NKYSAR

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NÝSA, THE NKU JOURNAL OF STUDENT RESEARCH

Nýsa publishes research from students at NKU and across the commonwealth. It is published by NKU's Institute for Student Research and Creative Activity. All submissions are peer-reviewed by an NKU faculty member and an NKU student.

About The Title

Names are tricky things. Journals of student research are relatively common, and in looking for a name, it was important to find something evocative of the intellectual effort and exhilaration that accompany any research endeavor. If it could relate to our identiy as The Norse, all the better. "Nýsa" worked perfectly. In the words of David Kime, Adivising Coordinator for NKU's Honors College, who suggested it:

"The Viking raids were only one aspect of Norse society. The Norse were shipbuilders, farmers, philosophers, poets, artists, and merchants. The Norse were explorers who engineered new shipbuilding technology and navigation tech- niques. They sought new knowledge in the stars and from distant lands and cultures. In Old Norse, "nýsa" is a verb meaning to search or investigate; to peer into the unknown. The idea of "nýsa" applies to today's NKU students as much as it did to the Norse a thousand years ago as they peer into the unknown and produce new and exciting exam- ples of research, scholarship, and creativity."

About The Cover

The cover and interior for this issue of Nýsa, The NKU Journal of Student Research was designed by Jacob Castle. Jacob is a multi-disciplined graphic designer and currently pursuing his BFA degree in Visual Communication Design at NKU. He works in a broad range of design projects, but is particularly interested in publication, brand, and packaging design. Jacob is passionate about helping elevate brands/products with the use of design. When designing the cover Jacob looked into the meaning of Nysa, how it connects the NKU students doing research for the publication, and how it connects to innovation. "I wanted the design to connect with the process the researchers go through." Jacob says. He adds "The design not only has a very close feel to NKU's brand, but it has elements (shapes, patterns, light) that give a sophistication to it that the researchers must have to begin a project like this and an energy to it that could represent what students feel when they break ground in their research paper." Jacob wanted the cover to intrigue readers, catch their eye and encourage them to read the publication.

From The Editor

Nýsa was not immune to the challenges of the last two years, but while we find ourselves publishing a two-year issue here in Spring 2022, I think it is more useful to focus on the excellent work that appears herein, work that was produced by students and faculty mentors during those very challenging times. We should also note the efforts of those whose labor isn't immediately apparent here: the editors, reviewers, production staffer, student interns, faculty, student, staff, and administrator advocates, and those associated with the Institute for Student Research and Creative Activity who support our journal. Looking ahead, I can see an exciting trajectory for *Nýsa*, and I hope you will join me in thanking everyone who helped produce this issue, celebrating our student authors, and helping *Nýsa* continue its role of highlighting the great research that NKU students do every day, regardless of what challenges may come up.

Patrick M. Hare

The Effects of Clicker Training on Stress Levels in Communally Housed Shelter Cats

Savana Verdino.
Faculty mentor: Lindsey Walters
Biological Sciences

Savana Verdino

Savana Verdino graduated magna cum laude from Northern Kentucky University in May of 2020 as a university honors scholar. She obtained a Bachelor of Science degree in biology and a minor in chemistry. This research was conducted under the guidance of Dr. Lindsey Walters and was presented at NKU's Celebration of Student Research and Creativity in April of 2020.

Since graduation, Savana has been working as a veterinary technician with an interest in pursuing graduate school.

Abstract

Shelter cat populations are subject to experiencing stress, which can lead to undesirable behavior changes and health concerns such as upper respiratory infections (URIs). Enrichment activities, such as clicker training, have been utilized to successfully help reduce stress levels in shelter cats. This success has been found in cats that were housed individually, however little is known whether these effects are seen in communally housed shelter cats as well. In this study, communally housed cats underwent six, ten-minute clicker training sessions over the course of two weeks in order to learn targeted behaviors. Their stress levels were observed for each session, and URI symptoms were recorded throughout the study. Fourteen of the initial thirty-four cats enrolled were present for two weeks, and of those it was found that the clicker-trained group had a significantly lower final average stress score than the control group. The treatment group also had a significant decrease in their average stress score when comparing the initial and final scores. This decrease was not seen in the control group. Twenty-six cats were present for at least one week and analyzed for URI incidence. While there was a greater number of URIs in the control group, no significant relationship was found between URI incidence and participation in clicker training. These findings suggest that clicker training can be effective in reducing stress levels in communally housed shelter cat populations, and further research could expand on its influence.

Introduction

Stress is a major topic of interest when discussing shelter cat populations, as shelter environments tend to be very stressful for cats. Potential adopters consider the temperament of a cat one of the main factors influencing their decision, and stress-related changes in behavior may hide a cat's true temperament (Kry & Casey, 2007). Exposure to stressful conditions can lead to undesirable behavior changes, such as vomiting, decreased appetite, and urinating outside of litter boxes (Stella et al., 2013).

Stress has also been linked to upper respiratory infections (URIs) (Dinnage et al., 2009; Gourkow & Phillips, 2016). URIs are one of the most common health concerns in shelter environments, as well as for several weeks after adoption (Dinnage et al., 2009; Lord et al., 2008). They are also a major influence when shelters are considering a cat for euthanasia (Dinnage et al., 2009). URIs can be caused by a variety of viral and bacterial infections, including feline herpesvirus 1, calicivirus, B. bronchiseptica, and M. felis. Symptoms include sneezing, ocular and nasal discharge, coughing, congestion, and difficulty breathing (Dinnage et al., 2009; Lappin, 2015). The viruses associated with URIs are more likely to spread when these symptoms are present, a time period known as "shedding." A cat carrying one of these viruses is more likely to shed when experiencing high levels of stress because it weakens their immune system (Dinnage et al., 2009; Gourkow et al., 2014). This weakened state caused by stress could make cats more susceptible to the bacterial causes of URIs as well, highlighting the importance of attempting to reduce stress levels in shelter environments.

One way to reduce stress is through enrichment activities, which are designed to improve the overall welfare of animals in captivity. The method of focus in this study is clicker training, where a cat in this instance is slowly taught a new behavior or skill using a clicker device to reinforce and reward when the desired behavior has been achieved. These typically occurs in short, sub-fifteen minute sessions, with a single cat being worked with at one time (Gourkow & Phillips, 2016; Grant & Warrior, 2019; Kogan et al., 2017). It has been shown to be effective for a variety of behaviors, with simple skills such as touching a target having a success rate of nearly 80% in some instances (Kogan et al., 2017). Previous studies have found positive impacts on reducing stress-related behaviors in individually-housed cats. After training, they spent more time exploring and at the front of their enclosures and were less likely to display behavior that was indicative of frustration. Those undergoing ten days of training were also found to

have higher antibody levels and lower rates of URI incidence (Gourkow & Phillips, 2016; Grant & Warrior, 2019).

The promising results of previous research provide a baseline to determine how influential clicker training can be on stress levels. However, it is uncertain whether these effects will still be present when cats are sharing territory and resources, such as in communal housing environments. This could potentially add additional stress to these cats and lead to differences in the effectiveness of enrichment methods. This study aims to determine whether clicker training can have a significant effect on stress levels for a communally housed shelter cat population, and in turn affect the rate of URI incidence.

Methods

Shelter Protocol

This study was conducted at the League for Animal Welfare located in Batavia, Ohio during January and February of 2020. All cats were housed in one of the eleven available communal cat rooms. Upon arrival to the shelter, each cat was examined by the on-site veterinary staff at the adjacent clinic building and was treated subsequently. All cats were spayed/neutered, microchipped, and vaccinated against rabies, rhinotracheitis, calicivirus, and panleukopenia. They were tested for feline leukemia virus (FeLV) and feline immunodeficiency virus (FIV), and checked for intestinal parasites through a fecal sample. If necessary, they were given medication to treat fleas and/or intestinal parasites. Any additional health concerns were also treated at this time.

Once recovered and deemed healthy, they were moved to one of the eleven communal cat rooms and placed in a smaller individual cage in order to acclimate to the new environment. The cats tended to spend 24 hours in this cage before they were allowed access to the rest of the room. Cats were placed into rooms based on personality and compatibility with the other cats, with each room housing an average of 2-6 cats. At least one room was designated for kittens and juvenile cats at any given time. Each room was approximately 10 feet by 15 feet and featured an outdoor area of the same size that was completely enclosed with woven wire fencing. This area was accessible through a full-size sliding glass door and a small cat door, giving the cats access to the outdoor portion at will throughout the day. The outdoor areas were separate so that cats from adjacent rooms were unable to make physical contact with one another.

The cat care staff arrived at the shelter at approximately 6 AM to clean the environment daily. Floors were swept and mopped in each room, as well as in the connecting hallways. Litter

boxes were scooped daily and disinfected weekly. Kittens were provided with non-clumping litter, while the adult litter boxes varied depending on what had been donated to the shelter. Blankets in the rooms were refolded daily to reduce visible hair, and fully changed when visibly dirty or refolded several times. This method of keeping blankets in rooms was intended to reduce stress levels.

Food bowls were disinfected with dish soap each morning. Cats were fed Science Diet brand dry food, at approximately 1/2 cup per cat in room. They were fed once daily in the evenings, and the food was left out until the staff arrived the following morning. An exception to this was for the kitten room, where food was left out all day. All toys and brushes were designated to a specific room and were not transferred to another room before being disinfected. Volunteers were able to remove toys and brushes from rooms at any point when they were deemed dirty, and those remaining were disinfected every week. On at least a weekly basis, every surface in the rooms, such as platforms and benches, were disinfected as well.

The cat care staff and veterinary staff communicated daily through the use of a journal, recording any health concerns with the cats. If an issue was noted, the veterinary staff came to examine the cat to determine if it needed medical treatment or needed to be transferred to the clinic.

Stress Assessment

After at least 24 hours had passed since the cat was released from the individual cage, they were randomly assigned to the treatment or control group. They were then monitored for their initial stress score. The scoring system was based off of the Cat-Stress-Score system developed by Kessler and Turner (1997). A certain number of factors, including body posture, position of the tail, ears, eyes, and head, vocalization, and activity, were rated on a scale of 1-7. A score of 1 was considered fully relaxed, while a score of 7 was considered terrorized. Each score included a description of the behavior or criteria that would fall under that rating, which can be found in Table 2 in Kessler and Turner (1997). The average of these individual scores was used as the cat's overall stress score. These scores were recorded three times a week between 8-10:30 AM at the beginning of each session.

Clicker Training

At least 24 hours after the initial observation, the treatment group began clicker training. A clicker training device was used in such a way that when the distinct click noise was made, a small treat was provided to the cat. The targeted behaviors used in this study were a sit and a handshake, where the cat would bring its paw up to at least elbow height and make contact with the trainer's outstretched hand. Each training

session lasted 10 minutes and occurred three times a week. Cats participated voluntarily and were not forced to stay in one location, nor were they physically handled during the session. All sessions took place individually in the outdoor portion of the enclosure, with all other cats in the room locked in the indoor space. In the adjacent rooms, all cats were locked indoors so as to reduce distractions. All sessions took place between 8-11:00 AM before the shelter opened and cats were interacted with by volunteers.

The first session for all cats consisted of familiarizing them to the clicker and forming a conditioned response. The trainer would randomly click and immediately toss a treat on the ground near the cat. Any time the cat sat or lifted their paw, they received a click as well. This conditioned response was considered learned when the cat looked towards the area on the ground where it would receive a treat after hearing the clicking sound. After this was learned, each session varied between cats depending on their learning ability and success.

The first targeted behavior was sitting. For some cats, this was a natural response after beginning to receive treats, while others required luring into position. Luring was done by holding a treat in front of the cat's face and moving it slowly forwards and upwards above their head. The typical response was for the cat to look up and lower its hind end, either to walk backwards or to try to jump up to reach the treat. The cat received a click any time its hind end lowered until a sit was formed. A verbal cue of "sit" was also used. The hand signal was slowly transitioned to a closed fist, palm facing upwards, moving from an outstretched position towards the trainer's shoulder. The sit behavior was considered learned when performed consistently with the hand signal and verbal cue. Once learned, the handshake behavior was formed.

The first step to initiating the handshake behavior was paw movement. This was accomplished by holding a hand or treat near the cat's paw and clicking for any movement where the paw was not in contact with the ground. The verbal cue "paw" was introduced as well. Paw raising was then targeted by reaching out with a flat, upturned hand and touching the bottom of the paw. The paw was manually pushed up a short distance and the cat then received a click. This continued, with the paw being raised slightly higher each time, until it reached approximately the height of the cat's elbow. After consistently allowing the trainer to manually lift the paw, the final handshake behavior was targeted. This was done by holding out a flat, upturned hand directly in front of the cat around their elbow height and giving the verbal cue, waiting for a response. Voluntary contact between the trainer's hand and the cat's paw was considered successful and received a click. If the behavior was mastered before the sixth session, it was reinforced throughout the remaining sessions, with longer

Table I. Descriptive Statistics							
Session	Group	Mean	SD	SEM	df	t	p
0	Control	2.00	0.29	0.11	12	0.30	0.77
	Treatment	2.06	0.44	0.17			
1	Control	1.79	0.14	0.05	12	0.30	0.77
	Treatment	1.83	0.35	0.13			
2	Control	1.81	0.21	0.08	12	0.15	0.89
	Treatment	1.83	0.30	0.11			
3	Control	1.76	0.10	0.04	12	0.06	0.95
	Treatment	1.77	0.22	0.08			
4	Control	1.83	0.14	0.05	12	2.02	0.07
	Treatment	1.70	0.11	0.04			
5	Control	1.74	0.13	0.05	12	1.71	0.11
	Treatment	1.64	0.08	0.03			
6	Control	1.78	0.03	0.01	12	3.05	0.01
	Treatment	1.61	0.15	0.06			

Descriptive statistics of independent-samples t-tests, comparing stress scores between treatment and control groups for each session. Significance was only found for session six.

pauses between contact and receiving the click and treat.

Upper Respitory Infection Assessment

Throughout this study, all cats were observed for any URI symptoms. Any excessive sneezing, coughing, or ocular/nasal discharge was noted for each day it was observed. Any cat diagnosed with a URI by the veterinary staff was removed from their room and treated in the veterinary clinic. Those who were diagnosed were removed from the training portion of the study.

Statistical Analysis

There were 34 cats enrolled that arrived at the shelter during the time frame of this study, ranging in age from four months to six years old. For analysis of stress levels in relation to clicker training, only those who were present for six sessions over the course of two weeks were included in statistical analyses. Previous studies have found that this approximate time frame was appropriate to see successful learning and significant changes in behavior in response to the clicker training (Grant & Warrior, 2019; Kogan et al., 2017). Those who developed a URI within six sessions were excluded from this analysis, as they did not undergo any remaining sessions after being diagnosed. For analysis of URI incidence, those cats who were present for at least three sessions and at the shelter for a minimum of seven days were included. The rationale behind this was to allow all cats in the treatment group a reasonable amount of time to develop a response to clicker training. All cats in the

treatment group had formed a conditioned response to the clicker by the end of the second session, so all were exposed to shaping of the desired behaviors by session three. Any of the 34 cats not included in these analyses were adopted within seven days of arrival, or were moved to the clinic for unrelated health concerns.

Independent samples t-tests were used for each session to determine whether a significant difference in stress scores was present between the groups. A paired samples t-test was also used to compare session 0 and 6 for each group in order to determine if stress scores significantly changed between the initial and final observations. A chi-square test of independence was used to determine if there was any significance between the amount of URI cases that developed and whether or not the cat received clicker training.

Results

There were 14 cats, seven in both groups, that were present for six sessions of clicker training. The independent samples t-tests showed no significant difference between the initial observation (session zero) or the first five sessions when comparing the average stress scores of the control and treatment groups (Table 1). However, the average stress score of the treatment group was found to be significantly lower than the control group after session six. Stress scores were also found to be significantly lower when comparing session six to session zero for the group that received clicker training,
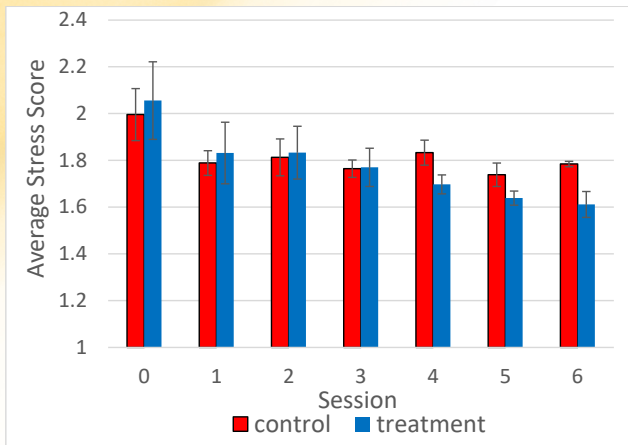
Figure 1. A comparison of average stress scores recorded during each session between treatment and control groups. Error bars indicate standard error of the mean.

t(6) = 2.69, p = 0.04. This was not the case for the control group, where the average stress scores were not found to be significantly different, t(6) = 1.81, p = 0.12.

There were 26 cats who underwent at least three sessions and were at the shelter for a minimum of one week. Of those, four cats in the control group (N = 13) displayed URI symptoms, while two displayed symptoms from the group who underwent clicker training (N = 13). Two of the four symptomatic cats in the control group were diagnosed with a URI and were removed from their environment, as well as the primary study. Of the two symptomatic cats in the treatment group, one was diagnosed and transferred to the clinic. The chi-square test of independence indicated that there was no significant relationship between URI development and whether or not the cat underwent clicker training, X2(1, N = 26) =0.867, p = 0.35. Also, due to the small sample size, the assumption that all expected counts were greater than 5 was not met.

Discussion

Cats housed in communal rooms exhibited lower stress scores after undergoing six clicker training sessions over the course of two weeks. This supports the notion that enrichment activities such as clicker training are effective stress reduction methods. Additionally, clicker training could be a viable enrichment option to implement in shelter environments, as it has been shown to be successful. Requiring few resources and lacking a complex methodology, it is a feasible program to implement in a shelter environment that tends to have volunteers willing to participate.

However, there are some limitations to these conclusions due to the statistical analysis methods used. While the independent

and paired-samples t-tests measured the differences between specific sessions for each individual analysis performed, they do not provide a measure of the overall change across all sessions for both groups. Further statistical analysis, such as a repeated measures ANOVA, could prove to be beneficial in measuring the change across sessions and would allow for a more definitive interpretation of the data.

While the URI incidences were not found to be related to whether the cat underwent clicker training, there was a slight trend indicating a potential relationship. Twice as many cats in the control group developed symptoms and were diagnosed with a URI than the treatment group. The insignificance was partly due to a small sample size that was not enough to meet assumptions for chi-square analysis. Future research involving larger sample sizes could indicate whether this method is effective in lowering instances of URIs.

In conclusion, clicker training is a reasonable and effective enrichment method to implement in order to help reduce stress levels. While previous research has found this to be true for cats housed individually, this study indicates that communally housed shelter cats can benefit as well. Additional research into the effects of clicker training on stress-related health concerns could further support its utilization as an enrichment tool in shelter environments.

Acknowledgements

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Representative or Not: Perspectives on Majority-Minority Districts

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Chris Kirkwood is a double major in political science and sociology at NKU. He is grateful to have worked under Dr. Reilly, who in part has inspired him to go to grad school. Chris plans on pursing a Ph.D. in political science, and hopes to pursue more research on the topic of political geography and legislative redistricting.

Abstract

People have questioned the effectiveness and practical purpose of majority-minority districts since their inception, however, recent research suggests that majority-minority districts are important in creating descriptive policy representation for minorities and ensuring electoral fairness for all. While previous inquiry has found various impacts of majority-minority districts, this is not necessarily true. The extent of majority-minority district impact has largely been up to question. This paper explores majority-minority districts, creating hypothetical new districts through fair methods, and shows how majority-minority districts can increase descriptive policy representation significantly, as well as how minority distribution affects the electoral success of parties.

Introduction

Often times, people complain about legislatures being unrepresentative of the people they represent. There is a perception of old, white men dominating politics disproportionately, but one way to fix this functionally is through the creation of majority-minority districts, or districts with a majority non-white population. People have questioned the effectiveness and practical purpose of majority-minority districts since their inception, however, recent research suggests that majority-minority districts are important in creating descriptive policy representation for minorities, and ensuring electoral fairness for all (Preuhs, 2006). Previous inquiry has found various impacts of majority-minority districts, but more often than not found this to be true (Overby and Cosgrove, 1996), however, the extent of majority-minority district impact has largely been up to question. In regards to majority-minority districts, those created through fair methods of redistricting increase the representativeness of an area through electing someone best fit to the area, however, the question becomes whether or not the representation is more ideological or descriptive.

In this literature review, this question will be answered: Do majority-minority districts result in descriptive policy representation? The main subjects explored in order to answer this question are the redistricting and gerrymandering aspects of majority-minority district creation, individual voting patterns of constituents, legislation passed, and actions of individual representatives. This subject is significant because the creation of majority-minority districts has been questioned from both sides of the isle, and due to this questioning, the worthwhileness of the practice is worth examining. Democratic fairness is of relevance to all, and if some are being disadvantaged by the creation of majority-minority districts, be they whites or minorities, there needs to be a remedy to the situation.

Disctricting

The method of creation for majority-minority districts, be it solely on the basis of minority interests or for political gain, is of importance. To begin, an important term to know in regards to majority-minority districts is racial redistricting, which is essentially the creation of majority-minority districts, without the charged connotation attached. Majority-minority districts are districts in which whites comprise less than 50% of the electorate, making non-whites (minorities) the majority group in the district, group being a loose term, as various minorities do not all have the same interest, so much so as their interest differ from those of whites. However, most majority-minority districts have one majority non-white group (50%+ of the district's population), commonly African Americans and Hispanics. Majority-minority districts are created, and as such are important, due to the fact that they enable minority groups to elect their preferred candidate by making said minority the dominant electorate.

There are various complexities involved with redistricting itself, which is complicated by racial factors. Compactness is a prized standard among proponents of fair redistricting, however, there is more to compactness than it seems, and race is a component of this (Niemi et al. 1990). The components that Niemi et al. outline are natural borders, compactness in size (the stereotypical method of compactness sought by fair redistricting proponents), quantitative measures of the area, and of course, racial composition (1990). Part of redistricting's goal is to give specific groups and areas a voice in their government, and ignoring minorities in redistricting goes against this principle. Previous and current gerrymanders have cracked and packed minorities (and liberals, of which there is some overlap (James 2011)), which means breaking them up to dilute their influence, and concentrating them to limit their influence, respectively (Shotts 2002). This packing, in turn, benefits minority needs by creating a substantive base in which to gather policy preferences from, which would be of benefit to minorities (Shotts 2002). However, the dilution mentioned is not something to ignore because of any resulting benefits, as a sizeable minority population (even with lack of a majority-minority) can swing an election based on their interests.

This points to the fact that redistricting is an inherently tempting process, with these multiple avenues of redistricting in regards to minorities, and with the power to choose laying many times in the hands of legislatures. Often, when unchecked, the mapmakers use mapmaking to further their political interests. Illinois is cited as a prime example of this (Herron and Wiseman 2000). Politics in the state are dominated by the Chicago urban area, which is majorly Democratic, and has large minority populations, and as such, districts are drawn in order to spread the liberal and minority influence across as many districts as possible, as well as utilize smaller, liberal urban centers downstate, such as Rock Island, Rockford, Normal, Champaign, East St. Louis, and Carbondale (Herron and Wiseman 2000). Were it not for the electoral influence of minorities, Illinois's bold gerrymanders at both the state and federal level would not be possible.

Impact

However, there is a debate in the literature as to the extent of the impact that racial redistricting and race-conscious gerrymandering has on elections. Shotts describes racial redistricting as something that moves policy to the left, as minorities are typically more Democratic as a group than white people, and says that the number of left leaning representatives increased after racial redistricting in the South (2003 A). Lublin and Voss counter his argument, saying that this racial redistricting in the South resulted in the election

of minorities and far-right Republicans, resulting in more conservative legislation and the suffering of black and other minority interests (2003). Shotts then wrote to counter this argument, saying that the Democrats elected were more liberal, but conceding that more research needs to be done on the subject (2003 B). This debate within the literature is important because it signifies that there is more research that needs to be done to determine the impact of majority-minority districts and racial redistricting on policy, and on elections within a system that utilizes majority-minority districts, as well as signifying that impacts that majority-minority districts have are subject to different interpretations.

There are several things that can be concluded from this. The first is that there is a direct correlation between minority votes and party for the most part, and most majority-minority districts elect minority Democrats (Lublin and Voss 2003). Another somewhat obvious point is that packing minorities/liberals into a district results in a more liberal policy preference of the elected representative (Shotts 2003 A), but the overall impact this has on policy is up to debate. Overall, Shotts has more solid reasoning in that majority-minority districts created through racial redistricting and gerrymandering results in the election of more liberal representatives (2003 A), and Lublin and Voss have more solid reasoning in that racial gerrymandering specifically moves policy to the right because of the cracking and packing of minorities, resulting in more far-right representatives being elected (2003).

Voting Patterns

The actions of individuals in relation to majority-minority district creation are of significant interest for various reasons. African American voting patterns stand out in particular. A candidate's support for black interests leads to increased black voting, and black population size in a constituency leads to more black-favoring legislation (Hutchings, McClerking, and Charles, 2004). Furthermore, the trio finds that Democrats in the modern era have been more responsive to black interests as a whole (2004). However, this responsiveness is more apparent in the South than in the North (where there are sizable black populations), but also finds that black support for candidates is not always consistent for different races and during different election years (Hutchings, McClerking, and Charles 2004). As a whole, the Northern states are much more Democratic than Southern states, so it is reasonable to infer that the North's left-leaning partisanship is seen by minorities as inherently beneficial to their interests, although their interests could likely be furthered more descriptively by a nonwhite representative.

There are also direct applications of minority interests to the government that function in tandem with majority-minority districts. Increases in minority populations have had effects beyond the local level of government (Preuhs, 2006). Specifically, minorities create more favorable policies in regards

to themselves, with political allegiances aside, and minorities holding leadership positions often offsets bias against them (Preuhs 2006). In tandem with this, districts losing minority votes are less sensitive to minority interests, specifically if the representative of the area is a Republican (Overby and Cosgrove, 1996). Overall, this points to the conclusion that minorities are the best representatives of themselves, and minority elected officials will do the most to further minority needs.

Furthermore, individuals are more likely to vote in relation to the ethnoracial context they find themselves in. People as a whole are more likely to vote for someone that looks like them, and they are more likely to vote if they reside in a district that matches their demographics, with the sheer power of a force like this is equivalent to a voter mobilization campaign (Fraga, 2016). This information directly leads to the research of Davidson and Korbel. They find that at-large elections take power from minorities, thereby limiting their influence (1981). Furthermore, elected minority officials do not always guarantee substantive policy representation for minorities; however, officials that run with a running mate often chose minorities in order to capture the minority vote, as was the case of the Maryland 2002 gubernatorial election with Michael Steele, an African American, as lieutenant governor (Davidson and Korbel, 1981) (James 2011). What can be concluded from this is that minorities need to feel empowered, or at least feel equal to whites, in order to reliably vote. This is also important because it shows that, to some extent, statewide elections do limit minority power due to their at-large nature, and traditional geopolitical boundaries should be reconsidered.

Legislation

Legislation passed in regards to minority interests is also key to understanding the impact of majority-minority districts. Based on much of the previously mentioned research, racial constituencies should be prioritized for minority representation, and that majority-minority districts are beneficial if the minority would otherwise be too small to effect policy decisions (James, 2011). This supports the idea that minorities themselves best come up with policies that work to their benefit, not those necessarily associated with political parties (Preuhs, 2006). Furthermore, Overby and Cosgrove find that minorities tend to elect minorities, likely because of the aforementioned sensitivity of the candidate to minority interests, and due to districts with a greater minority population electing representatives better suited to minority needs as a whole (1996). Gay supports this, demonstrating that the votes of California legislators respond directly to concerns of their constituencies (2007). However, it is noted that there is competition amongst minorities for representation, as at times majority-minority districts are such because of a large number of minority residents in an area are present, with none constituting an outright majority of

the district's population. The primary elections (for the most part) would determine which groups would have the chance to represent the population of interest (Gay 2007).

What the legislation signifies is that once in office, minority representatives, be they themselves minorities or not, respond well to the needs of their constituents, with minorities best being able to understand and legislate minority priorities. This would point to majority-minority districts being critical for the legislation of minority needs. However, as aforementioned, there are barriers to the creation of majority-minority districts that incorporate well into a fair map, as isolating minorities in districts may limit their overall say, as other representatives may have other priorities for legislation (Shotts 2002) (Overby and Cosgrove 1996).

Representatives

Lastly, the individuals elected as representatives for minority groups in majority-minority districts, or even minorities representing mostly whites, effect the impact that minorities have on legislation. As mentioned previously, Gay's accounting for constituency preferences of California legislators' votes highlights the impact that majority-minority districts and minorities as a whole have on legislation (2007). Even with the highlighted competition among minorities for representation, this shows that representatives have to be mindful of their minority constituents (and constituents as a whole), or else they may face a serious primary or general election challenger. This connection with one's representative goes further, with Banducci, Donovan, and Karp finding that majority-minority districts with minority representatives increase the amount of contact that voters have with said representative (2004), and additionally increase minority turnout (2004) (Fraga 2016). Individual candidates can tip racial and political balances of power in the districts in which they run, however (Canon, Schousen, and Sellers, 1996). These individual candidates can utilize "politics of commonality," which is essentially the candidate and the constituents, being of whatever race or ethnicity they are, having similar interests that can be worked towards, and thereby benefitting from diversity. It is also acknowledged that racial redistricting can have negative impacts, such as limiting minority power by cracking and packing (Canon, Schousen, and Sellers 1996).

This "politics of commonality" (Canon, Schousen, and Sellers 1996) is of interest because of Fraga's research on voting and ethnoracial context (2016). Were this concept to be widely accepted by the people, then Fraga's conclusions would have no basis, which means "politics of commonality" (Canon, Schousen, and Sellers 1996) is not something that is fully put into practice. Fraga concedes this to some extent, as he says that not all candidates embody it (2016). Voters for the most part do not see or vote for the collective interests of their country or district so much as they vote for their own interests, under the presumption that it is the best thing for everyone that they vote how they do. Under ideal circumstances, this would render majority-minority districts obsolete, as the natural diversity of any racial terrain would be irrelevant, with constituents and representatives being in a mutually beneficial relationship that resulted in descriptive minority policy representation, as well as representatives maintaining the favor of their whole electorate.

In conclusion, the literature suggests that the impact of majority-minority districts on descriptive policy representation is varied. The solid conclusion that can be made is that minority groups do promote policies specific to their interests, however, the extent to which they are able to do this because of the creation of majority-minority districts is very much up to question, coming to head with a heated debate within the literature (Shotts 2003A) (Shotts 2003B) (Lublin and Voss 2003). In the past, attempts have been made to exclude minorities (African Americans predominantly in the literature) from governance, as is evident from a great deal of Southern gerrymandering and/or racial redistricting (Lublin and Voss 2003), and with the advent of specific majority-minority districts, many wonder what the impact will be. The creation of majority-minority districts will be irrelevant unless safeguards for fairness are put in place, such as those mentioned by Niemi et al (1990). Fairness in this sense is letting the people choose their representatives, and providing them with a bias-free method of doing so. Without this, the United States will turn into a land of nepotism, not democracy.

Summary and Implications of Theory

What can be solidly concluded from the research presented above is that minorities do create representative policies for themselves. Banducci, Donovan, and Karp find that when minority representatives take office, they cause an increase in minority constituent interaction, which increases policy representation (2004). This is a fairly widely acknowledged conclusion, also being represented by Niemi (1990), James (2011), and Fraga 2016. Legislators do respond to the needs of minority constituents, as Gay finds (2007), however, this comes second to a minority representative being the voice of other minority constituents.

The more complicated part in regards to outcome is the method of majority-minority district creation and the resulting impact. Many majority-minority districts are created through gerrymandering, which does result in a district that represents minority needs; however, this could limit the impact of a party, or crack and pack minorities in order to limit their impact to one or as few districts as possible (Overby and Cosgrove 1996). There are also the questions of if the Democratic Party is more representative of minority constituents overall, and if the creation of majority-minority districts functions to dilute

Democrat's influence on a district-by-district basis. The current conclusion to the first question is in some cases yes (James 2011), and others no (Herron and Wiseman 2008), and the second question is up in the air.

The aforementioned research thereby leads to the question: Does minority distribution impact the electoral success of any party? Overby and Cosgrove cite the protections and semi-incentive of majority-minority district creation in regards to the Supreme Court ruling on the Civil Rights Act (1996), and in practice, this may function to favor minority over party. Party, however, is an acceptable method of redistricting discrimination up to this point in time, and the question arises if parties suffer electorally as a result of this. In places where one party is in power, they may be inclined to use majority-minority districts (or other districts with high minority populations that are not in the majority) in a way that works beneficially to them, be it through utilizing or disadvantaging minorities.

Knowledge and Importance

There are two concepts necessary to know in regards to racial redistricting The concept of electoral success is defined to the extent to which a party exhibits the characteristics of winning elections. The concept of minority distribution is defined to the extent to which minority populations exhibit the characteristic of spatial distribution. This paper will examine how electoral success is impacted by minority distribution.

Based on the current state of the knowledge, the current hypothesis of this section will be: If there is an increase in minority spatial distribution, then there will be a decrease in Democratic success. Democratic success is used as the basis for this hypothesis because of the stronger minority affiliation with the party (James 2011), so changes in minority populations spatially and numerically would be most evident in their performance. Herron and Wiseman's examination of Illinois best shows the impact minorities have on the Democratic party, at least in that state (2008), as much of the Democrat-created gerrymanders rely on a minority base on which to expand their legislative majority.

There is more important information to know about racial redistricting in regards to the basis of this hypothesis and further investigation. According to Nall, Democrats have begun to find more urban success, with their power increasing as population density increases (2015). Conversely, Nall finds that Republicans find more electoral success in rural areas, where population density is much lower (2015). Urban and rural areas form the backbones of Democratic and Republican support, with suburbs and exurbs deciding elections. Minority population within these areas may well also cause swings in elections.

The importance of racial in redistricting is paramount in how redistricting is done and the maintaining of electoral fairness. As Niemi et al. point out, there are multiple things that contribute to forming a fair and "compact" district (1990), and the racial makeup of an area is something that they say needs to be considered. Race should not be used as a tool for either side, just a variable that has to be accounted for, just like a district's population equality with other districts of the body they comprise. Currently, the usage of minorities to further partisan goals is functioning the opposite of how fairness should be.

As individuals, people may not care about this. Some people do not understand the ramifications of what redistricting does, much less the role that race plays in the process. Some people do not think it matters to them, since the process is seemingly out of their control, they are not a minority that is being taken advantage of, or they feel they benefit from the process. However, some people understand and care about this issue. People want the people that they support to be in power, and at the end of the day, the best way to do that is to ensure a level playing field so that everyone has fair, equal, and representative chances in their representation.

Data in Action

Examples of comparison between redistricting in favor of Democrats, redistricting in favor of minority representation, and fair partisan representation in the state of Virginia are presented in Figures 1 – 3, respectively . Regions in Virginia that will be referred to are NOVA (the greater D.C suburbs in Northern Virginia), the Hampton Roads (comprised of Portsmouth, Norfolk, Newport News, and Hampton in the southeast), and Tidewater (Chesapeake and Virginia Beach, south of Hampton Roads). The district creation and data are a result of using Dave's Redistricting Atlas (DRA), a website made for the purpose of redistricting for use by the general public (Bradley 2019). People are able to make maps of all states (and DC), and these maps have multiple dataset overlays, which include racial statistics, partisanship of multiple measures, and population per each precinct.

Additionally, these maps do prioritize the compactness and uniformity of districts in parts of the map where elections would be non-competitive. The districts are shaded by partisan lean (the DRA Composite of multiple elections in order to give the best indication of overall partisanship), with shades of reds and blues darkening for Republicans and Democrats respectively, with lighter shades indicating a fairly even district.

As the map for a Democratic gerrymander (Figure 1) shows, urban areas are key to Democratic success, and they happen to have higher minority populations. NOVA is broken amongst four districts (with districts there taking in rural area surrounding the city and liberal Charlottesville as well), Richmond among

| | | Keeping in mind that responses to this survey are anonymous, have you ever used marijuana? | | | |
		Yes	No	Prefer not to say	Total
Do you think the use of marijuana, for medicinal purposes, should be legal?	Yes	67 97.10%	15 88.24%	1 100.00%	83 95.40%
	No	1 1.45%	1 5.88%	0 0.00%	2 2.30%
	Unsure	1 1.45%	1 5.88%	0 0.00%	2 2.30%
	Total	69 100.00%	17 100.00%	1 100.00%	87 100.00%
Do you think the use of marijuana, for recreational purposes, should be legal?	Yes	63 91.30%	4 23.53%	1 100.00%	68 78.16%
	No	2 2.90%	9 52.94%	0 0.00%	11 12.64%
	Unsure	4 5.80%	4 23.53%	0 0.00%	8 9.20%
	Total	69 100.00%	17 100.00%	1 100.00%	87 100.00%

Figure 1. Districting map that results in a Democratic gerrymander.

Do you think the use of marijuana, for medicinal purposes, should be legal?		Keeping in mind that responses to this survey are anonymous, have you ever used marijuana?
	Chi Square	2.49*
	Degrees of Freedom	4
	p-value	0.65

*Note: The Chi-Square approximation may be inaccurate - expected frequency less than 5.

Figure 2. Districting map drawn for maximum minority representation.

| | | With which ethnicity/race do you identify? (Select all that apply.) | | | | | | | | |
		African/ African American	Native American	Asian	Caucasian	Hispanic/Latino	Middle Eastern	Pacific Islander	Other (specify)	Total
Do you think the use of marijuana, for medicinal purposes, should be legal?	Yes	11 84.62%	4 100.00%	0 0.00%	71 98.61%	1 50.00%	0 0.00%	0 0.00%	1 100.00%	83 95.40%
	No	2 15.38%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	2 2.30%
	Unsure	0 0.00%	0 0.00%	0 0.00%	1 1.39%	1 50.00%	0 0.00%	0 0.00%	0 0.00%	2 2.30%
	Total	13 100.00%	4 100.00%	0 100.00%	72 100.00%	2 100.00%	0 100.00%	0 100.00%	1 100.00%	87 100.00%
Do you think the use of marijuana, for recreational purposes, should be legal?	Yes	10 76.92%	3 75.00%	0 0.00%	57 79.17%	1 50.00%	0 0.00%	0 0.00%	1 100.00%	68 78.16%
	No	3 23.00%	1 25.00%	0 0.00%	8 11.11%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	11 12.64%
	Unsure	0 0.00%	0 0.00%	0 0.00%	7 9.12%	1 50.00%	0 0.00%	0 0.00%	0 0.00%	8 9.20%
	Total	13 100.00%	4 100.00%	0 100.00%	72 100.00%	2 100.00%	0 100.00%	0 100.00%	1 100.00%	87 100.00%

Figure 3. Fair partisan representation districting map.

two, the Hampton Roads area amongst two as well, and a swing district snaking through the south of the state and the mountain cities. These areas all have high minority populations, and this map utilizes them and population density in order to maximize the benefits for Democrats, giving them an 8-3 majority, while only having one majority-minority district, due to the African American population in the Hampton Roads.

The majority-minority district map (Figure 2) is less advantageous to Democrats than the previous map, giving Democrats only a 6-5 advantage, although the Tidewater district is closer to a swing district than it is Democratic-leaning. Majority-minority districts are created out of the NOVA population, Richmond

and Southeast Virginia, and Hampton Roads. The geographic compactness of the districts is less prioritized, but it is still achievable. This method of minority distribution functions to decrease Democratic power, as urban areas are taken less into consideration than the previous map, and racial cohesion is prioritized.

The fair map (Figure 3) raises an interesting point. The majority-minority district map contained three majority-minority districts, and while this map was not drawn using racial overlays, this map produced two majority-minority districts, and other districts in it have significant minority populations. This map is reflective of the partisan and racial breakdown of the state, ideally putting Democrats at a 6-5 advantage, with Democrats also controlling the two majority-minority districts. What this indicates is that districts drawn to the Niemi et al. fairness specifications are reflective of the state they represent. African Americans represent a significant population of the state of Virginia, and this is reflected in the congressional maps drawn.

Maps for Mississippi (Figure 4) show how powerful minorities can be in less politically variable areas. The state has a high African American population, although it is known as a bastion of Southern conservatism. These maps contain an arbitrary 30 seats, and one is gerrymandered in favor of Democrats (Figure 4A), to the extent to which that is possible, while the other is made for minority benefit (Figure 4B).

These maps bring up interesting points about minorities and Democratic party success. In Mississippi and other Southern states, there is such a strong correlation between minorities and the Democratic Party that they compose the majority of the party. Democrats drawing the maps in their favor or maps being drawn in favor of minorities will produce similar maps in these situations. The Democratic gerrymander only gains an

A   B

Do you think the use of marijuana, for medicinal purposes, should be legal?		With which ethnicity/race do you identify? (Select all that apply.)
	Chi Square	32.65*
	Degrees of Freedom	14
	p-value	0.00

*Note: The Chi-Square approximation may be inaccurate - expected frequency less than 5.

Do you think the use of marijuana, for recreational purposes, should be legal?		With which ethnicity/race do you identify? (Select all that apply.)
	Chi Square	7.69*
	Degrees of Freedom	14
	p-value	0.90

Figure 4. Districting maps that result in a Democratic gerrymander (A) and majority-minority districts (B).

extra seat (10/30) compared to the majority-minority district map (9/30) is proof of this.

In regards to the urban areas, Mississippi functions under a sort of primate-city rule for states, meaning the largest city is much larger than the others. This city is Jackson, and in each map, at least six districts are used to represent of the city's metro area. Other cities, namely Tupelo, Biloxi, and Hattiesburg, are of the size or African American population to warrant either a Democratic or majority-minority district. African Americans do comprise the majority of the population in the west of the state along the Mississippi River, which is where most of the Democratic districts are as well.

Conclusions and Future Potential

In conclusion, the answer to the question, "Does minority distribution impact the electoral success of any party?" is yes, at very least in the states redistricted as a part of this research. An important distinction to be made is that majority-minority districts do not have to be formed for electoral success to be impacted, though this can be the case. As was the case with the Virginia districts, the presence or lack of a sizable minority population can be enough to swing the election towards a party, with Democrats benefitting electorally from minorities, and Republicans being disadvantaged electorally. As such, districts as a group should be made to represent states in partisanship, racial makeup, and by geographic distribution of population.

The basis of Democratic support is in urban areas and among minorities, and some of the support in urban areas is from minorities, meaning these groups are not entirely separate entities. As the Virginia maps show, the Hampton Roads area is densely populated, and this dense population is comprised largely of minorities (namely African Americans), which keeps the district solidly in Democratic hands. As of right now, conservatives do not have significant minority support, and this shows in gerrymanders produced by conservatives that crack and pack minority populations (Overby and Cosgrove 1996).

Future research on this topic may delve into the effect that different minorities have on elections. As James says in his writing, African Americans provide a mostly uniform voting block that benefits Democrats, and while the majority of minorities are Democratic leaning (2011), the exact lean of this groups is of interest, as this is data that could be used in fair redistricting. Additionally, further research could examine if minorities vote the same down-ballot as they do for president, or where minorities vote differently from the partisanship of their districts.

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An Examination of the Public Opinion on Marijuana Legalization

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Abstract

What contributes to support for marijuana legalization? Recent research suggests that the American electorate is gradually altering their opinions towards favoring the legalization of marijuana. Multiple experiments involving public opinion have supported this hypothesis, but the difference in support for recreational and medicinal usage has not been adequately examined. In recent years, more states have begun to decriminalize the substance and propose policies that would effectively legalize the recreational usage of marijuana. We conducted an original survey to examine these beliefs in the current policy context. Our findings suggest that voters support the legalization of medicinal marijuana at significantly higher rates than recreational marijuana.

Introduction

The current state of the public opinion in the United States on the legalization of marijuana varies slightly from the current state of the public opinion on other social issues. This difference comes from the huge rise in support for legalization that the substance has experienced in recent decades. During the 1960's support was extremely low, remaining relatively stagnant at approximately 12% (Carroll, 2005). Since the 1960's support has grown steadily and quickly and had reached 57.4% as recently as 2014 (Schnabel and Sevell, 2017). Researchers have also discovered a difference in that the public is growing more supportive of the legalization of the substance cross-demographically, which is rare for most other social issues (Schnabel and Sevell, 2017).

Recent research has focused on the sudden increase in support and the reasoning behind the increase. In an attempt to add to previous research, a survey was conducted that aimed to discover college students' opinions towards the legalization of marijuana for either medicinal or recreational purposes. This differentiation in the reason for legalization was not mentioned in the cited research.

When conducting this survey, it was predicted that legalization of the substance for medicinal purposes would gather more support than legalization for recreational purposes. The results of the survey proved this hypothesis to be correct. The findings of this study are not statistically representative of the American population; thus they do not properly represent the current state of the public opinion on the legalization of marijuana.

Review of Recent Literature

Marijuana was criminalized in the 1930's as an attempt by the federal government to minimize drug usage by the public. At this time, the media portrayed marijuana as a substance that could do more harm to the human body than opium. Resulting from the media's framing of the substance, public support of its legalization during this time was extremely low. Stringer and Maggard theorized that American citizens were primed to believe that the substance was harmful and a nuisance to the public (2016). Citing a Gallup poll conducted in 1969, Carroll identified that only 12% of Americans supported the substance's legalization (2005).

Twenty years later, a time when America's 'War on Drugs' was emphasized and illicit drugs were criminalized extensively, public support for the legalization of psychotropic substances continued to be low. Drugs, such as marijuana, were still heavily opposed by the public (Stringer and Maggard, 2016). According to a General Social Survey conducted in 1988, support for legislation that would allow for the legalization of marijuana was at 17.7% (Schnabel and Sevell, 2017). A little over a decade later in 2005, a Gallup Poll discovered that approximately one in three American's supported the legalization of marijuana (Carroll, 2005).

A more recent General Social Survey has reported that this support had reached 57.4% in 2014 (Schnabel and Sevell, 2017). The literature surrounding the topic of the public opinion towards the legalization of marijuana offers a multitude of hypotheses that potentially explain the reasoning behind this rapid upward trend, which has grown at a rate of roughly 1.5% annually since the 1990s (Felson et al., 2019). Through some hypotheses and explanations of the growth, it is identified that the growth is seen across every sociodemographic group in America. The general rise in support for the legalization of marijuana has been a societal trend, rather than one seen in a specific political party or ethnicity (Schnabel and Sevell, 2017; Galston and Dionne, 2013; Felson et al., 2016; Stringer and Maggard, 2016).

Societal Shift in Attitude

One explanation for this growth is the general liberalization of the attitudes of Americans in recent decades. Schnabel and Sevell theorize that the attitudes of Americans towards societal issues pertaining to morality, and possibly religion, have liberalized at similar rates. To emphasize this argument, a study was done comparing the public's perception of the legalization of gay marriage and the legalization of marijuana in tandem. To complete this study, Schnabel and Sevell compared responses to the General Social Survey each year that questions on both topics were asked. In this comparison the researchers discovered that the growth in support regarding both issues has risen at a parallel rate since 1988. Though their graphs emphasize the parallel trend, Schnabel and Sevell highlight the differences in levels of sociodemographic support (Schnabel and Sevell, 2017).

Societal attitudes discovered in Schnabel and Sevell's research are changing at a similar rate across demographic groups, but this does not imply that all groups have the same level of support. Respondents who identified as conservative were more likely to oppose the legalization of marijuana and those who identified as liberal were more likely to support it. Similar differences can be seen in relationship to a participant's religion and age. Acknowledging these differences, the researchers theorize that a society-wide growth in support towards both issues is a result of a "society-wide redefinition of both behaviors as publicly accepted issues of individual autonomy," (Schnabel and Sevell, 2017).

Galston and Dionne also support this theory of a societal attitude change towards marijuana legalization, but they contend that it is a growth of ambivalence rather than support that has caused this change. Pooling data from two surveys conducted about participants' attitudes towards marijuana, the study noted that from 2010 to 2013 every sociodemographic group had increased its support towards legalization. Galston and Dionne argue that this growth is not a result of growth of support of the

substance itself, but rather a growth in ambivalence towards the topic. The researchers' explanation of this ambivalence is rather vague, citing that intense attitudes towards marijuana are correlated with opposition and ambivalent attitudes towards the substance are correlated with support (Galston and Dionne, 2013).

Demographic Differences

Though the recent literature continuously reports a societal transition on the public opinion on marijuana towards a growth in support, this support is not equal amongst all social groups. Political party, gender, religion, and level of education all affect the likelihood of someone supporting the legalization of the substance (Carroll, 2005).

To analyze the amount of support measured among different demographic groups, Carroll studied a Gallup poll conducted in 2005. According to this data, the change in the level of support is not a result of cohort succession but rather intra-cohort attitudinal adjustments (Carroll, 2005). Also from this data, Felson et al. identifies trends that suggest one is more likely to support the legalization of marijuana if they are affiliated with the Democratic party or identify as independent from a political party. Using three survey panels from Survey Sampling International and gathering a group of respondents that was statistically representative of the population of the United States, McGinty et al. found that people who identify as a Republican or conservative were more likely to oppose legalization. Only 36% of Republican respondents supported the substance's legalization. According to the same survey, 65% of Democrats and 61% of Independents supported legalization (McGinty, 2017). Social groups that expressed higher levels of support include men, people with college educations, people without religious affiliations, and African-Americans (Felson et al., 2019).

The most unusual fact to be acknowledged from this data is that, for this topic, men are more supportive than women. On issues of public opinion women typically lean more liberal than men, but this is not true for women's opinions on marijuana (Felson et al., 2019). Research does not offer a statistically significant explanation to this anomaly, but Felson et al. theorize that it could be a result of maternal instinct in women. As a woman begins a family, they could also begin to think about the negative effects associated with the substance. The researchers theorize that this thought process is the explanation of why women hold more conservative opinions towards the substance in comparison to men (Felson et al., 2019).

People who hold religious affiliations are another social group that is statistically less supportive of marijuana legislation. Looking at data from multiple General Social Surveys conducted throughout the late 2000's, Krystosek hypothesized that religious affiliation could deter an individual from supporting use and legalization of the substance. The study

defined religious affiliation as a combination of commitment, attachment, involvement, and belief of religion. When comparing answers to the surveys being examined, Krystosek identified a statistically significant relationship between a person's religious identification and that person's perception towards marijuana and its usage. The more religious a person is the more likely they are to hold a negative perception towards the substance and its users, meaning people who hold an affiliation with a religion are less likely to support legislation proposing the legalization or decriminalization of marijuana (Krystosek, 2016).

The Effect of Age

Though Carroll identified that the shift in support was a result of intracohort changes in attitude, other research implies that age does alter a person's level of support for the legalization of marijuana (Carroll, 2005; Vidourek et al., 2018; Moreno et al., 2016). In 2005, 47% of young Americans favored legalization. Support among older American cohorts during this time was 30% (Carroll, 2005). The millennial generation, identified by Moreno as people who were born between the years 1981 and 1998, had the highest level of support. Within this population, 69% of individuals claimed that they would support the substance's legalization (Moreno et al., 2016). Cohn et al. also had similar findings from a survey conducted in 2015. According to their research, 68% of young adults favored or supported legalization (Cohn et al., 2017). Currently the younger generation of Americans support the legalization of marijuana about 10% more than the general population, whose support averaged 57.4% in 2014 (Schnabel and Sevell, 2017).

The Effect of Usage

According to a Gallup poll conducted in 1969, only 4% of Americans admitted to having used marijuana. By 1985, this percentage had grown to 33% (Bowman, 2001). This percentage has grown over time in a way that parallels the growth in support for the legalization of the substance. Multiple researchers identify a growth in use as a catalyst for the growth in support (Bowman, 2001; Trevino and Richard, 2002; Williams et al., 2016, Palali and Ours, 2017). Using data from a survey conducted in the Netherlands in the late 2000's, Palali and Ours recognize that people who have personal experiences with the substance are more likely to be supportive of the legalization of the substance. They theorize that this support is a result of a respondents' self-interest in the substance (2017).

Trevino and Richard attempted to expand research on this in 2002 by surveying respondents who were categorized as users of the substance in comparison to those who had never used or experimented with it. The results of their study concluded that 68% of users surveyed supported marijuana's legalization, compared to only 33.3% of non-users. Trevino and Richard theorized that this support would be seen amongst other

drugs and their users (consider a heroin user supporting the legalization of heroin) but the researchers' data found this theory to be false. Their survey recognized that 55% of respondents opposed marijuana's legalization while 90% of respondents opposed heroin's legalization. Surprised by this finding, Trevino and Richard contended that society is not as opposed to the illicit use of marijuana as it is to the use of other illegal substances (2002). Trevino and Richard identify that the social implication of self-identifying as a user of illicit substances is negative so there are limitations to the findings of their study (2002).

Reasons for Opposition

Citing findings from a National Survey on Drug Use and Health conducted in 2014, Schuermeyer et al. found that 45.7% of respondents believed the legalization of marijuana would lead to higher use of other illicit substances. 42.6% of respondents from the same survey agreed that the legalization of marijuana would increase crime rates. Noting these results, Schuermeyer et al. identified that potential adverse effects are the reason many Americans oppose the substance's legalization (2014). Amonini and Donovan found that younger Americans who opposed the substance's legalization did so out of feelings of morality. Conducting a survey targeted towards millennials, Amonini and Donovan found that 56.5% of respondents believed that using marijuana was morally wrong under any circumstance (2006). The reason for opposition towards the legalization of marijuana differs among social groups.

Theory

It has previously been hypothesized that the recent growth in support for the legalization of marijuana has been a societal trend, meaning that it can be seen across all demographic groups in America (Schnabel and Sevell, 2017; Galston and Dionne, 2013; Felson et al., 2019; Stringer and Maggard, 2016). But recent literature has also identified the demographic groups who support marijuana legalization the least. The majority of the cited research contends that women, conservatives, and people with religious affiliations have the lowest levels of support for marijuana legalization (Felson et al., 2019; McGinty, 2017; Krystosek, 2016). Cited research also agrees that liberals, people with a college education, African-Americans, and people who use marijuana support the substance's legalization at the highest rates (Trevino and Richard, 2002; Palali and Ours, 2017; Schnabel and Sevell, 2017; Galston and Dionne, 2013; Felson et al., 2016; Stringer and Maggard, 2016).

This study was conducted in an attempt to validate previously researched hypotheses. It was also an attempt to discover a possible difference in support of the substance's legalization in regard to the reason for legalization. In this study, the two

reasons identified were medicinal purposes and recreational purposes.

Hypothesis 1: If someone uses, or has previously used, marijuana then they will support the substance's legalization both medicinally and recreationally.

One reason some cited researchers believe that this support has grown so much in recent years is the theory of self-interest. Palali and Ours theorized that people who currently, or who have previously, used marijuana are more likely to favor its legalization. This is believed to be a result of respondent's self interest in correlation with their experience and preference for use (2017). This was also theorized by Trevino and Richard in 2002, who found that people who use the substance were approximately 30% more likely to support its legalization. This study predicts to discover that a positive correlation between use, or previous use, and support for legalization. It also predicts that this positive correlation will be seen for both purposes of legalization.

Hypothesis 2: Support for the legalization of medicinal marijuana will be higher than support for the legalization of recreational marijuana.

The majority of the research cited in this paper did not inquire into or discuss the difference in support of the legalization of marijuana for medicinal purposes and the support of the legalization of the substance for recreational purposes. The questions asked in this research impelled respondents to share their feelings towards marijuana in general, not in relation to its reason for usage. In this study, two separate questions were asked to differentiate respondents' feelings towards the legalization of medicinal marijuana and the legalization of recreational marijuana. These questions were asked independent of one another in an attempt to gauge the difference, if any, in levels of support. It is predicted that levels of support will be higher for medicinal marijuana.

Hypothesis 3: Support for both the legalization of marijuana for recreational reasons and the legalization of marijuana for medicinal reasons will be highest among African-Americans.

As discovered by several of the cited studies, African-Americans have one of the highest levels of support for the substance's legalization when compared to other social groups. But, as previously mentioned, this research did not identify whether this support differed between the two primary reasons for legalization. This study hopes to discover whether such a difference exists and predicts that such a difference will not be found.

Methods

To gather data to test the aforementioned hypotheses, a twenty-four-question survey was developed. Questions

included information that would hopefully identify respondents' general feelings towards marijuana as a substance and the potential legalization of marijuana. There were five categories of questions: demographics, action, general feeling, criminalization, and geographical.

The demographic questions inquired about a respondent's religion, age-range, gender, political party, and ethnicity. Responses to the questions about ethnicity created data that allowed for the easiest testing of hypothesis three. To appropriately test hypothesis three, a comparison was made between each ethnicity's rate of approval for the legalization of marijuana. Respondents were given the choices: Caucasian, African-American, Asian, Native American, Hispanic/ Latino, Middle Eastern, Pacific Islander, and to specify if they identified with an ethnicity that was not listed.

The questions regarding each respondent's actions inquired about the likelihood of a respondent to contact legislators regarding the topic of the legalization of marijuana. Another question in this category asked respondents whether they had previously used the substance. In an attempt to gather accurate responses to this question, respondents were reminded that answers to the survey were anonymous. Responses to this question were limited to yes, no, or prefer not to say. This specific question is used to test hypothesis one. To test this hypothesis the levels of support for legality were compared between people who admitted to having previously used the substance and people who had not.

Questions in the general feeling category attempted to provide responses similar to those used in previous research. These questions asked respondents to declare whether they believed marijuana should be legal. Two questions were asked specifically about legality, one inquired about recreational marijuana and the other about medicinal marijuana. Respondents were limited to answer yes, no, or unsure. Responses to these two questions allowed for all three hypotheses to be tested. The other questions in this category examined respondents' feelings towards the perceived dangers of marijuana. These

questions were not used to test any of the three hypotheses.

The questions regarding criminalization and geographic location were not used to test the hypotheses mentioned previously. The criminalization questions were written in an attempt to gather respondents' feelings towards the criminal punishments being used on people who have been convicted of crimes involving marijuana. One question asked respondents about mandatory minimum sentences and another asked about the level of government that determines the legality of marijuana. The geographic questions were written in the assumption that the majority of the survey's respondents would be located in Kentucky and asked respondents to approve or disapprove of a bill recently introduced into the Kentucky House of Representatives.

The survey was created on a database called Qualtrics. The database allowed for questions with different forms of responses to be developed. Within the twenty-four-question survey response options included feeling thermometers, multiple-answers, and single-answers. None of the responses were forced, meaning respondents could refuse to respond to any question they felt uncomfortable with answering. Within the single-answer questions an 'unsure' or 'prefer not to say' response was provided to encourage respondents to answer every question. The survey was administered through social media. It was shared on Snapchat, Facebook, Instagram and Twitter. It was also administered through text-message and a forum shared among classmates.

Results

After the survey was administered, 100 responses were recorded. Only 89 of the 100 respondents had completed the survey. The responses are not statistically representative of the population of the United States and should not be considered as such. 77.4% of respondents identified as Caucasian. 14.1% identified as African-American. The remaining respondents identified as Hispanic/ Latino, Native American, and Biracial. There were no recorded responses from respondents who

		Yes	No	Prefer not to say	Total
Do you think the use of marijuana, for medicinal purposes, should be legal?	Yes	67 97.10%	15 88.24%	1 100.00%	83 95.40%
	No	1 1.45%	1 5.88%	0 0.00%	2 2.30%
	Unsure	1 1.45%	1 5.88%	0 0.00%	2 2.30%
	Total	69 100.00%	17 100.00%	1 100.00%	87 100.00%
Do you think the use of marijuana, for recreational purposes, should be legal?	Yes	63 91.30%	4 23.53%	1 100.00%	68 78.16%
	No	2 2.90%	9 52.94%	0 0.00%	11 12.64%
	Unsure	4 5.80%	4 23.53%	0 0.00%	8 9.20%
	Total	69 100.00%	17 100.00%	1 100.00%	87 100.00%

Figure 1: Cross tab with data for Hypotheses 1 & 2

	Keeping in mind that responses to this survey are anonymous, have you ever used marijuana?	
Do you think the use of marijuana, for medicinal purposes, should be legal?	Chi Square	2.49*
	Degrees of Freedom	4
	p-value	0.65

*Note: The Chi-Square approximation may be inaccurate - expected frequency less than 5.

	Keeping in mind that responses to this survey are anonymous, have you ever used marijuana?	
Do you think the use of marijuana, for recreational purposes, should be legal?	Chi Square	39.98*
	Degrees of Freedom	4
	p-value	0.00

*Note: The Chi-Square approximation may be inaccurate - expected frequency less than 5.

Figure 2: Statistical significance of the data in Figure 1.

identified as Asian, Middle, Eastern, or Pacific Islander. 73.6% of respondents identified as female. 25% of respondents identified as male. 1.1% of respondents chose not to identify with a gender.

To test hypothesis one the answers to three questions were compared. To view the cross-tabulation of this data, view Figure 1. Sixty-nine respondents admitted to having used marijuana previously, while 17 denied having used the substance, and one preferred not to say. Of the respondents who had previously used marijuana, 97% agreed that marijuana should be legalized for medicinal purposes. 1.45% of the respondents disagreed and 1.45% were unsure. 91.3% of the same respondents agreed that marijuana should be legalized for recreational purposes. 2.9% disagreed and 5.8% were unsure. Among the respondents who declined having used the substance previously, 88.2% agreed that marijuana should be legalized for medicinal purposes. 5.8% of these respondents disagreed and 5.8% were unsure. When asked about legalization for recreational purposes, only 23.5% of people who declined having used the substance agreed that it should be legalized for this reason. 52.9% believed that the substance should not be legalized for recreational purposes. According

to this data hypothesis one is correct, furthering validation for Palali and Ours' theory of self-interest (2017). To view the statistical significance of this data, see Figure 2.

To test hypothesis two, answers to both questions provided in the general feeling category regarding legality were compared. According to the survey's responses, 95.4% of all respondents believed that marijuana should be legalized for medicinal purposes. When asked if marijuana should be legalized for recreational purposes, 78.2% of respondents said yes. This data and statistical significance of these questions can be seen in Figure 1 and Figure 2. According to the data found from the responses in this survey, it can be said that people are more supportive of the legalization of marijuana for medicinal purposes than they are of the substance's legalization for recreational purposes. This proves hypothesis two to be correct.

To test hypothesis three, answers to three questions were compared. The researcher compared respondents' identified ethnicity with their answers on the questions regarding the reason for legality of the substance. According to this data, 84.6% of African-American respondents agreed that marijuana should be legalized for medicinal purposes. This was slightly lower than Caucasian, Native American, and Biracial respondents. African American support for this form of legalization was higher than Hispanic/Latino support. 76.9% of African-American respondents agreed that marijuana should be legalized for recreational purposes. This level of support was lower than the level of support expressed by Caucasian and Biracial respondents. African-American respondents expressed a higher level of support for recreational legalization of the drug than Hispanic/Latino and Native American respondents. According to this data, hypothesis three is incorrect. African-American respondents consistently supported the legalization of marijuana for both medicinal and recreational purposes at lower levels than other ethnicities. This data can be seen in a cross-tabulation in Figure 3. The data's statistical significance can be seen in Figure 4.

		With which ethnicity/race do you identify? (Select all that apply.)								
		African/ African American	Native American	Asian	Caucasian	Hispanic/Latino	Middle Eastern	Pacific Islander	Other (specify)	Total
Do you think the use of marijuana, for medicinal purposes, should be legal?	Yes	11 84.62%	4 100.00%	0 0.00%	71 98.61%	1 50.00%	0 0.00%	0 0.00%	1 100.00%	83 95.40%
	No	2 15.38%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	2 2.30%
	Unsure	0 0.00%	0 0.00%	0 0.00%	1 1.39%	1 50.00%	0 0.00%	0 0.00%	0 0.00%	2 2.30%
	Total	13 100.00%	4 100.00%	0 100.00%	72 100.00%	2 100.00%	0 100.00%	0 100.00%	1 100.00%	87 100.00%
Do you think the use of marijuana, for recreational purposes, should be legal?	Yes	10 76.92%	3 75.00%	0 0.00%	57 79.17%	1 50.00%	0 0.00%	0 0.00%	1 100.00%	68 78.16%
	No	3 23.08%	1 25.00%	0 0.00%	8 11.11%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	11 12.64%
	Unsure	0 0.00%	0 0.00%	0 0.00%	7 9.72%	1 50.00%	0 0.00%	0 0.00%	0 0.00%	8 9.20%
	Total	13 100.00%	4 100.00%	0 100.00%	72 100.00%	2 100.00%	0 100.00%	0 100.00%	1 100.00%	87 100.00%

Figure 3: Cross tab with data for Hypotheses 3

		With which ethnicity/race do you identify? (Select all that apply.)
Do you think the use of marijuana, for medicinal purposes, should be legal?	Chi Square	32.65*
	Degrees of Freedom	14
	p-value	0.00

Note: The Chi-Square approximation may be inaccurate - expected frequency less than 5.

		With which ethnicity/race do you identify? (Select all that apply.)
Do you think the use of marijuana, for recreational purposes, should be legal?	Chi Square	7.69*
	Degrees of Freedom	14
	p-value	0.90

Note: The Chi-Square approximation may be inaccurate - expected frequency less than 5.

Figure 4: Statistical significance of the data in Figure 3.

Discussion

Previous literature involving the public opinion of marijuana legalization argues that people with different demographic backgrounds have different opinions on illicit drug use and legalization. Following the drastic increase in general public approval for the substance's legalization over the past three decades, a current attempt to identify and categorize public opinion on the issue was beneficial (Schnabel and Sevell, 2017). The majority of previous literature did not identify the difference between the approval of legalization for medicinal use versus legalization for recreational use, which provided the opportunity to fill in a gap in the current research. Though the present survey was not completely representative of the overall public opinion on the topic, it did provide insight on the cross-section between different demographics and their opinions of both the legalization of marijuana for medicinal use and the legalization for recreational use.

Conclusions

The American public's support towards the legalization of marijuana has grown significantly and consistently since the 1990's (Felson et al., 2019). Originally, public opinion towards marijuana was primed by constant negative media attention. Support for legalization of the substance was below 20% as recently as 1988. More recently, support has consistently been reported as being above 50% (Schnabel and Sevell, 2017). This drastic change over a relatively short period of time has been a subject of question to many recent researchers, some of which have hypothesized that this growth has been a societal transition (Schnabel and Sevell, 2017; Galston and Dionne, 2013; Felson et al., 2016; Stringer and Maggard, 2016). The reasoning behind such a transition has not been proven but has been hypothesized as a societal movement of liberalization and a societal growth of ambivalence (Schnabel and Sevell, 2017; Galston and Dionne, 2013).

The focus of this paper is the public opinion on marijuana and which social groups have higher support for legalization than others. Within this paper, hypotheses and theories of recent literature were discussed and compared. After a review of this literature, three hypotheses were developed. Hypothesis one claims that the idea of the theory of self-interest applies to a person's support for the legalization of marijuana. Hypothesis two argues that support for medicinal marijuana will be higher than support for recreational marijuana. Hypothesis three theorizes that support for both forms of legalization of marijuana will be higher among African-Americans. A survey was developed and administered across social media, its questions written in hopes of providing data to prove or disprove these hypotheses. With the gathered data, hypotheses one and two were proven accurate. Hypothesis three was inaccurate. However, the data collected from the survey was not statistically significant and should not be taken to be a meaningful representation of the current state of the public opinion on marijuana.

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Do Blue Jays (*Cyanocitta cristata*) and Carolina Chickadees (*Poecile carolinensis*) Express Differential Alarm Calls in the Presence of a Domestic Dog (*Canis familiaris*)?

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Abstract

Avian alarm calls are a conspicuous behavior intended to warn hetero- and conspecifics of imminent danger. This study sought to ascertain whether Blue Jays (*Cyanocitta cristata*) and Carolina Chickadees (*Poecile carolinensis*) would express differential alarm calls when presented with a lone hiker or a hiker walking with a leashed dog. My hypothesis was that, because humans are larger and taller than dogs, both species would be more fearful of a human than a dog; and a dog on a leash would be considered part of a "predatory unit" with the hiker and not considered more threatening. My prediction was that no significant differences would be found in number of birds observed, number of alarm calls heard, or intensity of chickadee calls (which were recorded as number of *dees* recorded). Four pairs of experimental hikes (eight total hikes, two in each location, one with dog and one without) were completed in four different green spaces in Kenton and Boone Counties, Northern Kentucky during March 2021. All hikes were an hour long, and hikes with dog all were with the same dog. Manual notes and audio recordings were used for data collection. Mean number of birds and mean number of calls for each bird on each hike were calculated, and four paired samples t-tests completed. All CACH *dee* data were categorized into three bins and given dog or no dog status, and χ^2 analysis performed. Significance was not found in number of birds or number of alarm calls; significance was found in CACH call intensity. Repeat studies using video equipment/continuous observation could control for lurking variables and reveal more nuanced and complex antipredator behaviors in these species.

Introduction

In the wild, birds face many threats, with the risk of depredation being chief among them (Templeton et. al 2005, Soard and Ritchison 2008, Zachau and Freeberg 2012). Avian alarm calls are a conspicuous form of antipredator behavior that is believed to be primarily used to warn hetero- and conspecifics of a potential predator nearby (Gill and Bierema 2013). Some research has found that these calls not only warn of a potential threat, but also provide information about the type of predator observed (Gill and Bierema 2013, Soard and Ritchison 2008).

The Blue Jay (*Cyanocitta cristata*) and the Carolina Chickadee (*Poecile carolinensis*) are two native North American passerines that rely heavily on sounding alarm calls to alert con- and heterospecifics to potential predators in the area (Mostrom et al. 2020, Soard and Ritchison 2008, Smith et al. 2020, Zachau and Freeberg 2012). Blue Jays (hereafter referred to as BLJA) are commonly found in the United States and Canada east of the Rocky Mountains, and Carolina Chickadees (hereafter referred to as CACH) are commonly found in the Midwestern and Southern United States east of the Rockies (Mostrom et al. 2020, Smith et al. 2020). Both species are considered common backyard birds, with some tolerance for human activity (Mostrom et al. 2020, Smith et al. 2020).

BLJA and CACH alarm calls are commonly encountered in green spaces and backyards (Mostrom et al. 2020, Smith et al. 2020). BLJA vocalizations vary and can be hard to identify at times, but their distinctive, nonmusical *jeer* call is familiar and recognizable even to a casual observer (Hardy 1979, Smith et al. 2020). Variation in this monosyllabic, nonmusical call has been reported, potentially as an attempt to mimic a nearby predator (Smith et al. 2020). Although this variation may represent a difference in intensity, I opted to only record the number of jeer calls for this study (Smith et al. 2020). CACH express a repertoire that can be easily recognized, including a common song males use to attract females, and a very distinct *chickadee-dee-dee* alarm call (Mostrom et al. 2020, Soard and Ritchison 2008, Zachau and Freeberg 2012). The alarm calls of CACH and their close relatives, the Black-capped Chickadee (BCCH) have been studied, and in both species, it was found that their vocalizations encode information about predator size and perceived threat (Soard and Ritchison 2008, Templeton et al. 2005, Zachau and Freeberg 2012).

Although dog walking is a common activity in public areas, there have been few studies examining avian perception of domestic dogs (*Canis familiaris*) in North America. Banks & Bryant (2007) found that in an Australian woodland region, off-lead dog walking led to a reduction of bird diversity (~35%) and abundance (~41%). These reductions were consistent in sites where dog walking was common and in sites where it was banned, suggesting that wild birds do not readily habituate to the presence of a potential predator (Banks and Bryant 2007). Although Banks and Bryant (2007) found that walking with a dog can induce anti-predator behaviors, their study used unleashed dogs, which may be perceived differently than a dog that is leashed and walking with a human as one unit, however.

This study sought to determine, based on the responses of BLJA and CACH alarm calls, whether a lone hiker would elicit a different response than a hiker with a leashed dog. I measured the number of BLJA and CACH seen and heard on each hike, the number of BLJA jeer calls and number of consecutive CACH chickadee calls heard on each hike, and the number of CACH dees at the end of each chickadee call heard, which may be regarded as a measurement of call intensity (Mostrom et al. 2020, Templeton et al. 2005, Smith et al. 2020, Soard and Ritchison 2008, Zachau and Freeberg 2012). My hypothesis was that, given the much larger size and upright posture of *Homo sapiens* relative to *Canis familiaris*, birds resting on tree branches would perceive a human, which is larger and closer (by height), as a greater threat than a dog, and the addition of a leashed dog to a "predatory unit" would not elicit a significantly different response. Therefore, my prediction was that the mean BLJA and CACH observed, mean number of alarm calls, and CACH number of *dees* at the end of each call would not significantly differ on hikes with or without a dog.

Methods

Four pairs of experimental hikes (eight total hikes, two in each location) took place in four different parks and green spaces in Kenton and Boone Counties, Kentucky, USA during the month of March 2021. The sampling locations were: Middleton-Mills Park in Covington (3/2/21 and 3/6/21); Erlanger Lions Park and the suburban street leading up to it, Sunset Ave., Erlanger (3/9/21 and 3/13/21); Lincoln Ridge Park, Independence (3/16/21 and 3/20/21); and Big Bone Lick State Historic Site, Union (3/23/21 and 3/27/21). All hikes took place between 11:00am-4:00pm EST/EDT.

For each pair of hikes, the first hike consisted of just myself, alone on a Tuesday, and the second hike consisted of myself and a leashed dog at the same park/green space and walking the same route on the Saturday of the same week. The same four-year-old, ~55 lb., spayed female mixed-breed dog with black and white fur was used for each of the hikes with dog

number of alarm calls by both species, I measured the intensity of the CACH alarm call by counting the number of *dees* at the end of each call (Soard and Ritchson 2008). After all field data were collected, field notes were tabulated and recordings were reviewed to corroborate the notes taken by hand.

This study was experimental, as the predator in the environment was altered. The independent variable was the perceived predatory unit (hiker or hiker plus leashed dog), and the dependent variables were the intensity of CACH calls (number of *dees*), the number of BLJA and CACH individuals seen and heard in the vicinity, and the number of BLJA and CACH alarm calls heard. Birds were identified by sight with the aid of binoculars when needed, and recognition of sound when unable to see the bird. Each data point was tallied in the field, then after each hike, the recordings made were listened to in order to corroborate my handwritten tally. When a discrepancy was found, I erred on the side of caution and removed that data point from my analysis.

Sampling was continuous, and calls from 15 BLJA and 24 CACH were recorded. It is possible that some of these birds were the same individual on the two identical hikes; a paired samples t-test was run to correct for this. To maintain consistency, an attempt was made to walk at the same pace and with the same noise level on all hikes. Levey et al. (2009) found that Northern Mockingbirds (*Mimus polyglottos*) are able to recognize individual humans, and I have anecdotally

Figure 1. Lola, my canine companion

(Fig. 1). Each hourlong hike consisted of a 20-min. walk (±5 min.), followed by a seated 20-min. (±5 min.) rest period, and ending with another 20 min. (±5 min.) walk. Each hike was conducted on a circular path, so that no part of the hike was repeated. The number of BLJA and CACH seen and heard, the number of calls from BLJA and CACH heard, and the number of CACH *dees* heard at the end of each call were recorded by hand in a small notepad and recorded, when able, on a Nokia® 7.1 cell phone or a Sony® ICD-PX370 Mono Digital Voice Recorder (Soard and Ritchison 2008). In addition to the
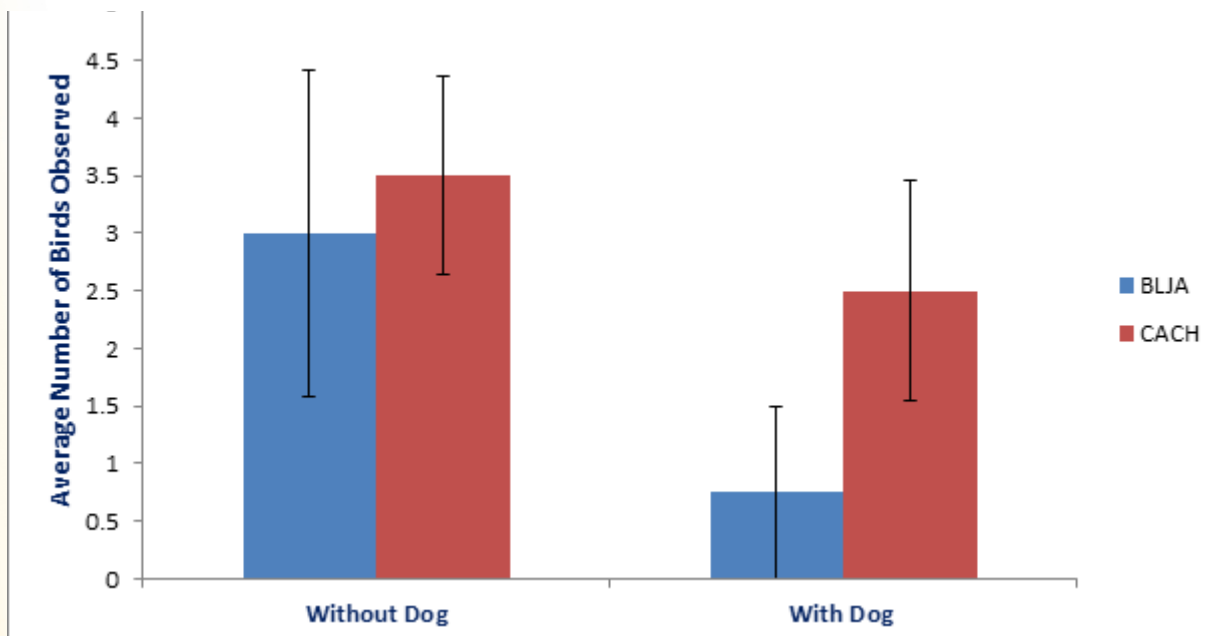

Figure 2. Mean number of birds observed without and with dog. The mean number of BLJA observed without dog was 3 (SE=1.41) and with dog was 0.74 (SE=0.75). The mean number of CACH observed without dog was 3.5 (SE=0.87) and with dog was 2.5 (SE=0.97).
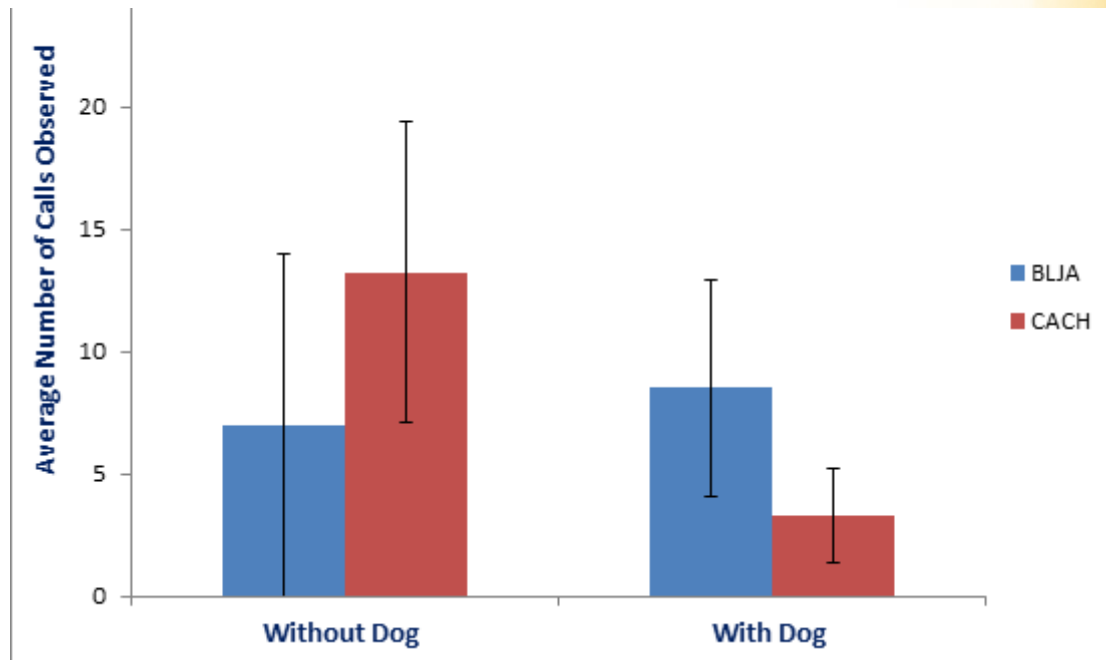
Figure 3. Mean number of calls observed without and with dog. The mean number of BLJA alarm calls heard without dog was 7 (SE=7.00) and with dog was 8.5 (SE=4.41). The mean number of CACH alarm calls heard without dog was 13.25 (SE=6.16) and with dog was 3.25 (SE=1.93).

discovered this to be true with Red-winged Blackbirds (*Agelaius phoeniceus*), Tree Swallows (*Tachycineta bicolor*) and House Finches (*Haemorhous mexicanus*); therefore, the study was designed so that I spaced the hikes out a few days apart and only hiked each trail twice (once alone, and once with dog), to minimize individual recognition while maintaining consistency in population sampling. Feng and Liang (2020) found that eight species of waterfowl displayed an appreciable reduction in flight initiation distance (FID) in encounters with individuals dressed in fishing attire than with those who were not; therefore, I wore very similar attire on each hike, in muted black, gray and navy blue hues. Jiang et al. (2020) found that Eurasian Tree Sparrows (*Passer montanus*) displayed shortened FIDs in encounters with humans wearing face masks; in light of this, I did not cover my nose and mouth during these hikes. Weather patterns remained similar for each hike, with no precipitation or windy conditions, and average seasonal temperatures for the month and climate. With all data recorded on days with similar conditions, an assumption was made that potential confounding variables arising from extreme weather would be minimized.

Statistical analyses were all completed using IBM® SPSS® Statistics 26.0. For the number of birds observed, the mean number of CACH and BLJA from each hike were calculated from the total numbers recorded, and two-tailed paired samples t-tests were performed comparing means for each species with or without dog at each location. For the number of CACH and BLJA alarm calls heard, the mean number of

alarm calls per species, per hike were calculated from the total numbers recorded; and two-tailed paired samples t-tests were performed comparing means for each species with or without dog at each location. For CACH number of *dees*, the cumulative number of *dees* observed per call for all hikes were placed in three categorical bins: low (1-3), medium (4-6) and high (7-9); each bin was paired with dog or no dog status, and a chi-square analysis completed. This analysis was applicable to CACH number of *dees* only, as it is a measurable variable of call intensity in addition to the number of calls. BLJA *jeers*, by contrast, are singular and monosyllabic, which was accounted for in number of calls measured in the t-tests.

Results

No significant difference was found in number of BLJA ($t_{0.05(2),3}$=-1.192; P=0.319, Fig. 2) or CACH ($t_{0.05(2),3}$=0.423, P=0.423, Fig. 2) observed with or without a dog.

No significant difference was found in number of BLJA ($t_{0.05(2),3}$=-1.192; P=0.319, Fig. 2) or CACH ($t_{0.05(2),3}$=0.423, P=0.423, Fig. 2) observed with or without a dog.

No significant difference was found in number of BLJA alarm calls ($t_{0.05(2),3}$=0.159; P=0.884, Fig. 3) or CACH alarm calls ($t_{0.05(2),3}$=-1.359, P=0.267, Fig. 3) heard with or without a dog.

A significant difference was found in observed and expected

Table I. Crosstabulation of Observed and Expected Values calculated for χ^2 analysis.

| | | Number of Dees | | | |
		Low (1 - 3)	Medium (4 - 6)	High (7 - 9)	Total
With Dog	Observed	11	22	9	42
	Expected	17.8	16.4	7.8	42
Without Dog	Observed	66	49	25	140
	Expected	59.2	54.6	26.2	140

bin frequencies of CACH number of *dees* per call (n=182, $\chi^2_{(0.05),2}$=6.075, P=0.048, Table I).

Discussion

As predicted, mean BLJA and CACH observed and mean number of alarm calls did not significantly differ for hikes with or without a dog, partially supporting my hypothesis that adding a leashed dog to a "predatory unit" would not elicit a significantly different response. However, significance was found with CACH number of *dees*, which were higher than expected for hikes with a dog, and lower than expected without a dog.

Because this study took place in public parks with wild, free-roaming birds, the possibility of confounding and lurking variables should be considered. All of the hikes without a dog took place on a weekday; and those with dog on a weekend, when the sampling locations were more crowded. The increased presence of park-goers on Saturday may have contributed to altered behavioral patterns in the birds prior to data collection. Although data collection took place in the span of one month, it is possible that as the month progressed, hormone levels may have been changing due to the beginning of breeding season for both species, which could have impacted behavior (Mostrom et al. 2020, Smith et al. 2020).

The differences found in number of *dees* suggests that a differential perception in threat was perceived by CACH, and corroborate previous findings. Soard and Ritchison (2008) found that CACH alarm calls contain enough variation to serve as a graded signal that informs other con- and heterospecifics on the size and perceived threat of the predator. In their study, they found that a call warning of larger predators, which are perceived as less threatening (eg., a Red-tailed Hawk) would have more *chick* and less *dee-dee-dee*; whereas a smaller predator that is highly threatening (eg., a Screech Owl) would elicit fewer *chicks* and more *dee-dee-dees* (Soard and Ritchison 2005). The authors found that CACH displayed higher responsiveness to playback calls that had more *dee-dees*, thus providing further evidence in support of the hypothesis that these calls are used to warn others of imminent danger (Soard and Ritchison 2008). This study used a live animal instead of decoys, and yielded congruent results, further supporting the hypothesis that these calls are used as a graded conspecific warning signal.

Smith-Castro and Rodewald (2009) found that FID from a human observer in Northern Cardinals (*Cardinalis cardinalis*) was not significantly different in birds nesting closer to recreational areas or farther away, suggesting resistance to habituation. In spite of this resistance, birds are known to display reduced fear responses for potential threats that are not paired with negative outcomes (Feng and Liang 2020, Van Donselaar et al. 2018). These conflicting findings suggest that responses may differ by individual bird, and could have contributed to some of the variation in results. Therefore, repeating this study with an additional form of monitoring the behavior of each individual CACH (with video recording equipment and/or an observer behind a blind) for fleeing or sleeking behavior in lieu of alarm calling may yield findings in support of an alternate hypothesis showing that CACH are more fearful of the hiker with dog, and would corroborate the significant difference in dees that was found (Mostrom et al. 2020). A repeat study of BLJA with continuous sampling of the same individual bird by video recording equipment/observer behind a blind could find that BLJA will move further away from the hiker with dog while continuing to emit alarm calls, indicating a difference in perceived threat. A more fine-tuned study of each individual bird's physical behaviors in additional to vocalizations could reveal more subtle and nuanced behaviors that contribute to each individual birds' survival. And finally, if confounding variables influenced the final results of this study, attempting to control for those variables and increasing the sample size may yield differing results.

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Predictive Factors of Disordered Eating Behaviors

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Abstract

This study investigated predictors of disordered eating behaviors. Seventy-nine participants (19 males and 59 females with a mean age 20.3) completed surveys measuring social support, coping mechanisms, attachment style, COVID-19 precautions, living situation, childhood trauma, and discorded eating behaviors. Adverse childhood experiences were a significant predictor of disordered eating behavior. Social support was not a significant predictor of disordered eating behaviors, nor was it a moderating variable in the relationship between adverse childhood experiences and disordered eating behaviors. Self-blame was a marginally significant moderator of the relationship between adverse childhood experiences and disordered eating. Adaptive coping was not a significant moderator between adverse childhood experiences and disordered eating. Knowing the predictive role adverse childhood experiences plays in disordered eating could lead to early intervention and better outcomes in eating disorders. Furthermore, although teaching adaptive coping mechanisms may not aid in lessening disordered eating in the future, identifying whether a child has self-blame may play a role in early intervention.

Introduction

The COVID-19 pandemic has upended the lives of humans around the globe. Although all have been impacted, it is important to note specific impacts that the pandemic is having and not just focus on broad areas such as mental health or physical health. One such specific area of struggle can be seen in the effect the COVID-19 pandemic has had on disordered eating behaviors.

COVID-19 and Eating Disorders

Although still in progress, studies of the effect of the pandemic on those currently with eating disorders and disordered eating behaviors in the general public paint a negative picture. A study in Australia examined the changes in eating and exercise behaviors following the announcement of the global pandemic (Phillipou et al., 2020). Among participants (primarily female) who reported a history of eating disorders, 64.5% reported a little or a lot more food restriction, 47.3% reported increased exercising, 35.5% reported increased binge eating behaviors, and 18.9% reported increased purging behavior since the start of the pandemic. In participants with anorexia nervosa, 67.1% of participants increased restricting behaviors, 48.9% of participants increased exercise, 20.5% increased binge eating, and 18.2% increased purging. By comparison, among the general population, 27.6% reported greater levels of food restriction, 34.8% reported increased exercising, and 34.6% reported increased binge eating. In the general population, however, there was no reported change in purging behaviors (Phillipou et al., 2020).

Termorshuizen et al. (2020) not only investigated the American population but also attempted to explain the causes of the worsening of disordered eating behaviors. Termorshuizen et al. (2020) studied participants in both the United States and the Netherlands. The results revealed that the primary source of concern related to increased disordered eating behaviors was lack of structure (79% of participants in the U.S. and 66% of participants in the Netherlands). This lack of structure was most likely due to changes in day-to-day habits. Following lack of structure, 58% (U.S.) and 57% (NL) of participants were concerned about worsening of disordered eating behaviors due to being in a triggering environment, which was defined as being in an atmosphere where participants felt eating disorder symptoms were awakened. Lack of social support and being unable to access food that corresponded with their style of eating was also a worry to 58% (US) and 57% (NL) of participants (Termorshuizen et al., 2020). The data suggest that many direct responses to social isolation policies such as lack of social support and lack of access to their meal plan could be related to increased disordered eating behaviors.

Adverse Childhood Experiences and Disordered Eating

While Termorshuizen et al. (2020) discussed causes of eating disorders in relation to the pandemic, other researchers have offered evidence in support of adverse childhood experiences being a predictor as well. Lejonclou et al. (2013) conducted a study on 296 Swedish women investigating the relationship between trauma and disordered eating. Among women with no history of disordered eating, none had experienced the same type of interpersonal trauma more than five times. Among women with a history of disordered eating, 52% had experienced the same type of interpersonal trauma more than five times. Lastly, there was a significant difference in the average number of adverse childhood circumstances reported, with the clinical group reporting an average of 0.56 adverse childhood circumstances and the nonclinical group reporting an average of 0.22 adverse childhood circumstances (Lejonclou et al., 2013).

Lejonclou et al. (2013) provided evidence that women who have a history of disordered eating are more likely to have experienced interpersonal trauma and adverse childhood experiences. The study, however, only included and only examined traumatic experiences in three categories– interpersonal, non-interpersonal, and adverse childhood circumstances. Research suggests that adverse childhood experiences can be divided into three main groups– abuse, neglect, and household challenges (Felitti, 1998). Each category can then be further divided into various categories.

Kinzl et al. (1996) expanded the study of adverse childhood experiences by investigating various categories of adverse childhood experiences such as physical abuse and sexual abuse on male participants. Furthermore, family background information and parent-child relationship information were gathered to paint a fuller image of the participant's background. The results revealed that men with serious childhood physical abuse and/or adverse family backgrounds were at an increased risk for developing eating disorders (Kinzl et al., 1996). This study suggests that the pattern of a relationship between adverse childhood experiences and eating disorders holds true in male and female populations.

Coping and Attachment Style

Research has also suggested a relationship between adverse childhood experiences, attachment style, and coping mechanisms. Perlman et al. (2016) surveyed college students (primarily White women) regarding their experience with childhood trauma, coping strategies, and attachment style. First, it was found that college students with a history of

physical abuse were more likely to have the avoidance type of attachment. Furthermore, a history of emotional abuse was associated with both avoidant and anxiety attachment types. Regarding coping strategies, physical abuse was associated with coping through substance use and the broad maladaptive coping subscale. Emotional abuse was associated with each type of maladaptive coping, as well as the maladaptive coping subscale. Perlman et al. (2016) did not measure disordered eating. It is unknown whether the maladaptive coping strategies and dysfunctional attachment styles that are associated with adverse childhood experiences also influence the association between eating disorders and adverse childhood experiences.

To address this question, Mitchell and Mazzeo (2005) analyzed whether social support (which is a direct result of attachment style, as the more efficiently a person can attach to someone, the better the social support system they can build) plays a moderating role between adverse childhood experiences and disordered eating. The study was conducted with 168 university males. The results revealed that participants who suffered from high physical neglect during childhood, but had high social support from friends, were less likely to be distressed. Those who had high levels of physical neglect and low social support were the most distressed (Mitchell & Mazzeo, 2005). Although the authors did not research the role of coping strategies as a possible moderating variable, they did demonstrate that social support is a moderator, which is further examined in the current study.

Current study

The goal of this research is to examine the relationship between adverse childhood experiences, social support, coping mechanisms and disordered eating behaviors during the COVID-19 pandemic. Predictions for this study were multifaceted: (1) Participants with a history of adverse childhood experiences would exhibit more disordered eating behaviors than participants without a history of adverse childhood experiences, (2) Among participants with a history of adverse childhood experiences, those with maladaptive coping strategies would exhibit more disordered eating than those with adaptive coping strategies, (3) Social support would be an independent predictor of disordered eating behavior, and maladaptive coping would serve as a moderating variable between adverse childhood experiences and disordered eating behaviors, (4) Among participants with a history of adverse childhood experiences, having a strong support system would result in less disordered eating behavior than having a weak support system, and (5) Participants with an avoidant or anxious attachment style will exhibit more disordered eating behaviors than those who do not exhibit these attachment styles.

Methods

Participants

Participants were recruited from the undergraduate population at a public university in the Midwest. Participants consisted of 79 undergraduates (74.68% female, 24.05% male) ranging in age from 18 to 41 years (M = 20.3 years, SD = 3.58 years). Participants were White (86.1%), Black/African American (5.1%), Latinx (5.1%), other (2.5%), and Asian American (1.3%). Furthermore, the majority of participants were employed (66.6%). Most participants reported living with someone (96.2%) and, when asked further, it was discovered the majority lived with parents (67.2%), followed by nonrelated roommates (17.1%), a significant other (10.5%) and lastly with other family (5.3%). The majority had a pet in the home (78.5%). Also, most participants identified that they had been in the same living situation since March 2020 (74.7%), and that neither they nor someone they live with have suffered the loss of a job since March 2020 (84.8%). When asked questions regarding COVID-19 precautions, the majority of participants identified that they had been limiting face-to-face contact either a lot more (64.6%) or somewhat more (31.6%) and limiting the amount they leave their home either a lot more (48.1%) or somewhat more (41.8%) since the start of the pandemic.

Materials

Participants completed seven measures.

Perceived Social Support

To assess the social support participants feel they have, participants were asked to complete the Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988). The Multidimensional Scale of Perceived Social Support is a 12-item self-report Likert scale questionnaire which asks questions regarding how social supported by family, friends, and significant others the participant feels. Participants rate how much they disagree or agree (1 = *Very Strongly Disagree*, 7 = *Very Strongly Agree*) with the statements.

There is sufficient evidence to consider this scale both reliable and valid. Internal consistency reliability coefficients have been calculated for each of the three subscales in a sample of undergraduate students: family (N = 610, M = 23.03, SD = 5.67, McDonald's ω = 0.931); friends (N = 610, M = 22.79, SD = 5.48, McDonald's ω = 0.942), and significant others (N = 610, M = 22.97, SD = 6.03, McDonald's ω = 0.943).

Attachment Style

To assess the attachment style of each participant, the Experiences in Close Relationships-Revised (ECR-r) scale (Fraley et al., 2000) was utilized. The ECR-r is a 36-item self-report scale where participants are asked to rate on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*) how much they feel a statement applies to them. Half the items assess

attachment-related anxiety, and half assess attachment-related avoidance.

This scale has strong internal consistency, with Cronbach's α = 0.93 for attachment-related avoidance and Cronbach's α = 0.92 for attachment-related anxiety. (Fairchild & Finney, 2006).

Coping Strategies

The Brief-Coping Orientation to Problems Experienced (COPE; Carver, 1997) scale was used to measure coping mechanisms. The Brief-COPE is a 28-item self-report scale aimed at measuring the degree to which participants utilize certain coping strategies. The strategies measured are active coping, planning, positive reframing, acceptance, humor, religion, using emotional support, using instrumental support, self-distraction, denial, venting, substance use, behavioral disengagement, and self-blame. Each subscale includes two questions. Participants are asked to rate each statement on a scale of 1 (*I haven't been doing this at all*) to 4 (*I've been doing this a lot*).

Reliabilities for each subscale are at or exceed the Cronbach's α of 0.50: active coping (α = 0.68), planning (α = 0.73), positive reframing (α = 0.64), acceptance (α =0.57), humor (α =0.73), religion (α = 0.82), emotional support (α = 0.71), instrumental support (α = 0.64), self-distraction (α = 0.71), denial (α = 0.54), venting (α = 0.50), substance use (α = 0.90), behavioral disengagement (α = 0.65), and self-blame (α = 0.69).

Adverse Childhood Experiences

The Childhood Trauma Questionnaire (CTQ; Bernstein et al., 2003) is a 28-item self-report measure designed to assess a range of childhood trauma. The measure is composed of six subscales: emotional abuse, physical abuse, sexual abuse, emotional neglect, physical neglect, and minimization/denial (used to identify those who respond in concordance with socially desirable events). Participants are asked questions regarding their experience growing up and are asked to rate how true that statement is on a scale from 1 (*never true*) to 5 (*very often true*).

In undergraduate populations, the scale has adequate internal consistency reliability: α =0.66 for physical neglect, α =0.96 for sexual abuse, α =0.77 for physical abuse, α =0.84 for emotional abuse, and α =0.86 for emotional neglect. Furthermore, the CTQ has convergent validity as it correlates highly with the Childhood Trauma Interview (Mitchell & Mazzeo, 2005).

Disordered Eating Behaviors

The Eating Disorder Examination Questionnaire (EDE-Q; Fairburn & Beglin, 1994) is a 28-item self-report questionnaire aimed at assessing eating disorder psychopathology, including disordered eating attitudes and behaviors within the past 28 days. The assessment evaluates four subscales related to disordered eating behaviors and attitudes including restraint (five items), eating concern (five items), shape concern (eight items) and weight concern (five item). For questions 1 through 12, participants are provided various behaviors and asked to rate how often they participated in those behaviors on a scale from 0 (*no days*) to 6 (*everyday*). In the present study, questions 1-12, 19-21, and 22-28 were utilized to create a EDE-Q global score. Questions 13-18 were not utilized in this subscale as their pattern of answering did not align with the other 22 questions (Friborg et.al, 2013).

This scale is shown to have good internal consistency, with a Cronbach's alpha ranging from 0.78 to 0.93 (Carey et al., 2019). Furthermore, the EDE-Q is shown to have strong test-retest reliability in men (r = 0.92), women (r = 0.90) and globally (r = 0.92). The EDE-Q has been shown to be in agreement with the Eating Disorder Examination (EDE) (an interview-based diagnostic tool) in behavioral features of eating disorders, dietary restraint, and concerns about shape. In the EDE-Q, various key behavioral features of eating disorders are asked about, and what is reported on the scale for each of these factors strongly correlates with what is found on an in-person EDE. These key behavioral factors include self-induced vomiting (Kendall's tau of 0.88 for a community sample and 0.91 for a patient sample), laxative misuse (Kendall's tau of 0.60 for community sample and 0.89 for patient sample), and binge eating (Kendall's tau of 0.45 for community sample and 0.60 for patient sample). The EDE-Q's assessment of restraint, shape concern, and weight concern is also correlated with measures from the EDE (restraint r = 0.81 for community sample and r = 0.78 for patient sample, shape concern r = 0.80 for community sample and r = 0.83 for patient sample, weight concern r = 0.79 for community sample and r = 0.85 for patient sample) (Fairburn & Beglin, 1993; Rose et. al., 2013).

Procedure

This study was completely anonymous and conducted through online survey platform software. Participants first completed an informed consent form. Participants then encountered each measure, starting with demographics and living situation questions. Next, participants were presented with the MSPSS, the ECR-r, the Brief COPE, the CTQ, and finally the EDE-Q. Lastly, participants were shown a debriefing screen.

Results

First, items that required such action were reverse scored and the needed subscales were created. The reliability of the subscales and scales were calculated, and all coefficients were greater than 0.6. Descriptive statistics were also calculated for each measure (Table I). I also conducted a bivariate correlation analysis between all scales and subscales. Pearson r correlation coefficients and Cronbach's alpha reliability coefficients are displayed in Table II. Because the social support, childhood trauma, and disordered eating measures had skewed distributions (and various transformations were conducted

Table I. Descriptive Statistics

Measure	Cronbach's alpha	Median	Mode	Standard Deviation
MSPSS	0.910	72.0	68.4	13.6
ECR-r Avoidance	0.937	2.92	3.05	1.21
ECR-r Anxious	0.927	3.39	3.23	1.27
Brief-COPE Substance Use	0.877	2.00	2.59	1.24
Brief-COPE Self-Blame	0.785	4.00	4.46	1.89
Brief-COPE Denial	0.826	2.00	2.96	1.57
Brief-COPE Advantageous Coping	0.824	22.0	22.2	5.60
CTQ	0.826	43.5	49.8	14.7
EDE-Q	0.890	2.65	2.92	1.53

without successful of normalizing the data), I also conducted a bivariate correlation analysis with Kendall's tau. The pattern of significant correlations was similar to that found with Pearson r.

To test the hypothesis that participants with a history of adverse childhood experiences would exhibit more disordered eating behaviors than participants without a history of adverse childhood experiences, I conducted a linear regression analysis to predict EDE-Q global scores from CTQ global scores. Adverse childhood experiences was a significant predictor of disordered eating behavior, $\beta = 0.36$, $t = 3.27$, $p = 0.002$. Thirteen percent of the variance in disordered eating was explained by adverse childhood experiences.

The creation of adaptive coping and maladaptive coping subscales, as used by Perlman et al. (2016) was investigated. Reliability analysis revealed that an adaptive coping subscale comprising the COPE subscales planning, positive reframing, emotional support, and instrumental support could be utilized (Cronbach's $\alpha = 0.82$). Reliability analysis showed that a maladaptive coping subscale comprised of substance use, self-blame, and denial could not be created (Cronbach's $\alpha = 0.57$). Therefore, these three subscales were analyzed separately.

The adaptive subscale was used to test hypothesis two, that among participants with a history of adverse childhood experiences, those with maladaptive coping strategies will exhibit more disordered eating than those with adaptive coping strategies. I conducted a moderation analysis to determine if the amount of adaptive coping mechanisms a participant exhibited moderated the relationship between adverse childhood experiences and disordered eating behavior. The analysis revealed that adaptive coping was not a significant moderator between adverse childhood experiences and disordered eating behavior, $Z = -0.86$, $p = 0.388$. Adaptive

coping did not have a significant direct influence on disordered eating behavior, $Z = 1.06$, $p = 0.291$.

The third hypothesis stated that 1) social support will be an independent predictor of disordered eating behavior, and 2) maladaptive coping will serve as a moderating variable between adverse childhood experiences and disordered eating behaviors. To determine whether social support was an independent predictor of disordered eating behavior, I conducted a linear regression analysis. There was no evidence that social support was a predictor of disordered eating, $\beta = 0.08$, $t = 0.69$, $p = 0.495$. To test the second part of the hypothesis, a moderation analysis was conducted with CTQ global score as the predictor and EDE-Q global score as the dependent variable. I treated each of the three COPE subscales of self-blame, denial, and substance use as a potential moderator. Neither substance use nor denial moderated the relationship between childhood trauma and disordered eating. Self-blame fell just short of statistical significance, $Z = 1.85$, $p = 0.064$. A simple slopes analysis revealed that the effect of childhood trauma on disordered eating behavior was stronger among participants who were high in self-blame versus those who were low in self-blame.

The fourth hypothesis was that, among participants with a history of adverse childhood experiences, having a strong support system will result in less disordered eating behavior than having a weak support system. To test this hypothesis, I conducted a moderation analysis with childhood trauma as the predictor variable, social support as the moderator variable, and disordered eating behavior as the dependent variable. Social support was not a significant moderator between childhood trauma and disordered eating, $Z = 1.33$, $p = 0.185$.

The fifth hypothesis was that participants with an avoidant or

Table II. Correlations and Cronbach's Alpha Values of Subscales

	MSPSS	ERC-r Avoidance	ECR-r Anxious	AC	Planning	PR	Humor	Acceptance	Religion	ES	IS	Denial	SU	Self Blame	CTQ	EDE-Q
MSPSS	1															
ERC-r Avoidance	-0.423***	1														
ECR-r Anxious	-0.327**	0.542***	1													
AC	0.245*	-0.082	-0.011	1												
Planning	0.092	0.034	0.035	0.724***	1											
PR	0.191	-0.120	-0.237*	0.465***	0.678***	1										
Humor	0.039	0.055	0.180	0.053	0.080	0.037	1									
Acceptance	0.166	0.125	-0.036	0.532***	0.583***	0.544***	0.136	1								
Religion	0.065	0.177	-0.035	0.247*	0.329***	0.479***	0.015	0.379***	1							
ES	0.333**	-0.153	-0.118	0.438***	0.393***	0.531***	-0.020	0.570***	0.333**	1						
IS	0.295**	-0.088	-0.024	0.426***	0.356***	0.454***	0.057	0.490***	0.478***	0.803***	1					
Denial	0.010	-0.000	0.200	0.089	0.091	-0.033	0.048	-0.0117	-0.115	0.007	-0.018	1				
SU	0.086	0.072	0.146	0.058	0.221	0.187	-0.085	0.039	0.066	0.162	0.147	0.282*	1			
Self Blame	-0.250*	0.382***	0.378***	-0.029	0.150	-0.026	0.104	0.068	-0.121	-0.003	-0.068	0.422***	0.212	1		
CTQ	-0.482***	0.308**	0.356**	-0.033	0.073	0.006	0.127	0.054	0.020	-0.042	-0.049	0.125	0.223	0.340**	1	
EDE-Q	-0.080	0.003	0.319**	0.123	0.054	0.019	0.309**	0.010	-0.059	0.109	0.144	0.181	0.068	0.335**	0.360**	1

AC= COPE Active Coping, PR = COPE positive reframing, ES = COPE Emotional Support, IS = COPE Instrumental Support, SU = COPE Substance Use, CTQ EA = CTQ Emotional Abuse, CTQ PA = CTQ Physical Abuse, CTQ SA = CTQ Sexual Abuse, CTQ EN = CTQ Emotional Neglect, CTQ PN = CTQ Physical Neglect . *** = $p < .001$, ** = $p < .01$, * = $p < .05$

anxious attachment style would exhibit more disordered eating behaviors than those who do not exhibit these attachment styles. To test this hypothesis, I conducted two linear regression analyses. Attachment-related avoidance did not predict disordered eating, $\beta = 0.00$, $t = .03$, $p = 0.978$. However, attachment-related anxiety did predict disordered eating, $\beta = 0.36$, $t = 2.84$, $p = 0.006$.

I also analyzed the relationship between living situation variables and social support. Independent samples t-tests demonstrated that neither pets ($t(76) = 0.55$, $p = 0.584$), job loss ($t(76) = 0.92$, $p = 0.363$), change in the living situation since March 2020 ($t(76) = 0.74$, $p = 0.465$), nor whether participants lived with others ($t(76) = 0.57$, $p = 0.569$) had a significant relationship with social support.

Lastly, I examined participants' COVID-19 precautionary behaviors. Ninety-seven percent of participants stated that they had limited the number of face-to-face interactions either "somewhat" or "a lot." Ninety percent of participants stated that they had limited the amount they leave the house either "somewhat" or "a lot." Because of the lack of variability for these measures, I could not determine whether COVID-19 precautionary behaviors were related to social support and disordered eating behavior.

Discussion

This goal of this study was to examine the relationship between adverse childhood experiences, social support, coping mechanisms, and disordered eating behaviors during the COVID 19 pandemic.

Hypothesis one stated that participants with a history of childhood trauma would experience more disordered eating behaviors than those without a history of childhood trauma. This hypothesis was supported. Childhood trauma was shown to be a significant predictor of disordered eating behavior. This result was expected, as the relationship is well documented in both males and females (Kinzl et al., 1996; Lejonclou et al., 2013).

Hypothesis two stated that, among participants with a history of adverse childhood experiences, those with maladaptive coping mechanisms would experience more disordered eating behaviors than those without maladaptive coping mechanisms. Results showed that only self-blame came close to moderating the relationship between childhood trauma and disordered eating, as the interaction effect fell just short of statistical significance. Furthermore, adaptive coping was not a significant moderator of the relationship between childhood trauma and disordered eating behaviors. More research is required to determine if other "negative" coping mechanisms serve as moderators. Perlman et al. (2016) documented the relationships between childhood trauma and coping strategies, finding that physical abuse and emotional abuse were associated with

maladaptive coping. This study builds upon Perlman et al. (2016) in that disordered eating was included as an additional variable of study.

Hypothesis three concerned social support being an independent predictor of disordered eating. There was no evidence that social support was a significant predictor. Termorshuizen et al. (2020) found that, during the COVID-19 pandemic, isolation measures (such as limiting outing with friends, or remaining at one's home) were related to decreased perceived social support. Lack of social support was a primary concern of participants with disordered eating behaviors. The data collected in the present study do not seem to align with what Termorshuizen et al. (2020) discovered. However, it is important to note that Termorshuizen et al. (2020) utilized a scale which measured participants' concern over losing social support during the pandemic. On the other hand, the current study utilized a scale which measured participants' perceived social support, not their concern over their current social support. Therefore, the difference between perception and reality could account for the variation in findings.

Hypothesis four stated that social support would serve as a moderating variable between adverse childhood experiences and disordered eating. This hypothesis was not supported. These results vary greatly from those found by Mitchell and Mazzeo (2005) who found that social support does play a moderating role between childhood trauma and disordered eating, particularly in cases of physical neglect. This difference in results can be explained in two ways. First, Mitchell and Mazzeo (2005) had a much larger sample size then the present study (168 vs. 79). Second, their study sample was comprised of all males, while the current study sample was primarily females.

Lastly, we found partial support for Hypothesis 5. Participants with attachment-related anxiety, but not attachment-related avoidance, showed more disordered eating behavior. These findings extend research by Perlman et al. (2016).

Limitations and future directions

There are various limitations present in this study, one of which is the relatively small sample size. One outcome of this relatively small sample size was the difficulty in measuring COVID-19 precautionary measures and how these measures were related to the other variables within this study. Nearly all of the participants stated that they had limited their face-to-face interactions and leaving the house. Very few participants stated they had not changed their habits. Therefore, I could not determine whether behavior changes associated with the pandemic were related to social support and disordered eating behavior. I recommend that future researchers create a more specific and extensive way of measuring COVID-19 precautions. Such measures will result in more variability in the data and therefore enable researchers to better examine the

extent to which participants' levels of social distancing relates to social support and disordered eating behavior.

Lastly, at the time this study was conducted, not many studies on COVID-19 had been conducted in the United States. Much of the literature reviewed for this study did provide insight into changing disordered eating behaviors during the pandemic, however the samples were limited to persons living in other nations. Therefore, one cannot be sure if those results can be generalized to persons in the United States.

Conclusion

I was primarily interested in looking at factors that were related to disordered eating behaviors. One clear result that can be seen in this study is that childhood trauma seems to be a strong predictor of disordered eating behaviors (Lejonclou et al., 2013). Given that this pattern has been repeatedly found, it would be of value to apply this knowledge to the counseling services that children with trauma receive. In sessions, counselors should be aware of a child's view of their body, so that they can identify body dysmorphia from a young age. Furthermore, this study reveals that, although teaching adaptive coping mechanisms may not aid in lessening disordered eating in the future, identifying whether a child has self-blame may play a role in early intervention.

The present study is just one of many researching a fairly new aspect of life– the COVID-19 pandemic. Although much research still must be done, this study serves as a stepping stone to more complicated studies after the pandemic has ended. It is difficult to examine a phenomenon while still experiencing it. This researcher hopes that once this pandemic is behind us, further research can be done to truly capture the effects it has had on the population.

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Religiosity and the Moral Compass: American Moral Perspectives on Sex Work

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Abstract

Sex work is an everyday occurrence within the United States, but, unfortunately, a poorly researched area when it comes to the study of public opinion. Religion has exhibited itself to be one of the main influences in this field. With this lack of existing research in mind, it would be pertinent to further explore how religiosity and public opinions on sex work interact. A study of public opinion on the matter was conducted on 204 respondents. In this study, a link between support for sex work and decreases in religiosity or other moral concerns, or vice versa, was established. However, the relationships discovered were nonlinear in nature, which is a direct contradiction to what has been previously found by earlier studies. This link indicates that intense religious beliefs have power over the research and regulation of sex work as both lean to the more conservative-religious side.

Introduction

The United States is a majority Christian country; this leads many Americans to find themselves basing their opinions and perceptions on Judeo-Christian moral standards. This is especially true when discussing and understanding sexual morality as opinions and feelings on it can be difficult to fully comprehend since these opinions are incredibly intertwined with personal morals and convictions. What one person might find morally acceptable another might object to. This has the potential to occur within the same religion depending on how devout an individual is. These areas of moral concern become even more difficult to understand when discussing sex work specifically. Because extra-marital sex is considered a lapse in moral judgement in Christian doctrine, sex work is "frowned upon," and rarely talked about or ignored even though it is an everyday occurrence. Sex work has occurred every day for thousands of years whether society wants to acknowledge it or not and it is an area of public opinion worth researching.

This paper aims to: (1) investigate how these moral concerns and perceptions affect public opinion on sex work in the United States through the lenses of religiosity and other contested areas of sexual morality; (2) identify and "fill in" any gaps in the existing research to deepen and improve the understanding of public opinion on sex work. Because a moral code is how people live their lives and form their opinions, a clear connection between opinions on religiosity and opinions on sex work should be exhibited in the research and data.

Literature Review

Lack of Prior Research

Though morality has a large influence on society, the area of sexual morality remains largely unstudied in terms of public opinion. Few studies in the United States have been conducted on public opinion towards prostitution specifically (Cao & Maguire, 2013). Most studies on opinions of prostitution conducted within the United States have been conducted by students on small scale levels (Cao & Maguire, 2013). The lack of research is such a pervasive issue that even the U.S. Attorney General's office has struggled with conducting adequate research for policy making. In the 1980s, the U.S. Attorney General's office attempted to conduct a study on pornography, but their work was marred by poor sources, loose, inaccurate comparisons, and misinterpretations of available data (Smith, 1987). This means that when researching sex work, it is crucial to cast a wide net to examine the public's view of sexual morality in general. This will allow for a deeper, more holistic understanding of the public's opinions towards sex work. It is, however, important to keep in mind that the lack of knowledge in the area can make it difficult to generalize the findings of one study and apply them to another (Cao & Maguire, 2013). The inability to generalize and properly compare datasets that are not fully comparable can hinder future research.

How Public Opinion on Sex Work and Policy Interact

The interaction between policies on sex work can be difficult to understand because a lot of conflicting information exists. There is some evidence to support that policy towards an issue like abortion, same-sex marriage, or sex work can legitimize an issue to the public, however this evidence is not strong as causality between beliefs and policy has proven hard to establish. This inability to establish causality means that personal beliefs regarding sexual morality could drive public policy and not the other way around (Redmen, 2018). Some researchers claim that public opinion is not the whole truth and policy might not reflect what the public thinks or wants (Pudifin & Bosch, 2012). Others argue that those in support of legislation were already predisposed to support the issue (Redmen, 2018). This can make studying and understanding how public opinion affects any issue difficult, especially issues that are already under researched like sex work.

Sex Work and Perceived Criminality

One lens through which to examine public opinion on sex work is to examine the public's views on criminals and criminality. The act of buying and selling sex is illegal in many countries. This could tie the public's idea of prostitutes with crime. In the United States, much like public opinion on sex work, little knowledge exists on how the public views criminality, possibly due to concern for other societal issues. The lack of understanding of public opinion about criminality could also be due to a lack of understanding by the public about how crimes are managed (Roberts, 1992). However, what is known about public opinion on crime is that both in the U.S. and Canada, criminals and offenders are seen in a negative light (Roberts, 1992). Those who commit crimes related to sex are seen in an even worse light by the public (Pickette et al., 2013). In America, specifically, prostitution is seen as an illegitimate line of work as well as criminal due to the perception that the United States provides many legitimate career opportunities (Hashamova 2018). Concern for the victims of sex crimes also drives the American opinion on sex work, painting those who work within the industry to be morally corrupt and irredeemable individuals (Pickette et al, 2013). In Canada, while there is a less than favorable view of sex work and those who work in the industry than there is in the United States. However, slightly more Canadians are in favor of legalized prostitution than are against it (Lowman & Louie, 2012).

The concern for the morality of sex work from a criminal perspective and for the well-being of victims of sex-related crimes could come from an ideological standpoint. An individual's opinions of a given topic are generally formed by his or her ideologies. This has proven to be the case for opinions on sex work and sexual morality in general. Ideologies such as feminism and religion play a large role in shaping these views.

Feminism and Sex Work

Those who identify as feminists tend to see the women who participate in sex work as victims of exploitation of the patriarchy (Jelen 1986). Pornography particularly is of large concern to some feminists as they are afraid it caters to the male gaze and can incite violence against women (Comella, 2015) or that it could even lead to rape (Jelen, 1986). Though there appears to be a lack of agreement in what consuming pornographic materials might incite, erotic and pornographic images depicting images of rape and violence against women greatly concern feminists (Jelen, 1986; Phipps, 2017). Feminists are very critical of what they perceive to be the male-centric sex-industry and the eroticization of violence against women (Comella, 2015). This belief that women are victims is very similar to the concern that most Americans present when considering victims of sex-related crimes (Pickette et al. 2013). This belief has even gone as far as women claiming that when pornography shows the endangerment of women it is a violation of their constitutional rights (Jelen, 1986).

Originally, the opposition to sex work was seen as an ideology that mostly took place during the second wave of feminism, but in 2015 Amnesty International proposed the decriminalization of sex work and feminists voiced a strong opposition to this proposal for fear of how this could affect the safety of women (Phipps, 2017). The focus that was once on pornography is now a concern for the safety of those who engage in prostitution. This is not to say that all feminists oppose sex work; some do support it as they believe it can be sexually freeing for the women who participate in the industry (Cao & Maguire, 2013). While most of the population exhibits some opposition towards sex work, some feminists see sex work as empowering for women. Sex work can be a way for women to take power in an area where they traditionally had none (Phipps 2017). However, an overall concern for the physical safety of women who work within the sex industry is still endemic in the feminist realm of beliefs. It is also important to note that when discussing sex work most people only refer to sex workers who identify as female and were assigned female at birth (Pudifin & Bosch, 2012). Since the feminist perspective focuses on women, the perspective might be limited if only focusing on women and not sex workers of other gender identities.

Religious Affiliation, Religiosity, and Sexual Morality

Religious fundamentalists also oppose sex work and, more broadly, what they believe to be sexually deviant behavior, much like feminists do, but for different reasons. Those who are more religious oppose sex work on a moral basis as they believe it degrades the traditional family (Cao & Maguire, 2013). Those who are religious also tend to view sex workers as moral failures (Hashamova 2018). This push back from the religious community could explain why there is so little research on the matter (Stack & Cao, 2010). Sex work is also considered by some to be a morally gray area which could explain the lack

of information and research on public opinion pertaining to sex work (Cao & Maguire, 2013). Neither theory is given a reason as to why these problems affect the lack of research, however.

In majority Christian countries such as South Africa, there is a direct link between religiosity and opposition to prostitution (Pudifin & Bosch, 2012). Similarly, in Australia in the late 1960s, those who opposed prostitution did so on a moral basis (Wilson & Chappell, 1968). Furthermore, it has been proposed that political behavior, public opinion, and public policy are all, at least partially, influenced by morality though there is little evidence to support this claim. Still, religiosity appears to be one of, if not the, largest influence on public opinion towards sex work and is considered to be more important than religious affiliation (Cao & Maguire, 2013). However, there is some evidence to suggest that people within certain religions exhibit more religiosity than others (Wilson & Chappell, 1968).

Religiosity affects more than just attitudes towards sex work; it affects how people view morality in general (Wilson & Chappell, 1968). Opinions on sexual morality, like homosexuality, sex work, and abortion are intrinsically tied to one's religiosity (Wilson & Chappell, 1968; Lax & Phillips, 2009). Judeo-Christian beliefs, Christianity specifically, are noted for their opposition to these issues (Lax & Phillips, 2009; Redmen, 2018; Cao & Maguire, 2013). While abortion and homosexuality face opposition from those of religious backgrounds, there are what could be considered mitigating circumstances or outside influential factors that could influence public opinion on the matter. Abortion, for example, while perceived as a sin or murder by some, yet even some of the most religious make exceptions in the case of rape, incest, or danger to the mother (Wilson & Chappell, 1968).

Views on homosexuality, on the other hand, differ in that they can be influenced by policy on the matter or liberalization of society, not just religiosity (Lax & Phillips, 2009). This influence is less solid than the influences on abortion as some evidence suggests that only those who were already more likely to support or oppose homosexuality are influenced by legislation (Redmen, 2018). Also present is a belief in the American public that only elites support homosexuality and support is being forced on the public through policy. While these influences are hard to link back to homosexuality specifically, religiosity has displayed a role in forming a person's predisposition to support or oppose homosexuality (Lax & Phillips, 2009; Wilson & Chappell, 1968).

Conversely, opinions on sex work, prostitution specifically, tend to be much more rooted in religiosity. Concerns about sexually transmitted diseases certainly influence an individual's opinion on sex work, but religiosity still appears to be the largest influencer of this opinion (Cao & Maguire, 2013). Reservations about human trafficking also drive opposition to sex work, but the concern could be rooted in religion as Christian charities

help to combat sex-trafficking as well (Hashamova 2018).

These beliefs and reservations are present in both Catholicism and Protestantism (Cao & Maguire, 2013), though there is some evidence to suggest that Catholicism might increase religiosity and have a stronger effect when an individual is developing a political opinion. There is evidence to suggest, however, that Catholics might also be more liberal in their views on morality and issues as they might feel it is important to respect others' beliefs even if they differ from their own (Wilson & Chappell, 1968). So while on an individual level, those who identify as Catholic may morally oppose abortion, homosexuality, and sex work, this belief system may not translate socially. This issue in translation could make it difficult to survey and understand individual beliefs if survey questions are not properly written or well worded, a problem that has occurred in the past (Smith, 1987).

Further evidence for the link between religiosity and opposition to sex work, homosexuality, and abortion is shown in increasing support for all three matters. Though traditional American values do still condemn prostitution there has been greater support for it over time (Cao & Maguire, 2013). This trend could be explained by an overall decrease in religiosity in the past fifty years (Mulligan et al, 2013). This decrease in religiosity can also account for the greater acceptance of homosexuality (Redmen, 2018). Though there is some speculation as to whether the middle class in the United States became more morally inclined in the latter half of the twentieth century, little evidence exists to support this claim and it has been rejected by scholars (Cao & Maguire, 2013).

Theory

According to previous research (Cao & Maguire, 2013; Hashamova 2018; Pudifin & Bosch, 2012; Wilson & Chappell, 1968), Christianity and religiosity have a great impact on public opinion on sex work. The previous data, however, can be hard to compare as some of it is old and the manner in which the data was collected can make it hard to generalize. This can make it difficult to understand to what extent religiosity impacts an individual's opinion on sex work, especially in the United States, where so little prior research has been conducted. The aim of this paper is to explore how religiosity or the lack thereof affects moral concern for sex work among the American public through the testing of the following three hypotheses.

H1: If there is an increase in individual religiosity, there will be an increase in moral concern for sex work.

Those who oppose sex work on a religious basis do so because of morality and a belief that sex work and perceived lapses in sexual morality are damaging to society as a whole. If an individual is more religious and adheres to the moral code of their religion more strictly, they will be less likely to support sex work. Based on previous research, this presence should be especially prevalent in those of Christian (Protestant and Catholic) backgrounds with slightly more concern in those of Catholic backgrounds as Catholics have been previously shown to demonstrate more religiosity. This past research also demonstrates a lack of tolerance towards what could be considered a sin when morality affects an individual's political opinions. Because of this lack of tolerance and support, those who are more religious, by a measure of service attendance, will show an increase in moral concern for sex work. This relationship in the increase in individual religiosity and moral concern for sex work should be positive and linear in nature.

H2: If there is a decrease in individual religiosity, there will be a decrease in moral concern for sex work.

If the previous hypothesis is correct, so should be the inverse. Previous research has credited the overall decrease in religiosity in the United States for the overall increase in greater support for sex work, specifically prostitution. Since the decrease is a nationwide trend for the past fifty years, it would then make sense that on an individual level a decrease in religiosity would lead to an increase in support for sex work of all kinds, not just prostitution. Though some evidence exists to say that at one point this trend might have changed to a decrease in support due to an increase in mortality, that finding has been rebuked and is not expected to be present in the dataset. This individual increase in support would mean that individuals have a decrease in moral concerns for sex work, indicating a positive linear relationship similar to the previous hypothesis.

H3: If an individual is morally concerned with homosexuality and abortion, then they will also show moral concern for sex work.

Religion and religiosity affect more than just opinion on sex work; they affect how people view sexual morality in general. Because religion is a moral code that people live their lives by, they could let those views affect their opinions of the world around them and how it should work. Prior research into how religiosity affects views on homosexuality, abortion, and prostitution illustrates how those who are more religious will be concerned with each matter. In the past, research in Australia indicated that there might be greater support for abortion and prostitution than homosexuality (Wilson & Chappell, 1968). Evidence to support this finding is not expected to be found when analyzing the data as current research indicates increased support for homosexuality, the research is over fifty years old, and Australia and the United States have different political climates. Taking into account all prior research, if an individual is already predisposed to have concern for abortion and homosexuality then so too should they exhibit moral concern for sex work. There should be a positive linear relationship between the increase in moral concern for homosexuality and abortion and moral concern for sex work.

Methods

In order to conduct the survey on public opinion of sex work, a twenty-question survey, five of which were demographic questions, was created in Qualtrics. These questions served to investigate public opinion on sex work through concerns that pertain to sex work. Likert scales were utilized to measure levels of concern of those surveyed for issues such as "how concerned are you with the morality of sex work?" For the demographic questions, religiosity was measured through the frequency of service-attendance, self-reported religious affiliation, age by age bracket, self-reported gender identity, and self-reported sexual identity. Nationality was also surveyed so answers from outside of the United States could be separated, as the aim if the paper is to examine public opinion of sex work only within the United States.

To distribute the survey, a social network based both in Kentucky and Illinois was utilized and two-hundred and sixteen responses were received. These responses were then narrowed down to two-hundred and four as those were the number of respondents who lived within the United States. From there, two separate crosstabs in Qualtrics were created to analyze the data. The first cross tab was a measure of religiosity and which issues (ex. gambling and prostitution) respondents found most morally concerning. The second cross tab was a cross-measure of religiosity and moral concern.

Data and Analysis

H1

Consistent with expectations for the relationship between religiosity and moral concern for sex work, religiosity appears to play a large role in how concerned a respondent is with the morality of sex work. Respondents who attend religious services more than once a week are approximately twenty-five times more likely to be "extremely concerned" over the morality of sex work than respondents who do not attend

religious services. Respondents who indicated an extreme level of concern and service attendance of more than once a week, did so at a rate of 50%. Those who found themselves "extremely concerned," but did not attend any religious services were only 2.8% of respondents. Respondents who do not attend religious services are almost just as likely to respond that they are completely unconcerned with the morality of sex work as the concern shown by those who attend services more than once a week.

Surprisingly, those who attend services more than once a week were more likely to respond that they were "completely unconcerned" with the morality of sex work than those who only attended religious services once a week by a measure of 11.4%. Their response rate to that prompt was almost the same as those who only attend religious services on major holidays for their religion at around 25%. Overall, those who attended some form of religious services were more likely to be concerned with the morality of sex work than those who do not, but the discrepancy between those who exhibited strong religiosity and moderate religiosity in terms of lack of concern disproves part of hypothesis one. The relationship between religiosity and moral concern for sex work was expected to be a positive linear relation. The "dip" in lack of concern in those who attend religious services once a week at 13.6% versus those who only attend services on major holidays for their religion at 26% was not expected and is nonlinear.

H2

The data in Table I does not demonstrate full support for hypothesis two, though it was expected to be the inverse of hypothesis one. A linear relationship between a decrease in religiosity, or a lack thereof, and a decrease in moral concern was expected but not fully found. More respondents who did not attend religious services reported that they were either "neither concerned nor unconcerned" at 27.1% or that they were "completely unconcerned" at 48.6% than

Table I. Moral Concern and Frequency of Religious Service Attendance

		Frequency of Religious Service Attendance			
		No attendance	On major holidays	Once a week	More than once a week
Moral Concern for Sex Work	Extremely concerned	2.8%	10.0%	27.3%	50.0%
	Somewhat concerned	13.1%	32.0%	31.8%	0.0%
	Neither concerned nor unconcerned	27.1%	20.0%	22.7%	25.0%
	Somewhat unconcerned	8.4%	12.0%	4.50%	0.0%
	Complete unconcerned	48.6%	26.0%	13.6%	25.0%
	Total Count	107	50	22	4

"somewhat concerned" at only 8.4%. A dip in responses at "somewhat unconcerned" was found when testing both hypotheses. Respondents, regardless of frequency of service attendances, were less likely to respond that they were "somewhat concerned" as opposed to "neither concerned nor unconcerned." This finding contradicts both hypotheses and previous research as it indicates that the relationship between religiosity and moral concern for sex work is nonlinear in nature.

H3

Table II indicates support for hypothesis three, but not in an expected way. Much like Table I and hypotheses one and two, respondents who exhibited some level of moral concern for sex work also exhibited concern for both abortion and homosexuality. Surprisingly, 66.7% of those who were "extremely concerned" over the morality of sex work were also morally concerned with homosexuality. This level of concern is over double that of the 30% of respondents who indicated that they were concerned with abortion while being "extremely concerned" with the morality of sex work. This finding was not expected but is consistent with the findings of the 1968 study from Wilson and Chappell.

Another unexpected finding from Table II was the fairly consistent rate in the relationship between moral concern for sex work and moral concern for abortion. The lowest rate of concern for abortion and sex work was 6.70% and the highest right was 30%. This variation is much less than the overlapping concern for homosexuality and sex work with a high of 66.7% and low of 0%. While 0% of respondents who were "somewhat unconcerned" or "completely unconcerned" with the morality of sex work found themselves concerned with the morality of homosexuality. This differs from those who exhibit little moral concern for sex work, but are morally concerned by abortion. 16.7 percent of respondents who indicated that

they were concerned with abortion were either "completely unconcerned" or "somewhat unconcerned" with the morality of sex work. This could be because those who object to sex work from a Judeo-Christian standpoint are more likely to object to homosexuality for the same reasons.

Conclusion

While some of the findings in this paper were consistent with all three of the hypotheses and prior research, the majority were not. As expected, a clear relationship exists between religiosity and moral concern for sex work. Unexpectedly, however, a nonlinear relationship between the two variables from the first two hypotheses was discovered. Instead, there is a consistent dip in Table I at "somewhat unconcerned" where an increase for hypothesis one or a decrease for hypothesis two was expected. Based on existing literature, this should not have been the case. One finding that was unexpected, but partially supported by the 1968 Chappell study was that the intersection for moral concern for sex work and homosexuality was higher than that for sex work and abortion. Based on the liberalization trend and the wider acceptance of homosexuality, the inverse was expected to be true.

The lack of expected findings in this paper could be due to an overall lack of prior research. Public opinion on sex work is a sparsely researched area with little ability to fully compare one study against another. This makes this particular area of public opinion incredibly hard on which to conduct research, especially when considering that most studies are conducted on a small scale by students. The student-run, small-sample-size issue was a limitation that affected this paper specifically. The small sample sizes, lack of prior existing research, and the inability to truly generalize existing research made conducting research for this paper quite difficult. The limitations of student research also lead to the data for this paper being a poor representation of the country as a whole as nearly half of the two-hundred and

Table II. Moral Concern Cross-Measures

		Moral Concern for Homosexuality and Abortion	
		Homosexuality	Abortion
Moral Concern for Sex Work	Extremely concerned	66.7%	30.0%
	Somewhat concerned	16.7%	23.3%
	Neither concerned nor unconcerned	16.7%	30.0%
	Somewhat unconcerned	0.0%	6.7%
	Complete unconcerned	0.0%	10.0%
	Total count	6	30

four participants identified as agnostic/or atheist and showed little to no religiosity and the research could only be based out of two states. Responses may have come from more than Kentucky or Illinois, but due to the interface that was used and the questions that were asked there is no way of knowing where in the country respondents were from. An oversight also exists in the survey used to conduct research for this paper; a question about respondents' political alignment was left out. This could have a slight effect on the data as conservatism also has the potential to effect support for sex work. Though the data used in the paper did solely focus on religiosity, understanding how religiosity and conservative beliefs work together would be helpful in understanding public opinions on sex work. To truly get accurate and more representative results larger studies need to be conducted, not just on the student level, but on the professional level. Sex work as it pertains to public opinion will continue to be a misunderstood area until this happens.

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Public Opinion on Free Speech

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Abstract

The existing literature that investigates public opinion on free speech indicates that Americans support the principle but not the practice of free speech. To investigate the relationship between free speech satisfaction and partisanship, two hypotheses are postulated: 1) if partisanship increased, then satisfaction with the free speech protections enjoyed in daily life will decrease and 2) if partisanship increases, then satisfaction with the government's protection of free speech will decrease. Both hypotheses were tested based on the results of a 20-question public opinion survey. The findings of the survey support both hypotheses and reveal that there is a relationship between partisanship and free speech satisfaction. However, due to the demographic makeup of respondents, it is unclear if this relationship is applicable to Democrats as well as Republicans.

Introduction

The freedom of speech is recognized around the globe as a basic human right and a tenet of successful democracy. In the United States, this freedom, along with the freedom of religion, freedom of assembly, and the freedom to petition the government, is enshrined in the First Amendment to the U.S. Constitution. Measuring, analyzing, and evaluating public opinion on free speech is important many reasons. First, public opinion data informs on and demonstrates the aggregate views on topics of public interest (Dautrich and Yalof, 2002; Clawson and Oxley, 2017). Additionally, understanding the attitudes of Americans on free speech can help political scientists and policy makers understand more about the overall health of American democracy and the aggregate beliefs of Americans. Finally, analyzing public opinion on free speech can help provide a measure of public engagement.

This paper's analysis of current literature reveals several key characteristics about the existing scholarly record. First, two schools of thought within the literature are identified and discussed. The conventional belief among political scientists is that public support for free speech in the abstract is very high. However, the literature indicates support for the application of free speech principles and support for the actual protection of free speech is quite low (Erskine, 1970). Additionally, a few key weaknesses in current research are revealed. Much of the literature is dated and there are issues with question uniformity and question wording. Finally, the future of public opinion research into free speech is discussed.

After reviewing the existing literature, examining the weaknesses of the current scholarly record, and discussing future research, this paper attempts to provide additional contributions to public opinion research. A theoretical development is provided that explores partisanship and free speech satisfaction. The goal of this paper is to advance public opinion research on free speech by examining the relationship between partisanship and satisfaction with free speech protections. This is done by proposing and testing two hypotheses. First, if partisanship increases, then satisfaction with the free speech protections enjoyed in daily life will decrease. Second, if partisanship increases, then satisfaction with the government's protection of free speech will decrease.

These hypotheses were tested by creating a 20-question survey that was distributed via social media. The data that was collected from the survey has led to several interesting conclusions and helps to provide a clearer picture into the current attitudes of Americans on free speech. Additionally, this paper will examine the relationship between satisfaction with free speech protections enjoyed in daily life and satisfaction with the preservation of the right to free speech.

Literature Review

Research into the attitudes Americans hold toward free speech is an area of scholarship that has often been neglected by political scientists and public opinion researchers. There exists very little political science research that has studied how the American public feel about free speech. Despite little existing literature, two schools of thought are identified within the current scholarly record. Interestingly, the two schools of thought do not directly contradict each other and function in tandem to provide a clearer picture about the attitudes of Americans toward free speech. In many ways the contributions of one school complement the contributions of the other and the two schools work together to demonstrate what future research should look like.

The first school maintains that Americans believe in and support the theory of free speech, but not the actual practice of exercising free speech (Erskine, 1970). Data is cited that demonstrates Americans express support for the abstract principle of free speech, but when confronted with more controversial questions and during times of political unrest, that support wanes. The second school of thought is more theoretical in nature and maintains a skepticism of current public opinion research on free speech (Post, 2011). Researchers in the second school offer a critique and analysis of current research, but do not directly contribute data to the scholarly record. The skepticism of researchers in this school is based on the grounds that opinions about the abstract idea of free speech and the historical context of free speech have yet to be measured accurately. Additionally, members of the second school of thought contribute to the scholarly discussion by highlighting many of the flaws in existing research.

As mentioned previously, the small amount of existing research into public opinion on free speech is very dated. Issues with question wording and a lack of question uniformity create problems for researchers trying to accurately measure opinions of free speech. It is for these reasons the accuracy of previous research can be called into question. It is possible and perhaps even probable, that previous research does not accurately reflect the changing attitudes and beliefs that are inherent when studying public opinion (Erskine, 1970).

In Theory but Not Practice

Researchers belonging to this school of thought postulate that Americans believe in the theory of free speech but not the practice of free speech. In other words, public opinion data indicates that Americans believe in the abstract principle of free speech, but when faced with controversy Americans indicate they would like to see free speech limited (Erskine, 1970). Scholars suggest that Americans would like to see the free speech protections they enjoy modified to fit the times and the occasion (Ferrar, 1976). This is especially true of Americans during times of great political dissent or unrest

(Berinsky, 2009).

Scholars belonging to this school make a compelling argument and the limited amount of data that has been gathered supports this hypothesis. Broad questions that gauge Americans' attitudes on the abstract principle of free speech indicate that an overwhelming majority of Americans strongly support the freedom of speech. Public opinion data gathered by CBS research during the 1970s revealed that when asked the question "Do you believe in the freedom of speech," 97% of Americans say they affirm and support the freedom of speech (Erskine, 1970). There has been more recent research that confirms the original findings of political scientists and reaffirms the hypothesis that Americans exhibit overwhelming support for the principle of free speech (Berinsky, 2009; Clawson and Oxley, 2017).

However, despite the broad support by Americans for the principle of free speech, data suggests that when asked more direct questions, attitudes change (Gorden and Infante, 1980). Scholars in the 'in theory but not practice' school use the existing data to demonstrate this.

Public opinion polling suggests that approximately 40% of Americans believe that everyone has the right to criticize the government, even if that criticism is damaging to national interests (Chong, 1993; Zellman, 1975). This is a dramatic shift from the 97% of Americans who expressed support for the abstract principle of free speech. Such a discrepancy is used by the researchers in this school of thought to show how when asked more direct questions about controversy, the opinions of many Americans change (Chong and Levy, 2018).

It is further hypothesized by members of this school that during times of great political dissent and unrest the American public wish to see free speech protections limited even more (Erskine, 1970). This is supported by data gathered from a national survey conducted shortly after the September 11, 2001 terrorist attacks. In a research study, political scientists found that following the terrorist attacks, Americans reported being willing to give up an amount of free speech in exchange for greater safety (Davis and Silver, 2004). Additional data suggests that the views of Americans change during turbulent times and times of crisis. Political scientists cite public opinion data during times of war as evidence of this (Berinsky, 2009).

Theoretical Skepticism

Researchers in this school of thought have conducted relatively little research and largely rely on the findings of other political scientists and public opinion data collection agencies. While this school of thought lacks data of its own, the researchers belonging to it offer beneficial analyses that further the scholarly discussion. The critiques and contributions they offer illustrate the weaknesses of current research and data collection methods, as well as provide a springboard for future

researchers wishing to build upon the existing scholarly record (Shin, 2015).

Researchers in this school of thought critique existing research primarily on the grounds there has yet to be a uniform question asked over an extended period of time that measures the attitudes of Americans on free speech (Erskine, 1970). Additionally, there have been issues with varied question types and questions designed to illicit specific responses from Americans based on different political climates (Post, 2011). Researchers argue this has potentially resulted in the distorting of data. Many of the ideas posited by researchers belonging to the theoretical skepticism school will be discussed more thoroughly when examining the weaknesses of current research and the possibilities for future research (Shin, 2015).

Weaknesses of Current Research

While there have been a few contemporary studies that seek to ascertain American public opinion about free speech, there has not been an extensive or comprehensive study conducted since the end of the Vietnam Era (Mueller, 1988: Shin, 2015).

The scholarly record indicates that the topic of public opinion on free speech has been given the most attention during and following times of war. Reviews of literature conducted by previous researchers have identified three periods in which public opinion researchers gave special attention to the topic of free speech: World War II, the Korean War, and the Vietnam Era (Erskine, 1970). This reflects the heightened attention that has historically been given to public opinion during times of crisis and helps demonstrate how and why current data may be distorted (Berinsky, 2009).

This is demonstrative of the fact that current data on free speech is extremely dated and may have its validity questioned because it was gathered almost exclusively during times of crisis. During these times there were many outside factors that impacted the perceptions of Americans on free speech. During the periods between World War II, the Korean War, and the Vietnam Era, very little research into public opinion on free speech was collected (Erskine, 1970). Additionally, the only substantive data collected after the Vietnam Era gauged American opinions on civil liberties following the terrorist attacks of September 11, 2001 (Davis and Silver, 2004).

Given this, it is easy to see how the accuracy of existing data may be questioned due to the focus on the opinions of Americans during unique times of political turmoil. For example, data collected in the 1960s, during the Vietnam Era, reflects views on free speech that were strongly impacted by the protests of that time (Schreiber, 1973). Additionally, during the 1960s, instead of inquiring about attitudes toward free speech, any research on public opinion was jaded with polarized questions seeking to illicit particular responses about anti-war protestors (Zellman, 1975). While it is important to understand the

opinions of Americans during turbulent times, the lack of data from other time periods and leading questions makes studying public opinion on free speech difficult.

One large failure of existing public opinion research on free speech is the neglection by researchers and opinion polling organizations to ask uniform questions over extended periods of time (Erskine, 1970). Often, questions that ask for public opinion on free speech fall under broader questions that seek to understand public opinion on the First Amendment. There has yet to be a standardized question asked to measure public opinion on free speech. The differences between questions has created issues when gathering data on public opinion of free speech.

Many of the questions that have been asked conflate the freedom of speech with other forms of civic participation. Instead of asking specifically about free speech, questions may ask for the opinions of Americans on the First Amendment (Dautrich and Yalof, 2002).

Additionally, varied question types, wordings and structure have made it difficult to accurately ascertain American public opinion on free speech. In the existing data there is relatively no consistency in the type of questions and what type of information researchers are trying to determine (Erskine, 1970). When combined with question wording and structure issues various historical contexts make it even more difficult to accurately gauge free speech public opinion.

Theory

The lack of existing research into public opinion on free speech leaves many avenues open to future researchers. It is the goal of this paper to contribute to the scholarly record and build upon existing research by exploring two facets of public opinion on free speech: satisfaction and partisanship. A theoretical development is provided that explores partisanship and free speech satisfaction, two aspects of research that have yet to be explored by political scientists. The theoretical relationship will be explored, and two hypotheses will be analyzed and tested based on survey data.

The relationship between partisanship and satisfaction with free speech protections has yet to be explored by political scientists. Partisanship is not a demographic that is addressed or considered in the existing literature. In general, the literature does not address demographic groups or filter questions at all. Due to this, any research that examines the opinions of subgroups or demographic groups on free speech will be contributing much to the literature. Additionally, the literature makes no mention of measuring the public's satisfaction with the free speech protections they enjoy. Based on the lack of existing literature it is difficult to determine the validity of the hypotheses prior to an examination of survey data.

Despite these gaps in the literature, there are several reasons to conclude a relationship exists between free speech satisfaction and partisanship. It can be reasonably expected to find a relationship between partisanship and free speech based on the current political context. In recent years, opinions on free speech have been divided along ideological lines. Issues like hate speech, religious speech, and anti-discrimination laws, have furthered the divide and increased the partisan division surrounding free speech. It can be reasonably assumed that there also exists a relationship between strength of partisanship and satisfaction with free speech. Stronger partisans are more likely to be more politically engaged, consume more political content, have disfavorable opinions towards those that do not share their beliefs, and overall be more dissatisfied with political leaders.

Two hypotheses that examine partisanship and satisfaction with free speech have been postulated. First, it is hypothesized that if partisanship increases, then satisfaction with the free speech protections enjoyed in daily life will decrease. This hypothesis is designed to test the relationship between an individual's partisanship and that individual's satisfaction with the protections enjoyed daily that allow oneself to speak freely. If this hypothesis is correct, there will be a demonstrable relationship between partisanship and satisfaction with free speech protections. Based on this hypothesis, it can be expected that as respondents become more ideologically extreme, satisfaction will decrease. If this hypothesis is correct, then individuals identifying as strong partisans will be less satisfied than individuals identifying as independents or weak partisans.

Second, it is hypothesized that if partisanship increases, then satisfaction with the government's protection of free speech will decrease. This hypothesis is not designed to test whether an individual is satisfied with the free speech protections enjoyed in daily life. Instead, this hypothesis is designed to test whether there is a relationship between partisanship and whether an individual believes that the government sufficiently protects the right to free speech.

This hypothesis tests satisfaction with the government's protection of free speech – a measurement more abstract than the tangible realization of free speech protections in one's life. Similar to the first hypothesis, if this hypothesis is to be proven true it can be expected that respondents identifying as strong partisans will be less satisfied with the government's protection of free speech than weak partisans. Finally, this paper will compare the satisfaction of daily free speech protections enjoyed by respondents with respondents' rating of how well the government has protected free speech.

Table I. Partisan Satisfaction with the Free Speech Protections Enjoyed in Daily Life (p<0.5)

	Total	Strong Republican	Moderate Republican	Leaning Republican	Independent	Leaning Democrat	Moderate Democrat	Strong Democrat
Extremely Satisfied	18.1%	5.3%	19.0%	33.3%	10.0%	28.6%	25.0%	100.0%
Somewhat Satisfied	47.2%	47.4%	47.6%	33.3%	60.0%	57.1%	37.5%	0.0%
Neither Satisfied nor Dissatisfied	8.3%	0.0%	4.8%	16.7%	10.0%	14.3%	25.0%	0.0%
Somewhat Dissatisfied	16.7%	31.6%	19.0%	0.0%	10.0%	0.0%	12.5%	0.0%
Extremely Dissasitified	9.7%	15.8%	9.5%	16.7%	10.0%	0.0%	0.0%	0.0%
Total Respondents	72	19	21	6	10	7	8	1

Methodology

These hypotheses were tested by creating and distributing a 20-question survey on free speech. The survey was distributed via social media. The questions on the survey were designed to gather a clearer picture about public opinion on free speech and they covered a variety of topics. Completing the survey was completely anonymous and each question was optional so respondents could choose not to answer. The topics covered by the survey included opinions on hate speech, satisfaction with free speech protection, opinions on religious speech, and approval of the regulation of harmful content by large technology corporations. The survey was distributed exclusively through the author's Facebook page, but was not limited to the author's Facebook friends. The post was a public post and was shared on Facebook several times. According to Facebook analytics, the survey reached over 1,000 individuals.

The survey collected 126 responses over a distribution period of roughly two weeks. Respondents identified themselves as primarily white and Republican. Since respondents primarily represent one race and political party, the demographics of respondents is not easily generalizable to the United States. Of the 72 individuals who chose to indicate their ethnicity, 69 said that White or Caucasian best describes them. This percentage is slightly more than 57.8% of Americans who are white. Roughly 56% of respondents identified themselves as a strong or moderate Republican. This percentage is significantly larger than the 25% of Americans who identify as Republican. Only 12% of respondents selected that strong or moderate Democrat best describes their political ideology, while 31% of Americans are Democrat. Interestingly, 14% of respondents selected Independent as the best descriptor of their ideology and 41% of Americans identify as independent.

Despite respondents being predominantly white and majority Republican, the survey was able to collect a good cross-section of respondents based on the demographic groups of gender and age. Respondents were asked to indicate their age by selecting which range of 10 years included their age. Individuals from every age category are represented in the survey results.

Seventy-two respondents answered the age question and there was an average of 10 respondents in each age category. Respondents indicated that 34.72% identified as male while 59.72% identified as female. Overall, there were a good number of survey respondents, the majority were white and Republican, but a good representative sample was collected based on age and gender.

Results

When under examination, the data collected from the survey indicates there is a relationship between partisanship and satisfaction with free speech protections. The tables included and the data discussed below show that there is a demonstrable relationship between partisanship and satisfaction with free speech protections. Additionally, preliminary survey data supports both hypotheses. Data indicates that if partisanship increases, then satisfaction with the free speech protections enjoyed in daily life will decrease. Additionally, data shows that if partisanship increases, then satisfaction with the government's protection of free speech will decrease.

Table I indicates that as partisanship increases, satisfaction with the free speech protections enjoyed in daily life decreases. The percentage of respondents who reported being somewhat dissatisfied or extremely dissatisfied grew as reported levels of partisanship increased. Among the individuals who identified as leaning Republicans, only 16.7% reported being somewhat or extremely dissatisfied with the free speech protections they enjoy in daily life. This number grew steadily as partisanship increased. For respondents who indicated they were moderate Republicans, 28.5% reported dissatisfaction with the free speech protections they enjoy in daily life. The hypothesis that if partisanship increases, then satisfaction with free speech protections will decrease is most supported when examining data from respondents who identify as strong Republicans.

Table II. Partisan Rating of How Well Government Has Protected Free Speech (p<0.002)

	Total	Strong Republican	Moderate Republican	Leaning Republican	Independent	Leaning Democrat	Moderate Democrat	Strong Democrat
Excellent	2.8%	5.3%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Good	16.7%	5.3%	23.8%	16.7%	10.0%	28.6%	25.0%	0.0%
Average	33.3%	26.3%	33.3%	50.0%	30.0%	42.9%	37.5%	0.0%
Poor	34.7%	47.4%	28.6%	33.3%	30.0%	28.6%	37.5%	0.0%
Terrible	12.5%	15.8%	14.3%	0.0%	30.0%	0.0%	0.0%	0.0%
Total Respondents	72	19	21	6	10	7	8	1

Among strong Republicans, almost half (47.4%) reported feeling some dissatisfaction with the free speech protections enjoyed in daily life.

It is clear from analyzing the data in the table above, that there is a demonstrable relationship between partisanship and satisfaction with free speech among Republicans. Unfortunately, due to the partisanship and the lack of respondents who identify as Democrats it is impossible to conclusively assert that a similar relationship exists on the other side of the ideological spectrum.

Table II shows that as partisanship increases, respondents become less satisfied with the job government has done protecting free speech. Among respondents that identify as strong Republicans, 63.2% rate the job the government has done protecting free speech as poor or terrible. When compared to the 33.3% of leaning Republicans who responded poor or terrible, this supports the hypothesis that if partisanship increases, then satisfaction with the government's protection of free speech will decrease. It is clear that based on the data in Table II, the second hypothesis is supported and there is a relationship between partisanship and how well respondents think the government has protected free speech. However, similarly to Table I, the demographic makeup of respondents makes it impossible to determine if relationship between

partisanship and satisfaction with the job government has done protecting free speech exists only for Republicans or is applicable to Democrats as well.

Table III demonstrates the relationship between the satisfaction with free speech protections enjoyed in daily life and how respondents rate the government's protection of free speech. The majority of respondents (49 respondents or 63.6% of respondents), report feeling either extremely satisfied or somewhat satisfied with the free speech protections enjoyed in daily life. This is interesting when compared to the number of respondents who indicated they believe the government has done a poor or terrible job of protecting the freedom of speech.

Approximately 49.4% of respondents reported that the government has done a poor or terrible job at protecting free speech. Despite most respondents feeling satisfied with the free speech protections they enjoy, only 16.9% of respondents said the government was doing an excellent job at protecting free speech. It can be concluded from the data in this table that there is not a positive relationship between satisfaction with free speech protections and satisfaction with the government's protection of free speech.

Table III. Respondents Rating How Well Government Has Protected Free Speech Based on Their Satisfaction with Free Speech Protections Enjoyed in Daily Life (p < 0.1)

	Total	Extremely Satisfied	Somewhat Satisfied	Neither Satisfied nor Dissatisfied	Somewhat Dissatisfied	Extremely Dissatisfied
Excellent	2.6%	14.3%	0.0%	0.0%	0.0%	0.0%
Good	16.9%	50.0%	17.1%	0.0%	0.0%	0.0%
Average	31.2%	14.3%	42.9%	50.0%	23.1%	11.1%
Poor	36.4%	14.3%	37.1%	50.0%	53.8%	33.3%
Terrible	13.0%	7.1%	2.9%	0.0%	23.1%	55.6%
Total Respondents	77	14	35	6	13	9

Conclusion

An examination of the existing literature revealed several interesting features of public opinion research on free speech including two schools of thought, weakness of current research, and suggestions for future researchers. The "In Theory but Not Practice" and "Theoretical Skepticism" schools worked together to demonstrate how Americans believe in the abstract concept of free speech but not the application of free speech, reveal the deficiencies of current research, and provide a springboard for future development.

After reviewing the existing literature, additional contributions to public opinion research on political science were discussed. A theoretical development exploring partisanship and free speech satisfaction was provided. Two hypotheses were developed and tested based on the results of a 20-question survey that was distributed via social media. The first hypothesis postulated that if partisanship increases, then satisfaction with the free speech protections enjoyed in daily life will decrease. The second hypothesis attempted to explain the relationship between partisanship and satisfaction by arguing that if partisanship increases, then satisfaction with the government's protection of free speech will decrease.

An analysis of the data collected from the survey supported both hypotheses and helped demonstrate the relationship that exists between partisanship and satisfaction with free speech. The data presented in Table 1 reveals that as respondents identified as stronger Republicans, their satisfaction with the free speech protections enjoyed in daily life decreased steadily. Table 2 showed that as respondents became stronger partisans, they were less satisfied with the government's protection of free speech. Finally, data in Table 3 examined the relationship between satisfaction with free speech protections enjoyed in daily life and satisfaction with the government's protection of free speech.

One shortcoming of the analysis was the inability to demonstrate a relationship between Democratic respondents and free speech satisfaction. While the collected data demonstrated a relationship between satisfaction and partisanship, the data focused strongly on Republicans.

This makes it difficult to conclusively determine if a connection between partisanship and satisfaction exists for all respondents or only those who identify as Republicans. Any future research wishing to provide a more thoroughly exploration of the relationship between partisanship and satisfaction should include a higher number to Democratic respondents.

Future Research

There are many options available to future researchers wishing to study public opinion on free speech. Additionally, there are several ways in which future researchers can build upon the scholarly record. After reviewing the existing literature it is clear that future research into public opinion on free speech should focus on asking a set of uniform questions over an extended period of time. This will allow political scientists to have an accurate dataset that reflects changes not just in the attitude of Americans, but changes in the political landscape. Such a dataset is key to making accurate and testable hypotheses and will serve to advance research on this topic. Any future research should also focus specifically on free speech as an abstract principle and should also focus on free speech in action. This will allow political scientists to further test the hypothesis that Americans support free speech in principle but not in practice.

The lack of existing detailed and thorough research leaves many avenues open for political scientists. In addition to asking uniform questions of extended periods of time, future researchers can and should ask more direct questions to measure American's opinions on specific aspects of free speech. The current political landscape lends itself well to this as political scientists, citizens, and policy makers wrestle with questions about hate speech, religious speech, and

censorship. Additionally, future researchers should consider measuring changes in public opinion across demographic groups. Subgroups and demographic characteristics like gender, race, ethnicity, and partisanship have yet to be measured by public opinion researchers studying free speech. Overall, public opinion on free speech is a broad area of research that has yet to be extensively explored and shows much promise for future development

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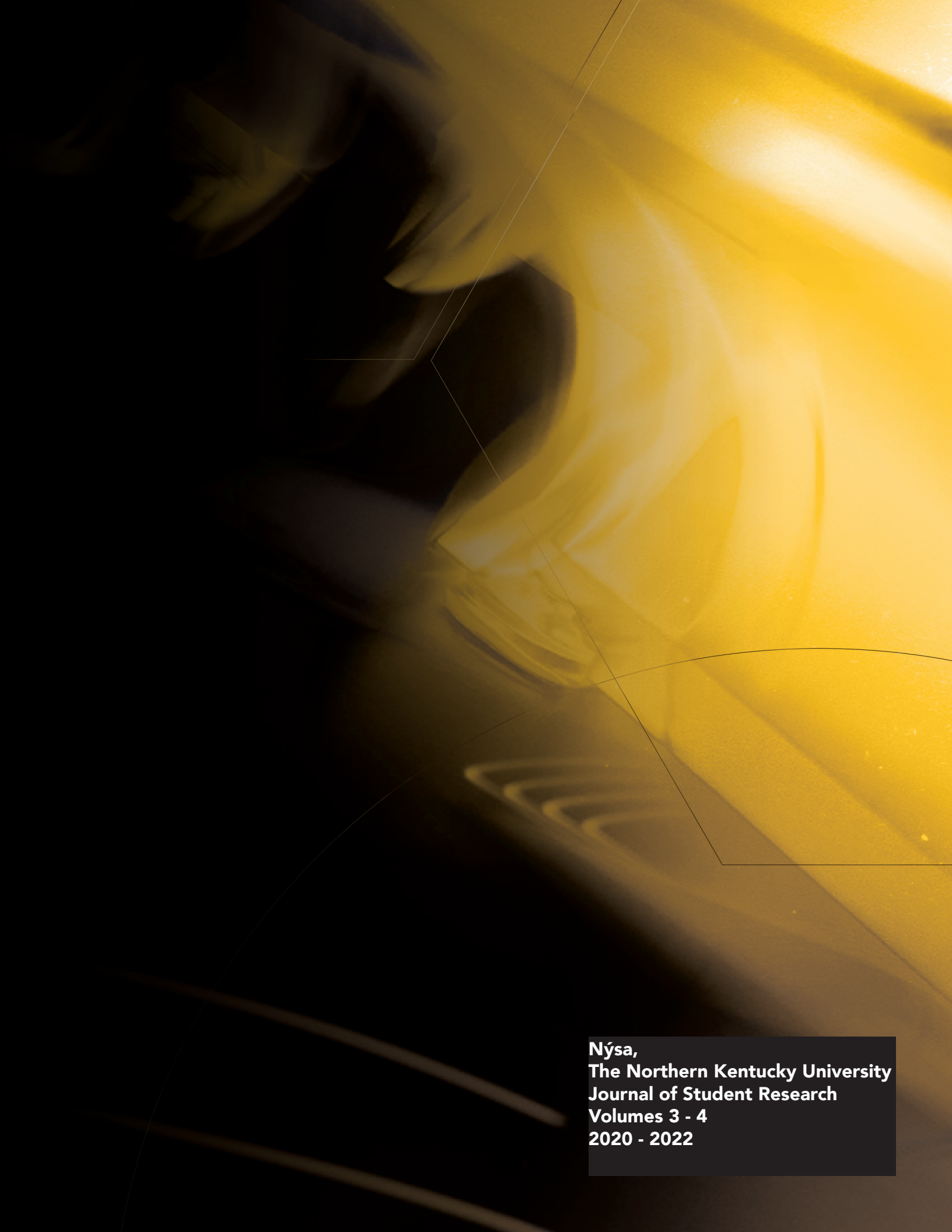*https://inside.nku.edu/artsci/departments/english/get-involved/pentangle.html*

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