controlling parents experience poorer social and academic adjustment in college (Darlow et al., 2017), and adolescents who have positive mentor relationships experience better college adjustment (Lenz, 2014). This research focused on two relationships that adolescents have in their lives, and the present study focused on a third. Although the present study did not confirm that sibling relationships predict college adjustment, every relationship that an adolescent has can be important in some way.

Limitations and Future Research

There are several limitations to the present study including the sample population and the representativeness of the sample. However, these limitations can lead to future research on sibling relationship quality and college adjustment. One main limitation was the sample recruitment. First, the sample size was small. A post hoc power analysis estimating a small effect size, with an alpha level of .05, and a total sample size of 58 revealed that the estimated power level was .662 (G*Power version 3.1.9; Faul et al., 2007). These results suggest that the study was not adequately powered to detect significant results if they existed in the population. Furthermore, a larger sample size would have enabled us to test whether closeness scores moderated

the relationship between adjustment and sibling relationships. At minimum, we might have been able to control for participants' closeness scores in a multiple linear regression analysis. In addition, participants were selected from one university, so the sample may not accurately represent the general population. This study also excluded individuals who have no siblings, so it does not represent only children and how they adjust to college. Previous research has found that strong social support can buffer the negative impacts that occur during times of stress (Alvan et al., 1996), and the present study only focused on how sibling relationships can provide that social support which excludes only children and how they may receive that support in a different way. Future studies should look at the differences in college adjustment among adolescents at different universities, both public and private. In addition, future research should look at different forms of social support that adolescents, both with siblings and without, can receive to help them as they adjust to college.

Another limitation regarding the population includes the inability to control for how close people are to one sibling over another. Previous research has found that positive sibling relationships predict better behaviors in adolescence (Kretschmer & Pike, 2010) and also boost adolescent self-esteem and self-efficacy (Kumar et al., 2015). In recognizing these findings, it is important that all sibling relationships are examined separately to look for differences. This study did not consider that individuals may have varying levels of closeness with their siblings. For example, among participants who had only two siblings (n = 20), closeness ratings between Sibling 1 and Sibling 2 were not significantly correlated (Pearson's r = .020, p = .903, Spearman's rho = .141, p = .394). Future research should consider how sibling closeness may vary, and it should examine if there are differences among college adjustment when this factor is considered.

A limitation may also include the methodology of the study. This study was conducted only during the spring semester of the school year, so the data cannot be compared to the first semester. This limits the possibility of observing college adjustment in new students during their first full year of college. Future research should spread the study out over a longer period of time to gain comparisons of college adjustment from one semester to another. This may answer questions concerning college adjustment and how it may evolve over the school year. Also, the results of the present study may not truly reflect what college adjustment looks like concerning the quality of sibling relationships because the measure most commonly used was unavailable. This puts reliability and

validity of the measures in question, because the current scales used in this study were not adapted to college adjustment and sibling relationships. Rather, the IADQ was developed for life (not college) adjustment (Shevlin et al., 2020), and the BFRS was developed for family relationships and not specific to siblings (Fok et al., 2014). Previous research found a strong link between mentor relationships and college adjustment by using the Student Adaptation to College Questionnaire (Lenz, 2014). However, this measure was not accessible for use in the present study. Future studies should look at college adjustment using scales that better reflect what is being examined. Although there are limitations to this study, future research can focus on examining wider populations and various factors that may impact college adjustment.

Concluding Remarks

Although there are limitations to the present study, it directly examined how sibling relationships may impact college adjustment among adolescents. This study found no support for the correlation between sibling relationships and college adjustment. While the current study could not establish that sibling relationships impact college adjustment, the findings may provide insight for professors, counselors, and coaches about how adolescents may adjust differently based on their relationships with their siblings. In addition, the results from this study may increase awareness about the many factors that impact adolescents' adjustment to college.

References

Alvan, S. L. J., Belgrave, F. Z., & Zea, M. C. (1996). Stress, social support, and college adjustment among Latino students. *Cultural Diversity and Mental Health, 2*(3), 193–203. https://doi.org/10.1037/1099-9809.2.3.193

Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist, 55*(5), 469–480. https://doi.org/10.1037/0003-066X.55.5.469

Branje, S. J. T., van Lieshout, C. F. M., van Aken, M. A. G., & Haselager, G. J. T. (2004). Perceived support in sibling relationships and adolescent adjustment. *Journal of Child Psychology & Psychiatry, 45*(8), 1385–1396. https://doi.org/10.1111/j.1469-7610.2004.00332.x

Darlow, V., Norvilitis, J., & Schuetze, P. (2017). The relationship between helicopter parenting and adjustment to college. *Journal of Child & Family Studies, 26*(8), 2291–2298. https://doi.org/10.1007/s10826-017-0751-3

Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39*(2), 175-191. https://doi.org/10.3758/bf03193146

Fok, C. C. T., Allen, J., & Henry, D. (2014). The brief family relationship scale: A brief measure of the relationship dimension in family functioning. *Assessment, 21*(1), 67–72. https://doi.org/10.1177/1073191111425856

Harper, J. M., Padilla, W. L. M., & Jensen, A. C. (2016). Do siblings matter independent of both parents and friends? Sympathy as a mediator between sibling relationship quality and adolescent outcomes. *Journal of Research on Adolescence, 26*(1), 101–114. https://doi.org/10.1111/jora.12174

Kretschmer, T., & Pike, A. (2010). Associations between adolescent siblings' relationship quality and similarity and differences in values. *Journal of Family Psychology, 24*(4), 411–418. https://doi.org/10.1037/a0020060

Kumar, A., Thomas, S., & Deb, S. (2015). The dynamics of sibling relations in adolescent development: Understanding the protective and risk factors. *Indian Journal of Positive Psychology, 6*(4), 439–443. https://iahrw.org/product/the-dynamics-of-sibling-relations-in-adolescent-development-understanding-the-protective-and-risk-factors/

Lee, C.-Y. S., Goldstein, S. E., Dik, B. J., & Rodas, J. M. (2020). Sources of social support and gender in perceived stress and individual adjustment among Latina/o college-attending emerging adults. *Cultural Diversity & Ethnic Minority Psychology, 26*(1), 134–147. https://doi.org/10.1037/cdp0000279

Lenz, A. S. (2014). Mediating effects of relationships with mentors on college adjustment. *Journal of College Counseling, 17*(3), 195–207. https://doi.org/10.1002/j.2161-1882.2014.00057.x

Shevlin, M., Hyland, P., Ben-Ezra, M., Karatzias, T., Cloitre, M., Vallières, F., Bachem, R., & Maercker, A. (2020). Measuring ICD-11 adjustment disorder: The development and initial validation of the international adjustment disorder questionnaire. *Acta Psychiatrica Scandinavica, 141*(3), 265–274. https://doi.org/10.1111/acps.13126

Smrithi, S., & Jeffrin, M. (2015). Influence of socio-economic status and parenting style on academic accomplishment and adjustment among college students. *Indian Journal of Health and Wellbeing, 6*(10), 1019–1021.

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Right wing authoritarianism scale (rwa) functions differently among African Americans than among white Americans

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Abstract – *Objectives:* This study investigated the cross racial validity of the Right-Wing Authoritarianism Scale (RWA) in an African American sample. We theorize that the measure lacks full validity in African Americans due to race-based stigmatization and higher levels of religiosity. *Methods*: We conducted a preliminary test of our theory in a longitudinal community sample of Chicago area adults (n = 130, n = 57 African Americans, n = 73 White Americans, age 61-64 years, 64% female, 36% male). Subjects completed the RWA, a measure of political ideology, a measure of religiosity, and demographic controls. *Results*: An ANCOVA revealed mean level differences on the measure between racial groups that dissipated once religion was controlled for. A Very Simple Structure Analysis revealed preliminary evidence of a differing factor structure with a two-factor solution emerging in the African American subsample and a single factor solution emerging in the White American subsample. Finally, the RWA was marginally less predictive of ideology when scored on a single composite factor in the African American subsample than in the White American subsample. The RWA was significantly less predictive of ideology when scored on the two factors uncovered in the African American subsample. Conclusions: Our findings provide preliminary evidence that the RWA may not function as intended among African Americans.

Public significance statement: Authoritarianism is frequently measured with the RWA. Our study suggests this measure may not function as intended in African Americans.

Keywords: Right Wing Authoritarianism, race, measurement

Authoritarianism, defined as the extent to which individuals value deference to established authorities, show aggression towards outgroups, and venerate traditional values, has generated renewed interest in light of recent political events in the US and abroad (e.g., Taub, 2016). Yet after 7 decades of research on Right Wing Authoritarianism, measurement and definition of the concept remains contentious (e.g., Adorno et al., 1950; Perez and Hetherington, 2014; Henry, 2011).

Authoritarianism has been conceptualized as an individually varying predisposition towards intolerance. Altemeyer (1981) characterized authoritarianism as a socially learned disposition towards intolerant attitudes regarding conventionalism, aggression, and submission to authority. Altemeyer (1981) developed the Right-Wing Authoritarianism Scale (RWA) accordingly. Notwithstanding criticism (e.g., Mavor et al., 2011), the

RWA, scored on a single composite factor, reliably predicts many important social and political outcomes (e.g., Altemeyer, 1981). Moreover, it has been one of the most widely used measures of authoritarianism over the past three decades. The RWA entry in the recent Encyclopedia of Personality and Individual Differences (2017) states, "the RWA scale remains well suited for use in understanding the behavior, attitudes, and policy preferences of both the mass public and political elites." (Saunders and Ngo, 2017, p. 978).

Still, the RWA, like other measures of authoritarianism (e.g., Stenner, 2005), was developed and validated in North America with predominantly White samples. Thus, the RWA has a better foundation as a measure of authoritarianism in Whites rather than a measure of authoritarianism in general or as a measure of authoritarianism among minoritized populations. The

validity of the RWA among minoritized populations has been assumed but not directly investigated. Nonetheless, the measure is widely employed with populations of color (e.g., Dusso, 2017).

Given that convention and authority are central to authoritarianism, it is prima facie reasonable that White and minoritized populations would have differences in authoritarianism. Previous work has established that racial and ethnic minorities in the U.S. seem to have higher mean levels of authoritarianism compared to Whites (e.g., Henry, 2011) (More on this point below). Perez and Hetherington (2014) argued that this pattern on the widely used Child Rearing Scale is due to lack of validity in minority populations. Likewise, Henry (2011) found evidence that the measure's lack of cross racial validity was explained at least in part by stigmatization. Even still, to our knowledge, no recent study has investigated the validity of the RWA among African Americans.

Measures that adequately reflect individual variation in a psychological construct in one population may not adequately reflect the same variation in another population with different lived experiences (Church, 2001). Thus, the RWA might be a psychometrically sound instrument among Whites while lacking this status among African Americans. Race-based stigmatization and African American religiosity are two factors that might lead to such an outcome, as these two factors could impact the meaning and measurement of authoritarianism among African Americans.

Racial stigmatization is a form of normative threat (Stenner, 2005), or threat to the ingroup relative to an outgroup, and this form of threat is regularly experienced by marginalized groups due to their experience of marginalization. Hetherington and Weiler (2009) suggest that normative threat might increase the expression of authoritarianism. Thus, the RWA, which measures expressed authoritarianism, might be inflated for African Americans due to the influence of normative threat. African American responses to the RWA might capture both authoritarian tendencies and responses to normative threat, while no such normative threat effect would be present for Whites.

African Americans tend to be more religious than Whites (Hunt and Hunt, 2001), and the RWA fails to distinguish between authoritarianism as a personality adaptation and religiosity (e.g., Mavor et al., 2011). Moreover, there might be a dynamic relationship between religiosity and racial stigmatization as some African Americans are more religious as religion provides protection against stigmatization (Brega and Coleman, 1999). This could be a second factor leading to artificially inflated RWA scores among African Americans relative to Whites.

We hypothesize that due to stigmatization and religiosity, 1) African Americans will have a higher mean level RWA score, in comparison to Whites, even after controlling for known correlates of authoritarianism previously cited to explain racial variation in authoritarianism (e.g., Lipset, 1959). 2) The RWA will possess a different internal structure in Whites than in African Americans, as the two groups interpret items differently, yielding different patterns of association among items. 3) Due to the artificial inflation of RWA scores among African Americans, the RWA will have a weaker relationship, among African Americans in comparison to Whites, with other constructs in the nomological network of the RWA, such as political ideology).

Method

Participants

Participants were recruited for a longitudinal study investigating narrative identity development in late midlife adults. The sample was recruited through mailers and advertisements in the Chicago area. Participants were between 61– 64 years old when data for the current study was collected in 2015 and 2016. Study goals were to recruit a similar proportion of African Americans and Whites (n = 57 African American; n = 73 White, n = 130, 64% female, 36% male). This study only included respondents who identified as African American or White/Caucasian, thus, thirty participants from the larger study from which this project is drawn were not included in analyses. All subjects included in analyses had completed the RWA and measures of political ideology. Data collection was completed in accordance with the Northwestern University IRB (#00001801) and all subjects provided informed consent. With this sample size, given previously found effect sizes for relationships between study variables, the study is appropriately powered to detect relationships of moderate-large size 89% of the time and to assess internal structure with exploratory factor analysis techniques that are specifically tailored for small sample sizes (Nassiri, Lovik, Molenberghs, & Verbeke, 2018).

Materials

Right Wing Authoritarianism Scale (RWA)

The RWA (Altemeyer 1988) consists of 30 statements measuring authoritarianism as an individually varying predisposition towards intolerant attitudes. Item responses ranged from 1–9, with 1 indicating "Strongly disagree" and 9 indicating "Strongly

agree." A total score was generated by appropriately summing all items (α = .94).

Political Ideology

Participants rated their political ideology on a scale ranging from 1 "Very conservative" to 7 "Very liberal."

Income

Participants reported their income in $25,000 increments that were coded to range from "less than $25,000" to "more than $100,000."

Educational Attainment

Participants identified their level of educational attainment on a scale ranging from 1- "Less than high school" to 5- "Graduate work".

Religiosity

Participants rated a single item measure that asked, "How often do you attend church/ synagogue or other religious meetings?" The scale ranged from 1 "More than once a week" to 6 "Never."

Race/Ethnicity

Participants were asked to self-identify as "White/ Caucasian," "African American," "Hispanic/ Latino," "Interracial," or "Other."

Procedure

Participants in the longitudinal study were contacted by email and/or phone and invited to participate in the 2015/16 round of data collection. Participants were sent an email link to complete study questionnaires or were mailed a questionnaire packet. The order of questions was the same for each participant, and the link/packet included a number of questionnaires not discussed in this study. The order of questions was demographics, political orientation, religiosity, a number of intervening questionnaires, and then the RWA.

Results

Descriptive statistics for study variables are provided in Table 1.

Hypothesis 1 African Americans Will Have a Higher Mean Level RWA Score:

A one-way Analysis of Covariance (ANCOVA) controlling for education and income, supported the hypothesis, as African Americans had a higher RWA than White Americans, $F(1,124) = 7.12$, $p = .009$. When religiosity was added to the model, the effect of race decreased such that race was no longer a significant predictor of RWA, Race: $F(1,123) = .43$, $p = .513$, and religiosity, Religiosity: $F(1,123) = 20.15$, $p < .001$.

Hypothesis 2: Differences in Internal Structure

Recent work shows that multiple imputation (MI) is a superior method for handling missing data for exploratory factor analyses with smaller sample sizes, e.g., samples smaller than 200 (Lorenzo-Seva & Van Ginkel, 2016). We imputed the data using the fully conditional specification of Van Buuren (2007) using the MICE package in R (Buuren & Groothuis-Oudshoorn, 2011). We generated five imputed data sets of RWA items for the subsample of Whites and the subsample of African Americans using the MIFA package in R. We also used the MIFA package to compute the covariance matrices for each imputed dataset and for averaging the covariance matrices within each of the samples (Nassiri et al., 2018). We conducted EFA techniques on each of the averaged estimated covariance matrices.

We conducted Very Simple Structure analyses (VSS; Revelle & Rocklin, 1979) using the psych package in R (Revelle, 2017) on each averaged covariance matrix to determine the number of factors to extract. The maximum value of the VSS is taken as indicating the optimum factor solution for any particular data set. The VSS index tends to peak at the most interpretable number of factors. The VSS peaked at one factor for the sample of whites and at two factors for the sample of African Americans. We therefore conducted EFAs (using the minimum residual method and oblimin rotation) extracting one factor for the sample of Whites and two factors for the sample of African Americans. See results in Table 2. These results show that the structure of the RWA differed between Whites and African Americans.

Table 1. Descriptive statistics for study variables.

Sample/ Subsample	RWA	Income	Education	Religiosity (Church Attendance)	Political Ideology
Entire Sample	Mean: 114.41 SD: 41.40	Median: $75,000-$99,999	Median: "Bachelor's Degree"	Median: "A few times a year"	Median: "Somewhat liberal"
White Americans	Mean: 102.14 SD: 39.16	Median: $75,000-$99,999	Median: "Graduate work"	Median: "Once a year or less"	Median: "liberal"
African Americans	Mean: 129.80 SD: 39.21	Median: $50,000-$74,999	Median: "Bachelor's Degree"	Median: "A few times a month"	Median: "Somewhat liberal"

Table 1 Displays descriptive statistics for the composite sample as well as both racial subgroups. Note that the sample leans liberal, and high SES compared to U.S Whites and African Americans at large.

Table 2. EFA loadings			
Item	African American: Country and Authority	African American: Religion, Sexuality and Conformity	White American: RWA Composite Factor
Obedience to Authority	.68	-.01	.72
Trust Authorities	.57	.12	.62
Law and Order	.43	.09	.73
Moral Traditionalism	.38	.39	.75
Crack Down on Deviance	.65	.14	.76
Obedience in Children	.48	.25	.56
Rot Poisoning Country	.82	-.14	.81
Respect Flag	.77	-.08	.72
Laws Enforced Without Mercy	.80	-.12	.75
Adults Should Forget Rebellious Ideas	.62	.11	.50
Strongest Methods to Eliminate Troublemakers	.69	.01	.68
Authorities Generally Right	.49	-.10	.67
Key to the Good Life is Discipline	.48	.22	.66
Strong Leader to Crush Evil	.60	.06	.79
Physical Punishment	.29	.13	.69
Young People Protesting	.39	.24	.51
Attention to the Bible	.04	.48	.57
Traditional Family Structure	-.06	.30	.41
Premarital Sex	.03	.68	.51
Homosexuality	.08	.68	.61
Rights of Radicals	.38	.19	.63
One Right Way to Live	-.09	.71	.34
Censorship	.29	.36	.24
Atheism Moral	.22	.52	.66
Nothing Wrong Sins	-.03	.77	.50
Everyone Should Live According to Own Beliefs	-.11	.75	.25
Sexuality and Modesty Just Customs	-.01	.57	.62
Nudist Camps	.05	.66	.54
Protecting Protestors	.49	.13	.63
Teach Students to Challenge Authorities	.07	.35	.50

Table 2 displays EFA loadings on the two factors uncovered in the African American subsample, and the single composite factor uncovered in the White American subsample. Note how items surrounding country and authority map together and items surrounding religion, sexuality, and conformity map together for African Americans.

Post-hoc Analyses following Results of Hypothesis 2

The EFA results make interpretation of mean level comparisons between White and African Americans on the RWA difficult as they suggest a different factor structure, and therefore a different mean, is appropriate for Whites and African Americans. Given that hypothesis one used a single total score mean, we conducted two more ANCOVAs using means based on the two factors.

In the EFA results 12 items on the scale relating to religion, sexuality, and conformity, mapped together for African Americans, as did 18 items surrounding country and authority. Therefore, "Religion, Sexuality, and Conformity" and "Country and Authority" will be the terms utilized for factor 1 and factor 2.

ANCOVA results, controlling for income and education, indicated that African and White Americans did not differ on average for the 18 Country and Authority items, once religiosity was controlled for, Religiosity: $F(1,125) = 6.35$, p =.01, Race: $F(1,125) = .28$, p = .60. Racial variation did, though, persist after controlling for religiosity, on the 12 Religion, Sexuality, and Conformity items, Religion: $F(1,125) = 43.75$, p <.001, Race: $F(1,125)$

= 4.72, p =.032, as African Americans had higher mean levels than Whites on this factor.

Exploratory independent samples t tests on the 30 individual RWA items were conducted to understand which items were driving racial variation. A Bonferroni adjusted significance level (p =.05/30) was adopted. Results indicated that African Americans scored higher on 10 items surrounding premarital sex, homosexuality, atheism, the role of discipline in achieving a good life, and obedience in children, among others. Results are presented in Table 3.

Table 3. Exploratory Item level differences

P value	T value	Item
2.60e-8	-5.98	Obedience in Children
1.38e-5	-4.55	Good life
.00036	-3.69	Physical punishment
.0003	-3.72	Family structure
1.33e-6	-5.14	Premarital sex
4.31e-6	-4.88	Homosexuality moral?
.0004	-3.63	One right way to live
2.85e6	-4.97	Atheism
.0006	-3.51	Nothing wrong with sin
.0001	-4.00	Modesty just custom

Table 3 displays individual items that differed significantly between racial groups. Significance was defined as a t value significant at a Bonferroni adjusted p value of .05/30.

Hypothesis 3: Reduced Predictive Utility of RWA Among African Americans

A multiple linear regression was conducted examining the predictive utility of RWA on self-identified political ideology, with RWA, race, and an RWA by race interaction term as predictors. Results indicated that a single total score for RWA was a significant predictor of political ideology (β = -.03, p < .001). Race was not a significant predictor of political ideology (β = -.43, p = .48), and, contrary to hypothesis, the race by RWA interaction term only approached statistical significance, (β = .009, p = .0516). Still given sample size, marginal significance is noteworthy in that it is possible it signals that RWA is meaningfully less predictive of other constructs in the nomological network of authoritarianism for African Americans in comparison to Whites.

To ensure equity of analytic practice, exploratory multiple regression analyses were run using the two RWA factors found in the African American sample, instead of the single RWA total score. Race, RWA, and a race by RWA interaction term were predictors and political ideology was the outcome. These analyses revealed significant race by factor interactions (Religion, Sexuality,

and Conformity: β = -.03, S.E = .013, p = .006; Country and Authority: β = -.018, S.E. = .008, p = .019) in predicting political ideology. The interaction is depicted in Figure 1 below. In line with our theory, both RWA factors were less predictive of political ideology among African Americans, in comparison to among Whites. Taken together with the marginal significance of the race by RWA interaction term reported above, it is possible that RWA does indeed possess weaker convergent validity in African Americans than in Whites. This is in line with the central tenant of this paper: the RWA is systematically biased in African Americans by religiosity and stigmatization. Given sample characteristics, however, we urge caution in interpretation of this finding.

Figure 1. Interaction of race and RWA factor predicting political ideology. Factor 1 represents the Country and Authority factor and factor 2 represents the religion, sexuality, and conformity factor. Note the significant interaction on both factors where RWA is a weaker prediction of self-rated ideology in African Americans, despite African Americans in our sample appearing both more conservative and higher in RWA.

Discussion

Study results suggest that the RWA functions differently among African Americans and Whites. Evidence was found that RWA mean levels, when controlling for socioeconomic factors, were higher among African Americans. We do not interpret this result to indicate that African Americans are higher in actual authoritarianism, rather we believe it reflects that the measurement of authoritarianism is artificially inflated by race-based normative threat and African American religiosity, which serves as protection from stigmatization. In line with our interpretation, when religiosity was controlled for, the mean level differences by race dissipated.

Study results also indicated that the internal structure of the RWA was different for African vs. White Americans, as African Americans displayed evidence of a two-factor structure, while Whites showed evidence for the traditional single factor structure. The two factors among African Americans appeared to coalesce around themes of religion, sexuality, and conformity, on the one hand, and country and authority, on the other. Moreover, post-hoc analyses indicated that African Americans, in comparison to Whites, obtained higher scores on religion, sexuality, and conformity items, but that the groups had similar scores on the country and authority items once religion was controlled for. In addition, post hoc item level analyses indicated that African Americans scored higher on items regarding premarital sex, homosexuality, atheism, the role of discipline in achieving a good life, and obedience in children. The combination of these mean level and item-association analyses suggests that RWA items have different meanings vis-a-vis authoritarianism for African and White Americans.

Finally, given our theory that the RWA is tapping a different latent construct in African Americans, we hypothesized that the RWA would be less predictive of political ideology among African Americans in comparison to Whites. The study found that a single total score for the RWA was marginally less predictive of political ideology in African Americans in comparison with Whites (p = .05). Exploratory analyses using the two RWA factors uncovered in the African American subsample yielded results in line with the hypothesis. Both RWA factors interacted with race in predicting political ideology, and both factors were less predictive of political ideology in African Americans than in Whites.

Overall, these results provide preliminary evidence in support of the proposed claim, race-based stigmatization and religiosity makes the measurement of authoritarianism non-uniform across African and White Americans. The extant literature base on the RWA and current typical usage of this measure appear to ignore this possibility. We believe this leads to artificial inflation of RWA scores, and other measurement errors, among African Americans.

Beyond measurement issues, this study points to the idea that individual differences in authoritarianism should be conceptualized with respect to social and historical context. The semantic core of authoritarianism (deference to established authority, in/out group judgments, and traditional values) is likely systematically

impacted by race, especially in countries with histories and current social realities like the United States. Thus, it might be appropriate to contemplate the idea of "individual differences in White authoritarianism" and "individual differences in African American authoritarianism" as non-identical constructs. More generally, varieties of individual differences in authoritarianism might be meaningfully characterized by a group's perceived and actual relationship to power and the status of the group vis-a-vis other groups in the social and historical milieu under study.

Limitations to Generality

The arguments throughout have used the terms African American and White American, while the sample comprised 130 middle-aged Chicagoans who identified as African American and White. The sample is clearly not nationally representative of these categories. Moreover, the smaller sample size (e.g., less than 300 per group) precluded the use of statistical procedures best able to detect measurement invariance between groups (e.g., multigroup confirmatory factor analysis), a key idea in the current study. As such, it is our hope that this study encourages researchers to address this question in larger, more diverse samples, while in the meantime, first establishing the validity of the RWA in nonwhite samples before proceeding with a study.

Conclusion

This study suggests that the RWA better measures individual differences in authoritarianism as it is traditionally conceptualized among Whites than among African Americans. Such results should spur further research on the measurement and conceptualization of authoritarianism among marginalized racial and ethnic groups. This matter is particularly pressing given renewed scholarly and media interest in authoritarianism.

References

Adorno, T. W., Frenkel-Brunswik, E., Levinson, D. J., & Sanford, R. N. (1950). *The Authoritarian Personality*. Harpers.

Altemeyer, B. (1981). *Right-Wing Authoritarianism*. University of Manitoba press.

Altemeyer, B. (1988). *Enemies Of Freedom: Understanding Right-Wing Authoritarianism*. Jossey-Bass.

Brega, A. G., & Coleman, L. M. (1999). Effects of religiosity and racial socialization on subjective stigmatization in African-American adolescents. *Journal of Adolescence, 22*(2), 223-242.

Buuren, S., & Groothuis-Oudshoorn, K. (2011). mice: Multivariate imputation by chained equations in r. *Journal of Statistical Software, 45*(3).

Church, A. T. (2001). Personality measurement in cross-cultural perspective. *Journal of Personality, 69*(6), 979-1006.

Dusso, A. (2017). Race and right-wing authoritarianism: How scoring high in authoritarianism does not necessarily lead to support for right-wing candidates. *Social Science Quarterly, 98*(1), 244-260.

Henry, P. J. (2011). The role of stigma in understanding ethnicity differences in authoritarianism. *Political Psychology, 32*(3), 419-438.

Hetherington, M. J., & Weiler, J. D. (2009). *Authoritarianism and polarization in American politics*. Cambridge University Press.

Hunt, L. L., & Hunt, M. O. (2001). Race, region, and religious involvement: A comparative study of Whites and African Americans. *Social Forces, 80*(2), 605-631.

Lipset, S. M. (1959). *Political man: The social bases of politics*. The Johns Hopkins University Press.

Lorenzo-Seva, U., & Van Ginkel, J. R. (2016). Multiple imputation of missing values in exploratory factor analysis of multidimensional scales: Estimating latent trait scores. *Anales de Psicología/Annals of Psychology, 32*(2), 596-608.

Mavor, K. I., Louis, W. R., & Laythe, B. (2011). Religion, prejudice, and authoritarianism: Is RWA a boon or bane to the psychology of religion? *Journal for the Scientific Study of Religion, 50*(1), 22-43.

Nassiri, V., Lovik, A., Molenberghs, G., & Verbeke, G. (2018). On using multiple imputation for exploratory factor analysis of incomplete data. *Behavior Research Methods, 50*(2), 501-517.

Perez, E. O., & Hetherington, M. J. (2014). Authoritarianism in black and white: Testing the cross-racial validity of the child rearing scale. *Political Analysis, 22*(3), 398-412.

Revelle, W. (2018). psych: procedures for personality and psychological research. 2017. R package version, 1-0.

Revelle, W., & Rocklin, T. (1979). Very simple structure - Alternative procedure for estimating the optimal number of interpretable factors. *Multivariate Behavioral Research, 14*, 403-414.

Saunders, B. A., & Ngo, J. (2017). The right-wing authoritarianism scale. *Encyclopedia of Personality and Individual Differences*, 1-4.

Stenner, K. (2005). *The authoritarian dynamic*. Cambridge University Press.

Taub., A. (2016, March 1). The rise of American authoritarianism. *Vox*. https://www.vox.com/2016/3/1/11127424/trump-authoritarianism

Van Buuren, S. (2007). Multiple imputation of discrete and continuous data by fully conditional

specification. *Statistical Methods in Medical Research, 16*(3), 219–242.

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