June 2019

A collection of student research and writing.

The Whitman Journal of Psychology

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Dear Readers,

      I am delighted to present you with the Spring 2019 edition of the Whitman Journal of Psychology. As always, the submissions process was extremely competitive, and we are proud and lucky to be able to include truly exceptional student research. The articles in this issue were not only written by high schoolers but focus on prominent issues facing people our age; studies examine how parenting styles affect our social media activity, how diabetes impacts the confidence of high schoolers, and how the right types of praise can elevate academic performance.

      This issue of the Journal caps off a year of change and improvement for our publication. We've refined our editing process to work more closely with submitters, built a new, more user-friendly website, and produced two excellent issues. This issue is the product of immense amounts of work from students and staff both here at Whitman and across the country. The Journal's staff would like to thank everyone involved for their commitment and effort throughout this process.

      In this coming year, we plan to emphasize engagement with our submitters and subscribers. We want to connect more closely and consistently with you, and help you connect to each other. One way we will do this is through a monthly, emailed newsletter. We have created a sign up for this newsletter on our website, and we encourage all of you to sign up—this newsletter will allow us to keep you in the loop on new opportunities and updates throughout the year. We hope you enjoy this issue, and welcome any and all feedback.

Sincerely,
Thomas Mande
Editor-in-Chief

Content

The Whitman Journal of Psychology is a forum in which student-conducted research in the field of psychology is recognized. The Journal contains research from many subject matters and is not limited to any specific field of study.

Manuscript Preparation

Authors should prepare manuscripts according to guidelines established in the Publication Manual of the American Psychology Association (6th ed.). The Journal reserves the right to modify APA style when necessary. Manuscripts should be no longer than 15 pages and should include an abstract. Additionally, all manuscripts must include a list of references as well as parenthetical documentation in accordance with APA style. Professional and other scholarly sources should constitute the majority of references. It is suggested that manuscripts include the following sections: introduction, methods, results and discussion. Manuscripts are not limited to these sections. Detailed requirements can be found on our website.

All manuscripts submitted for consideration may be mask (blind) reviewed at the request of the author. Clear notification must be given on the title page of a manuscript in order for it to be mask reviewed. It is the author's responsibility to ensure that identification is omitted from the manuscript. All manuscripts submitted are subject to editing on both the basis of style and content. It is the author's responsibility to ensure clarity of expression.

We accept submissions year round; however, there is a deadline to be considered for the next publicaton which can be found on our website.

Manuscript Submissions

Submissions should include a cover page with the following identifying information: author's name, school affiliation, advisor's name, address, phone number and e-mail address. Please e-mail a copy of your file(s) along with a cover letter with the requirements listed above to **whitmanpsychsubmissions@gmail.com**. You will get a confirmation e-mail once we have received your submission and are able to open the file(s).

Disclaimer

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Table of Contents

The Correlation Between Certain Parenting Styles and the Social Media Activity of Teenagers

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Abstract

This experiment explores the correlation between certain parenting styles and how teenagers use social media. Positive social media behavior is identified as behavior that enhances interpersonal interactions and reflects a pursuit of knowledge or new experiences (activities like watching Youtube videos for studying and posting encouraging comments). The researchers conducted a literature review and identified three main parenting styles and two types of social media behavior (negative and positive) and how they might be related to each other. The researchers hypothesized the authoritative parenting style would result in the most positive social media activity in teenagers due to its balance of high response and high demand. A survey consisting of 45 questions was distributed via social media to population of anyone born after 1993 through a Google Form and recieved 81 responses. After quantifying answers on a Likert Scale, the researchers concluded that the authoritarian parenting style is correlated with the most positive usage of social media among teenagers.

Introduction

The experiment examines three areas: social media relating to children's online activity, different parenting styles, and the psychological impact of social media use and various parenting styles. The review analyzes previous studies involving factors of social media and parenting styles, and how they may relate to each other.

Social Media Activity

There has been a dramatic increase—from 24% to 45%—in the amount of teens who state they use social media on a "near constant" basis from 2014-15 to 2018 (Anderson, Jiang, et al. 2018). Additionally, most teens now use Snapchat, Instagram, and YouTube, as opposed to Facebook. The largest share of teens (45%) state that they feel social media has had neither a positive nor nega-

tive impact on their lives, while 36% have stated a positive impact and 24% stated a negative impact (Anderson, Jiang, et al. 2018). The same study found that girls under the age of 18 tend to prefer Snapchat, while boys tend to use YouTube; white teens use Snapchat more compared to Hispanic and African American teens. Teens in significantly lower income homes have been shown to use Facebook more commonly. Girls and Hispanics are more likely to report near constant internet use (Anderson, Jiang, et al. 2018).

This study seeks to determine the impact parenting styles have on social media activity, which has been shown through previous research cited below. 27% of teens who stated that social media has a negative impact on their lives said that it was because it led to an increase in cyberbullying and the spread of rumors. 17% of teens that stated a negative impact said it was because spending time on social media harms relationships and social skills, while

15% said it gives people an unrealistic view of other people's lives (Anderson & Jiang, et al. 2018).

Electronic media usage has been steadily increasing over the past couple of years, with adolescents aged 11 through 18 spending approximately 11 hours per day on electronic media usage (Kaiser Family Foundation, 2010). In an increasingly connected society, 42% of media consumers state that they use social media to stay connected with friends and family and 34% state it is because a lot of friends are on social media (Valentine, 2017). According to Erikson's developmental stages, a teenager's main internal conflict is Ego Identity versus Role Confusion; teenagers are looking to establish their place in society while solidifying their own identity (Blair-Broeker, Ernst, 2013). Social media and electronics usage may be detrimental to the development of this conflict as it provides misleading information on "friends" and "followers." However, social media usage has also been shown to intensify a teenager's psychosocial development through enhanced peer relationships, diverse opportunities to affiliate, and increased occasions for self-disclosure (Margolin, Shapiro, 2014).

Psychological Impact

Social media usage can come with negative psychological impacts. First, social media can have addictive qualities, leading to the inability to function without the use of technology. Second, social media may cause fluctuation in mood due to viewing what others have or might be experiencing. This comes with the negative impacts of comparing one's life to the seemingly perfect life that others project on social media. Aditionally, use of social media can result in a decrease in social skills due to less personal connection (Squires, 2016). Social media usage leads to a great influx of information that can cause both positive and negative psychological impacts depending on what influences an individual.

Parenting Styles

Pschologists divide parenting styles into four categories: authoritative, uninvolved, authoritarian, and permissive. Authoritative parenting is demanding and responsive. Authoritative parents are defined by characteristics and qualities such as monitoring and imparting clear standards for their children's conduct. They are assertive, but not intrusive or restrictive. Their disciplinary methods are supportive, rather than punitive. They want their children to be assertive, socially responsible, self-regulated and cooperative (Baumrind, 1991, p. 62). Such balanced structures, emphasizing a high demand high response relationship, is the basis for why the researchers hypothesized that this parenting style would have the best social media activity; the socially responsible and self-regulated principles emphasized by this style of parenting seemed a logical basis for a socially and mentally well-rounded, healthy, use of social media by teenagers.

Uninvolved parenting is low in both responsiveness and demand. In extreme cases, this parenting style may encompass both rejecting-neglecting and neglectful parents, although most parents of this type fall within the normal range.

Authoritarian parenting is highly demanding and directive, but not responsive. Parents who employ the authoritarian parenting style are "obedience- and status-oriented, and expect their orders to be obeyed without explanation" (Baumrind, 1991, p. 62). These parents provide well-ordered and structured environments with clearly stated rules. Authoritarian parents can be divided into two types: non authoritarian-directive, who are directive, but not intrusive or autocratic in their use of power, and authoritarian-directive, who are highly intrusive. The rigid structure, high demand and low response of the authoritarian parenting style may have an impact on how much social media the teenager is exposed to. It may also imbue social media platforms with a safe haven complex, a false sense of security to teenagers of authoritarian parents who utilize social media as a way of escaping the rigidity of their parents, affecting their behavior online.

Positive parenting strives to empower children by boosting their self esteem to a maximum capacity. These parents offer unconditional support to their children. Discipline is present but to the extent in which the children are not upset or harmed by the discipline. Deep relationships are formed with the child and parent within this parenting style and explanations are given as to why something is the way it is in order to seek understanding and self-fulfillment (Sanders,

2008). Teenagers at their maximum self-esteem or empowerment may find social media to be a place of no consequences and only meant to boost their confidence like their parents, altering the way they behave on such platforms.

Permissive parenting is low in demands with high responsiveness. Permissive parents set few rules for their children while still offering unconditional love. Permissive parents are involved in their children's lives. These parents often behave as a friend to their child, failing to gain authority in the relationship. Due to the indulgent nature of their parents, children of permissive parents do not receive consequences and discipline, leading to trouble obeying authority figures (Baumrind, 1991). Such parenting characteristics tend to be associated with children who aren't accustomed to failure, frustration, and setbacks, and, as a result, are less compliant with rigid sets of rules and regulations. These tendencies may affect social media activity in that children of uninvolved parents may not comply with the set of rules regarding how to behave on social media platforms, or be less self regulated in how they use the social media platform, in regards to both time and content.

Cultural Influences

There is strong evidence to support the correlation of ethnic background and cultural influences with the use and success of different parenting styles and child raising activities. Concerning academic success for example, an authoritative parenting style (high warmth, high control) leads to positive outcomes in European-American children, whereas an authoritarian parenting style (low warmth, high control) leads to positive outcomes in African American and Hong Kong children (Leung, Lau, & Lam, 1998). Additionally, religion and cultural background have been shown to be strong influencers of parenting styles, especially in African American parents, followed by Hispanic and white parents. Interestingly, both African American and Hispanic parents were more likely to use social media in parenting young children than white parents (Leung, Lau, & Lam, 1998). Long standing cultural values continue to influence certain child-rearing goals. For instance, although both the United States and Japan are modern, child-centered societies

with relatively similar life standards, American mothers tend to prioritize autonomy, verbal competence, assertiveness, and self actualization in their children, while Japanese mothers focus more on emotional maturity, self-control, social courtesy, and interdependence, reflective of the difference between individualistic and collectivist societal mindsets (Bornstein, 1989; Bornstein et al., 2012; Morelli & Rothbaum, 2007). Such differences in priorities and approaches to parenting, as affected by cultural and ethnic backgrounds, may have some sort of affect on the social media activity of those raised in such households, as opposed to the social media activity of a child from a white, American, middle-income household.

Methodology

Data was collected using a survey (Appendix B) which consisted of 45 questions and was distributed via social media. The sample population was restricted to those born in 1993 or later, as that is the year a 13 year old would have been able to use Facebook (the first major social media platform) during its public release. The researchers chose to evaluate the correlation between social media and parenting styles of people that had been exposed to social media for at least seven years alongside their parents/guardians. The survey was posted on November 14th, 2018 and remained accessible to anyone until it was closed on November 28th, 2018. This survey was anonymous. There was no incentive offered for completing the survey; the researchers felt that participants who chose to do it without any reward would provide more complete, thought out answers. A series of demographic questions were asked to establish the background of the participants, not for any purpose in the experiment.

There were five types of questions asked: demographics, binary yes/no, frequency, level of agreement, and check all that apply. In the case of questions about the frequency of a behavior or feeling or about the strength of agreement/disagreement with a particular statement, only four answer options were provided to eliminate participants' ability to stay neutral, as per the Likert Scale. All of the questions excluding the demographic/quantitative ones (questions one

through six) were split up as follows: 17 questions on parenting styles, 10 questions on positive social media activity, 10 questions on negative social media activity, and two neutral question on social media activity. The researchers felt it was important to have a relatively equal (22:17) amount of questions per variable being analyzed (social media activity: parenting styles). The "check all that apply" questions were utilized to obtain a broader sense of reactions to certain social media activities and the prevalence of certain social media activities.

Data Analysis

After collecting 81 responses, the data for the correlation between social media activities and parenting styles was assigned numerical values and compared to each variable. Converting the responses of participants to numerical values for the binary and Likert scale questions could have added confounding variables and skewed the data unintentionally.

The questions were first separated into three categories: positive social media activities, negative social media activities, and parenting style questions. The researchers first analyzed the social media questions by assigning a value from one to four based on the Strongly Disagree to Strongly Agree range of responses (or Rarely to Very Often) for the social media questions. Strongly Disagree received a score of one and Strongly Agree received a score of four. The researchers then calculated overall subscores for negative and positive social media activities. The negative social media activity subscore was subtracted from the positive social media activity subscore to result in a score representing the positivity of a participant's activity on social media. To that score, points were added, left alone, or subtracted based on how many hours the participant spent on social media: for zero to one a point was added, one to two was left alone, for two to three one point was subtracted, for three to four two points were subtracted, and for four or more three points were subtracted. The data corroborates the research of Anderson, Jiang, et al, that the most used social media platforms are Instagram, Youtube, and Snapchat (2018). In this study, the data showed that Snapchat is the most used platform, followed by Instagram and Youtube (Figure 1).

Which social media platform do you tend to use most?
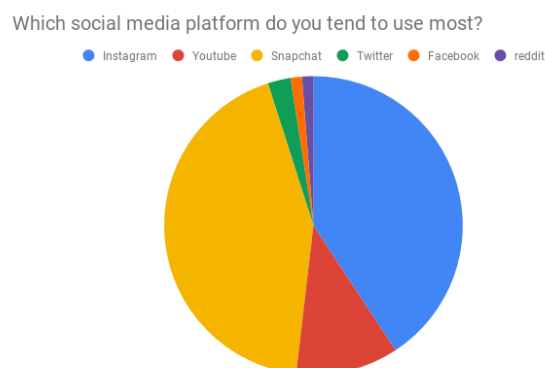
The research also found that most people born after 1993 have multiple accounts on the same social media platform, indicating the duality of purpose or audience expected from social media use. The questions were split into the three main categories of parenting styles: authoritarian, authoritative, and permissive. There were two questions that were general and the answer determined its correlating parenting style. The "your parents go to all teacher conferences and open houses/events if they have time" question was discarded because it felt it did not accurately provide information of a parenting style, as there are too many factors that can contribute to the answer given by the participants.

A value of one to four was assigned was assigned based on the Strongly Disagree to Strongly Agree range of responses (Rarely to Very Often).

A four indicates a strong association with the parenting style. A one indicates no experience with the parenting style. Each participant's parenting style subscores were grouped. Whichever subscore was highest was the parenting style exhibited in their household. The researchers found a prominent lack of permissive parents while examining the distribution of parenting styles (Figure 2).

Figure 2

Distribution of Parenting Styles

● Authoritarian ● Authoritative ● Permissive
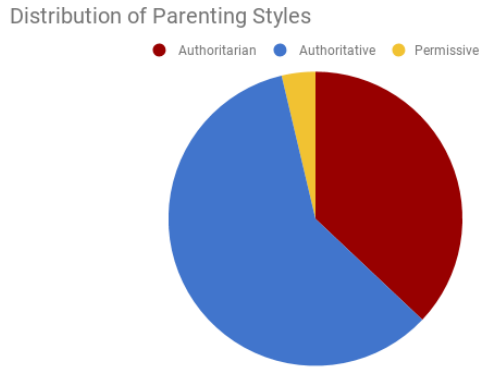
The data on parenting styles and social media scores were compared and analyzed. The researchers examined the range of social media scores for every parenting style and took the average score. The best social media usage scores were exhibited by participants with authoritarian parents (Figure 5), closely followed by authoritative (Figure 3), with permissive scores lagging far behind (Figure 4). The average social media scores for the three main styles of parenting identified in the data were as follows: 8.93 (authoritarian), 8.71 (authoritative), and 6.33 (permissive). However, those averages were calculated after the researchers took into consideration the amount of time participants had spent on social media.
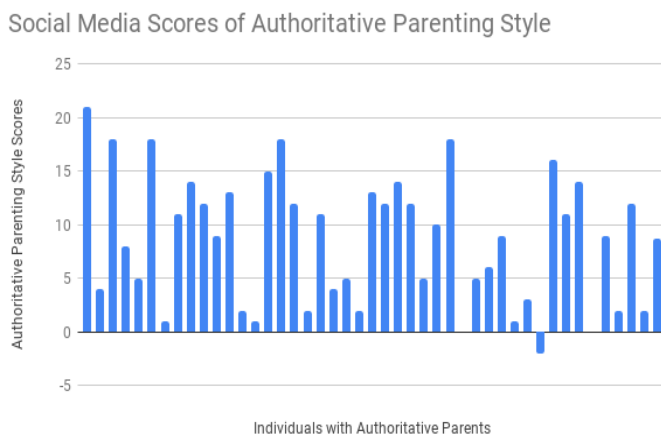
Figure 3

Social Media Scores of Authoritative Parenting Style

Individuals with Authoritative Parents

Figure 4

Social Media Scores of Permissive Parenting Style

Individuals with Permissive Parents

Figure 5

Social Media Scores of Authoritarian Parenting Style
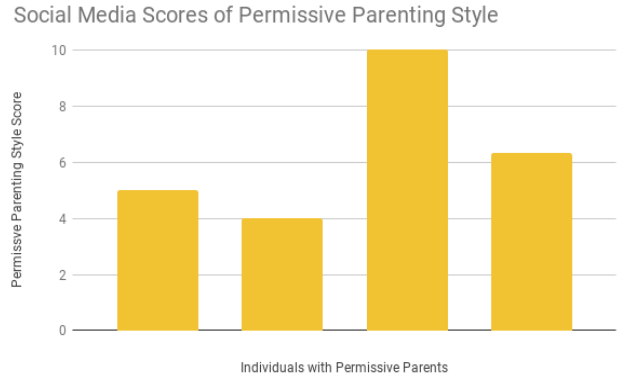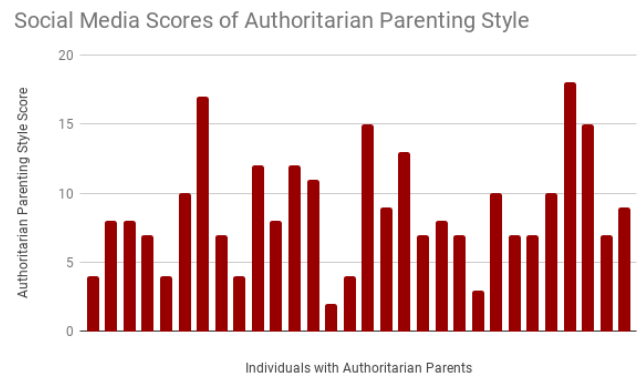

Individuals with Authoritarian Parents

Prior to considering that information, the authoritative parenting style superseded the authoritarian parenting style social media score average. The researchers believe that that discrepancies may be due to the stricter schedules imposed by authoritarian parents, who limit their children's the time spent on social media in comparison to the more responsive authoritative parents, who might not monitor the time their children spend on social media as closely. The researchers found that participants whose parents employed about an equal amount of each parenting style tended to receive a higher social media score (16+). The lowest social media scores were exhibited by participants whose parents use authoritative parenting styles with equal subscores of authoritarian and permissive. Participants who indicated that their parents used a more structured and demanding style with adequate levels of responsiveness, tended to exhibit more positive social media activities.

An important point to note is that 96.29% of all social media scores were above a zero, indicating mostly positive social media behaviors (Figure 6). Additionally, the researchers noted a surprisingly small number of children who were deemed to have permissive parents, which was only three out of 81 respondents. Unexpected lack of data on permissive parents may have skewed the results, providing the researchers with an incomplete base of data.

Figure 6

Positive (red) vs. Negative (blue) Social Media Scores on Behavior
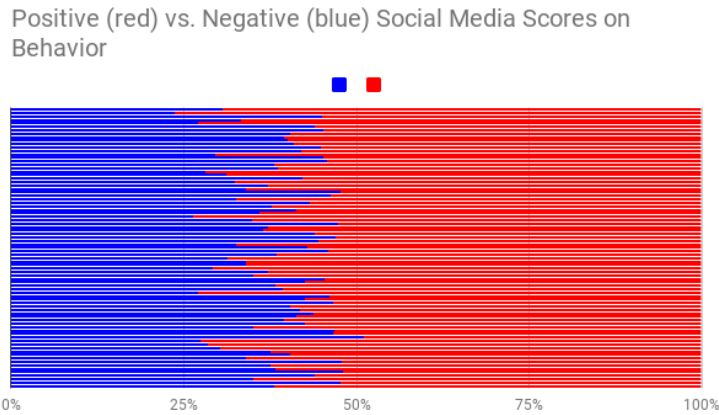
In analyzing the data not included in the Likert Scale or binary questions, the researchers found nothing surprising in the most common social media activities, as indicated by the participants. The most common behavior on social media is liking friends' posts, consuming entertainment (watching videos, funny posts, etc), following celebrities or influencers, and engaging in closed group chats (Figure 7).

Figure 7

Check all that you do on social media
80 responses
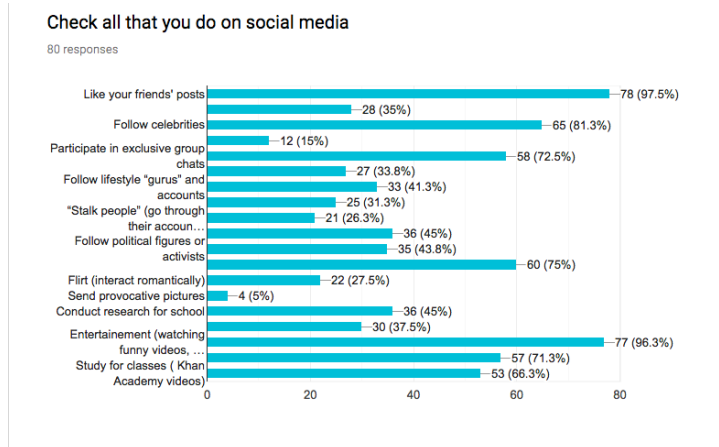
The researchers' hypothesis that authoritative parenting styles would yield individuals who exhibit more positive social media behavior was disproved by the data that authoritarian styles actually produce higher social media scores.

Discussion

The analysis of social media scores correlates to how well the participant uses social media to their benefit or disadvantage. Participants who had the highest social media scores used social media the best, reaping the most positive effects. Based on each participants' social media scores, the researchers concluded that children of authoritarian parents are most likely to use social media the most postively, followed by children of authoritative and then permissive parenting styles respectively. Authoritarian parents maintain a high demand, low response approach by not allowing the child an explanation or reason to why they expect certain behavior. The researchers believe that these children used social media the most positively due to the strong sense of accountability, structure, and authority that authoritarian parents place on their children. Additionally, the authoritarian parent may closely monitor a child's social media activity, and often restrict or set parameters for social media use.

In some instances, the authoritarian parenting style is not seen as the most effective parenting style due to the child's inability to justify certain consequences or responsibilities. Our data shows that even though children of authoritarian parents had the highest average social media scores, authoritative parenting resulted in similarly decent social media scores. Authoritative parents also set guidelines and expectations for their children, but were more likely to explain consequences and present justification with supportive disciplinary methods. Perhaps a balance of these two parenting styles would be most effective in providing guidelines for positive use of social media, based on time activity and usage.

The researchers believe the results of this study may be due to authoritative parents not monitoring social media as strictly as authoritarian parents; authoritative parents expect and develop more independence in their children, allowing them to use social media more freely, which may result in negative consequences. Permissive parenting styles may also result in more free-

dom, and therefore more ability to use social media responsibly without the any guidelines.

Data on ethnicity reveals that individuals of Asian ethnicity received the highest social media scores on average, in comparison to Latin and Caucasian participants. 60% of Asian participants had authoritarian parents, which is consistent with the data. However, this data was obtained as simply an interesting factor to observe, not one being tested, and future studies done on the relationship between ethnicity and social media activity can lend more insight.

Social media is continuing to become more and more prevalent in today's increasing technological world. The uses of social media range from business advertisements to entertainment. The way parenting styles affect a child will differ based on the developments of new generations. Social media presents children with a desire for increasing freedom as well as exposure to many different types of influences. With the increasing possibility for negative influences, stricter parents may be more effective in developing their children to use social media beneficially. The authoritarian parenting style seems to set strict guidelines on what should be acceptable in the world of social media and technology.

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Extra Charts and Graphs

LatinX Score Distribution
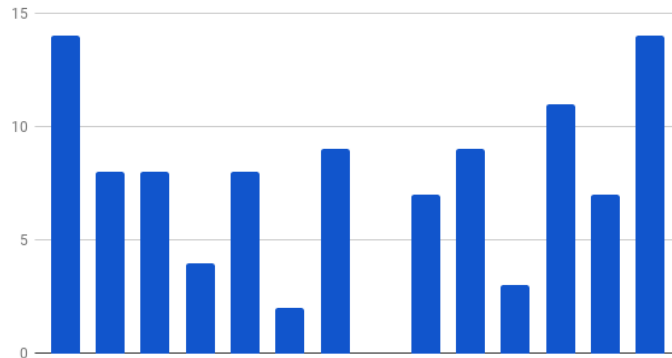
This chart shows the social media scores of participants part of the Latin ethnicity. The social media scores range from 2 to 14.

Distribution of LatinX Parenting Styles

This pie chart demonstrates the parentinstyles associated with participants who are of Latin ethnicity. 50 % have Authoritarian parents, 42.9 % have Authoritative parents, and 7.1% have Authoritarian-Authoritative parents.
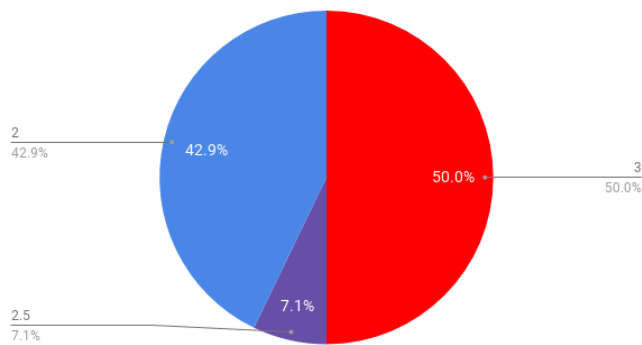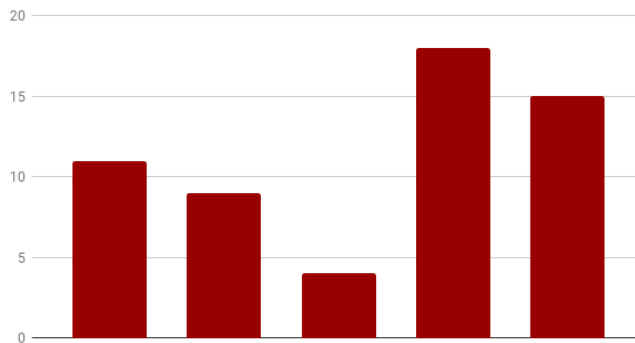
Asian Score Distribution

This chart displays the social media scores of participants part of the Asian ethnicity. The social media scores range from 4 to 17.

Distribution of White Parenting Styles

1.5
1.6%

3
26.2%

26.2%

1
3.3%

2.5
11.5%

11.5%

57.4%

2
57.4%
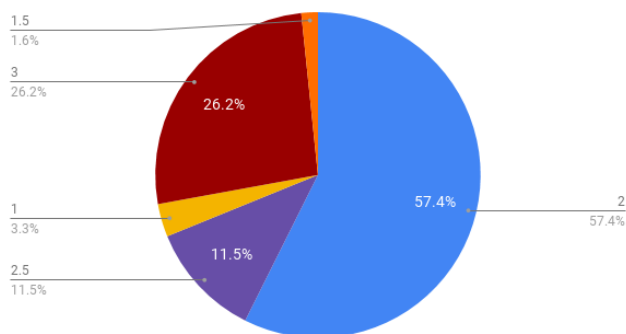
This pie chart demonstrates the parenting styles of participants part of the White ethnicity. 57.4% have Authoritative parents. 26.2% have Authoritarian parents. 11.5% have Authoritarian-Authoritative parents. 3.3% have Permissive parents. 1.6% have Authoritative-Permissive parents.

Ethnicity Distribution

African American
1.2%
Asian
6.2%
LatinX
17.3%

White (including
75.3%
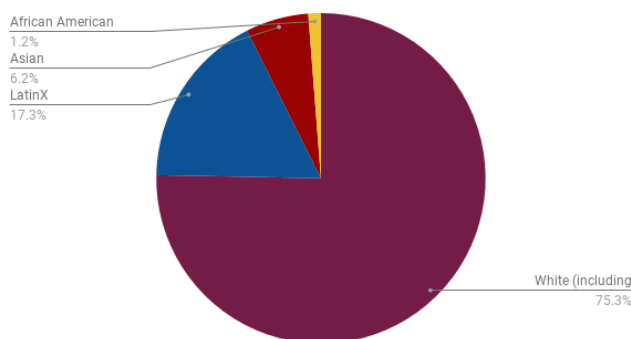
This pie chart demonstrates the distribution of participants related to the African-American, Asian, Latin, and White ethnicities. 75.3% of the participants are White. 17.3% of the participants are Latin.

Survey

Social Media and Parenting Styles * Required
1. Were you born in 1993 or later? *
Mark only one oval.

>*Yes* Skip to question 2.
>
>*No* Skip to "Thank you so much for taking the time to fill out the survey. ."

Thank you so much for taking the time to fill out the survey. We regret to inform you that your age disqualifies you from our target participant pool. We appreciate you taking the time to begin the survey and thank you for doing so.

Demographics
2. What is your sex? Mark only one oval.

>Female
>Male
>Prefer not to say
>Other:

3. Ethnicity? Mark only one oval.

>White (including middle eastern origin)
>African American
>Asian
>LatinX
>Pacific Islander
>Native American
>Other:

4. How much time would you say you spend on social media (Instagram, Snapchat, Youtube, Facebook) each day? Mark only one oval.

>0-1 hr
>1-2 hrs
>2-3 hrs
>3-4 hrs
>4+ hrs

5. Which social media platform do you tend to use most? Mark only one oval.

>Instagram
>Youtube
>Snapchat
>Facebook
>Other:

6. Do you have multiple accounts on the same platform? Mark only one oval.

>Yes
>No

Questions
7. Your parents are around the majority of the time when you are at home. Mark only one oval.

>Yes
>No

8. You have an imposed bedtime. Mark only one oval.

>Yes
>No

9. If yes, your bedtime is frequently enforced. Mark only one oval.

>Strongly agree
>Agree
>Disagree
>Strongly Disagree

10. You parents monitor your internet activity on a constant basis. Mark only one oval.

>Strongly Agree
>Agree
>Disagree
>Strongly Disagree

11. You believe you act morally (nicely, kindly, honestly) on social media. Mark only one oval.

>Strongly agree
>Agree
>Disagree
>Strongly Agree

12. You interact with your peers on social media more than in person. Mark only one oval.

>Strongly Agree
>Agree
>Disagree
>Strongly Disagree

13. Your parents show more interest in your social life than your academic endeavors. Mark only one oval.

Strongly Agree

Agree

Disagree

Strongly Disagree

14. You use social media to express your political opinions. Mark only one oval.

Strongly Agree

Agree

Disagree

Strongly Disagree

15. Your parents use give you loose guidelines for house rules (don't burn the house down, make sure the house is clean, watch over your siblings etc.). Mark only one oval.

Strongly Agree

Agree

Disagree

Strongly Disagree

16. Your parents usually know what you do on the weekends. Mark only one oval.

Strongly Agree

Agree

Disagree

Strongly Disagree

17. Your parents do not voice disapproval of your actions. Mark only one oval.

Strongly Agree

Agree

Disagree

Strongly Disagree

18. You use social media to reinforce relationships with friends and family. Mark only one oval.

Strongly Agree

Agree

Disagree

Strongly Disagree

19. Your social media activities are informational and/or conducive to your career-oriented goals. Mark only one oval.

Strongly Agree

Agree

Disagree

Strongly Disagree

20. It is important for me to have a large number of followers (or platform equivalent), regardless of "in real life" connections. Mark only one oval.

Strongly Agree

Agree

Disagree

Strongly Disagree

21. You would find it frustrating or upsetting to go through the day without being able to use your phone. Mark only one oval.

Strongly Agree

Agee

Disagree

Strongly Disagree

22. You often engage in behavior that results in the embarrassment of someone else online. Mark only one oval.

Strongly Agree

Agree

Disagree

Strongly Disagree

23. Your parents use "because I said so" as an explanation for their requests. Mark only one oval.

Very often

Often

Not often

Rarely

24. Your parents typically have nonnegotiable requirements for school performance. Mark only one oval.

Strongly Agree

Agree

Disagree

Strongly Disagree

25. Your parents are responsive to your inputs (i.e. when you have an argument, the listen to your opinion). Mark only one oval.

Strongly Agree

Agree

Disagree

Strongly Disagree

26. You use your social media presence to spread awareness and/or opinions on social causes (veterans affairs, racial inequality, socioeconomic divide) that matter to you. Mark only one oval.

Strongly Agree
Agree
Disagree
Strongly Disagree

27. Your parents are demanding (i.e. enforce chores, grades, job etc.). Mark only one oval.

Strongly Agree
Agree
Disagree
Strongly Disagree

28. Your time on social media leaves you feeling happier and relaxed. Mark only one oval.

Strongly agree
Agree
Disagree
Strongly Disagree

29. Your parents punish you for bad grades in school. Mark only one oval.

Strongly Agree
Agree
Disagree
Strongly Disagree

30. You get in trouble for using your social media at inappropriate times (during class, at practice etc.). Mark only one oval.

Strongly Agree
Agree
Disagree
Strongly Disagree

31. Your social media activities have introduced you to new perspectives and human stories. Mark only one oval.

Strongly Agree
Agree
Disagree
Strongly Disagree

32. You get in trouble with people of authority (such as school officials, parents, coaches etc.) for your actions on social media. Mark only one oval.

Strongly Agree
Agree
Disagree
Strongly Disagree

33. You believe that the majority of your posts uplift yourself or others. Mark only one oval.

Strongly Agree
Agree
Disagree
Strongly Disagree

34. You feel you are defined by your peers through your social media presence (how many followers you have, how many likes you get). Mark only one oval.

Strongly Agree
Agree
Disagree
Strongly Disagree

35. Your parents explain to you the reason for their decisions and house rules. Mark only one oval.

Strongly agree
Agree
Disagree
Strongly Disagree

36. Your academic success is paramount to your parents. Mark only one oval.

Strongly agree
Agree
Disagree
Strongly disagree

37. Your parents go to all teacher conferences and open houses/events (if they have the time). Mark only one oval.

Strongly Agree
Agree
Disagree
Strongly Disagree

38. Your time on social media does not interfere with your time engaging in facetoface interactions. Mark only one oval.

Strongly Agree
Agree
Disagree
Strongly Disagree

39. You have gone a full 24 hours without using social media. Mark only one oval.

Yes
No

40. You feel uncomfortable going a full 24 hours without social media. Mark only one oval.

Strongly agree
Agree
Disagree
Strongly disagree

41. Your parents have nonnegotiable requirements for school performance. Mark only one oval.

Strongly Agree
Agree
Disagree
Strongly Disagree

42. Which of the following constitute misusing social media. Check all that apply.

Misrepresenting yourself (sometimes reffered to as catfishing)
Cyberbullying
Stalking
Interacting with strangers
Sending/receiving explicit media
Innacuretly spreding information (sometimes reffered to as trolling)
Cheat/spread confidential information
Hate speech

43. You feel you have misused social media platforms. Mark only one oval.

Strongly Agree
Agree
Disagree
Strongly Disagree

44. How would you react to a post like this? Check all that apply.

Like
Laugh and don't do anything
Repost/retweet/share
Send in a groupchat
Comment your agreement
Comment your diagreement
Feel offended but don't do anything
Other:

45. Check all that you do on social media Check all that apply.

Like your friends' posts
Post the details of your day to day life (grabbing coffee, doing homework, exercising)
Follow celebrities
Repost/share posts that poke fun at someone
Participate in exclusive group chats
Interact with people you have never met in real life
Follow lifestyle "gurus" and accounts
Share/repost information about your peers' / family member's lives
"Stalk people" (go through their accounts, look for personal information, closely monitor their online activities)
Follow inspirational accounts
Follow political figures or activists
Check current events/news
Flirt (interact romantically)
Send provocative pictures
Conduct research for school
Spread awareness on issues that matter to you
Entertainement (watching funny videos, funny storys, i.e. Buzzfeed LOL posts)
Learn new skills (makeup tutorial videos, video game tutorials etc.)
Study for classes (Khan Academy videos)

Consent Form

Research Consent Form
Project Title: Parenting Styles and Social Media
Investigators: Juliana Kislin and Deborah Ades
School Name: Pine Crest School
Adult Sponsor: Ms. Kerri-Anne Alexanderson

The purpose of our study is to research the possible correlation between social media activity in teenagers and different styles of parenting. Our research and surveyseek to analyze the number of time teenagers is spending on social media networks like Instagram, Snapchat, and YouTube, and how they utilize such platforms. We then research the different parenting styles such as Authoritarian, Authoritative, Passive, and Neglectful and analyze where a difference in parenting styles could affect how much time a teenager spends on social media. The psychological impacts involve analyzing the possible negative consequences of social media as well as possible cultural influences.

Participation in the study includes submitting a survey. The survey can be accessed online and asks questions regarding personal social media activity as well as questions determining the parenting style of that child. Participants will be anyindividuals born on or after 1993. Participation should involve approximately 20 minutes. No people will not be paid to participate.

There are no physical or legal risks or discomforts expected due to participating in this research. There may be possible psychological and social discomforts due to personal questions regarding family life. For example, individuals are asked "How demanding are your parents?" and "How involved are your parents in your life?" Depending on an individuals family and social circumstances, the survey questions may lead to psychological discomforts. The individual participant will have the satisfaction of knowing they donated their time to a work of study that can create a society more aware of the causes and effects of social media activities.

This research will be able to offer insight into the correlation between different types of parenting styles and social media activity. Parents and children can discover from this studies information they might need in order to proceed more knowledgeably in the digital world of today. Before distributing the survey, we will make sure any student that chooses to take it knows how long the study will take, how many survey questions there are, and exactly any risks and benefits associated with taking the survey. After receiving the survey, the participant's parent or guardian or the participant will also have to sign off on a consent form that re-outlines all the steps of the study, and any questions the participants may feel uncomfortable completing so that they may withdraw from the study before taking the survey.

We will use an anonymous Google Form so that all the answers to the survey will be kept confidential. The faculty sponsor will keep all of the participant's information and the researchers will not receive any of the identifying information. We will not know who participated in the research, only how they filled out the questions. Since the researches will not know who filled out the survey how there will be no way for the researchers to disclose the confidential information. The research will take place on a google form distributed amongst anyone born in 1993 or later.

PARTICIPANT RIGHTS
- ● Your participation in this study is voluntary.
- ● You have the right to withdraw from the study at any time, for any reason, without any penalty.
- ● Any information derived from the research project that personally identifies you will not be voluntarily released or disclosed without your consent.

QUESTIONS ABOUT THE STUDY

If you have any questions about this study, please contact the adult sponsor named above at the following phone number: Kerri-Anne Alexanderson, 516-238-8107

If the participant is over 18:

PARTICIPANT'S SIGNATURE: _____

DATE: ____/____/____

PARTICIPANT'S PRINTED NAME: _____

If the participant is under 18: My signature means that I agree to have my child participate in this study.
This will account for my e-signature.

PARTICIPANT'S PRINTED NAME: _____

GUARDIAN'S PRINTED NAME: _____

GUARDIAN'S SIGNATURE/CONSENT: _____

DATE: _____/_____/_

The Effect of Type 1 Diabetes on the Self-Confidence of Students Grades K-12 in a School Environment

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Abstract

Type 1 diabetes is a self-destructive disease that impacts many children and adolescents in the United States. Diabetic adolescents have also been found to struggle with self-esteem; children with Type 1 diabetes have been found to feel different from their peers at school, according to the American Diabetes Association. This research addresses a gap in the existing literature on how Type 1 diabetes impacts the confidence of children and adolescents, specifically in a school environment. Self-esteem and self-efficacy scores for both Type 1 diabetics and non-diabetics were collected by quantifying the Rosenberg's Self-Esteem Scale and the Self-Efficacy Questionnaire, which was published by the University of Kansas Center for Research on Learning. Although the average self-efficacy and self-esteem total scores did not have a statistically significant difference, average scores between the two groups for select questions show statistically significant differences when doing a question-by-question analysis, indicating that in certain aspects the two groups were not the same. These results depict that Type 1 diabetic students, on a whole, are not more likely to suffer from lower self-esteem and self-efficacy than non-diabetics. However, further analysis indicates that Type 1 diabetic students are more likely to experience some feelings of lower self-efficacy regarding their futures and a subset of the diabetic population had consistent feelings of lower self-efficacy overall.

Introduction

Type 1 diabetes, sometimes referred to as juvenile diabetes for its prevalence in adolescents, is a condition in which part of the pancreas (a glandular organ responsible for the release of insulin) is attacked by the body's own immune system (Diabetes Research Institute Foundation). This autoimmune, or self-destructive disease, inhibits the production of the hormone insulin (which allows glucose to enter cells within the body) in Type 1 diabetics, thus making blood glucose levels difficult to regulate without medicine. Although Type 1 diabetes is not a condition that affects the majority of people, research surrounding it is essential. According to the Children's Hospital in Los Angeles, about one in every 500 people in the United States of America has Type 1 diabetes, with about 80 people being diagnosed in the country everyday (Children's Hospital, Los Angeles). Even those who do not have Type 1 diabetes currently may be affected by it, as 5% of people who have either a parent or a sibling with the condition may eventually develop the autoimmune disease (Children's Hospital, Los Angeles).

Other than just the well-known physical effects, having Type 1 diabetes can also impact a person psychologically. In fact, depression has been found to affect adolescents with diabetes two to three times more than those without the condition (De Wit et al. 2007). Depression and depressive thoughts are linked to low self-esteem. Those who suffer from depression feel worse about who they are as a person than those who are not depressed (Whitbourne, 2013). They also suf-

fer from what psychologists refer to as "The Negative Triad," one part of which causes a person to have negative perceptions of themselves (Boyes, 2009). According to the American Diabetes Association, self-esteem issues due to having Type 1 diabetes has been identified in adolescents. Children in school with the medical condition suffer from feeling different from their peers due to the special treatment at school required to manage their glucose levels (American Diabetes Association). Additionally, these students can also experience a longing to be more like their classmates (American Diabetes Association).

A literature review on the treatment for depression provides a historical perspective on the care and attention surrounding it. "Historical Understandings of Depression" (Nemade, Reiss, & Dombeck, 2007) provides an overview of depression through history. Initially called "melancholia," depression's earliest existence may be traced all the way back to ancient Mesopotamia, as evidenced by early Mesopotamian texts. "Historical Understandings of Depression Continued," discusses treatments for depression in the 1950s using medication. The author concludes with the assertion that as of 2007, a multitude of factors, including social, psychological, as well as biological factors may all contribute to depression.

While depression has held a constant presence throughout history, new emerging knowledge has shaped how depression surfaces, and how it should be addressed. Tangential to the theme of modern treatments and views on depression, "Psychological issues in the care of children and adolescents with Type 1 diabetes" (Frank, 2005) offers a more in-depth perspective of modern-day treatment and information on depression, especially in the context of Type 1 diabetes, and leads into the topic of depression of diabetic youths. The author conveys that depression can cause great difficulty in trying to maintain a steady metabolic control, especially in those who are adolescents with Type 1 diabetes, and that diabetic children and adolescents with better metabolic control tend to have higher self-esteem. Moreover, the article continues to assert that these complications can result in both long-term and short-term problems for a Type 1 diabetic adolescent. A 2007 study, "Validation of the WHO-5 Well-Being Index in adolescents with Type 1 diabetes," (De Wit et al.) concluded that, as previously mentioned, depression appears to be two to three times more prevalent in adolescents with diabetes—compared with adolescents in the general population—and adversely affects quality of life and diabetes outcomes. This statement relates back to the assertion made by Frank, that Type 1 diabetics who suffer from depression or depressive symptoms may suffer from outcomes such as a poor metabolic control. The De Wit study also found that "poor well-being is expected to be associated with more family conflicts and low self-esteem." While Frank does not explicitly state this relationship, this finding does corroborate that depression can result in a difficulty in stabilizing metabolic control and that better metabolic control is associated with higher self-esteem amongst adolescents with Type 1 diabetes. The American Diabetes Association (also known as the ADA) published an article supporting that depression is a major problem amongst Type 1 diabetic youth, titled "Depressive Symptoms in Children and Adolescents with Type 1 Diabetes." This study reconfirms that depression is found amongst Type 1 diabetic youths at a higher rate than it is found in adolescents that do not have Type 1 diabetes. However, unlike the De Wit study, this article claims that the "level of depressive symptoms in children and adolescents with Type 1 diabetes is nearly double that of the highest estimate of depression in youth in general," compared to the previously mentioned conclusion that suggests Type 1 diabetic adolescents are 2 up to 3 times more likely to have depression when compared to people who do not have Type 1 diabetes. The study published by the American Diabetes Association reconfirms De Wit's estimation of depression's prevalency in Type 1 diabetics to an extent; while the values do vary slightly, they both support that Type 1 diabetic adolescents are much more likely to suffer from depression than non-diabetics. However, the slight variation in the suggested likelihoods refers back to the fact that not enough research and attention has been put forth towards the psychological issues that accompany Type 1 diabetes. Consequently, not enough attention is given to help adolescents that have the condition and may be facing psychological problems. Type 1 diabetics may be needing this additional attention regarding mental

health.

Bridging the connection between Type 1 diabetes and depression to other psychological issues, other studies have focused on the relationship between low self-esteem and depression. A study by Sowislo and Orth (2013) evaluated the vulnerability and scar models of low self-esteem and depression in addition to low self-esteem and anxiety through a meta-analysis of the available longitudinal data, which covers 77 studies on depression and 18 studies on anxiety. The article continues to assert that although there is an acknowledged relationship between depression and low self-esteem, there is not enough evidence that such a relationship even exists. The study concluded that the effect of self-esteem on having depression was greater than the effect of depression on self-esteem. While no other article thus far has refuted the claims, this article brings a contrast to research with a different perspective on the relationship between Type 1 diabetes, depression and self-esteem. Compared to the previously mentioned studies and conclusions, which fully support that there is a relationship between depression and self-esteem, this study questions if a relationship exists.

Research of the available literature did not provide any data or documents supporting the statement from the American Diabetes Association implying that Type 1 diabetic adolescents suffer from lower self-esteem due to feeling different than their peers because of their medical condition. This gap in the existing literature on how Type 1 diabetes impacts a child's confidence, specifically regarding a school environment, leads to the research question of this paper: "Does having Type 1 diabetes affect the self-confidence of students in a school environment in grades K-12?" Confidence in this context is defined as how a child feels regarding their academic abilities and school involvement in relation to their peers. It is defined by their levels of self-efficacy and self-esteem regarding these areas, where higher levels of self-efficacy and self-esteem means higher levels of confidence. The results of this research may help medical professionals, psychologists, parents, school-faculty, friends, and any other person who has a relationship to a Type 1 diabetic adolescent or child to further understand and care for these students. Furthermore,

such research may help Type 1 diabetics understand themselves further. Approaching this research topic, based upon the connections made through a review of the existing literature, the researchers inferred that Type 1 diabetics in grades K-12 will have lower confidence levels (lower self-esteem and self-efficacy levels) than non-diabetic students within the same grade range. For statistical analysis, the null hypothesis was that there was no difference between the confidence levels of Type 1 diabetics and non-diabetics in grades K-12. The alternative hypothesis was that Type 1 diabetics would have lower confidence scores than non-diabetics in grades K-12.

Methodology

Using the Rosenberg Self-Esteem Scale (Rosenberg, 1965), data was collected on the self-confidence of each participant. Through use of the established Self-Efficacy Questionnaire, published by the University of Kansas Center for Research on Learning, a self-efficacy score for both Type 1 diabetics and non-diabetics was obtained. This data was used to create a baseline self-efficacy score and self-esteem score for the two groups to have data to compare their general sense of confidence. Because none of the questions within the Rosenberg Self-Esteem Scale and the Self-Efficacy Questionnaire were specifically asked within the context of school environments, while this study focuses on such, participants were asked in an informational section preceding the question section to answer all questions asked in the context of how they felt at school.

Type 1 diabetics answered additional questions relating to their Type 1 diabetes, such as age of diagnosis and how long they have suffered from the condition. In addition, students were asked questions relating to how Type 1 diabetes makes them feel. This information was gathered to collect data about general self-confidence, as well as the direct effect of Type 1 diabetes on the confidence of the diabetic children and adolescents in school. Additionally, the purpose of these questions was to see if the difference between the confidence scores of Type 1 diabetics and non-diabetics—if a statistically-significant difference was found—could be attributed to Type 1 diabetes. Be-

cause no official test regarding Type 1 diabetes that is relevant to this study's main question exists, questions were developed for this portion to gather qualitative data on the relationship between Type 1 diabetes and confidence, particularly in a school environment (specifically regarding their capabilities in academics and extracurriculars and among/ in relation to their peers). From these results, a relationship between Type 1 diabetes and diabetic students' confidence in school can be identified.

The survey (Appendix A) included questions from the Rosenberg Self-Esteem Scale, the Self-Efficacy Questionnaire, and the developed additional questions (which only Type 1 diabetics received access to). To gather participants, permission was needed from every local principal to reach out to the school nurses at each school. Information on the details and purpose of this research was distributed to school nurses, who then distributed the information to Type 1 diabetic students. If both the student and their parents/guardians decided that the student may participate, information was provided to establish contact to get them involved. Some parents could have answered on the participant's behalf. Due to HIPAA (Health Insurance Portability and Accountability Act), direct contact with the students could not be made unless they consented to be identified by the researcher and attempted contact first. Thus, through reaching out through the nurses, the privacy and protection of each student was maintained. A description of this study, as well as a link to the survey discussed, was also posted on an online diabetic community to gather more participants because not enough local Type 1 diabetics took part in this study. Before participants could answer any questions, a consent form requiring both the electronic signature of a parent/guardian and the participant was to be signed. Additionally, an informational section explaining the purpose and procedures of this research was included within the survey before the questions.

All respondents were required to take the Rosenberg Self-Esteem Scale, as well as an established self-efficacy questionnaire. Each participant had a total confidence score calculated by combining both self-esteem and self-efficacy scores. Questions on the Rosenberg Self-Esteem Scale that ask about a posi-

tive feeling towards oneself had their answers quantified so that "Strongly disagree" =0, "Disagree" =1, "Agree" =2, and "Strongly Agree" =3. Questions that ask about a negative feeling towards oneself had their answers quantified so that "Strongly disagree" =3, "Disagree" =2, "Agree" =1, and "Strongly Agree" =0. On the other hand, the Self-Efficacy Questionnaire already quantified its results, and participants rated themselves on how much they identified with the stated statement using a 1 (not very like me) to 5 (very much like me) scale. Numbers were inverted for questions that ask about negative feelings towards oneself (1 to a 5, 2 to a 4, 3 remains a 3, 4 to a 2, and 5 to a 1). The purpose of inverting the scale of questions that ask about a negative feeling towards oneself was so that higher score totals correlate with higher levels of self-esteem and self-efficacy. The Rosenberg Self-Esteem Scale and the Self-Efficacy Questionnaire were used to get a baseline score for each participant on their self-esteem and self-efficacy respectively to allow for a comparison between the diabetic and non-diabetic group. One statement in the Self-Efficacy Questionnaire is "I will succeed in whatever college major I choose." This statement was excluded from the survey because it may not be relevant to all students. In addition, younger students may have a harder time understanding this question.

Additional questions for Type 1 diabetics were developed to evaluate if the difference in the two groups' scores, if such a difference existed, may be attributed to Type 1 diabetes and its impact on how diabetics feel regarding their academic ability and school involvement.

Demographics

Only five local Type 1 diabetics took part in the survey, while 40 other participants were non-locals who found out about the survey on the JDRF online community. Of the 45 total responses, only 36 responses were completed, yielding an 80% completion rate.

Due to the positioning of the question asking if the student was a Type 1 diabetic or not within the survey, all incomplete responses were required to be discarded because it was unknown what group the respondent's answers belonged to. Participants of all

grade levels with the exception of 1st grade took part in this research study. The Type 1 diabetic group did not include participants in the 10th grade or the 1st grade, while the non-diabetic group did not include participants in the 5th grade, 3rd grade, or 1st grade. Of the 36 respondents, 20 reported having Type 1 diabetes, while 16 reported being non-diabetics. The demographics are represented below in Table 1 and Figure 1.

Table 1

Grade	Non Diabetic	Diabetic	Total
k	1	1	2
2	1	2	3
3		2	2
4	2	2	4
5		2	2
6	2	2	4
7	2	1	3
8	2	1	3
9	2	4	6
10	1		1
11	1	2	3
12	2	1	3
Total	16	20	36

Figure 1
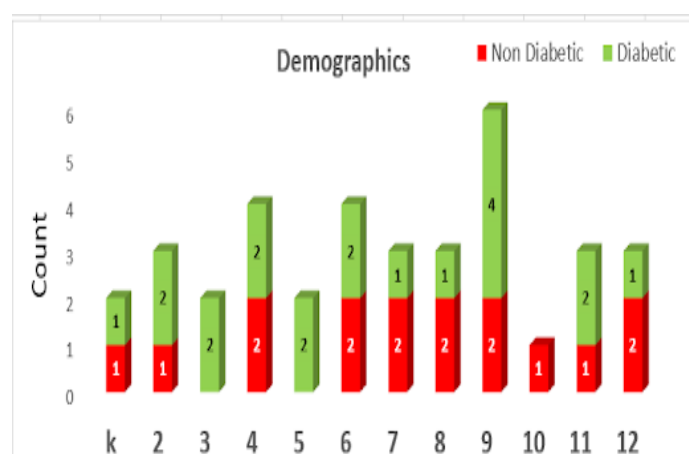
Data Analysis

To best assess the research question, a 2-sample (sample 1=20 diabetics, sample 2=16 non-diabetics), 1-tailed t-test for the difference between the means of the groups for both the self-esteem and self-efficacy scores was conducted (means of the non-diabetics minus means of the diabetics). Using an alpha value set to .05, Levene's test for the equality of variances was used to determine whether the variances of the two groups for each of the questions could be considered equal. The purpose of this was to determine which p-value to use (either with or without equal variances) for each question to assess statistical significance for the difference in the means. These tables contain the results of the hypothesis test comparing self-esteem and self-efficacy scores between the two groups (Table 2) as well as the data for the statistically significant questions (questions that showed a statistically significant difference) between Type 1 diabetics and nondiabetics (Table 3).

Table 2

Independent Samples Test-Self Esteem & Self Efficacy Non-Significant		Levene's Test for Equality of Variances		t-test for Equality of Means		Alpha=.05
		F	Sig.	t	df	P Values
Self Esteem Total Score	Equal variances assumed	3.735	0.062	-0.421	34	0.3383615
Self Efficacy Total Score	Equal variances assumed	0.072	0.790	-0.594	34	0.2782883

Table 3

Independent Samples Test Diabetics vs Non-Diabetics		Levene's Test for Equality of Variances		t-test for Equality of Means		Alpha=.05
		F	Sig.	t	df	
Q22-I will succeed in whatever career path I choose	Equal variances assumed	2.990	0.093	2.179	34	0.0182
			P>.05 equal Variance			
Q24-I believe hard work pays off.		9.820	0.004	-2.149	33.05	0.01951
	Equal variances not assumed		P<.05 Unequal Variance			

There was no statistically significant difference between the self-esteem and self-efficacy scores (and thus overall confidence) between the Type 1 diabetic group and the non-diabetic group. The results from the additional question section for Type 1 diabetics were thus not analyzed or used in the statistical analysis of the question "How does having Type 1 diabetes affect the self-esteem (confidence) of kids in a school environment in grades K-12?"

Findings

As depicted in Table 2, when comparing the overall self-esteem and self-efficacy scores for both groups, no statistically significant difference was found. However, when comparing the diabetic and non-diabetic group on a question-by-question basis, statistically significant differences were found between the two groups. Using Levene's test and a 1-tailed t-test for the difference in means, Question 22 was determined to have statistical significance when analyzed assuming variances were equal, while question 24 was determined to be statistically significant when analyzed under the assumption that the variances were unequal. Both showed statistically significant values at alpha=0.05. With a p-value of 0.0182 and a positive t-value, the results of question 22 indicate that Type 1 diabetics were less likely to agree with the statement than non-diabetics, meaning that Type 1 diabetic students are more likely than non-diabetic students to doubt their abilities regarding their futures, specifically regarding their careers. The results of question 24, with a negative t-value and a p-value of 0.01951, indicate that Type 1 diabetics were more likely to agree or with the statement than non-diabetics. Based on these findings, Type 1 diabetics are more likely to believe that their ability grows with effort. Interestingly, question 22 showed Type 1 diabetics to have lower self-efficacy, while question 24 showed non-diabetics to have lower self-efficacy.

Through connections made during preliminary research and the literature review regarding the relationship between depression, self-esteem, self-efficacy, and Type 1 diabetes, it was hypothesized that there would be a statistically significant difference between the overall calculated scores of self-esteem as well as

self-efficacy when comparing the two groups. It was found through data analysis that the original hypothesis was not correct. Although this was the case, as explained above, there were some instances where there was a statistically significant difference between the Type 1 diabetic group and the non-diabetic group, providing sufficient evidence that in certain aspects, the two groups were different. Overall, Type 1 diabetic students were not more likely to suffer from lower self-esteem and self-efficacy than non-diabetics. However, certain questions under these two topics create a statistically significant difference between the two groups.

Discussion

While no large-scale differences exist between Type 1 diabetic students and non-diabetic students in grades K-12 in reference to overall levels of self-esteem and self- confidence, Type 1 diabetic students are more likely to display lower levels of agreement when presented the statement "I will succeed in whatever career path I choose." Based on this result, diabetic individuals in grades K-12 may be more likely to show lower confidence regarding career opportunities and their abilities, possibly affecting their mental health.

A number of factors could have impeded the collection of accurate data and thus explained this unexpected finding. Possible reasons for error include a lack of understanding of the questions on the side of the participants, especially if the participants were younger, such as those in kindergarten and 2nd grade. Another possible cause of bias may be that the parents of some participants answered the questions on their child's behalf, or the child did not openly express their true answers in front of their parents. Additionally, the sample size may have impacted these results. Future research is required to identify what factor, or factors, may be causing the results identified in this research and collected data set.

Another limitation of this research included having to comply with HIPAA, which prevented any direct contact with possible participants unless they attempted contact first. This may have affected the sample size, and thus the results. Furthermore, dur-

ing the process of the literature review, the price of certain articles or the requirement of a subscription to view certain articles prevented access to a complete set of information thus limiting the literature analysis and discussion and impacting the hypothesis at the begininng of this study.

The research results are not consistent with the assumptions or connections drawn from the literature review. The apparent connection between depression, self-esteem, and self-efficacy in Type 1 diabetics was challenged by the results of this study because, as shown in Table 2, there were no overall differences that were statistically significant between Type 1 diabetics and non-diabetic respondents regarding self-esteem and self-efficacy as a group.

Through analysis, this research reveals a new pathfor future questioning. While there was no statistical significance between Type 1 diabetics and non-diabetics in regard to their self-esteem scores and self-efficacy scores (and thus no statistical significance between their overall confidence), in the overall population, a significant subsection within the Type 1 diabetic respondents of the survey were shown to have a statistically significant.difference in confidence levels compared to the rest of the diabectic population. 20% of Type 1 diabetic respondents expressed both consistent as well as strong themes of inferiority in relation to their peers (as data suggests in the additional questions section for Type 1 diabetic participants). Additionally, this subsection of participants expressed feelings that their Type 1 diabetes played a role in making them feel both overall, as well as academically, inferior to their peers and more prone to avoid school involvement, as shown below in Table 4.

Table 4

Have you ever/do you feel inferior to your classmates because of your diabetes?	Have you felt less confident in your abilities at any time in your life because of your diabetes?	Do you or have you ever felt like you were not as smart as your peers? If so, do you feel like your diabetes may have played a role in this in any way?	Do you ever feel shy due to your diabetes? If so, do you feel like that may ever have impacted your school involvement?	Have you ever felt unconfident amongst your peers due to your Type 1 diabetes?
Yes	Yes	Yes; yes	Yes; yes	Yes
Yes	Yes	Yes; yes	Yes; yes	Yes
Yes	Yes	Yes; yes	Yes; yes	Yes
Yes	Yes	Yes; yes	Yes; yes	Yes

In addition, this 20% of Type 1 diabetic respondents also had statistically significantly lower levels of overall self-esteem and self-efficacy than other diabetics, as shown in Table 5 below.

Table 5

Those who answered yes to 34-38 vs all other diabetics	Levene's Test for Equality of Variances		t-test for Equality of Means							P-Value
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Lower	Upper	
Self Esteem Total Score	1.611	0.221	2.102	18	0.025	5.125	2.438	0.002	10.248	0.0125
Self Efficacy Total Score	0.425	0.523	4.063	18	0	9.688	2.384	4.678	14.697	0.0000

These statistically significant findings—along with the low self-efficacy regarding Question 22—warrant future research focusing on the cause of such trends to identify what sets this 20% of Type 1 diabetic participants apart from the other participants, both diabetic and nondiabetic. Additionally, the results warrant future research focused on identifying certain behaviors as well as other indications that Type 1 diabetic students may be experiencing lower confidence levels and feelings of inferiority and ability at school.

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Survey

The following are the questions as they appeared in the survey:

IRB-Related Questions:
Parents Signature/Name:
Date
Student Signature/Name:
Date

Demographic Question:
What grade are you (the student) in?

Rosenberg Self-Esteem Test:
I feel that I am a person of worth, at least on an equal plane with others.
I feel that I have a number of good qualities.
All in all, I am inclined to feel that I am a failure.
I am able to do things as well as most other people.
I feel I do not have much to be proud of.
I take a positive attitude towards myself.
On the whole, I am satisfied with myself.
I wish I could have more respect for myself.
I certainly feel useless at times.
At times I think I am no good at all.

The Self-Efficacy Questionnaire:
I can learn what is being taught in class this year.
I can figure out anything if I try hard enough.
If I practiced every day, I could develop just about any skill.
Once I've decided to accomplish something that's important to me, I keep trying to accomplish it, even if it is harder than I thought.
I am confident that I will achieve the goals that I set for myself.
When I'm struggling to accomplish something difficult, I focus on my progress instead of feeling discouraged.
I will succeed in whatever career path I choose.
I believe hard work pays off.
My ability grows with effort.
I believe that the brain can be developed like a muscle.
I think no matter who you are, you can significantly change your level of talent.
I can change my basic level of ability considerably.

Grouping Question:
Are you (the student) a type 1 diabetic?

Developed Questions (Type 1 Diabetics only):

How old were you when you were diagnosed?

How long (in years) have you had type 1 diabetes?

Do you feel completely comfortable (not shy at all) talking about your diabetes at school?

Have you ever/do you feel inferior to your classmates because of your diabetes?

Have you felt less confident in your abilities at any time in your life because of your diabetes?

Do you of have you ever felt like you were not as smart as your peers? If so, do you feel like your diabetes may have played a role in this in any way?

Do you feel shy due to your diabetes? If so, do you feel like that may ever have impacted your school involvement?

Have you ever felt unconfident amongst your peers due to your type 1 diabetes?

How old were you when you started, if at all, to feel less confident overall due to your type 1 diabetes?

The Political Affiliation of Individuals and Its Correlation to the Political Affiliation of Their Social Group

Elizabeth Brown and Jared Orenstein

Pine Crest School, FL

Abstract

This research explores the correlation between social groups and political identities. The researchers examined prior social psychology studies, as well as the correlation between an individual and their social group's beliefs, specifically regarding politics. This study was comprised of a survey that contained two sections of questions addressing partisan beliefs. From participants' responses to these questions, the researchers calculated a political affiliation score for each individual and their social group. The area of focus in this research was to determine how a person's political affiliation correlates to their social group's overall political affiliation. The data showed a weak correlation (r =.295) between individual and social group political affiliations, although this trend was stronger for people with more polarized beliefs.

Introduction

There are three themes that past research of this topic has explored: politics, friends, and social psychology. These subjects are interrelated when discussing interactions within social groups, specifically regarding political opinions. Two Pew Research surveys and a study by Camila Campos looked at the variety of political opinions in social groups (2016; 2017). Others such as Christopher Kenny and Paul Beck focused on the influence of the political affiliations of friends (1994; 2002).

The first common thread identified was social psychology, which was exemplified through a famous study conducted by Solomon Asch. The information presented in the study zeroes in on the concept of conformity (a person's tendency to mirror the actions of others in a group) and how it relates to groupthink. Groupthink occurs when a group of people begin to think in the same way in an attempt to maintain harmony within the group (Schmidt, 2016). The spread of groupthink occurs during social interactions within social groups. This concept can be expanded upon with the idea of political affiliations and how a social group can influence those identities in the realm of politics. Asch's experiment displayed an individual's tendency to conform to a group belief, even if it was clear that the group's belief was wrong. In his study, Asch placed one participant in a group of actors. Each person was asked to determine which of the three different lines matched the length of the target line. All the actors responded with the same incorrect answer. This was done in order to test the participant's tendency to conform in response to group pressure (1955). This study will look at the tendency of an individual to match their views with a common view of the social group, examining the role of conformity and groupthink with respect to politics.

The foundational research for this study, conducted by Shanto Iyengar and Sean J. Westwood, political scientists from Stanford University and Princeton University, respectively, examines the impact of political attitudes toward people of opposing political

views and how these attitudes stand the test of time in regards to tribalistic political minds. The relationships examined throughout the study were amongst peers and family members, two groups that are believed to be primary social groups. Iyengar and Westwood argued that different political views can have powerful detrimental impacts on relationships; they discussed the long-term impacts of politics on relationship sby examining marriages of people from differing ends of the political spectrum. A study conducted by Paul A. Beck analyzes the social influence of friends on an election. This study delves into the topic of group-think: if people surround themselves with too many people of one ideology, citizens tend to skew toward that particular ideology (Beck, 2002). Groupthink can quickly evolve into group polarization (the strengthening of a group's initial beliefs after discussing these shared beliefs.). When an individual is surrounded by a group that shares the same beliefs, their beliefs will become stronger. Beck's study examined the 1992 election in depth to discuss third party voters and the implications of not conforming to an established party. In particular, the study looked at how in a polarized group, if one person differs from the group, the group is more likely to suppress that viewpoint. Those who were more vocal were more partisan and less open-minded. This reinforces the idea that the political affiliation of an individual's friends will likely have a high correlation with the individual's political affiliation.

Based on the results of these studies, as well as the application of social psychology in a social group setting, the researchers hypothesized that an individual's political affiliation will positively correlate with their social group's overall political affiliation.

Methods

The study explored the correlation between political affiliation and friendships. Political affiliation was determined through a survey involving several questions that asked about the participants' views regarding specific political topics (Appendix B). These questions were selected from another political affiliation quiz, The Political Compass ("The Political Compass," 2001).

The study used a scale of strongly disagree to strongly agree (1-4) to follow the format of the Likert scale (Likert, 1932). The Likert scale ensured that participants were unable to choose a "neutral" score, so the participant had to decide to what extent they agreed or disagreed with each particular statement in the survey.

The survey was chosen as the method of receiving data because it was most accessible and could be completed by anyone who had access to the internet and social media, as long as the consent form was completed by the participant (Appendix C). The responses to the consent form were only accessible to the faculty advisor, Kerri-Anne Alexanderson. This maintained confidentiality, so the researchers only had access to the participants' responses to the survey itself.

This survey contained three important concepts that were operationally defined: political affiliation, social group, and friend. Political affiliation was defined as the party with which an individual's views most closely aligned. This was determined through a section of the survey with questions from The Political Compass, as mentioned above. Social group was defined as the participant's five closest friends. A friend was defined as someone who the participant spent a significant amount of time with voluntarily. The researchers ensured that 25 of the 28 questions were partisan in order to elicit a polarizing belief. In addition, around five questions per topic were grouped into specific political issues such as military, fiscal and monetary policy, religion, social beliefs, and the Constitution. This was done to ensure that a diverse range of topics were explored, thus capturing the individual's overall political identity.

The data collection process lasted from November 18 to November 30, 2018. The researchers opened the survey to a broader community by sharing the link through social media outlets such as Facebook, Snapchat, and the Pine Crest School eLearning page. From there, the researchers waited for participants to complete the survey. Once the survey was closed, the researchers analyzed the data using Google Sheets.

Results

The responses of 53 participants were analyzed and used in the creation of the graphs. The survey received a total of 72 responses, but 19 of these responses were not able to be used due to an incomplete survey.

This study had a number of limitations. If the study were to be repeated, the researchers should create more explicit directions for each section of the survey in order to avoid receiving responses that are incomplete. Because the survey received a smaller sample size of 53 responses, the results of this study were less reliable and more difficult to generalize. It is also important to recognize that, although the researchers calculated political affiliation scores for each participant and their social group, the social group scores were based on the participants' judgements of their social group, not the members of the social group themselves. Therefore, the political affiliation scores for the social group may not be completely accurate.

Both sections of the survey contained the same questions, but the first section pertained to the participant's own beliefs, and the second section pertained to the majority of the participant's social group beliefs. Some participants believed the second half of the survey was a duplication of the first half. The researchers did not recognize that this characteristic would create confusion prior to opening the survey, and this resulted in a slightly smaller sample size than expected.

Despite the smaller sample size, the data collected resulted in several findings that contribute to the initial question of how an individual's political affiliation correlates to the social group's political affiliation. The majority of responses to Question 28 regarding the participants' percieved political affilations resulted in 56.6% responding Democratic to 18.9% for Republicans, with the remaining percentage going towards Independents at 9.4% and other party affiliations at 15.1% (Appendix A, Figure 2). Similarly, survey Question 28 regarding the participant's social group affiliation resulted in 52.8% for Democrats, 26.4% for Republicans, 15.1% for Independents, and 5.7% for other party affiliation (Appendix A, Figure 1). In both the individual and social group responses, overall percentages of affiliation with the different parties were similar. This highlights an important similarity in political affiliation between the individual and social group. However, it is noted that those who responded as Democrat for the individual question did not necessarily respond as Democrat for the social group as well, so a correlation is not immediately evident based on this data.

Ignoring the Independent and Other responses, the data shows that both the individual and social group have the largest number of political affiliations with the Democratic Party (Appendix A, Figures 3 and 4). Both graphs have the greatest number of party affiliations being Moderate Democrats, then the order follows with Democrats, Republicans, and Moderate Republicans. It is worth noting that the Democratic category was significantly larger than the Republican category in the both the social and the individual group. This could be due to Pine Crest's location within a heavily democratic region.

The graph represented in Figure 5 directly addresses the research question: how does social group affiliation affect one's individual political affiliation (Appendix A, Figure 5)? This graph compares the individual's political affiliation to what the individual believed their social group's political affiliation was. The r value of this collection of data is .295, revealing a weak correlation between the individual's political affiliation and the social group's political affiliation. While the data is not conclusive enough to find a definitive correlation between the political affiliation of an individual and their social group, the researchers believe that if this study were administered to a broader audience of varying ages and socioeconomic ranges it would establish the relationship. Individuals who were calculated to have a strong political affiliation (49% for Democrats, 76% for Republicans), were found to have social groups that were also in this "strong political affiliation" category. Many of those who scored as Moderates varied more in their social group's political affiliations. This data highlights an important difference between participants with strong political beliefs and participants with moderate political beliefs. Those with stronger beliefs were more likely to have social groups that aligned more closely with their own beliefs, while those who had moderate beliefs seemed to have a wider variety of beliefs in their social group.

Conclusion

The data acquired from the researchers' survey

provides some support for the hypothesis that an individual's political affiliation will positively correlate with their social group's overall political affiliation. The data shows a weak correlation between the individual and social group political affiliation, with a r value of .295. While this data supports the initial hypothesis, the researchers realize the possibility that this was influenced due to the demographics of those who participated in the study. The limited demographic representation could be a possible cause for the bias in the research.

Applied to today's politics, this correlation—which ws especially strong for those with more polarized political beliefs—may explain the tense political climate between the Republican and Democratic parties during the 2016 election, as well as why this division has persisted into 2019. The correlation points toward a human tendency to be surrounded by similar political opinions, which enhances group polarization between major political parties (Myers, 2011). In addition, if people become more aware of how their social group's political affiliation relates to their own political affiliation, this may reveal to them the limited variety of political information they expose themselves to. The results of this research challenge people to avoid groupthink by broadening their horizons, whether it be through friendships or social media. By eliminating this self-censoring of beliefs in a group, people may be more inclined to diversify their social group and extend themselves into new groups in order to understand the value of each political party's stance on different issues.

Further research should be conducted to verify the researcher's correlation. Researchers may want to examine a person's willingness to join new social groups that harbor opposing political views. Another important step is to research how the political affiliation of an individual's social group correlates to who that individual votes for in an election. A possible research question could ask if the social group's opinion is a deciding factor in how an individual votes, or if the candidate that someone's beliefs align with will determine who their social group will be. Research in these areas will make further interpretation of the present correlation possible, and it will begin to indicate how the individual-social group relationship can alter the modern political climate.

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Visual Representation of Data

Below are the figures that were created using the data from survey responses. Each figure highlights a different aspect of the data and the political affiliation scores that the researchers calculated. Figure 5 directly addresses the researchers' initial hypothesis.
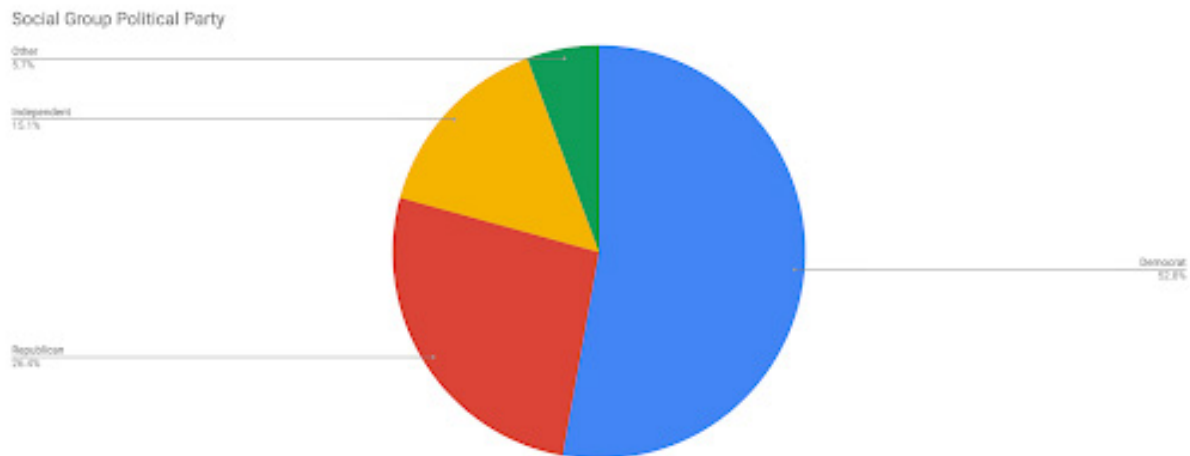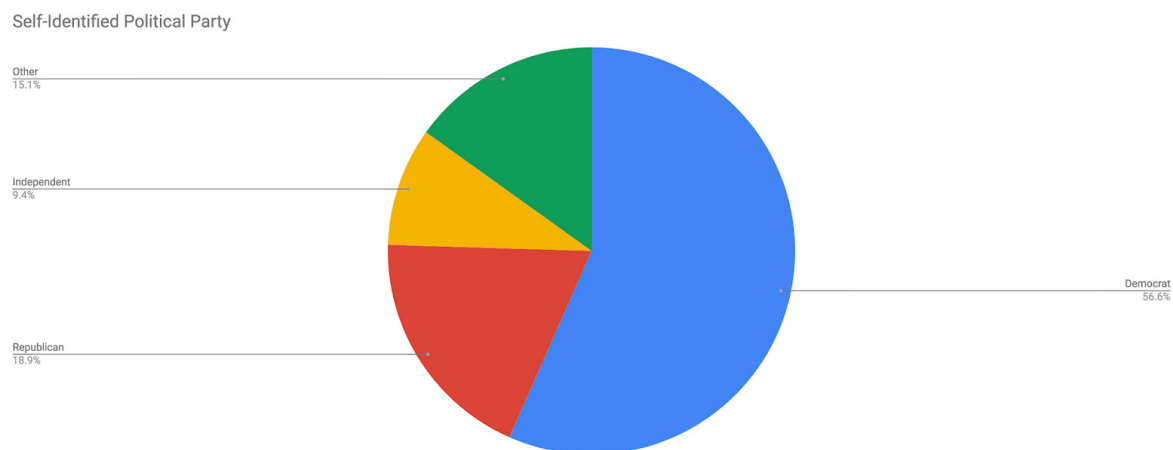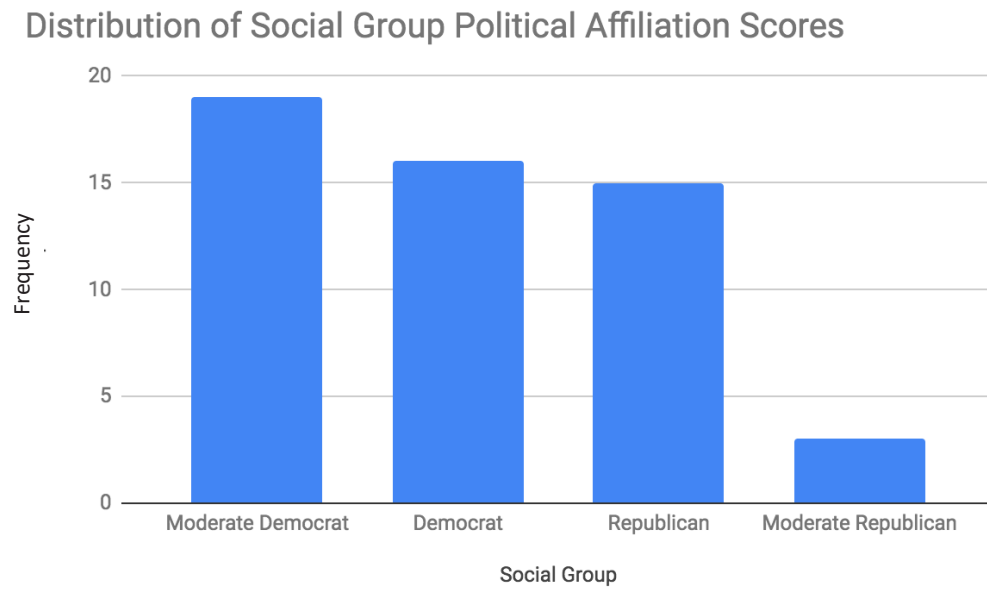
Figure 1

Social Group Political Party

Figure 2

Self-Identified Political Party

Figure 3

Distribution of Social Group Political Affiliation Scores

Figure 4

Distribution of Participants' Political Affiliation Scores
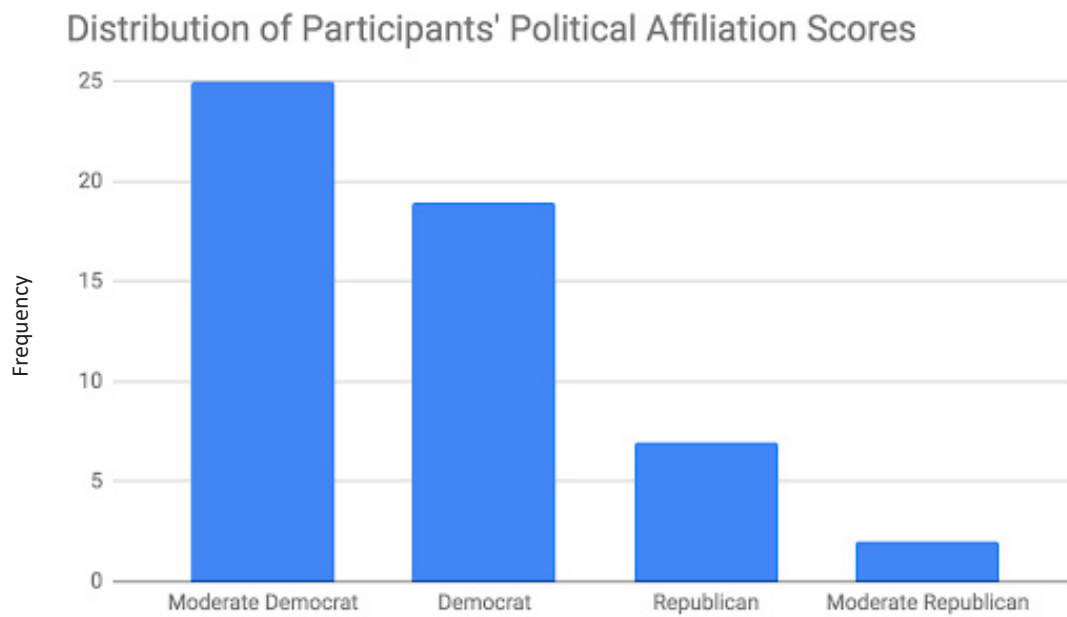
Figure 5

Social Group Political Affiliation Score vs. Individual Political Affiliation Score
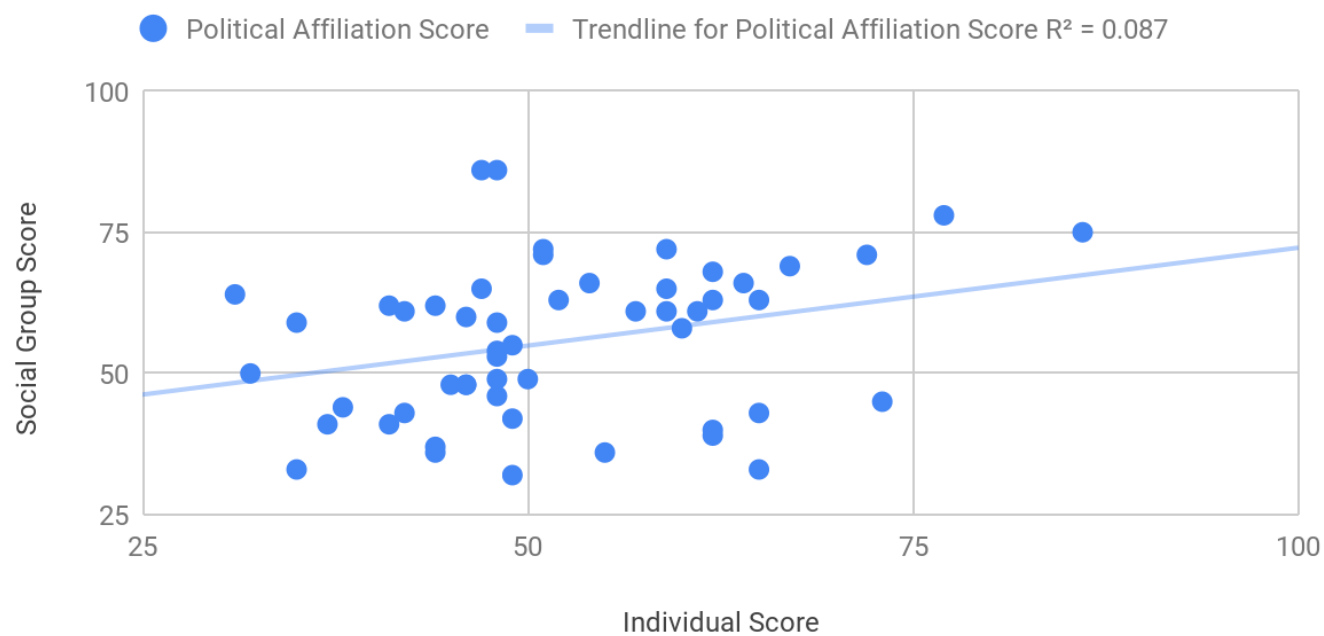
Political Affiliations Survey

This is the survey that was used to collect data for the study. The survey contained two sections, one for the individual and their social group.

Questions About Personal Beliefs:
This information is confidential and does not have any identifying information about you attached to it.
1. Military action that defies international law is sometimes justified.
2. I'd support my country, whether it was right or wrong.
3. No one chooses his or her country of birth, so it's foolish to be proud of it.
4. The freer the market, the freer the people.
5. The rich are too highly taxed.
6. Those with the ability to pay should have access to higher standards of medical care.
7. It's a sad reflection on our society that something as basic as drinking water is a bottled, branded consumer product.
8. People are ultimately divided more by class than by nationality.
9. Controlling inflation is more important than controlling unemployment.
10. Because corporations cannot be trusted to voluntarily protect the environment, they require regulation.
11. Those who are able to work, and refuse the opportunity, should not expect society's support.
12. Possessing marijuana for personal use should not be a criminal offense.
13. The most important thing for children to learn is to accept discipline.
14. Abortion, when the woman's life is not threatened, should always be illegal.
15. All authority should be questioned.
16. Making peace with the establishment is an important aspect of maturity.
17. In criminal justice, punishment should be more important than the rehabilitation.
18. It is a waste of time to try to rehabilitate some criminals.
19. Our civil liberties are being excessively curbed in the name of counter-terrorism.
20. Although the electronic ages makes official surveillance easier, only wrongdoers need to be worried.
21. The death penalty should be an option for the most serious crimes.
22. It is important that I instill religious values in my child.
23. You cannot be moral without being religious.
24. Charity is better than social security as a means of helping the genuinely disadvantaged.
25. I believe people are born heterosexual.
26. A same sex couple in a stable, loving relationship should not be excluded from the possibility of child adoption.
27. What goes on in a private bedroom between consenting adults is no business of the state.
28. Which political party do you believe your views most closely align with?

Questions About Social Group:
Please answer these questions regarding the majority belief in your friend group. "Majority" is defined as the same belief held by more than half of your social group.

This information is confidential and does not have any identifying information about you attached to it.
1. Military action that defies international law is sometimes justified.
2. I'd support my country, whether it was right or wrong.

3. No one chooses his or her country of birth, so it's foolish to be proud of it.
4. The freer the market, the freer the people.
5. The rich are too highly taxed.
6. Those with the ability to pay should have access to higher standards of medical care.
7. It's a sad reflection on our society that something as basic as drinking water is a bottled, branded consumer product.
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16. Making peace with the establishment is an important aspect of maturity.
17. In criminal justice, punishment should be more important than the rehabilitation.
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20. Although the electronic ages makes official surveillance easier, only wrongdoers need to be worried.
21. The death penalty should be an option for the most serious crimes.
22. It is important that I instill religious values in my child.
23. You cannot be moral without being religious.
24. Charity is better than social security as a means of helping the genuinely disadvantaged.
25. I believe people are born heterosexual.
26. A same sex couple in a stable, loving relationship should not be excluded from the possibility of child adoption.
27. What goes on in a private bedroom between consenting adults is no business of the state.
28. Which political party do you believe your views most closely align with?

Scoring:
For questions 1, 4, 5, 6, 9, 11, 13, 14, 16, 17, 18, and 20-25 of both sections of the survey: "Strongly disagree" = 1 point, "Disagree" = 2 points, "Agree" = 3 points, "Strongly agree" = 4 points
For questions 3, 7, 8, 10, 12, 19, 26, and 27 of both sections of the survey: "Strongly disagree" = 4 points, "Disagree" = 3 points, "Agree" = 2 points, "Strongly agree" = 1 point
For question 28 in both sections of the survey the options were as follows: "Republican Party," "Democratic Party," "Independent," and "Other". No points were identified with this question.
Questions 2 and 15 were disregarded, as neither of these two questions clearly identified with a political party.
The participant's responses fell into a range between 25-100. A score of 25-48 = Moderate Democrat, 49-62 = Strong Democrat, 63-76 = Strong Republican, 77-100 = Moderate Republican.

Research Consent Form

The Research Consent Form was required prior to having access to the survey. In order to allow for a larger sample size, adult and minor consent forms were both created so that minors could participate as well, if interested. The responses to the consent forms were anonymous and only available to the faculty advisor. The consent form for minors had an additional space for a parent signature.

Project Title: Political Affiliations
Investigators: Elizabeth Brown and Jared Orenstein
School Name: Pine Crest School
Adult Sponsor: Kerri-Anne Alexanderson

The purpose of the study is to determine the degree to which an individual's political affiliation correlates with his or her friends' political affiliations. This study involves participants taking part in a survey, and each participant will answer anonymously and then the results will be relayed to the conductors by Kerri-Anne Alexanderson, the faculty advisor. The participants will be anyone who chooses to fill out the survey created. There will be no specific sampling method of people to participate.

The content may be uncomfortable due to the subject matter, including politics and political conflict. The information presented is not meant to target your views in any way, rather we are collecting data in order to measure the correlation between your viewpoints and your friends. The participants will be random because the survey will be shared, and whoever chooses to complete the consent form and the survey will be the participants for this study.

Participation time is based on the pace at which you answer the survey questions. You will be allowed to take their time and answer all questions appropriately. You will not be paid to participate. The information is anonymous and the questions will mainly ask about your views on specific topics, so it should not create any discomfort for you. The research may indicate the influence of your friends on social topics such as politics.

This research is beneficial to the participants because it will allow them to determine which political views are compatible with their friends and how they could diversify their friendships beyond their existing social groups. Our data could greatly benefit society as it will highlight pathways to new friendships based on the correlation of different political affiliations in social groups.

A consent form is required before the survey is accessible. The responses to the consent form are housed in a secure location with the faculty advisor, and the responses to the consent form will remain with the faculty advisor. All of the information such as responses to consent forms will be sent to the faculty advisor, so the researchers will not have access to any of the participant's information. The researchers will only receive the responses, so the survey is anonymous. The research will take place on a survey which will be shared via social media. It could take place anywhere at your discretion and at any time of the day. Thus the information will not be taken from one specific location and participants of the experiment will be allowed to take their time and answer all questions appropriately. We approximate that a person will take somewhere around 10-15 minutes on the survey.

PARTICIPANT RIGHTS
● Your participation in this study is voluntary.
● You have the right to withdraw from the study at any time, for any reason, without any penalty.
● Any information derived from the research project that personally identifies you will not be voluntarily released or disclosed without your consent.

QUESTIONS ABOUT THE STUDY
If you have any questions about this study, please contact the adult sponsor named above at the following phone number: Kerri-Anne Alexanderson, 516-238-8107

My signature means that I agree to participate in this study. This will account for my e-signature.

PARTICIPANT'S SIGNATURE: _____

DATE: _____/_____/_____

PARTICIPANT'S PRINTED NAME: _____

The Art of Praise

Michelle Qin

Dos Pueblos High School, CA

Abstract

This experimental study investigates the relationship between praise on teenage students and good performance, examining how praise can make them more motivated, confident, and inclined to tackle challenges. A series of experiments with a group of 93 subjects from grades 5-8 and 10 was conducted. The experiment was composed of math problem-solving, puzzle-solving, recess (free choice), and a self-attribution for failures period. The experiment focused on the effects two different types of paise: praise for process (effort) and praise for person (inherent ability). The findings show that subjects praised for process are more learning-oriented and more likely to have growth mindsets in relation to attributions for failures than subjects praised for person; subjects praised for process are more perseverant after setbacks than subjects praised for person; and these different effects are robust across grade levels, task types, and experimenters (adults or teenagers).

Introduction

Like plants need water, kids need encouragement. Yet different framings of praise garner diverse reactions. Properly praising a child will raise their confidence levels and maintain their self-esteem. Self-esteem is important because it is the basis for the development of positive qualities, abilities, values, and worthiness, as well as one's relationships with others. This experiment was aimed at determining the different effects of praise for person and praise for process. It provides an evaluation of the beliefs held by educators that praise for process, but not praise for person, makes teenagers more motivated, confident, and inclined to tackle challenges.

Hypothesis 1: Subjects praised for process (effort) are more learning-oriented and more likely to have growth mindsets in relation to attributions for failures than subjects praised for person (ability).

Hypothesis 2: Subjects praised for process are more perseverant with setbacks than subjects praised for person.

Hypothesis 3: The different effects of praise for process and praise for person remain as either grade level or task type changes.

Background

Mueller and Dweck (1998) showed via experiments on American 5th graders that kids behave differently due to different types of praise received. Molden and Dweck (2006) argued that individuals who believe ability is fixed tend to set performance goals, whereas individuals who believe ability can be improved by learning tend to set learning goals. Corpus and Lepper (2007) performed an experimental study on how gender and age moderate the long-term and post-failure motivational consequences of person versus process praise. Gunderson et al. (2013) found that the higher the proportion of effort-based praise kids got during early childhood, the more likely kids were to endorse "can do" attitudes when they were in the second or third grade. This research contributes to

this literature by providing an experimental study of both the different effects of praise for process and for person on teenagers and their robustness.

The following are the key terms for this experimental study. *Person Praise*: Feedback that emphasizes ability, e.g., "You're a really smart writer!" *Process Praise*: Feedback that emphasizes effort and strategies, e.g., "You are finding interesting ways to solve this!" *Neutral Feedback*: Feedback that neither increases nor decreases future activity, e.g., "You completed the task." *Fixed Mindset*: Belief that basic qualities are fixed traits. *Growth Mindset*: Belief that basic qualities can be developed. *Performance Goal:* A goal to demonstrate level of ability through performance of a task. *Learning Goal*: A goal to improve level of ability through effort and perseverance at a challenging task. We refer to Dweck (2007) and Molden and Dweck (2006) for discussions on these terms.

Method

Materials
- A group of 93 willing teenage students in grades 5-8 and 10 from Santa Barbara public schools
- A set of math problems of varying levels of difficulty
- A set of visual puzzles of varying levels of difficulty
- Permission slips
- Instructions for the experiment
- Timer
- Paper and pencil

Methods

The subjects of each grade level were randomly divided into 3 groups that were given neutral feedback, process praise, and person praise respectively. Instructions for the experiment were read by each subject at the beginning of the experiment. The experiment began with moderately difficult math problems, and praise was given after successful completion of the task. The experimenter checked to see if the difficulty level should be increased. The experimenter also asked the subject whether to maintain, increase,

or decrease the difficulty level when encountering setbacks. The experimenter ended this period after 4 minutes. The subjects continued with moderately difficult puzzles and repeated similar steps as in the math problem-solving period. This period ended after 4 minutes. The subjects began the 3-minute recess period during which they were free to choose between resting, working on extra math problems or puzzles, and revisiting uncompleted ones. Lastly, the subjects were asked for attributions to failures if any. The researcher analyzed the data after the experiment.

Results

As shown in Figure 1, a group of 93 subjects in grades 5-8 and 10 voluntarily participated in the experiment. Among them, 22.58% were 5th graders, 25.81% were 6th graders, 16.13% were 7th graders, 19.36% were 8th graders, and 16.13% were 10th graders.
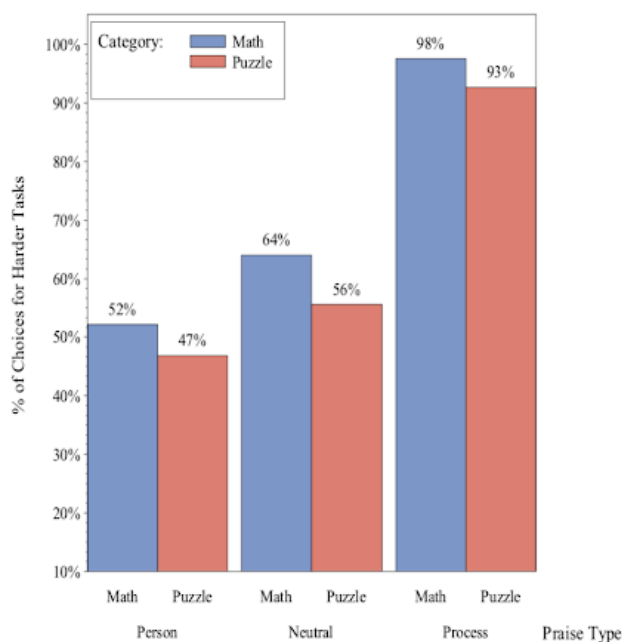
Figure 1
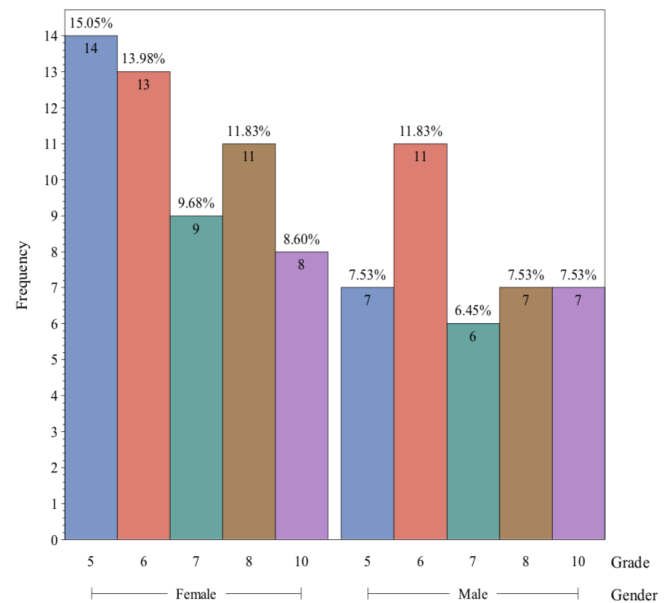
The findings show that providing process praise participants who were successful resulted in motivation for intrinsic learning. A chi-square task-specific analysis revealed a significant difference in popula-

tion percentages of subjects having preferences for learning goals. Specifically, as shown in Figure 2, most subjects who were praised for process chose harder tasks after successful completion (98% with math problems and 93% with puzzles). In comparison, fewer subjects given praise for person made such choices (52% with math problems and 47% with puzzles). Intuitively, harder tasks offer increased learning opportunities. Thus, most of the subjects praised for process showed preferences for learning goals instead of performance goals, while only about half of the subjects praised for person showed such performances. The percentage of the subjects in neutral feedback condition showing preferences for learning goals fell in between (slightly above 50%).

Figure 2

As shown in Figure 3, a chi-square grade-specific data analysis establishes similar comparison across the three feedback conditions. The smallest grade-specific percentage of subjects praised for process who demonstrated preference for learning goals was 89%. In comparison, the largest grade-specific percentage was 67% under praise for person and 71% under neutral feedback.

Figure 3
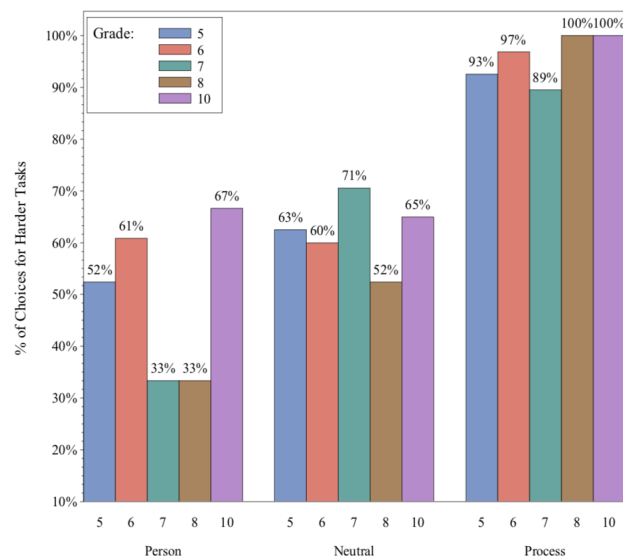
A chi-square analysis revealed a significant difference in percentages of participants in each group who demonstrated of fixed and growth mindsets after receiving praise. Specifically, as shown in Figure 4, 84% of the subjects praised for process showed growth mindset in relation to attributions for failures. In comparison, the corresponding percentage of the person praise group was only 32%. The group in neutral feedback condition fell in between (45%). These results support Hypothesis 1: subjects praised for process are more learning-oriented and more likely to have growth mindsets in relation to attributions for failures than subjects praised for person (ability).

The results of the participants who faced setbacks support Hypotheses 2 and 3. From Figure 5 it can be seen that subjects praised for person were less perseverant than subjects praised for process: 69% of subjects in the process praise group kept on working after encountering setbacks and succeeded, only 23% of the subjects with person praise did so. The group in the neutral feedback condition fell in between (32%). A chi-square analysis showed that the difference in population percentages is significant.
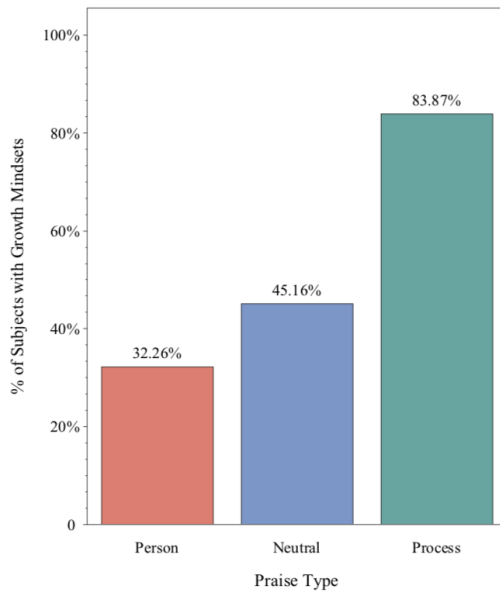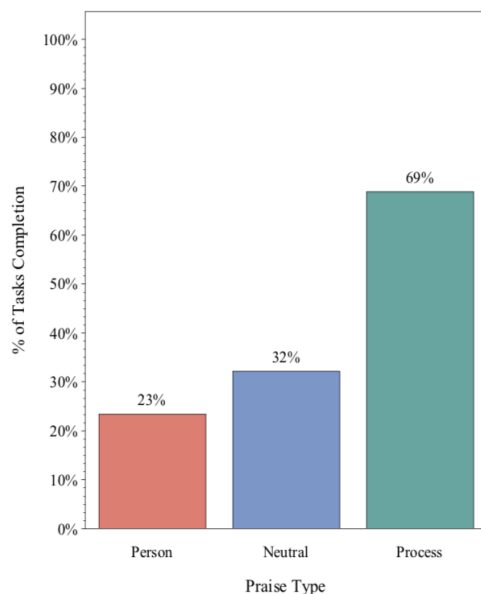
Figure 4

Figure 5

A significant difference in population percentages of engaging subjects who revisited uncompleted tasks during recess period, an indication of perseverance, follows from the chi-square analysis. As shown in Figure 6, 92% of the engaging subjects praised for process revisited uncompleted tasks, but only 58% of the engaging subjects praised for person did the same. The neutral feedback group fell in between the two

groups (79%). These results support Hypothesis 2: subjects praised for process are more perseverant after setbacks than subjects praised for person.

Finally, Figure 3 demonstrates that cross praise group comparisons of the percentages of subjects pursuing learning goals (choosing harder tasks) were not affected by grade levels. Similarly, Figure 2 supports the idea that these comparisons were not affected by task types either. The results support Hypothesis 3: the different effects of praise for process and praise for person remain as either grade level or task type changes.

Figure 6
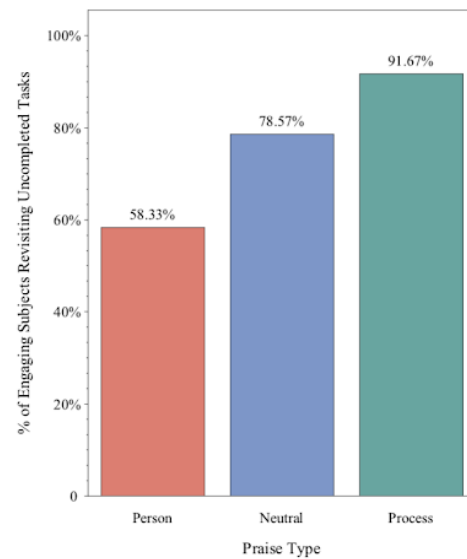
Discussion

This research was aimed to determine how to effectively praise adolescent students for good performance to make them more motivated, confident, and inclined to tackle challenges. To this end, a series of experiments with 93 teenage students was conducted. It was found that after successfully completing the task, subjects praised for person tended to choose easier tasks that could enable them to continue to be successful. Such choices revealed their preferences for performance goals rather than learning goals. In com-

parison, subjects praised for process tended to choose harder harder tasks, offering opportunities for increased learning. Such choices revealed preferences for learning goals. Subjects praised for person tended to believe that their performance reflected their ability, a belief which was not shared by most subjects praised for process. Hence, the group praised for person tended to have fixed mindsets (attributed low ability for failures). In contrast, the process praise group tended to adopt growth mindsets (attributed low effort for failures).

The percentage of subjects who had setbacks but kept trying within the time limit was the smallest for person praise group, the highest for process praise group, and in between for the neural feedback group. These results show that subjects praised for person were the least perseverant, those praised for process were the most perseverant, and subjects in neutral feedback condition were in between these two groups. The results also show that the different effects of praise for process versus praise for person largely remain as grade level or task type changes, an establishment of the robustness with respect to both task types and grade levels. Furthermore, with a teenage experimenter, the results show that the different effects are also robust with respect to experimenters (adults or teenagers).

All in all, the results support the hypotheses of this research project. Our findings provide support that the advice Haim Ginott offered to parents long ago is still applicable: "The single most important rule is that praise deal only with children's efforts and accomplishments, not with their character and personality" (Ginott, 1965, p. 39).

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Motivation Styles and Decrease in School Performance in High School Seniors: a Correlational Study

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Abstract

High school seniors often experience a significant decrease in school performance as graduation draws near. This decrease in performance—often termed senioritis—is exemplified through a decline in grades, increased absences, and lack of motivation with regard to schoolwork. Although little research exists on the topic of senioritis, this study aimed to provide a gateway into the subject by investigating the relationship between academic motivation and senioritis. The three motivation styles that were studied were intrinsic, extrinsic, and amotivation. A survey was given to 166 Montgomery County high school seniors assessing senioritis levels and student motivation styles; once the data was collected, it was analyzed to elucidate whether a correlation existed between the severity of senioritis students experienced and their motivation styles with respect to school. Our results concluded that while senioritis did exist within the population, there was not a statistically significant relationship between motivation style and the degree of senioritis. These findings contrast with the traditional theory of senioritis as a product of absence of external motivation and emphasize the need for further study on the topic.

Introduction

Senioritis—defined as a decrease in productivity and poor performance in comparison to prior years in school—is a common problem that many high school seniors face each year. Seniors who experience senioritis develop a sense of apathy towards their schoolwork and subsequently receive lower grades. Students often attribute this decreased motivation to a loss of an incentive to complete schoolwork after getting accepted into college (Kirst, 2001). Some seniors also feel as though they have earned a break from the previous years of academically demanding work (Reed et al. 2015). The drop in performance associated with senioritis can increase the likelihood of a student being rescinded after admission to college; some years, University of Washington has rescinded up to two dozen offers of admission (Perry, 2006). In addition to the increased possibility of being rescinded, senioritis may cause seniors to acquire poor habits in school. These habits include a lack of academic focus, responsibility lapse, and a decline in commitment to school or other activities (Pickhardt, 2013).

At the moment, little research exists on the factors that may predict or cause senioritis. However, existing research that broadly addresses motivation provides some insight as to what types of students might be most vulnerable. Psychologists categorize motivation into three styles: intrinsic, extrinsic and amotivation. Intrinsic motivation is "the inherent tendency to seek out novelty and challenges, to extend and exercise one's capacities, to explore, and to learn" (Ryan and Deci, 2000, pg. 3). People who are intrinsically motivated accomplish tasks because they feel satisfied when the tasks are completed. Extrinsic motivation "refers to the performance of an activity

in order to attain some separable outcome" (Ryan and Deci, 2000, pg. 4). In regard to school, extrinsically motivated students often complete their work because they aim to get extremely high grades or because they want to get into an academically challenging college. The final motivation style that was studied was amotivation. Amotivation is "a state in which a person does not perform any behavior because it is perceived that there is no need to act" (Ryan and Deci, 2000, pg. 5).

A number of previous studies have have found high levels of intrinsic motivation to positively influence overall academic performance (Fortier, Vallerand, Guay, 2002 and Cortright, Lujan, Blumberg, Cox, DiCarlo, 2013). This evidence, along with the widespread belief that senioritis is due to a lack of external incentives for students to keep up their academic performance, led us to hypothesize that students who are intrinsically motivated would experience less senioritis.

In order to investigate the relationship between motivation style and degree of senioritis, we conducted a correlational study. We predicted that students who are intrinsically motivated experience less severe senioritis than students who are extrinsically motivated or amotivated. With a better grasp on the relationship between motivation styles and senioritis, more can be done to lessen or prevent senioritis.tion.

Method

Participants

Participants in this correlational study consisted of 166 second-semester seniors primarily attending Walt Whitman High School in Bethesda, Maryland; the remainder attend nearby schools with similar demographics (Figure 1). The Walt Whitman High School student population is 2,055. Less than 5% of students are eligible for free and reduced meals (FARMS). Of the 166 participants, 68 were male and 98 were female.

Design and Procedure

We posted a link to the online survey in the Class of 2019 Facebook group; additionally, the survey was advertised on Instagram and circulated via direct messages. Survey data was collected over the course of

three weeks, from March 26th to April 16th. To encourage student participation in the survey, all participants were entered in a raffle to win Apple Airpods.

Figure 1

% of Population (Walt Whitman HS)

■ Caucasian ■ Asian ■ Hispanic ■ Other*
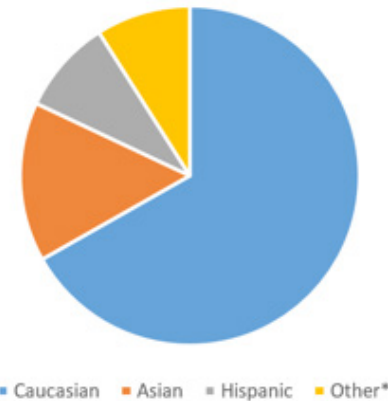
populations representing less than 5% of total

The survey (Appendix A) tested several motivational styles and assessed participants' degree of senioritis. Students were asked to rate their "eagerness to learn and do well in school" during first and second semester on a 1 to 7 scale. We operationally defined senioritis as the difference in motivation ranking between first and second semester of senior year. The motivation styles that we tested were intrinsic, extrinsic, and amotivation. Two questions on the survey (questions 7 and 8) assessed motivation style, with corresponding answer choices for each style. Other questions on the survey asked about gender identity, acceptance to college, prior performance in school through the end of junior year, and GPA difference since the first semester of senior year.

Results

Of the 11 questions administered on the survey, only three were ultimately used in the data analysis. As mentioned before, the two questions concerning "eagerness to learn and do well in school" for each semester were used to operationally define senioritis. Due to low internal consistency between the two

questions meant to assess motivation styles, motivation style was determined solely by participants' answers to the motivation question concerning schoolwork (after consulting with a teacher, we determined this was the more valid of the two questions). Other questions were ignored primarily in order to narrow the focus of the study to motivation styles.

Figure 2 and Figure 3 are histograms displaying the rankings of eagerness to learn and do well in school during first semester and second semester respectively, and the frequency of the rankings. Eagerness was ranked from 1-7, and the frequency of the given rankings ranged from 0-60 in both graphs. Additionally, there were no observable outliers in the collected data. For first semester rankings, the center of the histogram was at an eagerness of 5 and was skewed left. Conversely, the center of the second semester histogram was at 3 and was slightly skewed right. We conducted a paired sample t-test between reported first and second semester motivations to calculate the mean difference and determine whether senioritis was a significant factor within our population. Our null hypothesis is that the difference between second semester and first semester motivation will equal zero. Our alternative hypothesis is that the difference between the two semesters' motivation will not equal zero. The sample mean difference was 2.04 with a p-value of <.0001, providing strong support for a significant drop in motivation among most population members.
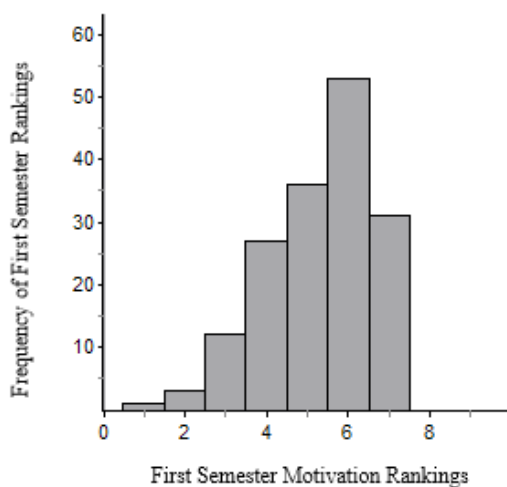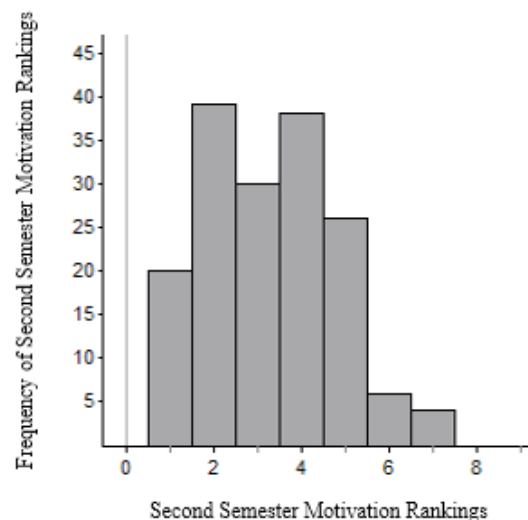
Figure 2

Next we performed a sample t-test between the mean difference of semesters' motivation (numeric), and categorized extrinsic and intrinsic motivations (categorically). We performed this hypothesis test in order to calculate and investigate the relationship between the difference in motivation for each semester and type of motivation. Our null hypothesis was that intrinsically and extrinsically motivated students had the same difference in first and second semester motivation (amotivation was excluded because only three students surveyed fell into this category). The sample mean of the difference between semester motivation for extrinsically motivated students was 2.05 and for intrinsically motivated students it was 2.00. The distributions of change in motivation were extremely similar for both intrinsically and extrinsically motivated students (Figure 4). Our calculated p-value was .85, therefore we fail to reject the null hypothesis. Our results showed no statistical significance between the difference of motivation per semester for extrinsically and intrinsically motivated students.

Discussion

Our original hypothesis stated that students who are intrinsically motivated will not experience such an abrupt drop in motivation between first and second semester. The results displayed no statistical significance of the correlation between motivation styles

Figure 3

and difference between semester rankings on the survey. However, seeing that there was a mean difference of 2.04 between the motivation rankings of seniors during first and second semester, it can be reasonably concluded that most seniors have senioritis, providing grounds to further extend this research. Unfortunately, considering the absence of research on senioritis, there is no pre-existing information to compare our data to.

Figure 4

Difference between First and Second Semester Rankings (bottom-intrinsic) (top-extrinsic)
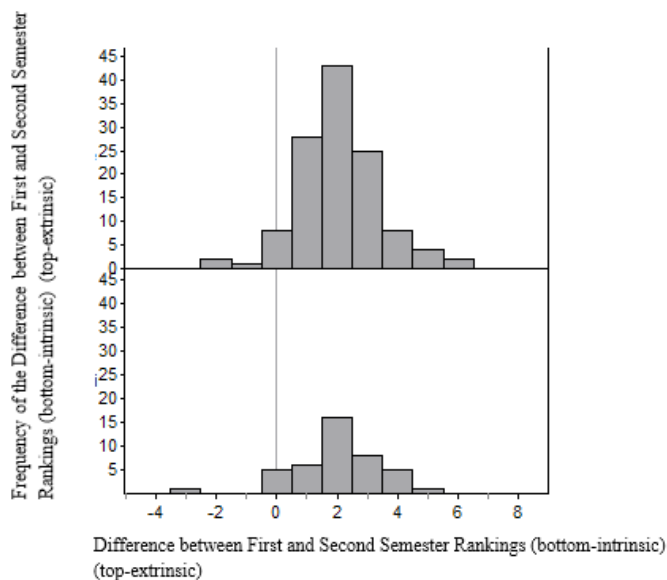
Several confounding variables may have impacted these results. Firstly, the survey that was given to the senior class was posted in a public group on Face-

book, meaning that the survey was subject to sampling bias. In order to avoid this sampling bias, future researchers should randomly assign the survey to a specific number of seniors. In this scenario, the population would be the entire senior class, and the sample size would be the specific number of seniors that the survey was given to. Additionally, we determined motivation style solely based on a single question. In future studies, motivation style should be assessed via multiple questions with strong internal consistency and/or previous evidence that they are valid determinants of motivation style.

This study failed to find a significant correlation between motivation styles and senioritis. This result was somewhat surprising, given the conventional understanding of senioritis is that students fail to try because of a loss of external motivation, which implies that intrinsically motivated students would have less senioritis. Future research on senioritis should retest this same question, given the total lack of existing research on the topic to date. It might also explore other possible predictors of senioritis, perhaps including student ambition, number of AP classes taken, school environment, and other factors. Future research could also include qualitative data, asking students to what they attribute their decreased motivation.

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Appendix A

Motivation Style and Senioritis Survey

What is your gender identity?
> Female
> Male
> Other

Are you planning on attending college next year?
> Yes
> No
> Maybe

Have you already been accepted to a college?
> Yes
> No

How many colleges did you apply to?
> 1-5
> 6-10
> 11-15
> 16+

What was your unweighted GPA through the end of your junior year?
(Short answer text)

I do my schoolwork…
> Because I feel good when it's done
> Because my parents would be mad at me if I didn't
> Because I want to learn new material
> Because I have nothing else to do with my time
> Because I want to get good grades

I pick my classes
> To challenge myself
> To please my parents
> To impress colleges
> To learn about subjects I am interested in
> For no particular reason

"I enjoy learning"
> Rate 1-7 (strongly disagree-agree)

How would you rank your eagerness to learn and do well in school during first semester?
      Rate 1-7 (apathetic-enthusiastic)

How would you rank your eagerness to learn and do well in school during second semester?
      Rate 1-7 (apathetic-enthusiastic)

How does your current quarter GPA compare to your GPA last semester?
      Higher
      Lower
      Same

The Stress Behind Patterns: A Color Neutral Analysis on How Patterns Relate to Stress

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Abstract

While significant research has been conducted regarding the effects of art and color on stress and symptoms of Generalized Anxiety Disorder (GAD), little research has been done to analyze and establish a connection, if any, between design patterns—patterns commonly seen on fabric or clothing—and these same subjects. The purpose of the study conducted was to analyze the possible connections between design patterns and stress levels in students with and without GAD and examine the specifics of any potential relationship. A random sample of 30 students ages 16-18 were assessed for levels of symptoms of this disorder and then asked to rate how stressed various pattern designs made them feel and explain why. In data analysis, students were divided into groups based on the number of GAD symptoms they reported in order to examine how the stress caused by patterns might differ for students with and without GAD. The pattern ratings were furthermore inspected for trends and statistical significance. The findings of this work show statistically significant differences in the stress participants in both the high- and low-anxiety groups felt in response to each pattern, suggesting a relationship between patterns and stress levels and demonstrating a need for further research on the subject.

Introduction

Approximately 25% of teens in America today have some sort of mental disorder, and one in every five children suffer from a mental illness. Many of these disorders that adolescents are diagnosed with fall under the anxiety umbrella, with one in every eight adolescents being diagnosed with an anxiety disorder (ADAA, 2015). According to the Anxiety and Depression Association of America, symptoms of Generalized Anxiety Disorder—one of the most commonly known and diagnosed types of anxiety (commonly called Generalized Anxiety or GAD)—include excessive worry, restlessness, irritation, sleep disturbance, difficulty concentrating, feelings of worthlessness and guilt, insomnia, and increased amounts of muscular tension. People who exhibit symptoms of GAD can be startled by stimuli of various assortments. Common, everyday occurrences such as busy public places, loud noises in movies, large crowds, and small, enclosed spaces can often worry anxiety patients and lead to a serious feeling of panic. Sometimes, even more subtle stimuli can make people with anxiety disorders exhibit similar responses, such as dark rooms or elevators. These situations can cause people with anxiety symptoms to become extremely stressed or even lead to panick attacks (ADAA, 2015).

While there have been increased amounts of research conducted on the connection between color and stress within the past 10 years, an area which is becoming commonly known as color psychology, little research has be done to examine the correlation between the patterns inside the art and stress level caused by it, which could also affect a person's anxiety

levels. The question that has yet to be considered is if something as subtle as a particular design pattern—such as pinstripes, plaid, checkerboard squares, or spirals—can have a positive effect on a person's anxiety-related stress levels or cause people with anxiety disorders to have panicked responses. By examining the possible correlation between these two subjects, a solution could be found that lowers stress or anxiety symptoms, both for people with and without anxiety. A relationship between patterns and stress levels could even potentially lead to a new branch of therapy being created and used to lower the stress levels of those who suffer from GAD. This brings to light the question: what are the effects of various black and white design patterns on the stress levels of students ages sixteen through eighteen who have symptoms of GAD, and how does this compare to the effects of patterns on students without symptoms of GAD?

Literature Review

Stress is a topic that has been deeply examined by psychologists for much of the discipline's history. Robert Hooke was one of the first psychologists to analyze and evaluate stress (Lazarus, 2017). Hooke's analysis of emotion "greatly influenced early 20th century models of stress in physiology, psychology, and sociology" (Lazarus, 2017). After Hooke came Selye, who first thought of "a general, nonspecific physiological response to any stressor" and later discovered eustress and distress. Eustress is defined as the "good kind of stress," as it is thought to associate with with positive feelings and healthy bodily states; distress is thought to be the "bad kind (of stress)," (Lazarus, 2017). According to B. H. Rosenwein, a professor in the Department of History at Loyola University Chicago, while both Hooke and Selye took serious interest in psychology's connections with emotions, many other psychologists did not; he notes that many psychologists and historians even "shied away from the topic," including the highly-acclaimed historian Lucien Febvre who established the Annales School of History. Even when reviewing articles that were published as far back as 1941, researchers concluded that many psychologists and scientists widely avoided the topic of emotions and stress-related expression of emotions.

Through the years of emotion-interested history, there have been some connections made between emotions and colors, according to author William Reddy. Reddy, in his book *The Navigation of Feeling: A Framework for the History of Emotions*, writes about how "both emotions and colors have a strong subjective or experimental character" (Reddy, 2001). In 2015, a group of research from across the world came together to evaluate the colors in abstract painting and the emotions that are connected via the art color theory. The researchers found it "difficult to define the expressive properties of a color without relating it to other colors" (Sartori, A., Culibrk, D., Yan, Y., 2015). They also "formalized theories on the emotional effects of two-color combinations and their properties to generate harmonious artworks." While some researchers claim that there have been positive effects from the connections between emotions and art, others aren't yet sold on the theory, stating that "there is as yet insufficient evidence on its benefits" (Mundet-Bolos, A., Fuentes-Peláez, N., Pastor, C., 2017). Some psychologists believe color is too complex and dynamic to be associated with individual emotions; in an article in the International Journal of Indian Psychology, psychologists claimed that "each color has many aspects to it. It is not a static energy and its meaning can change from one day to the next with any individual—it all depends on what energy they are expressing at that point in time. The meaning of colors can vary depending on culture and circumstances" (Tavaragi, M., Sushma, 2016).

Despite some disagreement, there have been new breakthroughs on relationship between colors, emotion, and cognition, a couple of them being the emerging field of Color Psychology—the study of how color alters the brain and its function—and Color Therapy, which is the use of color to calm or soothe a subject in a therapy-related environment. According to psychologist Faber Birren, color therapy (which is commonly known as Chromotherapy) is extremely useful; Birren states that "the value of color therapy in psychosomatic disease cannot be denied" (Birren, 2016). A.J. Elliot, one of the nation's leading psychologists in the field of Chromotherapy and a psychology professor at Rochester University in New York, has conducted and published multiple studies on various colors and the emotions related to them. His research has found that while almost all colors bring forth some emotion—whether it be a positive emotion or a negative emo-

tion—black, white, and gray have very little emotional correspondence. Psychologists have also linked behavioral patterns and the color red, explaining that "two further experiments establish the link between red and avoidance motivation as indicated by behavioral (i.e. task choice) and psychophysiological (i.e. cortical activation) measures" (Elliot, A. J., Maier, M. A., Moller, A. C., Friedman, R., & Meinhardt, J., 2007). Cortical Activation, which is mentioned in the quote above, is the stimulation of cerebral cortex, most commonly through sensory arousal.

Although there has been significant research in the fields of Chromotherapy and Art Therapy, there has been much less study or analysis of any possible correlation between patterns and stress or anxiety levels. Studying the relationship between these could help identify if there are patterns that could lower or reduce anxiety levels for people who both deal with and do not deal with symptoms of GAD.

This study aimed to provide insight into this largely unexplored field. We hypothesized that there would be an effect from different patterns on the stress levels of individuals 16-18 both affected and not affected by GAD.

Method

50 junior and senior students at Southside High School in Fort Smith, Arkansas were randomly selected from English classes to participate in the research. Participating students were asked to complete two surveys. The first survey (Appendix A) assessed how many symptoms of Generalized Anxiety Disorder they had, and the second survey gave each student ten patterns and asked them to rank their stress on a scale of 1-10 (1 being extremely stressed and 10 being not stressed at all*) and provide their reasoning, with the option to put "unsure" if not clear why they gave the ranking they did. The second survey also asked students about age, gender, daily stress levels, extracurricular involvement, number of Pre AP, AP, and college courses the student is currently taking, employment status, and plans for after graduation. Surveys were distributed through a teacher, which allowed for not only a large subject range but also for anonymity for both the subject and the researcher so that no bias would appear between either person.

The patterns included in the survey were as follows: small-scale houndstooth, large-scale plaid, wide horizontal stripes, a large spiral, horizontal scallops, polka-dots, large-scale checkerboard, lined hexagons, chevron, and thin, vertical stripes. These patterns will be referred to by description or by Pattern Number, which is listed in Chart 1. All of these patterns will be black, white, and gray, as these colors are completely neutral and hold no emotional value according to research (Elliot, Maier, 2014).

Each survey that was filled out and returned was assigned a number which coordinated with the legal status and subject number of the person taking the survey, and only the researcher knew who is in possession of which number. After all data was organized into a data sheet, all names were removed.

Chart 1

Chart One

Pattern Description	Pattern Number
Small Scale Houndstooth	Pattern One
Large Set Plaid	Pattern Two
Wide Set Horizontal Stripes	Pattern Three
Large Spiral	Pattern Four
Horizontal Scallops	Pattern Five
Polka Dots	Pattern Six
Large Scale Checkerboard	Pattern Seven
Lined Hexagons	Pattern Eight
Large Scale Chevron	Pattern Nine
Thin Vertical Pinstripes	Pattern Ten

For ease of understanding, editors of The Journal decided to flip this ranking scale for the analysis conducted throughout the rest of this paper.
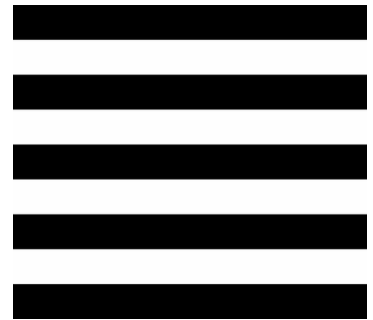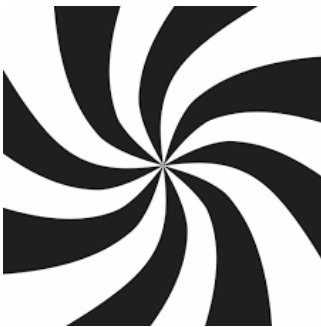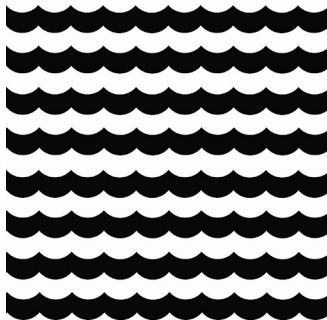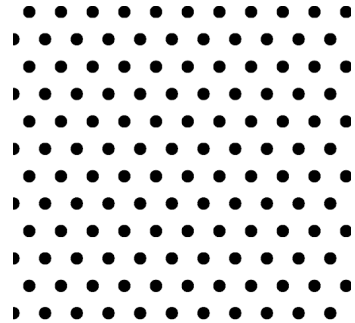
Pattern 1
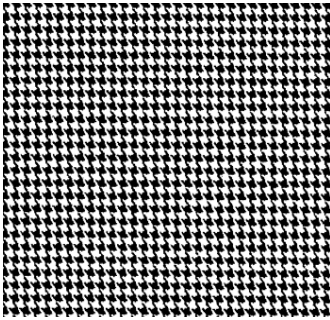
Pattern 2

Pattern 3

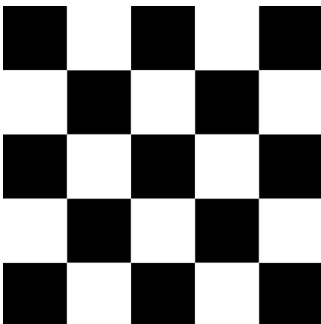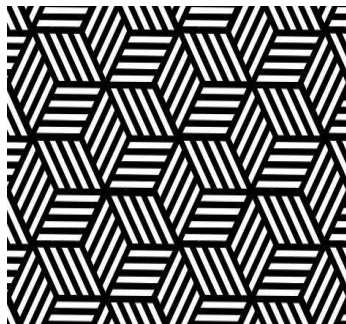**Pattern 4**

Pattern 5

Pattern 6
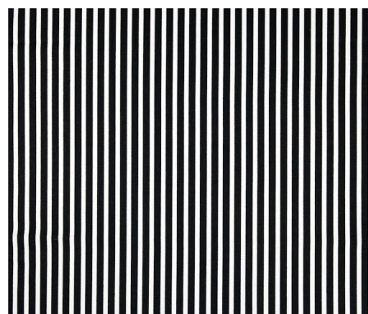
Pattern 7

Pattern 8

Pattern 9

Pattern 10

Findings

Although 50 students were expected to to participate in both surveys, only 30 returned their surveys within the time frame that was allotted. Many participants did not give notice that they wanted to cancel their participation in the survey until the time frame was almost over and more surveys could not be given out.

During data analysis, subjects were divided into two groups based on their responses to a survey containing 14 symptoms of Generalized Anxiety Disorder. Subjects with zero to seven of the 14 Generalized Anxiety symptoms were placed in the one group—which we will refer to as Group A—while subjects with eight to 14 of these symptoms were placed in another group—Group B. This division allowed for comparison between the responses of the two groups. While even distribution between Group A and B was achieved, there were uneven amounts of 16-year-olds, 17-year-olds, and 18-year-olds. Only 17% of survey participants were eighteen, while 47% of participants were sixteen.

Females were more likely to be placed into Group B when compared to males; Group B consisted of 12 female students and three male students, while Group A consisted of 11 male students and four female students. While only five students above the age of 18 chose to participate in the surveys, each of the students ranked very low on the anxiety scale and were placed in Group A group. 67% percent of Group B was made up of 16-year-olds. Group A had almost twice as many students who had some sort of job, with seven out of the 15 subjects in the group having at least a part time job while only four of the fifteen Group B subjects held jobs.

After conducting a two sample hypothesis test on the means of each pattern rating for Group A and Group B with a significance level of .1, only three patterns were demonstrated to have statistically significant differences in rating between the two groups. Pattern Five (Horizontal Stripes), Pattern Six (Polka Dots), and Pattern Ten (Thin Vertical Stripes) all had p-values—0.06, 0.05, and 0.01, respectively—lower than the significance level; for all three of these patterns Group A gave lower stress rating than Group B. While no consistent statistically significant relationship between grouping and pattern rating was shown, given certain patterns received a statistically significant difference in ratings the groupings were kept for the rest of the analysis.

To assess the original hypothesis that patterns would have an effect on stress levels of students with and without GAD, ANOVA tests were performed within each group among the patterns; these tests obtained p-values of 0.006 for Group B and 0.05 Group A. As a result, we were able to conclude that black and white patterns do impact stress levels of 16- to 18-year-olds both with and without GAD.

Mixed-Method Analysis

Overall group differences

Response averages between test groups varied on some patterns by as little as 0.14 of a point with wide-scale checkerboard to as much as 2.66 points on the stress scale with vertical pinstripes. Subjects in Group A seemed to agree less on the reasoning behind pattern responses, but subjects in Group B seemed to respond with a reasoning of "unsure" slightly more than than when compared to their classmates in Group A. Subjects in Group B reported experiencing an average of 1.27 points more of stress when compared to those in Group A. Group A members were more likely to have similar stress rankings per pattern in comparison to their counterparts in Group B, who were more likely to vary in stress ranking.

Although there were many subjects who responded "unsure" in terms of reasoning as to why the pattern made them feel a specific amount of stress, there was no significant difference between the amount of theses responses in each group, with Group A having 31 out of the 150 responses being "unsure" and Group B having 34 out of the 150 responses being "unsure."

High and Low Stress Patterns

Pattern One, the small scale houndsouth, averaged a 4 on the stress scale from Group A and a 5.13 from Group B, making it the highest stress ranking pattern in the group for Group A and the second highest ranking pattern for Group B. Reasoning for both of these groups was partially consistent among participants (26% overall agreement), with many citing the pattern as being "hard to focus on" and "hurting their

eyes." The highest ranking pattern for Group B was Pattern 10, with an average stress of the 5.8 in Group B although only 3.14 in Group A, as shown in Figure 1. Reasoning behind stress was largely consistent within Group B, with 60% percent of the group writing that the pattern contained "too many lines" and reminded many participants for a jail cell or prison uniform. Participants from Group A had similar reasoning for this pattern with Group B—reasoning was 40% consistent overall—with several stating that the pattern reminded them of a prison as well.

Figure 1

Average Stress Rating Per Pattern
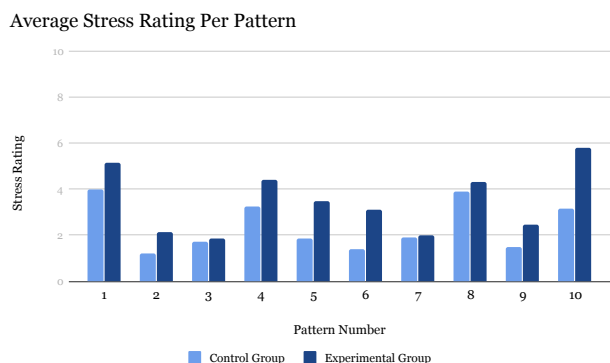
The four lowest stress patterns—Patterns Two, Three, Seven, and Nine—had varying amounts of similar reasoning; Pattern Two had the least consistent reasoning of all patterns at just 16%, while Patterns Three, Seven, and Nine had 30%, 33%, and 26% agreement, respectively. Common answers for Patterns Three and Nine were generally vague, calling Pattern Three "simple" and Pattern Nine "cute" and commonly seen. The calm feelings created by Patterns Two and Seven were most often explained through association; Pattern Two was frequently associated with flannel and Pattern Seven was often associated with the board games chess and checkers.

Association

Many subjects included in their reasoning associations they made between the patterns and other items, images, or ideas. Many of the responses identified the large set plaid pattern (Pattern Two) as flannel, a common clothing pattern, or relating to a picnic or kitchen, while the vertical pinstripes (Pattern Ten) reminded

60% of Group B of prison. Many participants associated the checkerboard pattern (Pattern Seven) with checkers or chess, and the black and white scallops (Pattern Five) reminded 46% of Group B and 40% of Group A of waves or something concerning water like the ocean.

For less commonly seen patterns such as wide horizontal stripes (Pattern Three), a series of hexagons with lines running through them (Pattern Eight), and large scale chevron (Pattern Nine) responses showed more variation in reasoning, with just 30% agreement for Pattern Three and 26% agreement for Patterns Eight and Nine.

Patterns that were strongly associated with certain images or ideas could be more or less stressful depending on the participant's feelings about the associated subject. The large set plaid pattern (Pattern 2), which was commonly associated with the popular clothing item flannel and positive images like picnics, received much lower stress ratings than the vertical pinstripes, which were often associated with prison. Sometimes the same association could generate different amounts of stress for different participants; responses for the large scale checkerboard pattern, Pattern Seven, were mixed between positive and negative connotation, with many describing the enjoyment and ease they felt from the popular strategy game checkers and others explaining the stress and difficulty they felt because of the game chess, both of which are played on boards similar to the pattern shown. Similarly, Pattern Five, which was heavily associated with "waves," "water," or "the ocean," received mixed ratings, because while many subjects stated that they enjoyed the ocean and the thought of waves that was associated with it, several subjects ranked the pattern with high stress levels due to a fear of the ocean or water in general.

Geometry

There were also consistent trends in rating based on geometric characteristics of the patterns. Patterns that contained more spacing between sections, such as Pattern Three, wide set horizontal stripes, received a calmer ranking at an 1.87 from Group B and an 1.7 from Group A and were often viewed as "simple" and "basic" when compared to less spaced out patterns like Pattern One, small scale houndstooth, which many subjects from both groups described as "too busy" and

"hard to focus on" and claimed that it "hurt their eyes" to look at for a long period of time.

As seen in Figure 1, Pattern Three and Pattern Seven, patterns with larger printing and larger amounts of spacing between portions, seemed to have a more calming effect of subjects in comparison to Pattern One and Pattern Ten, which had significantly higher stress ratings in comparison. This large spacing between sections seems to lower the stress levels in both Group A and Group B.

Horizontal patterns, such as Pattern Three and Pattern Five, received lower stress rankings in comparison to more vertically oriented patterns like Pattern Ten, with Pattern Three receiving an overall stress average between both groups of 1.79 and Pattern Five receiving and overall stress average of 2.69.

Discussion

Limitations

There were multiple limitations in this research. The sample size was not as large as originally intended in the methodology. Younger subjects, mainly sixteen-year-olds participants, were less likely to agree to take the surveys and more likely to not return them before the requested deadline. The ratio between age groups was also an issue that could not be adjusted in this particular research. There were very few eighteen-year-old subjects who were willing to participate when asked, as well as approximately ten participants who backed out without notifying the researcher or the teacher that gave out the consent forms and surveys and only gave notification of the cancelation when asked about returning the surveys near the end of the time allotted for research gathering. Many subjects also refused to participate because of the the nature of Survey One, which talked about Generalized Anxiety Disorder, due to their parents not wanting them to take a survey that discussed mental illness. Distribution was also a significant issue. Consent forms and surveys were distributed through a teacher. This method made it difficult to contact subjects about possible survey errors and returning their surveys to them to fix these errors.

The rating scale used—with one being high stress and 10 being low stress—may also have confused some participants, leading to incorrect data. Additionally, having to take the pattern survey right after the anxiety survey could have increased stress levels in certain participants, especially those with more anxiety symptoms.

Conclusion

Through this research, the hypothesis that design patterns do have an impact on a person's stress levels has been supported. This effect was demonstrated both for people with and without high numbers of symptoms of Generalized Anxiety Disorder. Results suggest that patterns with larger amount of spacing between sections, such as plaid and vertical stripes, can lower stress levels both in subjects with high amounts of symptoms of GAD and subjects with low amounts of these symptoms. Patterns with less spacing between sections and those of a smaller scale, such as vertical pinstripes or small scale houndstooth, were shown to bring forth higher stress levels for viewers. Those with larger amounts of symptoms of GAD had a greater variation in pattern-related stress levels in comparison to those without symptoms. More commonly seen patterns, such as scallops and large-scale plaid, were more likely to be agreed upon in terms of reasoning behind stress level. This research provides a foundation for the continued exploration of the relationship between design patterns and stress levels.

Future

A larger survey size as well as a more age diverse sample size could be examined in the future of this topic, as very few younger subjects were surveyed in this research study. Younger subjects could be tested to see if similar results are obtained or if these patterns would provide different stress rankings and reasonings. Subjects from various social and economic backgrounds could be examined as well to look for consistencies between social groups and classes. Other patterns could also be included in future surveys, as there were only ten design patterns presented to the participants to rank; other design patterns were removed from the survey to make the survey less time consuming and easier to take, as many subjects decided to not take the survey when

told of how many questions the combined surveys consisted.

Future studies could also be conducted to examine the relationship between the size and spacing of the patterns in relation to the stress levels, which was was not examined in depth in the particular study. Future patterns can be grouped by spacing amount and then further analyzed within those groups, as patterns in this survey were put in without order as not create a possible anxiety hierarchy. Future anxiety testing can see if subjects have already been diagnosed with a mental illness, as this was not taken into account due to the risk of self-diagnosis and possible biases between subjects.

Later testing could partake in pre-and post-survey stress levels for each subject to see if pattern observation as a whole lowered the subject's stress levels. Stress levels related to pattern orientation (i.e. stress levels from vertical stripes in comparison to stress levels from horizontal stripes of the same size and section spacing) could be included in further analysis as well to see if the orientation raises or lowers stress levels. Pattern creation and incorporation could be included in the therapy field as well as on a larger scale, such as with house design or decoration.

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Appendix A

Generalized Anxiety Survey
Survey #1

Code: _____ Age: _____ Gender: _____

Please mark yes or no to the following questions:

Over the last several months, have you be continually worried or anxious about a number of events or activities in your daily life?
Yes:_____ No:_____

Have you experienced any of the following?
    Excessive worry, occurring more days than not, for a least six months
    Yes:_____ No:_____
    Unreasonable worry about events or activities, such as work, school, or your health?
    Yes:_____ No:_____
    The inability to control worry
    Yes:_____ No:_____
    Are you bothered by any of the following?
    Restlessness, feeling keyed-up, or on edge
    Yes:_____ No:_____
    Being easily tired
    Yes:_____ No:_____
    Problems concentrating
    Yes:_____ No:_____
    Irritability
    Yes:_____ No:_____
    Muscle tension
    Yes:_____ No:_____
    Trouble falling or staying asleep, or restless and unsatisfying sleep?
    Yes:_____ No:_____
    Anxiety interfering with your daily life?
    Yes:_____ No:_____
    Have you experienced any sleeping/eating changes?
    Yes:_____ No:_____

Do you often feel:
    Sad/depressed?
    Yes:_____ No:_____
    Uninterested in life?
    Yes:_____ No:_____
    Worthless/guilty?
    Yes:_____ No:_____

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