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Reducing Racism: Attitudes as a Function of Categorization

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Abstract--In this study, I explored how categorizing people into groups can affect racist attitudes. Forty-eight undergraduate students were randomly assigned to one of three groups. One group was asked to categorize human faces based on their race, one group was asked to categorize the same human faces based on whether they were wearing glasses, and one group was asked to categorize fruits and vegetables. All three groups then completed two surveys that measured racist and prejudice attitudes. Results indicated that the categorization task had no effect on racist attitudes in participants. However, racist attitudes were found to be significantly different between genders, with males scoring higher than females. Because of the narrow scope of this study, more extensive research into categorization effects on prejudice attitudes is warranted.

When looking back at the history of social psychology, it is evident that the concepts of racism and prejudice are two of the most popular topics in the field. A 2010 search for “racism” on PsycINFO, a psychology article database, yields over 6300 related articles; a search for “prejudice” results in over 9000 articles. Related research focusing on attempts to reduce racism is less prominent. A search on PsycINFO for “reducing prejudice” results in only 163 related articles, while a query for “reducing racism” results in a paltry 18 articles. This apparent lack of research focused on reducing prejudice convinced me that the topic warranted further study. In the present study, I attempted to show that racist attitudes can be lowered by asking participants to categorize individuals as part of a multi-race group, and that asking participants to categorize individuals into racial groups would strengthen exhibited racist attitudes.

Past research on reducing racism has focused on the effects of knowledge about racism on race-related attitudes. In one study, the researchers focused on the effect of prejudice discussion in a classroom setting on reducing prejudice attitudes, specifically racism, sexism, and homophobia (Pettijohn & Walzer, 2008). The researchers compared students in an introductory psychology course, in which the classroom discussion focused comparatively little on prejudice, to students in a class focused on prejudice. The groups were compared by administering a pre-test at the beginning of the semester and then giving the same test again near the end of the semester. Students in the prejudice class significantly reduced their prejudice levels over the course of the semester, while students in the introductory psychology class showed less prejudice reduction. These results indicate that there are ways to reduce prejudice attitudes in individuals. Although this study shows that prejudice can be reduced using certain techniques, the methods the researchers used were markedly different than those used in the present study, which focused on categorization.

Using categorization to lower participants' levels of prejudice is based primarily on research that has shown the opposite effect, in which priming participants to think of stereotypes causes higher levels of prejudice attitudes. In one of these studies, freshmen psychology students were primed with easy-to-process sexist stereotypes, which caused them to exhibit higher rates of sexist attitudes (Castelli, Macrae, Zogmaister, & Arculi, 2004). In a separate study, priming undergraduate males to think about the stereotypically feminine trait of communalism was enough to evoke higher levels of sexist thoughts towards women (Good & Sanchez, 2009).

Another important concept in creating prejudice attitudes is ingroup bias. Ingroup bias states that individuals will view members of their social groups more positively than those that they see as non-members of their group (Gaertner & Dovidio, 2000). One of the most fundamental ingroups that individuals use is race. Therefore, according to ingroup bias, a Caucasian person may view other Caucasians more positively than members of other races based on nothing more than their racial status.

A related concept is the own-race bias, which states that individuals are better at recognizing members of their own race than members of another (Meissner & Brigham, 2001). A recent study focused on the correlation between own-race bias and brain activity (Van Bavel, Packer, & Cunningham, 2008). White participants were asked to categorize human faces based on, among other things, race. The researchers found that, in response to black faces, white participants exhibited increased activity in the visual cortex when compared with white faces. The researchers also found that there were no areas of the brain that were more stimulated by white faces than by black faces. These results provide some evidence to the theory that the brain largely ignores race when it matches an individual's current in-group.

These concepts help explain the roots of racial biases. The salience of skin color makes it easy to designate ingroups and outgroups and, consequently, exhibit ingroup bias towards members of an individual's own race. However, ingroup bias also gives the researcher a tool for reducing racism. If the researcher is able to induce an individual to think about others using a more inclusive ingroup involving members of multiple races, the positive effects of ingroup bias could potentially be extended to those racial outgroups.

An example of using inclusive ingroups to reduce prejudice is the Common Ingroup Identity Model (Gaertner & Dovidio, 2000). The Common Ingroup Identity Model states that if members of different groups are able to think of themselves as members of the same group, their attitudes towards former out-group members will be more positive than if they had not created the common in-group. For example, in one study, the researchers created two arbitrary groups by having two groups of students meet in separate rooms to solve a problem about surviving a plane crash. The two groups then convened in one room to discuss the problem. The groups were seated around a table in one of three seating arrangements: completely segregated, partially integrated, and integrated. After the discussion, participants were given questionnaires measuring their feelings towards the former out-group members. The results showed that the more integrated the two groups were, the more the students created a common ingroup and the less they exhibited ingroup bias.

The findings of common ingroup research suggest that, when an individual is asked to think of *themselves* as a member of a racially-inclusive group, racist attitudes can be reduced (Gaertner & Dovidio, 2000). The current study looked to see if the effects of a common ingroup could be found without explicitly invoking the individual. Specifically, the current study looked at how categorizing *others* of an individual's ingroup would affect exhibited levels of racist attitudes.

In the present study, I focused on categorization groups involving members of two different races. Based on the in-group bias effect (Van Bavel, Packer, & Cunningham, 2008) and stereotype priming (Castelli et al., 2004; Good & Sanchez, 2009), I predicted that participants who were asked to categorize human faces into groups based on race would exhibit higher levels of racist attitudes than participants in the control condition. I also predicted that participants who were asked to categorize human faces into groups based on whether or not the target was wearing glasses would exhibit lower levels of racist attitudes than participants in the control group. My final prediction was that participants who were asked to categorize the faces based on whether or not the target was wearing glasses would exhibit lower levels of racist attitudes than participants grouping the faces based on race.

Method

Participants

Participants were 48 undergraduate students (12 males, 36 females) enrolled in introductory psychology courses. Participant ages ranged between 18 and 24, with a median age of 19. 40 participants identified themselves as Caucasian, 6 as African-American, 1 as Hispanic, and 1 as other. Participants received course credit for their participation. Participants were recruited via an online research sign-up system (SONA) and were randomly assigned to one of three groups: the race group (N = 17), the glasses group (N = 16), or the fruit group (N = 15).

Materials

For the categorization manipulation, participants viewed a set of sixteen pictures (Appendix A). In both the racial group and the glasses group, the pictures consisted of eight Caucasian faces and eight African-American faces; four members of each race were also wearing glasses. In the control group, the pictures consisted of eight fruits and eight vegetables. Participants categorized the pictures they saw into two groups using a categorization sheet (Appendix B).

After the manipulation, participants were asked to complete two questionnaires; both of the questionnaires were labeled as college opinion surveys (Appendices C and D). The first was the Right Wing Authoritarianism (RWA) scale (Altemeyer, 2006), a 22-item questionnaire which measures levels of authoritarianism. Though the RWA scale does not strictly test for racism, one of the hallmarks of authoritarianism is aggression towards members of outgroups. Items on this scale were summed to create a single score. Items 4, 6, 8, 9, 11, 13, 15, 18, 20, and 21 were reverse scored. All answers were given on a 7-point Likert scale, with higher scores correlating with a more authoritarian viewpoint.

The second questionnaire was the Modern Racism Scale (MRS) (McConahay, 1986), a 19-item questionnaire used to measure racism. Of these items, eight are used to measure racist attitudes and eleven are filler questions. The eight race questions were summed to create a single score, with item 1 being reverse-scored. All answers were given on a 7-point Likert scale, with higher scores correlating with a more racist response.

After completing the questionnaires, participants filled out a demographics sheet (Appendix E).

Procedure

Participants were tested in-person in a one-on-one setting. After the participant arrived, I followed this script:

> Hi. My name is Brad Gamblin and I am a student in Psychology 401. Thank

you for participating in my study today. Before we begin, I will read the consent form (Appendix F). You can read along with the sheet in front of you if you would like. (Read Consent Form). In this study, you will view a set of pictures and then fill out two questionnaires. Your responses are anonymous. Please do not write your name on the questionnaires. Do you have any questions before we begin? (Answer questions). We will now begin. The purpose of the first part of this study is to see how effective people are at categorizing pictures into groups. The second part of the study consists of two questionnaires designed to measure the opinions of college students on a variety of topics. There are no right or wrong answers. Please try to be honest.

At this point, participants were given the manipulation. Participants in the Race and Glasses conditions were shown sixteen human faces and asked to categorize them either based on their race or whether or not they were wearing glasses. Participants in the Fruit condition were shown sixteen pictures of fruits and vegetables and asked to label them as such. The pictures were randomly shuffled prior to the testing period.

After participants had rated the faces, they completed the RWA and MRS scales, and then filled out a demographics sheet. At this point, the study was complete. Participants were given a Debriefing Form (Appendix G) and were then told that they were free to leave.

Results

Categorization Effect

Data gathered were summed scores on the Right Wing Authoritarianism (RWA) scale and Modern Racism Scale (MRS); higher scores indicate higher levels of prejudice and explicit racism, respectively. RWA sum scores had a possible range between -58 and +74; the range in these data was -55 to +40. MRS sum scores had a possible range between -1 and +41; the range in these data was +1 to +38.

To test the main hypotheses, two One-Way Analyses of Variance (ANOVA) were conducted on the categorization independent variable. I predicted that participants in the Race group would score significantly higher on the RWA and MRS than both the Fruit and Glasses groups, and that participants in the Glasses group would score significantly lower on the RWA and MRS than both the Race and the Fruit groups. The results yielded no significant main effect on the RWA, $F(2, 45) = 1.36$, *ns*, or the MRS, $F(2, 45) = .07$, *ns* (see Tables 1 and 2 for means and SDs). Therefore, the hypotheses were not supported.

Table 1. Means and Standard Deviations on RWA Scale.

Condition	*Mean*	*SD*
Race	-12.77	22.35
Glasses	-2.94	18.78
Fruit	-1.67	21.98

Table 2. Means and Standard Deviations on MRS Scale.

Condition	*Mean*	*SD*
Race	11.94	7.55
Glasses	12.81	10.21
Fruit	13.07	8.88

Post-hoc Analysis

Gender Effect. An interesting effect found within the demographics was that of gender. Although neither gender appears to exhibit a predicted categorization effect, males scored significantly higher on the two scales than females. For the RWA scale, $t(46) = 2.58$, p=.01. On this scale, males had a mean sum score of 6.92 (SD = 21.75), and females had a mean sum score of -10.33 (SD = 19.55). For the MRS scale, $t(46) = 7.10$, p=.00, males had a mean sum score of 23.42 (SD = 7.23), and females had a mean sum score of 8.97 (SD = 5.70).

Discussion

In the present study, participants were randomly assigned to a categorization task in which they were asked to categorize either human faces or fruits and vegetables into separate groups. The manipulation was that some participants grouped the faces by race (thereby making racial ingroups and outgroups salient), some grouped the faces by whether they were wearing glasses (theoretically creating a multiracial ingroup), and some grouped the fruits and vegetables into separate groups (the control group). Explicit racism and prejudice were measured after the categorization task using the Right Wing Authoritarianism (RWA) scale and the Modern Racism Scale (MRS).

Results suggest that asking participants to group pictures by race or eyewear had no effect on their explicit racism and prejudice levels. These findings go against the prejudice reduction research of previous researchers (Gaertner & Dovidio, 2000; Pettijohn & Walzer, 2008). These findings are also not consistent with past research showing a link between priming stereotypes and increased prejudice levels (Castelli et al., 2004; Good & Sanchez, 2009).

The results of this study yielded an unpredicted significant difference of gender, in which males scored significantly higher than females on both the RWA and MRS scales. This difference applied only between genders; within-gender, there was no categorization effect found. These findings support previous research which has shown that men and women typically score differently on both the RWA (Rubinstein, 1995) and the MRS scales (Aosved & Long, 2006).

One potential limitation to the study's internal validity is crosstalk between participants who had completed the study and future participants. If a previous participant told others about the study, the effects of the task on their prejudice and racism levels may have been neutralized.

There are a few limitations to the external validity of this study. One limitation is the small number of participants. There were only 48 participants split between three conditions. A limitation to the significant gender difference found is the number of males in the study. There were only 12 males in the study, compared to 36 females. Thus, this finding should be replicated with a larger sample before conclusions are drawn. Another limitation is the types of people who participated in this study. The age range of the participants was extremely narrow, only ranging from 18 to 24. All of the participants were also undergraduate psychology majors. Levels of racism and prejudice have large variations between age and level of education, so the results of this study may not be applicable to an older population or to people with different education levels.

Overall, the construct validity of this study is high. However, I believe that the MRS may have outlived its relevance. Some of the questions on the scale are very outdated; one asks whether blacks should be involved in school desegregation programs. One of the reasons that the answers for this scale were so close may have been because even someone induced to feel more racist would not exhibit that with the questions being asked.

The results of this study suggest that simple categorization has no effect on levels of racism and prejudice. However, one study into this topic is not enough; research on the effect of visual categorization on prejudice should continue. Perhaps the task itself (categorizing pictures) was not sufficient enough to induce the feelings of racism or prejudice that were expected; a more interactive visual task, like a video, may have been more effective. Additionally, a different multiracial ingroup could have had a stronger effect on participants. The presence or absence of glasses is not likely to create strong feelings of group membership. The use of a group with more importance to the participant, such as school affiliation or a sports team, may be able to reduce prejudice in a manner that eyewear could not. Conversely, participants in the race condition may have truly been induced to feel more racist or prejudiced, but faults within the dependent variables caused these increased attitudes to go unnoticed. Further research into the effects of categorization on prejudice could potentially yield more exciting results and add to the very limited amount of research on reducing prejudice.

Author Note

Bradlee W. Gamblin is a graduate of Eastern Kentucky University. He obtained his B.S. in Psychology in December, 2010 and his M.S. in General Psychology in December, 2012. Correspondence concerning this article should be addressed to the author's email address, bradlee_gamblin@mymail.eku.edu.

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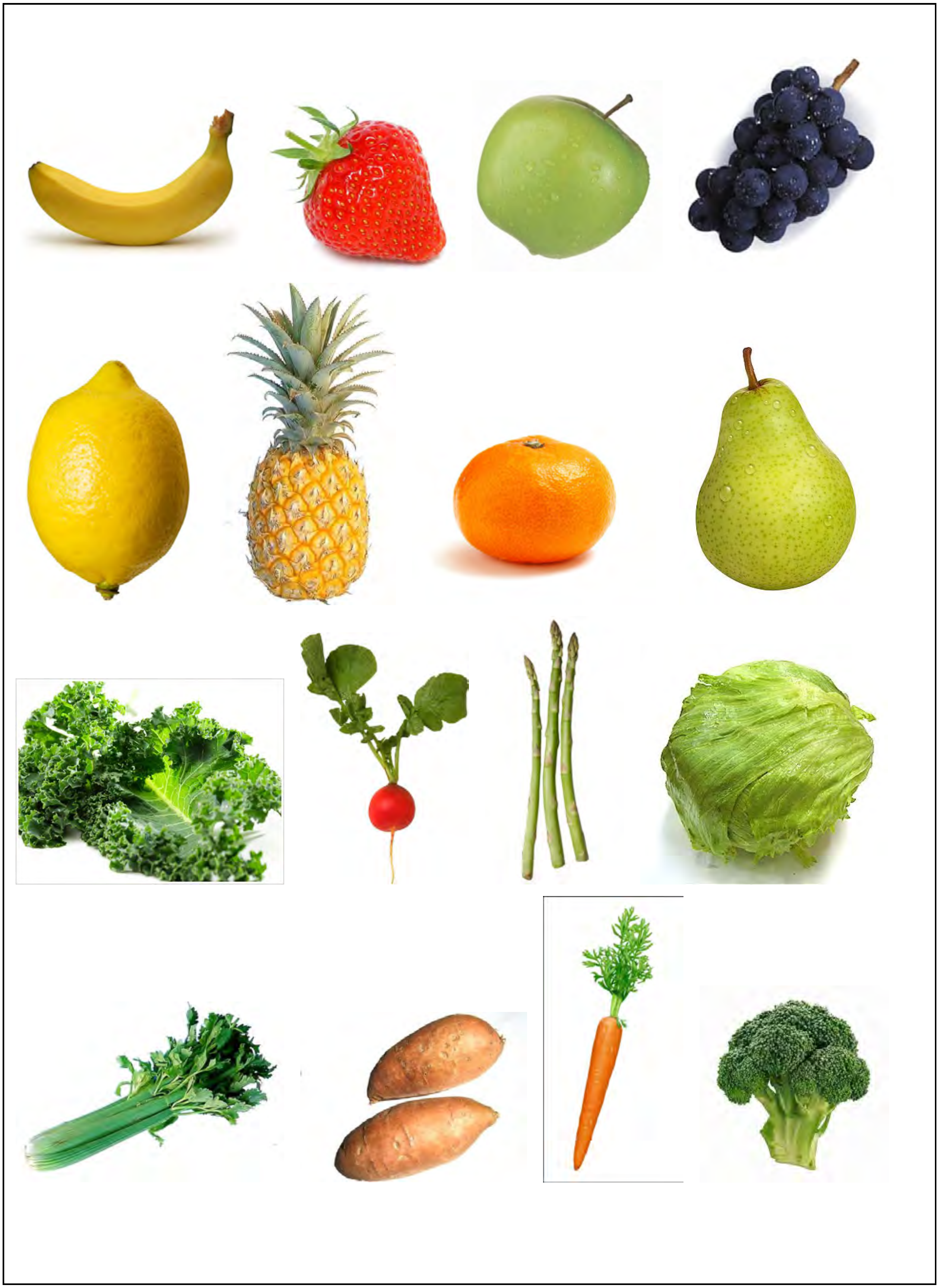
Appendix A

Categorization Pictures



Appendix B

Categorization Sheet

You will be shown sixteen pictures and be asked to categorize these into two groups. Mark the correct column with a checkmark or "x" for each picture. Do your best to answer accurately.

	Black/Glasses/Fruits	**White/No Glasses/ Vegetables**
Picture 1		
Picture 2		
Picture 3		
Picture 4		
Picture 5		
Picture 6		
Picture 7		
Picture 8		
Picture 9		
Picture 10		
Picture 11		
Picture 12		
Picture 13		
Picture 14		
Picture 15		
Picture 16		

Appendix C

College Opinions Survey A (RWA Scale)

This survey is part of an investigation of college students' opinions concerning a variety of social issues. Please circle the number corresponding to your reaction to each statement, with 1 meaning you strongly disagree with the statement, and 7 meaning you strongly agree.

1. The established authorities generally turn out to be right about things, while the radicals and protestors are usually just "loud mouths" showing off their ignorance.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

2. Women should have to promise to obey their husbands when they get married.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

3. Our country desperately needs a mighty leader who will do what has to be done to destroy the radical new ways and sinfulness that are ruining us.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

4. Gays and lesbians are just as healthy and moral as anybody else.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

5. It is always better to trust the judgment of the proper authorities in government and religion than to listen to the noisy rabble-rousers in our society who are trying to create doubt in people's minds.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

6. Atheists and others who have rebelled against the established religions are no doubt every bit as good and virtuous as those who attend church regularly.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

7. The only way our country can get through the crisis ahead is to get back to our traditional values, put some tough leaders in power, and silence the troublemakers spreading bad ideas.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

8. There is absolutely nothing wrong with nudist camps.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

9. Our country needs free thinkers who have the courage to defy traditional ways, even if this upsets many people.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

10. Our country will be destroyed someday if we do not smash the perversions eating away at our moral fiber and traditional beliefs.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

11. Everyone should have their own lifestyle, religious beliefs, and sexual preferences, even if it makes them different from everyone else.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

12. The "old-fashioned ways" and the "old-fashioned values" still show the best way to live.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

13. You have to admire those who challenged the law and the majority's view by protesting for women's abortion rights, for animal rights, or to abolish school prayer.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

14. What our country really needs is a strong, determined leader who will crush evil, and take us back to our true path.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

15. Some of the best people in our country are those who are challenging our government, criticizing religion, and ignoring the "normal way things are supposed to be done."

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

16. God's laws about abortion, pornography and marriage must be strictly followed before it is too late, and those who break them must be strongly punished.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

17. There are many radical, immoral people in our country today, who are trying to ruin it for their own godless purposes, whom the authorities should put out of action.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

18. A “woman’s place” should be wherever she wants to be. The days when women are submissive to their husbands and social conventions belong strictly in the past.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

19. Our country will be great if we honor the ways of our forefathers, do what the authorities tell us to do, and get rid of the “rotten apples” who are ruining everything.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

20. There is no “one right way” to live life; everybody has to create their own way.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

21. Homosexuals and feminists should be praised for being brave enough to defy “traditional family values.”

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

22. This country would work a lot better if certain groups of troublemakers would just shut up and accept their group’s traditional place in society.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

Appendix D

College Opinions Survey B (MRS Scale)

Below are a number of opinion statements about public issues, politics, and your beliefs about the world in general. It is extremely important that you answer as honestly as possible. All your responses will be kept strictly confidential. Please circle the number corresponding to your reaction to each statement, with 1 meaning you strongly disagree with the statement, and 7 meaning you strongly agree.

---

1. It is easy to understand the anger of black people in America.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

2. Sexually exploitive publications should be banned.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

3. Having an abortion for any reason is morally wrong.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

4. Over the past few years the government and news media have shown more respect to blacks than they deserve.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

5. A married woman should be permitted to have an abortion only if both husband and wife request it.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

6. Execution is a “cruel and unusual” punishment.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

7. I would be uneasy seeing displays of affection between homosexuals.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

8. Blacks have more influence upon school desegregation plans than they ought to have.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

9. Killing doctors who perform abortions is completely justified.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

10. Blacks are getting too demanding in their push for equal rights.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

11. Censorship is a legitimate tool of the government.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

12. The decision to have an abortion ultimately rests on the woman.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

13. Over the past few years, blacks have gotten more economically than they deserve.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

14. Blacks should not push themselves where they're not wanted.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

15. In the vast majority of cases, violent criminals can be rehabilitated.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

16. Life imprisonment for murderers is preferable to execution.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

17. Doctor assisted suicides should be legal.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

18. Discrimination against blacks is no longer a problem in the United States.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

19. There should be programs to subsidize abortions for women with low incomes.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

Appendix E

Demographics Sheet

Race: (Please check all that apply)

____ Asian
____ African-American
____ Caucasian (White)
____ Hispanic
____ Other (Please specify): __________________________________

Gender: ________ Male ________ Female **Age:** ___________

Appendix F

Consent Form

Researcher's Name: Bradlee Gamblin

Title: College Student Attitudes

I am an undergraduate psychology student at Eastern Kentucky University. I am conducting a study in which you will be asked to categorize a group of pictures and then fill out two questionnaires. This study should take no longer than 30 minutes.

Your participation is voluntary and you have the right to refuse to answer any question. You may also withdraw from the study at any time without giving prior notice and without penalty; however, you will not be given credit for your participation today. Your responses will be completely anonymous.

After completing the study, you will be given a debriefing sheet explaining the purpose of this study. If you wish to participate in this study, we will begin.

Appendix G

College Student Attitudes

This study was designed to test the effect of categorization on levels of racism. Previous research has shown that racism can be reduced in a classroom setting (Pettijohn & Walzer, 2008) as well as by creating a common ingroup with members of another race (Gaertner & Dovidio, 2000).

The present study looks to extend these results to visual categorization. Priming has been shown to induce prejudice attitudes in participants (Castelli, Macrae, Zogmaister, & Arculi, 2004). However, through the use of a similar technique, it may be possible to find the opposite result. In this study, participants were randomly assigned to categorize a set of sixteen pictures into two groups. There were three groups: one group categorized faces based on their race, another group categorized the same faces based on whether they were wearing glasses, and a final group categorized fruits and vegetables into their respective groups. All groups were then asked to complete two questionnaires meant to measure prejudice and racism, the Right Wing Authoritarianism scale (Altemeyer, 2006) and the Modern Racism Scale (McConahay, 1986). I predict that participants in the “race” group will show the highest levels of racist attitudes, and participants in the “glasses” group will show the lowest levels of racist attitudes. I predict this because participants who were asked to categorize faces based on race might be more focused on race, while participants who categorized based on eyewear are focused away from race.

Thank you again for participating in my study. Psychological research is not possible without the cooperation of participants like you. If you are interested in research on reducing prejudice and racism, feel free to contact me or consult the references listed below. I expect to have the results for this study by the end of the semester; if you would like to know my findings, please come by the Cammack lobby during finals week and check out my poster.

Researcher: Bradlee Gamblin

bradlee_gamblin@eku.edu

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Relationship of Proactive Personality to Intrinsic and Extrinsic Career Success

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Abstract--*As our job market continues to be affected by the poor economy, it is important to look at individual differences in those who are successful in their careers and those who are not so successful. The present study attempts to examine the relationship between career success and a characteristic of personality called proactive personality. This study seeks to further explore this premise by analyzing differences between intrinsic success and extrinsic success in relation to employees with proactive personality types. A survey was completed by 54 students that measured their degree of career success in their current or most recent job, as well as their level of proactive personality. As hypothesized, intrinsic career success had a stronger correlation with proactive personality in comparison with extrinsic career success.*

Since 2007, the U.S. has suffered a continuous economic downturn that has led millions of people to become unemployed across the country. This has been the longest recession since the Great Depression in the 1930s. It is becoming more and more difficult to move up through a career and receive promotions to be able to afford a comfortable lifestyle. There are many factors that can contribute to job advancement and, of course, no one factor guarantees job security or success. However, a particular subject worth examining is an employee's personality type.

Personality at Work

Some previous studies have looked at the relationships between various personality traits and occupational success, which have established the significance of personal characteristics as predictors of success in work environments (Converse, Pathak, DePaul-Haddock, Gotlib, & Merbedone, 2012). For example, a study by Boudreau, Boswell, and Judge (2001) looked into the big five personality traits and how they relate to career success. This study examined the five-factor model of personality, which is a general framework for interpreting personality constructs. They found that extroversion was positively related to intrinsic career success while neuroticism was negatively related to intrinsic career success. My study highlights a particular type of personality known as proactive personality and its relationship to work-related settings.

Proactive Personality

Proactive personality focuses on how individuals differ in their inclination to act toward manipulating their surroundings. A person with proactive personality is commonly characterized as a person who takes action to influence their environment (Crant & Bateman, 2000). Influencing one's environment may include acting upon opportunities, showing initiative, solving problems, and persisting until a change is made. A proactive individual continues to change their environment, despite situational constraints (Seibert, Kraimer, & Crant, 2001). In contrast, less proactive individuals adapt to their environment and show little initiative (Crant & Bateman, 2000). Organizations, society, and technology are constantly advancing; therefore employees must manage these continuous and often simultaneous changes occurring in their environment

(Fuller, & Marler, 2009). Seibert et al. (2001) used a model to characterize proactive personality in one of two ways; it is either a general action in a work-related environment or a "context-specific action." An example of the former may be identifying opportunities for organizational improvement whereas the latter may include being actively involved in one's own career path. In relation to the big five personality traits, proactive personality is most commonly associated with high conscientiousness and high extroversion. However, proactive personality is distinguished from the big five because it is a more narrowly focused personality trait. It has been shown that proactive personality differs from self -consciousness, need for achievement, need for dominance, and locus of control (Erdogan, & Bauer, 2005). A longitudinal study led by Seibert et al. (2001) looked at proactive personality as three behavioral processes- voice, innovation, and career initiative, and one cognitive variable- political knowledge. Much like Bateman and Crant (1999), we view proactive personality as a personal disposition to change one's own environment.

Career Success: Intrinsic and Extrinsic

There is growing literature on career success and how it is related to an assortment of factors, including demographics, motivation, geographic location, and many other individual and organizational variables. Seibert, Crant, and Kraimer (1999) define career success as "positive psychological or work-related outcomes or achievements one accumulates as a result of work experiences" (p. 417). When looking at career success extrinsically, the term refers to observable accomplishments such as salary and promotions. On the other hand, intrinsic career success can be defined as subjective perceptions of one's career, such as their satisfaction level. Although extrinsic and intrinsic factors of career success have been positively related in previous research, it is important to look at both variables separately because an individual who receives a high salary may not necessarily feel accomplished. (Converse et al., 2012).

Career-related Variables Linked with Proactive Personality

Previous studies have shown proactive personality to be positively associated with tolerance for stress in demanding jobs, leadership effectiveness, work team performance, and entrepreneurship (Seibert et al., 2001). Another example of similar literature is a study that showed proactive people are more likely to engage in networking, which is one way to help advance an individual's career by seeking opportunities (Fuller, & Marler, 2009). Proactive personality types have also been linked with creativity. Creativity is associated with future goal planning and innovation, as creative people typically think of better ways to do things (Fuller, & Marler, 2009). Overall career success can be comprised of these and many other work-related variables.

An individual's ability to shape their environment may have multiple benefits that could potentially relate to career success. Those who exert control of their environments can anticipate changes and therefore may plan ahead by altering their work styles. Proactive individuals create situations that enhance the likelihood of high levels of job performance. For example, they are more likely to seek career support or organizational information (Seibert et al., 1999). Also, job satisfaction has been positively linked with proactive personality because proactive people actively manage obstacles that prevent them from being satisfied (Erdogan, & Bauer, 2005).

Seibert et al. (1999) surveyed 496 employees from different organizations and found that proactive personality was positively correlated with intrinsic and extrinsic indicators of career success. In a similar approach, this study looks to deepen our understanding of proactive personality traits and their effect on an individual's intrinsic and extrinsic success in their job. I hypothesize that an individual's overall career success will have a positive relationship with proactive personality types, but that intrinsic career success will be more strongly associated with a proactive personality when compared with extrinsic success.

Methods

Participants

A total of 54 participants completed the survey. The participants were selected from two classes and were asked to complete the survey only if they currently had a job or have had a job previously. All of the participants were students at the University of North Carolina at Charlotte. The majority of students were female (70.4%) while the remaining 29.6% were male. The ages ranged from 18-29, with the average age being 19.4 years old. Out of the 54 participants, 59% were currently employed at the time of taking the survey and 61% of the total students were responding about a current or past part-time job. Only 20.4% of the participants said they were employed in a job that is similar to their career goals.

Measures

The survey used two separate measures. Participants were advised to consider their current or most previous job when responding to the survey. The first scale used was Bateman and Crant's Proactive Personality Scale (PPS), which is a 17-item scale used to measure one's degree of proactive personality (1993). The validity and reliability for this measure has been investigated by Crant, Kramer, and Seibert's (1991) in their study of career success and proactive personality. Each question is rated on a 7-point Likert scale ranging from strongly agree to strongly disagree. Higher scores indicate that the participant has a more proactive type of personality.

The second scale was used to measure intrinsic and extrinsic career success; this scale is a modified version of section four in the Job Diagnostic Survey (JDS), which was developed by Hackman and Oldham (1975). The scale was shortened so that it only included questions that measured intrinsic and extrinsic factors but excluded people-based factors. Items one, two, and five from the JDS measured extrinsic career success while the remaining five items measured intrinsic career success. This was also scored on a 7-point scale ranging from extremely satisfied to extremely dissatisfied.

Procedure

Surveys were administered by the researcher or the faculty member overseeing the study during class time. Students were told about the purpose of the study and that they would be giving their informed consent by completing the survey. Any student who wished to continue and currently has or previously had a job at any time was given a copy of the survey. There was no time limit for completion, though it took most students approximately 10 minutes to finish the survey. The students did not receive any incentives for participating. Before the survey wasadministered, the participants were reminded not to include any personal information that could identify them, such as their names or student ID numbers, in order to protect anonymity. The participants answered demographic questions before proceeding to the PPS and JDI portion of the survey.

Results

Analyses indicated a significant, positive correlation between proactive personality (M=96.02, SD=12.86) and overall career success (M=40.06, SD=10.06), where $r(54)= .36$, $p<.01$. Proactive personality and intrinsic career success (M=25.5, SD=6.6) were significantly and positively correlated ($r(54)= .45$, $p<.01$), while proactive personality and extrinsic career success (M=14.5, SD=4.02) were not significantly correlated ($r(54)= .16$, $p>.10$). Any results showing significant correlations were found to be significant at the .01 level or less. An r to z conversion tested the differences in correlations between intrinsic and extrinsic career success, which indicated that the differences between the two are statistically significant (z=5.05, $\theta <.01$).

Discussion

As hypothesized, intrinsic career success had a stronger relationship with proactive personality when compared with extrinsic success. The present findings are similar to those by Crant, Kramer, and Seibert (1999), which determined the statistical significance of proactive personality in relation to career success. This study contributed to organizational psychology by breaking down career success into intrinsic and extrinsic factors. Aforementioned studies have resulted in finding correlations between other types of personality traits and career success, such as the big five from Boudreau, et al.'s 2001 study. Previous research has also found links between various individual characteristics that may improve career success with proactive personality, such as the study by Seibert et al. (2001). The current findings are now able to supplement prior research by showing a relationship between proactive personality and intrinsic career success.

This sample came from a biased participant pool, as all of the participants were younger college students and these findings may not generalize to the larger public. The careers of college-age students are typically short-lived or temporary, so information on things like salary increases or promotions may not be applicable to each participant. The results also do not account for extraneous variables such as the participants' type of job. In order to avoid extreme bias or other confounding variables that come from different work experiences, the study may have been more effective if I were able to survey a group of people from one type of organization.

Future research on this topic should consider looking at the impact of proactive personality in different types of jobs, such as the hospitality industry versus service industry jobs. It would be interesting to see if there are any changes in the relationship between career success and proactive personality over a longitudinal study, as perceptions of career success may differ as the needs of the participants adjust over time.

For those who value intrinsic success such as job satisfaction and reaching career goals, it is important to consider the association between these career goals and proactivity in the work environment.

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Appendix A

Bateman and Crant's Proactive Personality Scale

1. I am constantly on the lookout for ways to improve my life.
__ Strongly Agree
__ Agree
__ Somewhat Agree
__ Neutral
__ Somewhat Disagree
__ Disagree
__ Strongly Disagree

2. I feel driven to make a difference in my community, and maybe the world.
__ Strongly Agree
__ Agree
__ Somewhat Agree
__ Neutral
__ Somewhat Disagree
__ Disagree
__ Strongly Disagree

3. I tend to let others take initiative to start new projects. **this one is scaled backwards
__ Strongly Agree
__ Agree
__ Somewhat Agree
__ Neutral
__ Somewhat Disagree
__ Disagree
__ Strongly Disagree

4. Wherever I have been, I have been a powerful force for constructive change.
__ Strongly Agree
__ Agree
__ Somewhat Agree
__ Neutral
__ Somewhat Disagree
__ Disagree
__ Strongly Disagree

5. I enjoy facing and overcoming obstacles to my ideas.
__ Strongly Agree
__ Agree
__ Somewhat Agree
__ Neutral
__ Somewhat Disagree
__ Disagree
__ Strongly Disagree

6. Nothing is more exciting than seeing my ideas turn into reality
__ Strongly Agree
__ Agree
__ Somewhat Agree
__ Neutral
__ Somewhat Disagree
__ Disagree
__ Strongly Disagree

7. If I see something I don't like, I fix it.
__ Strongly Agree
__ Agree
__ Somewhat Agree
__ Neutral
__ Somewhat Disagree
__ Disagree
__ Strongly Disagree

8. No matter what the odds, if I believe in something I will make it happen.
__ Strongly Agree
__ Agree
__ Somewhat Agree
__ Neutral
__ Somewhat Disagree
__ Disagree
__ Strongly Disagree

9. I love being a champion for my ideas, even against other's opposition.
__ Strongly Agree
__ Agree
__ Somewhat Agree
__ Neutral
__ Somewhat Disagree
__ Disagree
__ Strongly Disagree

10. I excel at identifying opportunities.
__ Strongly Agree
__ Agree
__ Somewhat Agree
__ Neutral
__ Somewhat Disagree
__ Disagree
__ Strongly Disagree

11. I am always looking at better ways to do things.
__ Strongly Agree
__ Agree
__ Somewhat Agree
__ Neutral
__ Somewhat Disagree
__ Disagree
__ Strongly Disagree

12. If I believe in an idea, no obstacle will prevent me from making it happen.
__ Strongly Agree
__ Agree
__ Somewhat Agree
__ Neutral
__ Somewhat Disagree
__ Disagree
__ Strongly Disagree

13. I love to challenge the status quo.
__ Strongly Agree
__ Agree
__ Somewhat Agree
__ Neutral
__ Somewhat Disagree
__ Disagree
__ Strongly Disagree

14. When I have a problem, I tackle it head on.
__ Strongly Agree
__ Agree
__ Somewhat Agree
__ Neutral
__ Somewhat Disagree
__ Disagree
__ Strongly Disagree

15. I am great at turning problems into opportunities.
__ Strongly Agree
__ Agree
__ Somewhat Agree
__ Neutral
__ Somewhat Disagree
__ Disagree
__ Strongly Disagree

16. I can spot a good opportunity long before others can.
__ Strongly Agree
__ Agree
__ Somewhat Agree
__ Neutral
__ Somewhat Disagree
__ Disagree
__ Strongly Disagree

17. If I see someone in trouble, I help in any way that I can.
__ Strongly Agree
__ Agree
__ Somewhat Agree
__ Neutral
__ Somewhat Disagree
__ Disagree
__ Strongly Disagree

Appendix B

Job Diagnostic Scale, Section Four (Revised)

1. How satisfied are you with the amount of job security you currently have or had on your previous job?
__ Extremely Satisfied
__ Satisfied
__ Slightly Satisfied
__ Neutral
__ Slightly Dissatisfied
__ Dissatisfied
__ Extremely Dissatisfied

2. How satisfied are you with the amount of pay and fringe benefits you currently receive or did receive on your most recent job?
__ Extremely Satisfied
__ Satisfied
__ Slightly Satisfied
__ Neutral
__ Slightly Dissatisfied
__ Dissatisfied
__ Extremely Dissatisfied

3. How satisfied are you with the amount of personal growth and development you get in doing your current or most recent job?
__ Extremely Satisfied
__ Satisfied
__ Slightly Satisfied
__ Neutral
__ Slightly Dissatisfied
__ Dissatisfied
__ Extremely Dissatisfied

4. How satisfied are you with the feeling of worthwhile accomplishment you get from doing your current or most recent job?
__ Extremely Satisfied
__ Satisfied
__ Slightly Satisfied
__ Neutral
__ Slightly Dissatisfied
__ Dissatisfied
__ Extremely Dissatisfied

5. How satisfied are you with the degree to which you are fairly paid for what you contribute to your current or your most recent organization?
__ Extremely Satisfied
__ Satisfied
__ Slightly Satisfied
__ Neutral
__ Slightly Dissatisfied
__ Dissatisfied
__ Extremely Dissatisfied

6. How satisfied are you with the amount of independent thought and action you can exercise on your current or most recent job?
__ Extremely Satisfied
__ Satisfied
__ Slightly Satisfied
__ Neutral
__ Slightly Dissatisfied
__ Dissatisfied
__ Extremely Dissatisfied

7. How satisfied are you with the chance to help other people while at work?
__ Extremely Satisfied
__ Satisfied
__ Slightly Satisfied
__ Neutral
__ Slightly Dissatisfied
__ Dissatisfied
__ Extremely Dissatisfied

8. How satisfied are you with the amount of challenge in your current or most recent job?
__ Extremely Satisfied
__ Satisfied
__ Slightly Satisfied
__ Neutral
__ Slightly Dissatisfied
__ Dissatisfied
__ Extremely Dissatisfied

Alexithymia and Facial Affect Recognition among College Students High on Psychopatic Traits versus Controls

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Abstract—Despite a recent increase in research in the psychopathy field, our understanding of persons in the community high on trait psychopathy remains limited. This study tested for differences in levels of alexithymia and facial affect recognition performance between college students high on psychopathic traits (CP) and comparison (control) groups. Two groups were formed based on Psychopathic Personality Inventory-Revised scores. Forty-five college students completed questionnaires including a demographic questionnaire, the Psychopathic Personality Inventory-Revised, the TAS-20, and a facial affect recognition task. Surprisingly, there were no significant differences between group performance on the facial affect recognition task. In addition, there were no significant group differences on the alexithymia measure.

Alexithymia

Alexithymia is the deficiency in an individual's ability to recognize and describe feelings and emotions, which occurs despite the individual's fully intact vocabulary (Kroner & Forth, 1995). In addition to experiencing difficulty in identifying emotions, alexithymic individuals also show deficits in imaginative ability, daydreaming, and experience difficulty understanding the importance of feelings (Kroner & Forth, 1995). Another feature is a tendency to fixate on external events and a general lack of introspection (Parker, Taylor, & Bagby, 1993). Parker et al. (1993) also note that the difficulty in interpreting facial expressions could impact how a person empathizes with others.

Studies have shown that participants who are rated as having high alexithymia scores perform more poorly on tasks involving identifying emotions than those participants with lower alexithymia scores (Parker et al., 1993); the less intense the affect is, the more difficult it is to identify (Hastings, Tangney, & Stuewig, 2008). Parker et al. (1993) also found that males scored significantly higher on the Toronto Alexithymia Scale - 20 (Bagby, Parker, & Taylor, 1994) than females but found no differences in gender regarding the identification of facial expressions. Furthermore, this deficit has been seen with both verbal and nonverbal stimuli in both male and female groups (Lane, Sechrest, Reidel, Weldon, Kasniak, & Schwartz, 1996).

Alexithymia has been compared to psychopathy, as both are characterized by a lack of empathy and insight and both can be considered disorders relating to deficient emotion regulation (Rogstad & Rogers 2008). Additionally, both groups have had difficulty identifying both positive and negative emotions. Positive correlations have been found between the social deviant aspect of psychopathy and the Importance of Emotions Subscale on a measure assessing alexithymia, the TAS-20 (Kroner & Forth, 1995). Gender differences are consistent between both alexithymia and psychopathy, in that they are seen more often in male populations. Teten, Miller, Bailey, Dunn and Kent (2008) found alexithymia to be a significant predictor of impulsive aggression in veterans who experienced at least one traumatic experience.

Psychopathy, Alexithymia and Facial Affect Recognition

Psychopathy is a disorder characterized primarily by the lack of conscience in an individual (Cleckley, 1941). As described by Robert Hare (1993), additional symptoms can be characterized into two factors: emotion/interpersonal symptoms and social deviance symptoms. Glib and superficial, egocentric and grandiose, lack of remorse or guilt, lack of empathy, deceitful and manipulative and shallow emotions are seen in Factor 1 or the Interpersonal Factor. Impulsivity, poor behavior controls, need for excitement, lack of responsibility, early behavior problems and adult antisocial behavior all make up Factor 2 or the Behavioral Factor. Much of the research on psychopathy and facial affect recognition use Hare's Psychopathy Checklist –Revised (PCL-R; Hare 1991) to assess for psychopathy.

Previous research has been mixed regarding whether there is a correlation between psychopathy and facial affect recognition. Some research has found no difference between psychopathic and control groups (Glass & Newman 2006), while negative correlations have been indicated between psychopathy and alexithymia (Kroner & Forth, 1995). Although Kroner and Forth (1995) found no association between psychopathy and alexithymia, they also considered how a psychopath might answer certain questions. For instance, the researchers think it is unlikely psychopaths would mark certain questions with an "agree" choice because of the traits a psychopath often possesses, such as grandiosity, glibness and deceitfulness. Furthermore, this research suggests that a differentiating factor between individuals high on trait psychopathy and individuals high on alexithymia is that psychopaths have more difficulty in recognizing emotions while individuals high on alexithymia have more difficulty in describing emotions.

Other research has supported the notion that psychopathy may be related to a decreased ability to recognize facial affects (Hastings et al., 2008). Research has shown marked deficits in recognizing different facial affects, including happiness, sadness, and fear. The research of Iria and Barbosa (2009) looked at non-criminal psychopaths, criminal psychopaths, criminal non-psychopaths, and non-criminal non-psychopaths. This research found that both the criminal psychopath group and the non-criminal psychopath group showed deficits in identifying fear. This suggests that both criminal and successful psychopathic populations have difficulty recognizing certain facial expressions and that it is not only the criminal populations who experience this deficit. Kosson, Suchy, and Mayer (2002) found that when completing a facial affect recognition task with their left hands, the psychopathic group performed more poorly than the control group in recognizing disgust.

The low-fear model (Lykken, 1995) and the Violence Inhibition Mechanism model (Blair, 1995, 2001) have been applied to understand why certain affects are difficult for psychopaths to recognize (Hastings et al., 2008). The low-fear model, in which psychopaths don't process threat or punishment cues, would explain why anger and fear would be difficult for psychopaths to identify. The VIM model suggests psychopaths do not respond appropriately to submission cues, which would explain why fear, sadness and shame would be difficult for psychopaths to identify (Hastings et al., 2008). Inconsistent with either of these models, Hastings et al. (2008) also found that individuals with high psychopathic traits had difficulty identifying happy facial expressions as well as sad expressions.

Goals of this Study

This study looked specifically at the role of alexithymia on facial affect recognition in persons high on a measure of trait psychopathy, who were classified as college students high on psychopathic traits (CP). The overall purpose of this study was to determine whether CP perform differently than controls on a facial affect recognition task and an alexithymia measure.

Hypotheses

1. The first purpose was to observe differences between college psychopaths and control groups on the facial affect recognition task. It was hypothesized that the college psychopath group would score lower than the control group on this task. Specifically, it was hypothesized that findings would replicate those of Hastings et al. (2008) and Iria and Barbosa (2009) where psychopaths were less accurate in identifying happy, sad, and fearful emotions.

2. The second purpose of this study was to examine whether there was a relation between scores on the trait psychopathy measure and the alexithymia measure. It was hypothesized that there would be a negative correlation between alexithymia and trait psychopathy. This hypothesis was based on the research of Kroner and Forth (1995) and their idea that psychopaths would not want to disclose deficits that might be revealed when answering the TAS-20.

Method

Participants and Procedure

Participants were college students recruited from a large mid-Atlantic University via the Sona Systems Website. Only males were asked to participate, as previous research on psychopathy has focus mainly on male populations. Any male student was allowed to complete the online portion of the study.

Subjects were male students from a large mid-Atlantic University who were recruited via the Sona Systems Website, an anonymous website used to post surveys online for the purpose of recruiting participants and collecting data. Participants first read the cover letter and after agreeing to participate, they answered a series of questionnaires. Each participant was assigned a participant number to ensure anonymity. The following questionnaires were included: a) demographic questionnaire, b) the Toronto Alexithymia Scale-20, and c) the Psychopathic Personality Inventory-Revised.

After completion of all questions, the last section directed the participants to a different website for the Facial Recognition Task. This task required participants to judge the expression on the faces of several actors, displaying emotions including sadness, surprise, happiness, fear, anger and disgust. Each photograph was displayed for two seconds followed by a slide requesting the participant to pick the appropriate emotion. There were built-in breaks for the participants after every 15 faces, with a total of 60 faces for participants to judge. Participants were required to check a box stating that they understand instructions prior to beginning the task. Following the study, participants were debriefed.

Based on their responses to the PPI-R, participants were grouped into the CP group or the control group. A sample of 266 male students was obtained from a large Mid-Atlantic University. Participants were not included in analyses if they completed the measures in twenty minutes or less ($N = 38$), if they had an invalid PPI-R ($N = 4$, based on PPI-R validity scales), or if they did not complete the facial affect recognition task ($N = 178$). Following these selection procedures, 45 participants remained and were included in all subsequent analyses in this study. Participants were split into a college psychopath group ($N = 22$), and a control group ($N = 23$) using a 50/50 split. All participants received extra credit in their psychology courses.

Participant age did not differ significantly between the groups (college psychopath (CP) $M = 21.18$, $SD = 2.95$ years; controls $M = 20.29$, $SD = 1.89$ years). The groups did not differ significantly by class rank or marital status. Participants in the CP group were mostly of European American descent ($N = 21$, 95.45%), as were participants in the control group ($N = 23$, 100.00%). An examination of Total PPI-R scores for each group indicated CP were at or above the 75% cut off for psychopathy (M = 61.45, SD = 4.16), and control participants scored at or below the 50% cut off, (M = 36.15, SD = 4.43).

Measures

1. **Demographic Questionnaire**. This is a questionnaire asking participants about general demographic information. Information regarding gender, age, class rank, race/ethnic background, marital status and family's annual income were be acquired.

2. **Facial Affect Recognition Task.** The purpose of this task was to assess the ability to recognize six basic emotions: sadness, surprise, happiness, fear, anger and disgust. Black and white photographs show ten actors displaying each emotion for a total of 60 photographs.

3. **Psychopathic Personality Inventory-Revised** (PPI-R; Lilienfeld, S.O., & Widows, M.R., 2005**).** The PPI-R is a 154-item four-point Likert Scale measure assessing trait psychopathy. It has eight subscales: Machiavellian Egocentricity, Social Potency, Coldheartedness, Carefree Nonplanfulness, Fearlessness, Blame Externalization, Impulsive Nonconformity, and Stress Immunity. The PPI-R was developed to look at levels of trait psychopathy in a community population with individuals who have no previous criminal history (Marcus, John & Edens, 2004). According to the PPI-R manual, scores are interpreted based on normative comparisons. The PPI-R is designed to serve as a measure of high levels of psychopathic personality traits, and inverse interpretation of decidedly low scores is not intended. During the scoring of the PPI-R, each individual's score is translated to a T-score based on the individual's sex and age. A T-score of 50 suggests an average level of psychopathic traits, and there is a T-score standard deviation of 10 for each scale.

4. **Toronto Alexithymia Scale – 20 (TAS-20; Bagby et al. ,1994).** The TAS-20 is a 20-item measure assessing alexithymia. Participants rated each item on a Likert Scale, 1 as "strongly disagree" to 5 as "strongly agree." Scores of 61 or greater indicated high alexithymia and scores of 51 or below indicated low alexithymia or nonalexithymia. The TAS-20 follows a three-factor structure. Factor 1 addresses difficulty identifying feelings and items in this factor include "I am often confused about what emotion I am feeling" and "I don't know what's going on inside me." Factor 2 addresses difficulty describing feelings and items in this factor include "It is difficult for me to find the right words for my feelings" and "I find it hard to describe how I feel about people." Factor 3 addresses externally-oriented thinking and items in this factor include "I prefer to analyze problems rather than just describe them" and "I prefer talking to people about their daily activities rather than their feelings."

Data Analysis

Multivariate analysis of variance (MANOVA) and univariate analysis of variance (ANOVA) analyses were conducted to determine the relationship between the college psychopath group and the control group in regards to group performances on the facial affect recognition task and the alexithymia.

Results

Alexithymia and Psychopathic Traits

A univariate ANOVA was conducted to compare the two groups (CP and controls) on their level of alexithymia (Total TAS-20). There were no significant differences found between the CP(M = 48.59, SD = 11.09) and control group (M = 47.61, SD = 9.68) on alexithymia, F (1, 44) = .10, p = .753, (*partial* η^2 = .002).

A MANOVA was performed on the three subscales of alexithymia (Difficulty Describing Feelings, Difficulty Identifying Feeling, and Externally-Oriented Thinking) to compare performance between the CP and control groups. No significant results were observed between the CP and control group on any of the three subscales (see Table 1 for complete results).

Table 1

Alexithymia scores for psychopaths versus control participants.

	Controls ($N = 21$)		Psychopaths ($N = 21$)				
	M	*SD*	*M*	*SD*	*F*	*p*	η^2
Difficulty Describing Feelings	14.22	5.32	15.73	6.14	0.78	0.38	0.018
Difficulty Identifying Feeling	13.22	4.50	12.73	3.79	0.16	0.70	0.004
Externally-Oriented Thinking	20.17	3.97	20.14	4.53	0.01	0.98	0.001
Total TAS	47.61	9.68	48.09	11.10	0.10	0.75	0.002

Facial Affect Recognition and Psychopathic Traits

A univariate ANOVA was conducted to compare the two groups (CP and controls) in their facial affect recognition on the entire set of faces (Total Recognition). A MANOVA was conducted on all of the individual emotions (happiness, surprise, fear, sadness, anger, and disgust) to compare CP and controls. Using an alpha level of .001 to evaluate homogeneity assumptions, the Box's M test of homogeneity of covariance was not significant (p = .080). Additionally, Levene's homogeneity of variance test was not statistically significant for any of the emotional expression dependent variables. Wilks' Lambda was not significant, $F(6, 43) = 0.51$, $p = .794$, *partial* $\eta^2 = .075$.

There were no significant differences found between the CP and control group on any of the individual emotions (see Table 2 for complete results). There was also no difference in total recognition, $F(1, 44) = 0.008$, $p = .929$, (*partial* $\eta^2 = .000$).

Table 2

Facial affect recognition performance of psychopaths versus control participants.

	Controls ($N = 21$)		Psychopaths ($N = 21$)				
	M	*SD*	*M*	*SD*	*F*	*p*	η^2
Happiness	**9.78**	**0.74**	**9.82**	**0.50**	**0.04**	**0.85**	**0.001**
Surprise	**9.35**	**0.93**	**8.81**	**1.37**	**2.32**	**0.14**	**0.051**
Fear	**4.57**	**2.10**	**4.77**	**2.46**	**0.92**	**0.76**	**0.002**
Sadness	**656.5**	**2.04**	**6.27**	**1.98**	**0.40**	**0.53**	**0.009**
Anger	**7.21**	**1.65**	**7.41**	**1.62**	**0.15**	**0.70**	**0.004**
Disgust	**5.48**	**2.71**	**5.82**	**2.65**	**0.18**	**0.57**	**0.004**
Total Recognition	**43.04**	**1.05**	**42.91**	**1.07**	**0.01**	**0.93**	**0.000**

Note. Each individual emotion is out of a total of 10. Reported scores are representative of raw scores.

Discussion

This is the first known study to examine alexithymia in a population of college students high on psychopathic traits. It is also among the first to observe facial affect recognition in a population of college students high on psychopathic traits (Grieve & Mahar, 2010; Vidal, Skeem, & Camp, 2010). Findings indicated there were no significant differences in participant performance between the CP and controls. These findings regarding the TAS-20 are in accord with research conducted by Kroner and Forth (1995) who suggested that there would be no significant differences as psychopaths would be unlikely to endorse certain items on the TAS-20 based on the behaviors that are characteristic of psychopaths.

Concurrent with Parker et al. (1993), our results suggest that the participants in the college psychopath group did not respond differently than a non-psychopath group. This is understandable, considering the participants in the college psychopath group are considered "successful psychopaths". Correctly identifying facial affect could allow these sampled college students high on trait psychopathy to avoid incarceration. However, it is important to recognize the implications of the present findings. College psychopaths may not differ significantly from control college students low on psychopathy on measures of alexithymia or facial affect recognition. Therefore, separate measures may be needed to further understand college psychopaths.

Limitations

This study employed a small number of participants for both the experimental and control groups. Out of the participants who completed the surveys, only 22 were used for analyses as only six could be classified as successful psychopath (based on responses on the PPI-R) and only 23 were classified as non-psychopath (based on their responding on the PPI-R). Additionally, because of the the large number of facial expressions presented to the participants during the facial affect recognition task, random responding could have been a factor in the low number of participants for each group and could have also impacted whether results were significant or not. Furthermore, all analyses were based on self-report, which limits findings without corroborative information. Finally, the inability of the researchers to get participants to come into the laboratory physically may have hindered performance on the tasks, including the facial affect recognition task. Since participants were only able to complete the subsequent study in an online format, participant attention levels during the task were unclear. The facial affect task may also not have been successful due to a fatigue effect, as the task was always the final task to complete.

Future Directions

Further research on this topic using a larger sample for both populations may reveal more significant results regarding the responding of college psychopaths on the facial affect recognition task and on the TAS-20 versus controls. Additionally, this study concentrated on only European American male college students; populations such as ethnic minorities, females, and non-students versus students should also be considered for future research. The collection of more information beyond self-report would benefit future research. Having participants complete facial affect recognition tasks may better assist understanding of any potential deficits in affect recognition in a population of college students high on trait psychopathy. Finally, future studies might consider changing the procedure of this study in which participants physically come into a lab as opposed to participating online.

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Sharing Attention between Temporal and Nontemporal Tasks: The Effects of Concurrent Cognitive Tasks on Prospective Time Estimation and Perception

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Abstract--Most theories of time perception include some aspect of attention playing a part in judgments about time. When participants are aware that they will be asked to perform a temporal task alongside a nontemporal task, they are in a prospective condition. The following experiment showed that under a prospective paradigm, participants' subjective feeling of time was shortened. The results give evidence for a resource allocation model of prospective timing, which states that when engaged in a dual-task situation versus a control situation (timing only), participants will tend to underestimate how much time has elapsed. Furthermore, this model suggests that as the cognitive load of the second, nontemporal task increases the subjective shortening of time will decrease.

The way in which humans perceive temporal experiences has been studied at great length. While various models have been put forth to explain the perception of time, the one focused on in this study places emphasis on attentional resources, and is known as the resource allocation model of time. (Macar, Grondin & Casini, 1994; Brown & West, 1990; Brown, 1985). The two basic assumptions of this model are (1) estimated duration of time should shorten when the amount of attention devoted to temporal cues decreases and (2) when an individual is engaged in concurrent temporal and nontemporal tasks, there should be an interference effect, giving evidence for a limited pool of resources for timing (Brown, 1997; Brown & West, 1990; Buhusi & Meck, 2009).

The traditional theory of time perception, known as the stopwatch paradigm, hinges on the idea that pulses emitted in the brain by a pacemaker are stored in an accumulator (Buhusi & Meck, 2009). This model assumes that humans have something of an internal clock, which is able to contain information that represents our subjective time (Buhusi & Meck, 2006; Zakay 2000). The attentional allocation theory revises this model, hypothesizing that the more our attention is diverted away from the timer, the fewer number of pulses are able to be accumulated, leading to an underestimation of time. While attention to time has been noted to be important in time perception research in the past, recently it has gained notoriety in both animal and human literature. Sharing time between temporal and nontemporal tasks, also known as time-sharing, has become the central part in several theories explaining attentional resources. One such theory, an attentional-gate theory of time perception, has been proposed (Zakay, 2000; Zakay & Block, 2004).

The attentional-gate theory of timing was introduced by Zakay and Block as a way to explain how during prospective situations, the amount of attention paid to temporal cues lengthens our subjective feeling of time (Zakay, 2000). What this theory proposes is that as nontemporal tasks become increasingly more demanding, the amount of resources needed increases, which in turn opens an "attentional gate". Pulses are therefore unable to reach the accumulator and time is underestimated (Buhusi & Meck, 2009; Zakay, 2000). Alternatively, other researchers have focused on a switch hypothesis, proposing no need for this attentional "gate" and instead focusing on the switch that some hypothesize lies in front of the accumulator (Buhusi & Meck. 2009). Further, some have stated that working memory shares resources with the internal clock, and therefore as manipulations increase, the internal clock cannot maintain pulses (Buhusi & Meck, 2009; Zakay, 2000). The general consensus is that under prospective situations, individuals should underestimate perceived time as information-processing demands, or cognitive load, increases (Block, Hancock & Zakay, 2010).

During a prospective condition, an individual is aware that he will be asked to estimate length of time after a specific task. This is much different than a retrospective paradigm, where individuals are unaware of having to make such a judgment until after a task is completed (Zakay & Block, 2004). There is evidence that prospective judgments are generally longer and more accurate than retrospective judgments (Brown, 1985). Many researchers have concluded that these two paradigms call on different areas of the brain, with prospective timing depending on attentional processes and retrospective timing dependent on working memory (Brown, 1985; Hicks, Miller, Gaes & Bierman, 1977; Zakay & Block, 2004).

The amount of attention people pay to the passage of time directly influences their subjective feeling and ultimately their ability to verbally estimate time intervals. The way in which this model has been tested is supported by studies of concurrent temporal and nontemporal tasks, or the dual-task paradigm. This paradigm requires participants to perform some cognitive, perceptual, or motor task simultaneously with a temporal task (verbal estimation, reproduction, or production). Studies have used different versions of the dual-task paradigm, including the use of card sorting, mental arithmetic, reading tasks and drawing tasks (Brown, 1985; Brown, 1997; Hicks, Miller, Gaes & Bierman, 1977; Hicks, Miller & Kinsbourne, 1976). The assumption of this paradigm is that the more cognitively demanding the second task becomes, the shorter an individual's experience of time will be. An important note to make about this assumption is that during a dual-task prospective situation participants tend to verbally underestimate time judgments, while tending to overestimate reproductions. Both situations produce a shortened perception of time; the only difference is that in reproductions, due to a reduced number of temporal cues, the subject may allow more time to pass before making a judgment (Brown, 1997).

The effect of nontemporal tasks on timing has become a very consistent finding in research and is known as the interference effect (Brown, 1997). Since under prospective conditions participants know they must also account for time, it is likely that the interference comes from an inability to keep track of time. Much of the time, the strategies people use involve some sort of counting or general feeling about time. The interference that is shown could in some way be drawing attention from this strategy (Brown & Merchant, 2007). There has also been research involving an attenuation effect in temporal timing. This theory focuses on counteracting the dual-task interference that occurs by giving skill training before the trial period. Brown (2008) concluded that time-judgment skill training was effective at attenuating the interference effect in timing judgments. This also gives evidence for attention playing a large role in time keeping, as practicing such skills will allow for more resources to attend to time-in-passing. Evidence for interference between timing and a concurrent nontemporal task suggest that there is a limited amount of cognitive "space" and that the harder the nontemporal task becomes, the more inaccurate/shorter the estimation becomes.

The present experiment used a concurrent nontemporal and temporal task under prospective conditions. The purpose was to show that due to the resource allocation model of timing, the more cognitively demanding a task was, the more an individual would underestimate time, relative to a control group. The two tasks chosen were different, one a motor-perceptual task, the other a mental cognitive task, in order to show varying levels of difficulty and dual-task scenarios. Different tasks have shown to have different interference effects on timing. The hypothesis was that for each of the tasks given, as the task became increasingly difficult, the mean verbal estimation of time elapsed would become shorter than for the control group. This hypothesis is consistent with the current literature on time perception in humans.

Method

Participants

Sixty-four (54 female, 12 male) undergraduate psychology students from Marist College participated in this experiment in order to learn about the research process. The participants ranged in age from 19 to 27 years old ($M=20.9$, $SD=1.45$). The participants were told in advance that they would be asked to complete cognitive tasks, including estimating time duration. All participants signed a consent form and were treated according to APA ethical guidelines.

Materials

The stimulus materials consisted of a star -tracing task and a mental arithmetic task. The star-tracing task was a motor-perceptual task and involved a six-pointed star with two levels of borders. One border was thick (3 cm) and one border was thin (.5 cm). Those assigned to the easy (E) group were asked to trace inside the lines of the thick border with their dominant hand while those assigned to the difficult (D) group were asked to trace inside the lines of the thin border with their dominant hand. The mental arithmetic task consisted of subtraction problems. Each page was made up with 7 x 8 problems, 56 in total, with 11 incorrect answers on each sheet. The problems were presented in standard arithmetic format. There were two versions of this task, an easy version and a difficult version. The easy version was created using a single random number ranging from 2 to 10 for the minuend and a single random value of 1 to 9 for the subtrahend. The difficult problems were created using a random two-digit value from 10 to 99 for the minuend and a single random value from 1 to 9 for the subtrahend. This was considered more difficult due to the mental "borrowing" that would have to occur. All numbers were chosen randomly using www.random.org. The participants were asked to mentally compute the problems and mark the wrong answers with a pen using their dominant hand. When the task ended the participants circled the last problem they were working on. The timing of all tasks was done using a stopwatch. The recall sheet asked the participants to estimate time duration for each task, as well as asked their age, sex, and a brief description of how they attempted to keep track of time.

Procedure

The participants were tested individually in a quiet room with no clocks. They were asked to remove any watches or other timing devices before entering the room. Each participant was randomly assigned to one of three conditions, the control group (C), the easy group (E), and the difficult group (D). The control group sat quietly at a desk while looking straight ahead and was asked to only estimate time elapsed. Two timing sessions were given, one at 32 seconds and one at 42 seconds. The easy group was also given two timing sessions; the easy star task was given the 32-second slot while the easy math task was given the 42-second time slot. Finally, the difficult group was tested at the two intervals, given the difficult star task for 32 seconds and the difficult math task for 42 seconds. The sessions were initiated by the experimenter saying, "Start" and ended by the experimenter saying, "Stop". The participants were asked to continue each task (either tracing the star or verifying the math problems) until they heard the experimenter say "Stop". After each trial was completed, the participant was asked to estimate as precisely as possible how much time had elapsed using a verbal temporal estimation. After the two trials the participants were asked to fill out a demographic sheet, which included their age, sex, and a brief explanation as to how they attempted to keep track of time. The experimenter collected the sheets and the participants were thanked for their time.

Results

Two one-way ANOVAS were used to compare the means between the three conditions. The dependent variable was the participant's verbal estimation of time elapsed and the independent variable was the task (control, easy, or difficult). The mean time estimated was calculated for each condition and for each task and compared. The math time judgment effect was significant (F(2,61) = 3.58, p= 0.034), with the judgments shortening with increases in nontemporal tasks. The Tukey HSD post hoc test showed that the mean difference between the control group and the difficult group was significant ($M_{\bar{D}}$ = 12.23, p=0.047). There was a steady decrease in temporal estimation from the control (M=51.1, SD=20.8) to easy condition (M=40.2, SD=14.1) to difficult condition (M=38.9, SD=13.2). Figure 1 shows the effect of the increasing difficulty in cognitive task on time estimation means. The results showed that increases in nontemporal demands led to a decrease in verbal estimations of time in the participants.

The star time judgment effect was not shown to be significant (F(2,61)=0.647, p=0.527). Although the judgments were lower for both the easy (M=39.0, SD=18.5) and difficult (M=43.6, SD=12.5) conditions in relation to the control group (M=44.5, SD=19.3), the effect was not strong.

The verbal estimations were also analyzed as time-judgment ratio scores; found by dividing the actual time elapsed by the verbal estimation. This was done in order to compare the within subject errors for the star task vs. the math task and show directional error. A value of less than one therefore corresponded to an underestimation of time while a value of more than one represented an overestimation of time. The difference between errors made between both the easy condition (t (20)=2.495,p=0.021) and the difficult condition (t (20)=4.342,p=0.000) were significant (easy M=.26, SD=.48, difficult M=.44, SD=.46). For both conditions, participants tended to overestimate the star task (32 second session) while underestimating the math task (42 second session). Table 1 shows the difference in timing errors between the three groups.

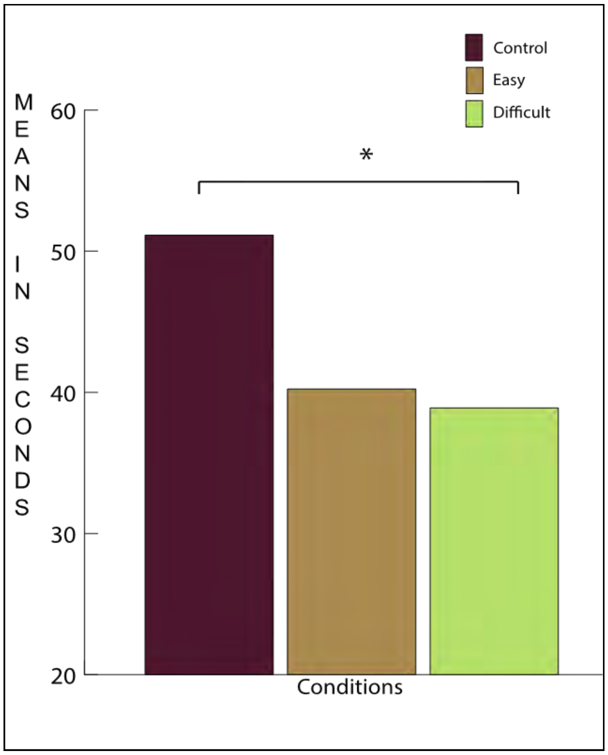
Table 1

Differences in Time Judgment Errors Across Condition

	Condition					
	Control		Easy		Difficult	
	Mean	SD	Mean	SD	Mean	SD
Star Error	1.39	.58	1.22	.39	1.36	.60
Math Error	1.22	.50	.96	.34	.92	.31

Performance on the math tasks was evaluated for total number of problems verified as well as the number of incorrectly verified items, to ensure an increase in cognitive difficultly between the two groups. The mean number of problems verified for the easy condition (M=33.2, SD=11.0) was significantly higher than for the difficult condition (M=16.0, SD=7.1), (t (40)=6.011,p=0.000), indicating a clear difference in the task demand of each condition, with the easy condition allowing for more items verified. This is a rough index of task difficulty as individuals in the easy condition were able to verify more than twice as many problems as individuals in the difficult condition. There was also a difference in the number of wrong verified problems (easy: M=.81, SD=.81 difficult: M=1.6, SD=2.0), although not statistically significant (t (40)=-1.642, p=0.108). One basic gauge of math difficulty is percentage of problems correctly verified; an increase in wrong answers across the easy and difficult conditions would lead to the assumption of an increase in nontemporal demands.

The difference in the border size of the star task, while visibly different, could not be verified as being cognitively different or more difficult as the condition changed from easy to difficult.



Discussion

This experiment was meant to show two different dual-task situations and their effect on prospective time judgments. The results of the experiment show a pattern; with increases in nontemporal demands there was a decrease in verbal estimation of time elapsed. Results were significant for the math verification task, although not so for the star-tracing task, providing important information regarding the nontemporal demands between both tasks. The findings present evidence for a resource allocation model of time perception (Zakay, 2000; Brown, 1997; Casini & Macar, 1997; Chaston & Kingstone, 2004).

The resource allocation model assumes that under prospective timing, participants will tend to underestimate time when asked to do a concurrent non-timing task. It also states that as these tasks become more demanding, the underestimation should increase. These results show that the ability to pay attention to time-in-passing has a major affect on our subjective feeling of time (Chaston & Kingstone, 2004; Macar, Grondin & Casini, 1994). The math task in the current experiment clearly shows this pattern, with verbal estimations consistently getting shorter with increases in cognitive load. Furthermore, the difficult task created more disruption than the easy task, with a bigger underestimation of time, less problems verified, as well as, an increase in errors. These results are consistent with numerous timing studies (Brown, 1985; Brown, 1997; Macar, Grondin & Casini, 1994; Chaston & Kingstone, 2004).

The verbal estimations of both the easy and difficult versions of the motor-perceptual task were shorter than for the control group. These results suggest that the pattern would have continued to significance if the tasks had increased in cognitive load. The participants were all asked after the experiment to briefly describe their method of estimating time. Many people stated that they tried to count, and more so, that during the star task it was much easier to do so. This was stated for both versions of the star task, suggesting that this specific motor-perceptual task was not demanding enough to pull resources from the internal clock. The difference in judgment errors between the two tasks was statistically significant, further implying that certain tasks are not only more cognitively demanding, but may rely more so on the same resources in the brain as timing judgments do.

The evidence for the math task, that each version got increasingly more difficult, shows clear dual-task interference in trying to keep track of temporal cues. The strategies in which people employ to keep track of time are important. Since most people stated that they tried to count seconds passing by or tried to have a general feeling of time-in-passing, the results of this study clearly interfered with this strategy. Engaging in the math verification task took attention away from timing strategies, telling us that attention to time is important to our temporal performance. It cannot, however, be concluded by this study how the pulses are lost, whether due to an attentional switch, gate, or through passive memory decay.

It can be assumed that certain tasks disrupt a person's ability to keep track of time more than others and those tasks will lead to a shortening of perceived time. This indicates that attention to time has a major contribution to our feeling about time, and hence there must be a limited pool of resources for both temporal and nontemporal tasks. This suggestion leads to the assumption that the two tasks share resources in the brain, which is an important conclusion when looking at human's perception of temporal experiences. In fact, this helps us to understand notions such as "Time flies when your having fun" and "A watched pot never boils". When you are having fun, your attention is diverted away from the timer by some other task, which in turns allows you to lose pulses and the result is a subjective shortening of time. When you pay attention to the time passing, such as listening to a boring lecture, or waiting for the water to boil, you are putting all of your resources into timing, counting the pulses, and therefore your subjective feeling of time lengthens.

While this study clearly showed evidence for a resource allocation model of timing, it also had its limitations. Brown (1985) used a similar version of the star-tracing task where the easy version was to trace a star inside two borders with a pencil and the difficult version was to trace around the star using a mirror drawing apparatus. He found that the effects of task difficulty was significant for the 32 second duration, with increasing tasks shortening perceived duration. By turning the difficult star task into a mirror-tracing task, the results could have been significantly different.

The current study tested participants in the prospective situation. Many research articles have studied both prospective and retrospective conditions and compared the results to see how these strategies differ (Brown, 1985; Hicks, Miller & Kinsbourne, 1976; Zakay & Block, 2004). Testing individuals under the retrospective conditions has provided the conclusion that this type of time judgment does not rely on attentional resources, but instead calls upon working memory for the judgments, with estimations being less accurate and typically shorter (Brown, 1985; Zakay & Block, 2004). Finally, knowing that verbal estimations are less reliable than reproductions or productions (Brown, 1997), the current study could have employed these methods of estimating time as well. Many of the previous studies have employed these methods with great success (Brown, 1997; Brown, 2008; Brown & West, 1990; Zakay, 1993). Comparing the way in which people verbally estimate time and reproduce time is important in understanding the way in which we perceive time-in-passing.

The interference that occurred during the math verification task fits into a model highlighting the importance of attention in time perception. A model of resource allocation may allow for a variety of methods and conditions, including but not limited to, prospective vs. retrospective, different cognitive tasks (analogies, math verification, motor-perceptual, etc.), different methods of timing (reproductions, productions, or verbal estimations), as well as different timing sessions (short or long). If temporal tasks do in fact compete for resources with nontemporal tasks, it can be assumed that these things share something in common, particularly where they are processed in the brain.

Author Note

Currently a senior at Marist College studying psychology, I plan on furthering my education in the field of Cognitive Neuroscience after completing my bachelor's degree at Marist. I am interested in many areas of psychology, including dementia, perception, and memory. Specifically, this paper looks to understand how humans perceive time, which is a particular fascination of mine. Beyond school, I am a mother of two daughters and spend my free time with my family and friends.

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The Relationship between Pornography Viewing and Relationship Cheating

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Abstract--Pornography has become commonplace in our society, and is now widely available through the Internet. It is important to determine whether there are any societal implications to the widespread availability of Internet pornographic materials. This study sought to determine: (1) the predominant demographic groups consuming Internet pornography; and (2) whether there is a correlation between pornography consumption and "cheating behaviors" in relationships. This study was composed of a self-reporting nine-question Internet-based survey, which gathered data about pornography consumption, cheating behaviors, and demographics from 92 participants. The terms "pornography" and "cheating" were purposefully left undefined so that each participant could utilize their internal definition and respond according to their own internal predefined norms. While Respondents who "cheated" on their partner were found to be more likely to have consumed pornographic materials in the past, it was not apparent that the converse was true—the consumption of pornography did not yield an increased likelihood of cheating behaviors.

The term "pornography" evokes an exceedingly varied set of emotions among individuals, and is defined in an equally diverse fashion. To some, pornography is a harmless outlet; to others, it is the epitome of declining social mores. The widespread availability and increasing reliance on the Internet has made pornographic materials easily accessible to many. A 2010 report by Raine stated that 74.0% of American adults use the Internet. Additionally, pornographic material is exceedingly easy to access via video stores or the Internet. Patterson (2004) found that, "In 2001, there were more than 70,000 existing pornography sites, accounting for more than 11.0% of all e-commerce..."

While both Internet usage and the availability of pornographic material is increasing, the two are not immediately dependent on each other. However, the hypothesized conclusion is that quite a large number of Americans view pornography, either through video stores, or on the Internet. In 2005, Featherstone linked the statistics of Internet availability with the access of pornographic material, reporting that 66.0% of men who use the Internet, and are aged 18-34 years old, view pornography at least once per month (2005, p.84).

One question that certainly has warranted study is the demographics of pornography consumption, as well as the effect pornographic consumption has on intimate relationships. There have been several studies on the role of pornography in sexual violence and the effect that it has on our attitudes; however, attention to the effects on consensual intimate relationships and whether an increased incidence of "cheating" occurs as a result of pornographic consumption has been lagging. This research attempts to answer two questions: (1) what is the demographic spectrum of pornography consumption; and (2) whether pornography consumption leads to an increased incidence of "cheating" within intimate relationships.

My hypothesis was that pornography consumption will have a significant positive correlation on the incidence of infidelity within an intimate relationship. I believe that research will show that viewing pornography does not mean that individual will cheat on their partner. However, I also believe that the research will show that among those individuals that do cheat, there will be a higher rate of pornography viewing. Manning's examination of research found that study participants that used the Internet and had an extramarital affair had rate of Internet pornography viewing that were over 3 times higher than those who used the Internet and did not have affairs. While this study is different, I think we will still see a similar correlation.

Method

Participants

Data were collected from 92 participants. The sample consisted of adults sourced through social media. The survey required all participants to be a minimum age of 18 years old and currently in a relationship. Out of the 92 respondents, 7 surveys were unqualified based on age, relationship status, or a failure to complete all sections of the survey. The remaining 85 responses were counted as qualified and used as the basis for all statistics. The majority of the participants were between the ages of 25-40 years old. This subset represented 74.1% of the total qualified responses. Age groups 18-24 years old and 40-65 years old each represented11.8% of qualified respondents. Those qualified responses proffered by individuals in the 65 years and older category represented 2.4% of the total. Female participants made up 69.0% of the sample and males made up the remaining 31.0%. No participants responded as transgendered. Participants also identified their religion._Out of all qualified participants, 65.9% identified themselves as Non-Catholic Christian. There were 21.2% of respondents who identified as Non-Religious (i.e. atheist, agnostic, etc.). Of the remaining responses: 3.5% were Catholic; 2.4% were Jewish; 2.4% were Pagan; 1.2% were Buddhist; 1.2% were Muslim; 1.2% were Spiritual; and 1.2% were Unitarian-Universalists. White, non-Hispanic participants made up 94.1% of the survey. Two out of 85 or 2.4% identified themselves as Black. Asian/Pacific Islanders, Hispanic and Mixed (unknown) respondents each made up 1.2% of the sample population._Participants were also asked to identify their marital status. This question did not intend to identify relationship status as all qualified participants were in a current relationship. This question solely looked at marriage as defined by law. Over half were "married, and currently in their first marriage" representing 52.9% of qualified participants. Over a quarter of respondents, or 28.2% indicated they had "never been married." Those that were married in their second or subsequent marriage represented 10.6% of the sample. "Separated" participants and "divorced" participants made up 3.5% and 4.7% of the sample population, respectively.

Materials

A 9 -question survey was used. The questions gathered qualifying information as well as demographic information. No identifying information was collected about participants. For this survey "pornography" was intentionally left undefined. Pornography can be defined in many ways; however, this survey utilized the respondents' intrapersonal definition of pornography rather than an objective "book" definition. This was a self-reporting inventory, and as such, it was imperative that each person decided for his or her self whether or not anything they viewed would be classified as pornography.

The term "cheating" was also intentionally left undefined. Melby (2010) said that, "internet infidelity can take lots of different forms: Secret texting, illicit emails, intimate instant messages, frank discussion of sexual subject matter, viewing of pornographic websites without the partners knowledge or using other high-tech devices such as video chatting and Facebook" (p. 1). Taking Melby into consideration, it was believed that the most important definition on a self-reporting inventory was whether or not the individual taking the survey felt like he or she had cheated.

The survey provided options for "cheating by physical interaction" as well as "cheating by the thought of cheating," or "lust for someone besides one's own partner." Six out of 17 participants, 28%, indicated that they had thought about having interaction with someone other than their partner. Those 6 respondents were classified as "cheating" as they identified as one who had cheated. Again, it was important that the participants defined for themselves whether they had cheated on their partner.

Procedure

The surveys were distributed via an E-mail link. This link directed participants to an online survey where they were able to select one answer for each question. Questions 1, 2, 8, and 9 were required questions. Question 1 eliminated anyone who was not in a current relationship. Question 2 required all participants to be 18 years old or over. Questions 8 and 9 were qualifying questions to gauge correlation between pornography and relationships. Question 8, "Do you view pornography," had five choices for options that included: never, less than once a month, a couple of times a month, weekly, daily. Any answer that did not include "never" was counted as a positive for pornography viewing. On question number 9, "In this present relationship have you ever cheated on your partner?," participants were allowed to select one or more answer. The choices given were, "Never," "Yes, I am in love with another person, " "I have thought, but not acted on, having intimate relations with a person that is not my partner," and "I have had physical interaction with someone besides my partner." Any answer other than "never" was counted as a positive for cheating. Because there are so many definitions of cheating it was important that each respondent answer according to his/her own internal definition. While thinking about having relations might not be considered cheating by one individual another individual, having had that behavior, might define that as having had cheated. IT was important for this survey that each respondent be allowed to answer based on his/her own internal definition of his/her own behavior. A 'no" response on question 1 and blank answers on questions 2, 8, or 9 disqualified that survey .

Recipients of the E-mail link were asked to forward the survey to any qualified contacts they knew of. The survey was also posted to Facebook, and was distributed via status updates, an online event, and requests to re-post the survey to other individuals' Facebook walls. The survey link was also posted on community Facebook pages.

Results

One of the first sets of results analyzed was the data for determining the demographics of pornography consumption. To evaluate this set of data all responses were separated into responses that indicated pornography consumption and those that did not. A frequency distribution table was used to tally those responses and then percentages of the sample were calculated. The 18-24 year old age group had the highest percentage of pornography consumers at 70.0%. The next highest were the 25-40 year old age group with 58.7% of respondents consuming pornography. The 40-65 year old age group had 30.0% of respondents that viewed pornography. The 65 year old and over age group had 0.0% that viewed pornography. The conclusion of this data is that pornography consumption decreases with age. The gender proportions were as expected. A higher percentage of males (76.9%) view pornography than females (50.8%).

The survey revealed that among those respondents that had never been married, 83.3% viewed pornography. Among those that were married in their first marriage, 42.2% viewed pornography. Out of those that were married, in their second marriage or beyond, 55.6% viewed pornography. Out of the divorced respondents, 75% viewed pornography.

Sample Composition (1.1)	
Age	**Total Participants (n)**
18-24	10
25-40	63
40-65	10
65+	2
Gender	
Female	59
Male	26
Ethnicity	
White, Non-Hispanic	80
Hispanic	1
Black	2
Mixed-Unknown	1
Asian/Pacific Islander	1
Religion	
Christian, Non-Catholic	50
Catholic	3
Non-Religious	18
Pagan	2
Unitarian-Universalist	1
Jewish	2
Buddhist	1
Muslim	1
Spiritual	1
Sexual Orientation	
Completely Heterosexual	76
Mostly Heterosexual	4
Bi-sexual	2
Completely Homosexual	4
Marital Status	
Never Married	24
Married, 1st Marriage	45
Married, 2nd+	9
Separated	3
Divorced	4

The surveys also revealed demographic information about those that indicated they had cheated on their partner in the current relationship they are in. The term "cheating" was left undefined. Options were given to identify as one who had cheated emotionally (i.e. being in love with another person, lusting, or having thoughts about engaging in intimate relations with another person), or in action (i.e. having physical interaction with someone besides one's partner).

There was no clear of age and cheating in a relationship. The highest group that reported positive responses for cheating behaviors was the 25-40 years old range at 20.1%. The 18-24 years old and 40-65 years old ranges both report cheating in 20.0% of respondents. The 65 years old and over age group had 0.0% that reported cheating. Women reported cheating more than men. The data revealed 22.0% of women reported cheating on their significant other whole only 15.4% of men reported the same. Cheating behavior was reported in 38.8% of Non-Religious individuals, and 20.0% of Non-Catholic Christians. Single, never married respondents, and first marriage respondents reported a 17.8% incidence of cheating behaviors. Respondents in their second marriage reported an 11.1% incidence of cheating behaviors. Divorced respondents and separated respondents had the highest incidences of cheating behaviors, at 25.0% and 66.7% respectively.

Once all demographic data were analyzed, questions 8 and 9 were compared to see if there was any relationship between viewing pornography and cheating on one's partner. Out of all respondents, 50 said that they viewed pornography. Out of those 50, 28% said they had cheated and 72% that had not cheated. Out of the total results 20% of respondents had positive response for cheating. Out of those that reported positive responses for cheating 65% indicated that they had engaged in physical interaction with someone other than their partner and 35% indicated that they had cheated emotionally.

There were 17 respondents that indicated that they had cheated on their partner. Out of

	Pornography Viewing N in Group that answered in the affirmative / Percentage of subset	Cheating Behaviors N in Group that answered in the affirmative / Percentage of subset
Age		
18-24	7/70%	2/20%
25-40	37/58.7%	13/20.1%
40-65	3/30%	2/20%
65+	0/0%	0/0%
Gender		
Female	30/50.8%	13/22%
Male	20/76.9%	4/15.4%
Ethnicity		
White, Non-Hispanic	48/60%	15/18.8%
Hispanic	1/100%	0/0%
Black	2/100%	2/100%
Mixed-Unknown	0/0%	0/0%
Asian/Pacific Islander	0/0%	0/0%
Religion		
Christian, Non-Catholic	27/54%	10/20%
Catholic	3/100%	0/0%
Non-Religious	14/77.8%	7/38.8%
Pagan	2/100%	0/0%
Unitarian-Universalist	1/100%	0/0%
Jewish	2/100%	0/0%
Buddhist	1/100%	0/0%
Muslim	0/0%	0/0%
Spiritual	0/0%	0/0%
Sexual Orientation		
Completely Heterosexual	42/55.3%	16/21.1%
Mostly Heterosexual	2/50%	0/0%
Bi-sexual	2/100%	1/50%
Completely Homosexual	4/100%	0/0%
Marital Status		
Never Married	20/55.3%	5/17.8%
Married, 1st Marriage	19/42.2%	8/17.8%
Married, 2nd+	5/55.6%	1/11.1%
Separated	3/100%	2/66.7%
Divorced	3/75%	1/25%

those only, 17.6% indicated that they never viewed porn. The remaining 82.4% indicated that they had viewed pornography.

All data were analyzed to examine a possible correlation between positive response for cheating and positive response for pornography viewing. Data was calculated manually and then re-calculated via IBM SPSS Statistics Version 21 for Macintosh. The results showed a significant correlation ($r=0.28818$). Responses that were positive for pornography viewing were also examined to see the difference in results of physical cheating and emotional cheating. Pornography and physical cheating resulted in a correlation of $r= -.47863$. Pornography and emotional cheating resulted in a correlation of $r=.09555$.

Discussion

Baltazar, Helm, McBride, Hopkins, and Stevens (2010) found that religiosity contributed to risk factors for viewing pornography . They reported that secular individuals were more likely to view pornography that those with a religious affiliation. This study confirms those results. In this study 59% of all identified religious individuals viewed pornography compared to a higher percentage of 77.8% of non-religious individuals. While more than half of pornography viewers had religious affiliation, only 20.0% reported cheating on their partners. That is significantly less than the non-religious respondents. Non-religious respondents had a cheating incidence of 38.8%. Thus, while religiously affiliated people are more likely to view pornography, they are also less likely to cheat than their non-religious persons counterparts. They also found that men view pornography more than women do (p 33). This confirms a similar 2005 finding by Featherstone that men view pornography more than women (p. 85). Likewise, a 2009 survey by Twohig, Crosby, & Cox also found that more men view pornography, specifically, this study reported that 13% of the United States population viewed pornography regularly. Of that 13% that viewed pornography, 75% were men (p.523). The results of the this study are in line with that line of research as I found that more men viewed pornography (76.9%) than women (50.8%).

Pornography consumption declined consistently by age. Participants aged 18-24 years old reported a 70% incidence of pornography consumption. Pornography consumption was less in the 25-40 year old age group (58.7%). Pornography consumption was still further reduced in the 40-65 year old age group (30.0%). Those aged 65 years and over reported no pornography consumption. This data suggests a conclusion that pornography consumption decreases with increasing age .

This research provided some interesting demographic conclusions that are worth continued study. While 76.9% of men reported viewing pornography only 15.4% reported cheating on their partner. On the other hand, while fewer women reported viewing pornography than men (50.8%), a proportionally larger sample of women reported cheating on their partners (22%).

The data on cheating by ethnicity also warrants more review for reliability. Because a large proportion of the respondents were White, Non-Hispanic, the data regarding other ethnic groups did not produce a large enough sample to be conclusive.

Sexual orientation had strong correlation with cheating or lack thereof. Completely heterosexual respondents reported cheating in 21.1% of the cases. Completely homosexual respondents reported cheating in 0% of the cases. This is an interesting correlation because 100% of the completely homosexual respondents reported viewing pornography. This correlation also warrants deeper examination into the conclusion that the presence of pornography consumption does not necessarily translate into the presence of cheating behaviors.

The goal of this study was to analyze where there was a relationship between cheating and viewing pornography. Out of 85 qualified participants, 50 said that they viewed pornography. Out of those 50 who consumed pornography, only 28% indicated they had cheated on their significant other, while the remaining 72% reported they had not cheated. The results confirmed that there is a significant correlation between the two variables.

Author Note

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Appendix A

Survey Instructions: Please answer each question by selecting one option on each question for questions number 1-8. On question number 9 please select all answers that apply. If you answer “yes” to question number one please continue the survey. If your answer to question number 2 is “no” please discontinue the survey.

1. Are you currently in a romantic relationship?

   Yes
   No. If not, thank you for your participation but this survey examines participants in relationships only. I hope you will participate in future research. Please exit survey now.

2. Please indicate our age range.
   Under 18
   18-24
   25-40
   40-65
   Over 65

3. Please indicate your religion.
   Non-religious (atheist, agnostic, etc.)
   Christian, Non-Catholic
   Catholic
   Buddhist
   Jewish
   Muslim
   Hindu
   Other (please specify)

4. What is your gender?
   Male
   Female
   Transgender

5. Please indicate your ethnicity. For unknown or mixed ethnicity, please indicate the group that you feel most connected to.
   White, Non-Hispanic
   Hispanic
   Native American
   Black
   Middle Eastern
   Asian / Pacific Islander
   Indian Subcontinent
   Other (please specify)

6. What is your marital status?
   Single, never married
   Married, only marriage
   Married, second marriage or beyond
   Separated
   Divorced

7. Please indicate your sexual orientation.
   Completely heterosexual
   Mostly heterosexual
   Bi-Sexual
   Mostly Homosexual
   Completely Homosexual

8. Do you view pornography?
   Never
   Less than once a month
   A couple of times a month
   Weekly
   Daily

9. In this present relationship have you ever cheated on your partner? Indicate one or more selections.
   Never
   Yes, I am in love with another.
   I have thought, but not acted on, having intimate relations with a person that is not my partner.
   I have had physical interaction with someone besides my partner.

Effects of Single Session Mindfulness Meditation on Mood

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Abstract--Studies using three and four day sessions of mindfulness meditation have found significant improvements on cognition and mood measures. The current study examines the immediate effects of a single session of mindfulness. Effects of mood were specifically examined using measures of anxiety, depression, and a multiple mood measure. Ninety two participants from a large Southeastern university were randomized into three conditions: mindfulness meditation (MM), sham meditation and a control. MM scores were compared to both sham and control scores for all measures. One session of MM showed significant effects on mood measures and state mindfulness. One session sham was also significant in increasing state mindfulness and some specific mood measures. There were no significant effects on anxiety or depression scales. These results suggest that a single session mindfulness intervention may be adequate in elevating immediate mood. Implications of this study and suggestions for future research are also further discussed.

In recent years, much research has been conducted to fully understand the implications and limitations of mindfulness meditation (MM). Although there are several definitions of mindfulness, Kabat-Zinn (1994) is probably the most well known stating "Mindfulness means paying attention in a particular way: on purpose, in the present moment and nonjudgmentally". Mindfulness meditation is a training which focuses on increasing levels of mindfulness through practice. Studies have shown positive effects on attention, memory, mood and overall well-being. In previous studies brief mindfulness exercises taking place over three to five days for 20 to 30 minutes a day have found positive effects on mood variables. For example, in Zeidan, Johnson, Gordon and Goolkasian (2010), the MM intervention took place over three sequential days and participants were tested at baseline and on day three after the third session. Because the participants were tested immediately following the MM on day three, the positive effects may be due to a session effect. Did participants see benefits in mood due to the three day design, or can similar results be found after just one session? The current study examined effects of a single session MM intervention on participants' mood compared to a control group and a sham meditation group. The sham meditation was included to examine subject-expectancy effects. Do participants experience the same effects from sham as they would from MM simply because they expect meditation to improve their mood? Mood will be examined with the use of self-report measures. It was hypothesized that students in the mindfulness meditation group will show positive improvements on mood scales in comparison to the other two groups.

Literature Review

Brief mindfulness meditation encompassing several days has been shown to have positive effects on attention, cognition, and mood in various studies. A three-day study tested the effects of mindfulness meditation versus a sham meditation and a control. MM was shown to be more effective at reducing tension, depression, fatigue, confusion and total distress as measured by *Profile of Mood States* (POMS). Cardiovascular variables were were also examined pre and post intervention by recording heart rate, systolic blood pressure (BP) and diastolic BP. Heart rate showed a significant decrease for all three conditions, but MM showed the strongest effect size in assessing before/after difference. Both systolic and diastolic blood pressure significantly reduced for all three groups. Systolic BP showed the greatest decrease for MM while SM showed the greatest decrease in diastolic BP. Anxiety was measured pre and post intervention using the *State-Trait Anxiety Inventory* (SAI) and significant reductions were shown for both MM and Sham conditions (Zeidan et al., 2010). In a four session study using a community sample from the Haifa University community, Tanay, Lotan and Bernstein (2012) compared the effects of a mindfulness intervention to no intervention on mood and anxiety vulnerability. The intervention conducted was a 60 minutes mindfulness training session administered four times over the course of 21 days. Emotions and mood were measured using self reports administered after weekly interventions as well as pre-intervention and post-intervention assessments. Finally, participants were asked to complete the battery of self-reports again within 48 hours of the final session. Subjects in the intervention group showed lower mood and anxiety vulnerability as measured by the *Positive and Negative Affect Schedule* (PANAS), Anxiety Sensitivity Index (ASI) and *Dysfunctional Attitudes Scale-Revised* (DAS-R) (Tanay et al., 2012).

A five day study with Chinese undergraduates examined the effects of MM training on attention and self-regulation. Mood was examined using the POMS scale. Participants were randomized into either a control group participating in relaxation training or an experimental group participating in integrative body-mind training (IBMT). Intervention was given over five days for 20 minutes a day. Attention tests and self-reports were give one week before the intervention and immediately following the final session. POMS results indicated that participants in the experimental group showed a significant decrease in anxiety, depression, anger and fatigue while showing a significant increase in vigor (Tang et al., 2007).

Lane, Seskevich and Pieper (2007) used a four session meditation program as the intervention in a study assessing effects on anxiety and negative mood. The exercise included a 15-20 minutes mantra repetition taught in the first session and participants were instructed to repeat the practice twice daily in between sessions. Intervention occurred over two weeks with four one-hour meetings on a Monday/Wednesday or Tuesday/Thursday schedule. Anxiety and mood were measured using self reports; POMS, SAI, *Perceived Stress* Scale (PSS), and *Brief Symptom Inventory* (BSI). Self reports were administered at a baseline meeting and then again at follow up visits scheduled four, eight and twelve weeks after the first intervention. Positive moods and lower anxiety levels were significant on all four measures after the baseline reports. Frequency of practice was also examined, with more frequent practice associated with better outcome (Lane et al., 2007).

Single Session Studies

Several studies have examined the effects of a single session of MM. Single session studies conducted have shown improvements on attention, mood and measures of mindfulness. Frewen, Lundberg, MacKinley and Wrath (2011) measured the immediate response to mindfulness meditation exercises of 10 and 15 minutes in undergraduate non-meditators. They asked participants to report their “meditation breath attention scores” (MBAS) by querying them at intervals during the exercise as to whether their attention was directed towards their breathing or whether their mind had wandered. The purpose of the studies was to explore the psychometrics of the MBAS. Surprisingly, the MBAS was not correlated with decentering on the state Toronto Mindfulness Scale (TMS) in either 10 or 15 minute sessions of mindful breathing. The 15 minute mindfulness breathing (MB) exercise found that MBAS was associated with the degree of self-reported mind wandering and the Five Facet Mindfulness Questionnaire (FFMQ) scale of "Acting with Awareness" in the expected direction. Measures of state mindfulness (MBAS, state TMS) were unrelated to depressive cognition *(measured* by Automatic Thoughts Questionnaire-Negative—Letting Go Version), while FFMQ scales of "Nonjudging, Nonreactivity" and "Acting with Awareness" were negatively related to depressive cognition (Frewen et al., 2011).

Thompson and Waltz (2007) used a 15-minute meditation intervention to examine differences between state mindfulness, measured by TMS scores, "everyday mindfulness" measured by the "Mindful Attention Awareness Scale" (MAAS) and "Cognitive and Affective Mindfulness Scale-Revised" (CAMS-R) Scores. Additionally, they investigated the effects of the meditation intervention on mood using the PANAS. Mood was examined pre- and post- intervention and significant results were found with positive affect increasing and negative affect decreasing after the meditation (Thompson & Waltz, 2007).

Feldman, Greeson and Senville (2010) compared single session 15-minute interventions of Mindfulness Breathing (MB) to interventions of Progressive Muscle Relaxation(PMR) and Loving Kindness Meditation (LKM). PANAS negative affect dropped significantly post-intervention for all three conditions, but a significant difference was not found between MB and the two comparison groups. However, the association between frequency of repetitive thought and negative reactions to thoughts was relatively weaker in the MB condition than in the PMR and LKM conditions, in which these two variables were strongly and positively correlated (Feldman et al., 2010). This indicates that various modalities of meditation and relaxation are effective in reducing negative affect, but mindfulness exercises are the most effective for decentering.

Erisman and Roemer (2010) measured effects of brief (10-minute) mindfulness intervention on positive and negative affective experiences caused by emotionally evocative film excerpts. Participants were randomized into either a MM exercise group or a control group which listened to neutral educational information. The three film excerpts were each aimed to evoke a different emotion; distress, amusement, and one that was affectively mixed. Emotions were measured before, in between and after the films using self-reports. Participants in the MM group showed higher positive affect in response to the amusing film, and lower negative affect to the mixed film compared to the control group. Emotional response to the distressing film was unrelated to the type of intervention given (Erisman & Roemer, 2010).

In all of the reviewed literature participants were tested on mood measures immediately following the intervention. While much research has been conducted regarding MM and its effects on mood, affect and cognition, few studies have used a single session design. This is especially true in regards to effects on mood. Mood could have improved as a result of session effects, due to them coming into the lab over the course of several days. In the current study participants were administered self report measures immediately following the intervention. Standardized scales of anxiety and depression were used along with mood measures that were shown to be sensitive with a three day MM intervention (Zeidan, Johnson, Gordon, et al., 2010). State mindfulness, repetitive thoughts and decentering were also measured. Lastly a manipulation check was used to assess the participant's perception of the sham exercise.

Methods

Participants

Ninety two students from a large Southeastern university participated in exchange for two research credits. The participants were recruited via the University subject pool and were asked to be native English speakers without any prior meditation experience. The protocol was approved by the University Institutional Review Board. Sixty five percent of participants were female, and the mean age of the participants was 23.4 $\pm$ 8.2 years (range 18 – 57). In ethnic composition, 56.5% of the participants self-identified as White, 25% as African-American, 8.7% as Hispanic, 6.5% as Asian, and 3.3% as biracial, Native American, or Other.

Self Report Measures

1. Center for Epidemiological Studies of Depression Scale (CES-D), a self-report scale which measures current depressive symptomatology based on the frequency that participants have experienced thoughts and feelings reflected in the items during the past week. Consists of 20 items to be rated on a four point scale (0 = rarely or none of the time and 3 = most, or all of the time). Sample items include "I felt sad," and "I felt lonely." (Radloff, 1977).

2. State-Trait Anxiety Inventory (STAI), Form Y (state version), measures feelings and anxiety at the current moment. Comprised of 20 statements to be rated on a four -point scale (1=almost never, 4=almost always). Sample items are: "I lack self confidence," "I feel nervous and restless," and "I am 'calm, cool, and collected. (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983).

3. Repetitive Thoughts Questionnaire, a two factor structure, the first assessing frequency of repetitive thoughts (e.g., thoughts about one or more problems in your life, a mental to-do list, criticisms of yourself) scored from 0 (never) to 4 (almost constantly). The second factor consists of three items assessing negative reactions to thoughts (e.g., to what degree were you upset, annoyed, or distracted by thoughts) scored from 0 (slightly or not at all) to 4 (extremely). (Feldman et al., 2010).

4. Toronto Mindfulness Scale, state version (TMS: Lau et al., 2006) has 13 items and a two-factor structure (curiosity, decentering) that has been validated in a number clinical contexts (Davis et al., 2009) The items of Factor 1 (curiosity) reflect an attitude of wanting to learn more about one's experience (e.G., "I was curious about each of the thoughts and feelings I was having"). The items in Factor 2 (decentering) reflect a shift from identifying personally with thoughts and feelings to relating to one's feelings in a wider field of awareness (e.g., "I was aware of my thoughts and feelings without over-identifying with them"). Items are scored from 0 (not at all) to 4 (very much). Highter scores indicate higher levels of minfulness in response to the exercise. (Lau et all., 2006).

5. POMS (Profile of Mood States) – POMS provides a Total Mood Disturbance score and six subscales of mood (i.e., anxiety, depression, anger, confusion, vigor and fatigue). Consists of 65 items to be scored on a five point scale (1= not at all; 5 = extremely). (Mcnair, Lorr & Droppelman, 1971).

6. Manipulation Check- Participants in the MM and sham groups will be tested for expectancy results after completing all self reports. They will be asked to answer, on a scale of 1 (not at all) to 10 (very much so), "During the CD listening exercise, did you feel that you were truly meditating?"

Description of MM

The CD recording starts with naming the exercise "Mindfulness Meditation Training" and proceeds to a two minute introduction and explanation of MM. For example, participants were told that the intervention was secular and based on teaching the cognitive skill of mindfulness practice. They were also told that their goal is to balance a relaxed state of mind with a highly attentive one and to raise moment to moment awareness of their thoughts without judgment. Participants are then given specific instructions on how to position themselves followed by breathing and relaxation instructions. First, participants are asked to draw their attention to their breathing and the sensation of the breath at the tip of their nose. They are instructed that if the mind wanders, this is to be expected. They are told to acknowledge the distractor for what it is, label it, and then let it go by gently bringing the attention back to the breath. Participants are also reminded several times to not judge themselves or get frustrated and to try not to respond emotionally to their thoughts. After more silence, participants are prompted to focus their attention on the full breath. Participants were instructed to non-judgmentally focus on the complete flow of the breath, starting with the sensations in the nostrils and following the breath to the stomach, noticing the rise and fall of the abdomen with each inhale and exhale, and to mentally note the different sensations of each breath. Several times throughout the exercise participants are reminded that it is okay to get distracted, to not judge the distracting thoughts, and to simply draw attention back to the breath. Before the final silence, participants are reminded our sensory events are momentary and thus do not deserve long lasting attention. A final long silence proceeds and the gong rings at roughly 25 minutes, signaling the end of the exercise. Participants are told to stay relaxed, open their eyes, and are thanked for their participation.

Description of Sham

The CD recording starts with naming the exercise "Mindfulness Meditation Training" and proceeds to the same two minute introduction to MM. Participants receive similar sitting and posture instructions as the MM group, but begin the exercise with deep breaths in and out of the nose. Participants are instructed to follow the simple instructions of taking deep breaths and sitting in silence and stillness, (e.g., "All you really need to do is take a couple of deep breaths and then just sit in stillness, and that's essentially the practice"). Additionally, the facilitator would repeatedly tell the participants that they were practicing meditation, for instance, the facilitator would state," take a deep breath as we sit here in meditation." Participants are also prompted to control feelings of frustration, hunger, or any other distracters by simply taking deep breaths and relaxing. The sham CD also includes a prompt of how MM can teach emotional regulation and control, but this is briefer than the explanation on the experimental MM CD. Throughout the silence participants are often reminded to take deep breaths and relax and are once instructed to not fall asleep or get too relaxed. They are told to balance attention and relaxation. After 25 minutes the gong rings signaling the end of the exercise and participants are thanked for their participation.

The main difference between the MM and the Sham M was in a greater level of detail on the MM CD on postural vigilance, how to breathe, and the greater emphasis on acceptance of thoughts on the MM CD. The Sham group was not given the guided instruction of focusing on the flow of the breath imperative for concentrative meditation. There were long periods of silence in both CDs.

Procedure

Participants were scheduled for lab sessions by themselves or in groups of two or three. Meetings were scheduled during the week in the morning or afternoon. Participants were randomized into groups using a random number generator and randomization occurred immediately before participants arrived. Participants received the informed consent and then, sitting in a circle with a research assistant, listened to 25 minutes of either an MM exercise CD, the Sham M CD, or *The Hobbit* on CD. After the exercise participants were given the battery of self report measures. Participants stayed in the lab for approximately 90 minutes per session. Randomization placed 41 participants in the MM group, 25 in the Sham M group, and 26 in the book listening group. There were no differences between the groups in age, gender, or ethnic composition.

Analysis

All statistical analyses were computed using SPSS version 19.0. Overall Multivariate Analysis of Variance (MANOVA) analyses with post hoc comparisons were performed for the POMS. If the overall MANOVA was significant, Tukey HSD post hoc comparisons were conducted to examine differences within groups. Separate Univariate ANOVAs were conducted for the Mindfulness, SAI, CESD, Repetitive Thought, and the Manipulation Check.

Results

Ninety-two students participated in the study, 53 of whom were female. Mean age for all participants was 23.4$\pm$8.2 with a range of 18-57. Fifty-six and a half percent of participants self identified as White, 25% as African American, 8.7% as Hispanic, 6.0% as Asian and 3.3% as other. There were no significant differences between groups on age ($F(2,89)=.63$, $p=.53$), gender (X^2 (2)=.26, $p=.87$) or ethnicity (X^2 (2)=1.07, $p=.58$). See Table 1.

The overall MANOVA for all of the POMS subscales was significant F (2, 88) 1.8, p = 0.05. Post hoc analysis using Tukey HSD found significant differences from controls on the Tension, Anger, Fatigue, Confusion and Total scores (see Table 2). Specifically, on the Tension, Confusion and total POMS distress score both MM and Sham M groups scored significantly lower than the Control group. On the Anger and Fatigue subscales, the Sham group scored significantly lower than Controls. On the fatigue subscale, the MM group scored significantly lower than controls.

There was a significant difference among

Table 1
Descriptive Statistics for Demographics of Participants

	Age	Gender		Ethnicity	
	M (SD)	Male	Female	White	Non-white
MM	23.9 (7.9)	15	19	24	17
Sham	21.8 (6.0)	9	16	12	13
Control	23.4 (8.2)	8	18	16	10

Table 2
Descriptive Statistics for POMS subscales

	MM *M (SD)*	Sham *M (SD)*	Control *M (SD)*	*p*
Tension	12.9 (5.4)	12.7 (3.9)	16.9 (6.9)**	.01
Depression	20.9 (7.3)	18.0 (2.4)	22.7 (11.5)	.11
Anger	14.4 (5.3)	12.8 (1.7)	17.3 (9.6)[a]	.05
Vigor	19.6 (6.4)	18.2 (6.6)	18.7 (6.2)	.68
Fatigue	12.7 (5.8)	11.3 (3.6)	15.8 (6.8)[b]	.02
Confusion	13.1 (3.9)	12.7 (3.6)	16.0 (5.5)**	.01
Total Distress	54.5 (28.8)	48.8 (13.8)	69.8 (39.5)*	.03

Note. * * Post hoc significantly different from MM and Sham *p*=.01
* Significantly different from MM and sham *p* =.05
[a] Significantly different from Sham *p* =. 01
[b] Significantly different from MM *p* =. 01

the three groups on the TMS scales F (2,88) = 3.04, p =0.019. Post hoc analysis using Tukey HSD showed that both the MM group (p = 0.008) and the Sham M group (p=0.02) were significantly higher on TMS Curiosity compared to the Control group. Only the MM group was significantly higher on TMS Decentering compared to the Control group (p = 0.02). There were no significant differences between groups on SAI, CESD, Repetitive Thought Frequency or Repetitive Thought- Negative Reactions. Descriptive statistics for these self report scales are presented in Table 3.

An ANOVA analysis found no significant difference on the manipulation check F (1,62)= 1.09, p= 0.30. The MM groups scored an average of 6.4 ± 1.6 while the Sham scored an average of 5.8 ± 2.5. This suggests that the sham was not perceived as significantly different from the actual MM.

Table 3
Descriptive Statistics for Self Report Measures

	MM *M (SD)*	Sham *M (SD)*	Control *M (SD)*	F	*p*
SAI	32.9 (11.3)	32.1 (8.1)	38.3 (12.9)	2.3	.10
Repetitive thought frequency	7.9 (4.7)	6.9 (3.7)	7.3 (5.2)	.41	.66
Repetitive thought negative affect	3.6 (2.5)	3.2 (2.2)	3.9 (3.2)	.51	.60
TMS-decentering	14.4 (5.4)	14.1 (5.5)	10.8 (5.0)*	4.1	.019
TMS-curiosity	13.5 (6.7)	13.4 (5.2)	8.8 (5.3)**	5.4	.006

Note. Tukey's post hoc comparisons, * significantly different from MM, p <.05;
** significantly different and MM and Sham M, p <.001

Conclusion

Participants perceived SM as similar to the MM, rendering it useful in measuring the true effects of MM. One session of both the MM and the SM was effective in heightening state mindfulness as compared to the control. The total distress score for POMS was significantly lower for both MM and SM groups as well as a few specific subscales of mood. There was no significant difference between the groups on depression, anxiety, or repetitive thoughts. One session of MM may be efficacious in reducing total distress in the current moment, but not enough to affect anxiety or long term depression.

Discussion

The results of the current study suggest that single session of mindfulness intervention may have some potential benefits for enhancing immediate mood. Significant differences between the M groups and the controls were found for most POMS measures including the total distress. Participants in both the MM and SM group showed reduced tension, anger, fatigue and confusion. Participants in the SM condition reported lower fatigue as compared to controls. This may be due to more specific guided instructions in the MM intervention as opposed to the SM. Participants had to pay more attention to the CD, and in turn their thoughts and feelings, perhaps resulting in a less sleepy relaxed state. For most of the significant subscales participants in MM and SM showed similar scores. For example, tension MM scores were 12.9 (SD 5.4) while SM reported 12.7 (SD 3.9). This may be due to the instructions on both CDs focusing on mindful breathing and relaxation. Interestingly, for the measure of anger SM participants scored lower on average (12.8±1.7) than MM (14.4±5.3). It would be interesting to examine the possible causes of this, as this result is surprising due to more specific decentering and nonattachment instructions during MM.

Zeidan et al. (2010) also used POMS as a mood measure in the three day intervention design. MM was significantly more effective in reducing total distress, $p<0.01$, tension, $p=0.05$, depression, $p=0.02$, fatigue, $p<0.01$, confusion, $p<0.01$. This would suggest that extended practice is required to show extensive effects on depression. The current study tried to further examine clinical depression by adding the CESD measure. Additionally, the three day design yielded significant differences between MM and SM on subscale measures, also suggesting the increased effects of multiple days of practice on differentiating sham from true MM.

In the current study, depression was measured using the CES-D, which asks participants questions based on the past week. No significance was found between groups and neither MM nor SM showed any trends in reducing this measure. As the answers are based on participants' experiences in the past week, a single session might have little or no effect in changing this. Even if participants are feeling enhanced mood at the current moment, they might still perceive the past week in an unchanged manner. Additionally it is good to keep in mind that while depression is still a sensitive and stigmatized topic, some college age participants may be reluctant to answer truthfully.

The current study found no effects on anxiety as measured by SAI. This contrasts with the findings in the Zeidan et al., (2010) three day design. Trends were shown indicating MM and SM groups scoring lower than book groups, but no significant differences between groups was found. This suggests again that extended practice may be required to show effects on anxiety.

As measured by the TMS, mindfulness was significantly higher for MM and SM as compared to the control on both decentering and curiosity subscales. Decentering refers to the nonattached non-judgmental nature of mindful thought. The MM CD included specific instructions for this construct, as participants were told to let go of all fleeting and momentary thoughts and feelings. Perhaps the curiosity measure was affected since participants actively chose to participate in a meditation study. Many participants expressed an interest in meditation and desire to learn more about it, so that once assigned to the MM or SM group this desire was fulfilled in contrast to those in the control group. In fact, a handful of participants expressed disappointment to being in the book condition and at the end of the study requested further information about MM.

While the current study does demonstrate some positive effects on a single session intervention on mood, it also emphasizes the importance of extensive training. The results demonstrated, while significant, were weaker than the effects of a multiple session study. Additionally, important constructs such as anxiety and depression only began improving after multiple days of MM practice. The POMs measure was more sensitive to single session intervention and this may be due to the instructions and items asked. POMs instructions specifically direct participants to rate the items based on how they feel at that current moment. Additionally, certain items such as "energetic", "restless" or "fatigued" can change from moment to moment and contribute to positive findings. It is important to outline the limited benefits of a single session intervention. For mindfulness meditation to truly result in a rooted state of mindfulness and enhanced mood, practice would have to be more extensive.

Implications and Suggestions for Future Research

Results found in the current study were based on self-reports completed immediately after intervention. Additionally, where significance was found, results were based on participants' current mood. This implies that a single session intervention is most relevant in an immediate situation. It would be interesting to see if and how MM could be used as a quick crisis intervention in the context of violent and suicidal thoughts. Research to study this implication would have to examine such factors as the length of intervention, perhaps bringing it up or down from the 25 minutes used in the current study. Rosch (2007) examined assumptions about mindfulness meditation and compared them to psychological therapies and Buddhist teaching outcomes. Rosch also draws attention that for many clinical subjects, active awareness of day-to-day experiences can be difficult and painful. "People are not mindful for a reason" Rosch says, underlying the difficulties associated with mindfulness based therapies. Rosch concludes that psychological research appreciates that many of the positive effects of MM are beyond the reach of "simple mindfulness". "…an expanded awareness includes the further transformative experience of timelessness." (Rosch, 2007, p. 263) suggests MM requires extensive training, and so a mindfulness based crisis intervention may have little effect.

To further understand how MM works, it would be interesting to examine which aspect of the intervention was key to reducing specific measures as anger and tension; perhaps the decentering instructions were more valuable in reducing tension while mindful breathing had a greater effect on anger. Additionally, it would also be useful to examine effects based on the administration of the exercise; is MM more or less effective when instructions are given in person as opposed to via a CD or over the telephone? As the field of meditation has expanded, numerous guided modalities now exist ranging from CD's to books to iPhone applications. In the previous three-day design, participants received oral instructions in person each time (Zeidan et al., 2010).

Another outcome of the measures being immediately after intervention was that no data was gathered to test the longevity of heightened mindfulness and mood. Future research could examine how long the effects of MM persist after intervention. Is there a difference in how long benefits last for a single session as opposed to a multiple session design? Perhaps there is a threshold for when effects on mood and mindfulness begin to root themselves permanently. Additionally, do some aspects of mood see benefit immediately after intervention while some show benefit some time afterwards?

At the University of Washington, Bowen & Kurz (2012) examined the effects of between-session mindfulness practice and a client-rated therapeutic alliance on lasting mindfulness after an eight week relapse prevention program for substance abusers. Mindfulness of participants was measured post-course, two months following the course and then four months following the course. Between-session mindfulness practice was predictive of mindfulness post-course but not two or four months following the course. Measures of alliance as rated by the clients were predictive of mindfulness levels post-course and two months following the course, but not four months after the course. These results suggest that the quality of alliance during the mindfulness based therapy may be more predictive of lasting mindfulness than repeated mindfulness practice (Bowen & Kurz, 2012). This study suggests that perhaps for the benefits of MM to last it is important to shift the focus of the intervention from the length and number of session to the quality of the mindfulness exercise.

While a large body of research already exists to compare the efficacy of different modalities of meditation, future research could further examine this question. Mindfulness meditation, in contrast to many traditional meditation modalities, is often highly secular with virtually no mention to spirit, soul or transcendence. Wachholtz and Pargament (2008) examined this question in regards to treating migraines. Meditation-naïve frequent migraineurs were randomized into one of four conditions: Spiritual meditation, internally focused secular meditation, externally focused secular meditation or muscle relaxation. Pre-post tests measured pain tolerance, headache frequency and mental and spiritual health variables. Participants in the spiritual group showed a significant decrease in migraine frequency, anxiety and negative affect as well as an increase in pain tolerance, headache-related self-efficacy, spiritual experience, and existential well-being (Wachholtz and Pargament, 2008). The study strongly suggests that spiritual meditation is more effective than secular forms of mindfulness practice. Perhaps different people, based on their personal beliefs, would find greater benefit a modality that complements their beliefs. Perhaps a complementing modality would show greater mood enhancement with less practice. Additionally, how would different modalities differ when comparing extended practice to a single session?

A single session of mindfulness meditation might be especially useful in persuading non-meditators to further pursue the practice. Future research should examine whether a single session or multiple sessions are more likely to induce this effect in participants. Additionally, it would be useful to examine what new constructs and techniques a first time meditator learned with just one session of MM. This would be measured by assessing clients understanding of mindfulness concepts (i.e; decentring, nonjudgmental awareness, non-reactivity) following intervention. Lastly, does one session change a participant's attitude about meditation and does adding multiple sessions to the design have any effect on the attitude change.

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Effects of Nutritional Knowledge on Food Choice in College Students

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Abstract--This study examined the relationship between people's knowledge of basic nutritional information and their current dietary habits and attitudes. Food choice was also observed before and after participants were educated about nutrition labels and other nutritional information. It was predicted that students would choose the healthy snack option first or switch to a healthy one after being debriefed. This prediction was not supported; however, there were significant correlations between participants' age, knowledge and habits. The higher the participants age the better their knowledge score was, and participants with good knowledge scores also had good habits scores. The last correlation showed a positive relationship between age and food habits. There were also significant findings when examining participants' most important and least important relationship to food showing that many unhealthy snack choosers selected "taste" as their most important. Implications of these findings are discussed.

Obesity is a continually growing epidemic that has plagued our society and many others for the past few decades. There is conclusive evidence that many of the foods consumed by the population are contributing factors to obesity, heart disease, hypertension and many other ailments, which puts college students at risk. In 2011, the CDC reported that no US State had an obesity rate less than 20%, and 39 of the States had a rate of 25% or more. (1) In 2008, the American College Health Association examined obesity levels among 80,121 college students across 106 higher learning institutions and found that 31.9% ranged from overweight to class III obesity based on body mass index. (2) These findings lead some to wonder whether college students are being educated on these foods for the sake of their current and future health. Do they even care about eating the right foods for their health?

In a study by Grunert, Wills and Fernández-Celemın in 2010, consumers (n = 2,940) in the UK were tested on their nutritional knowledge by in-store interviews, questionnaires and in-store observation. (3) These items tested knowledge of daily recommendations for specific ingredients and awareness of nutritional labels. The results showed that many people knew which ingredients they should avoid; however, only 25% correctly answered questions about monounsaturated and polyunsaturated fats. It was also revealed that health inferences are more driven by fat and calorie levels than salt or saturated fat levels, which could be a problem for those prone to obesity and/or hypertension. Misconceptions also occurred with portions and serving size.

In a 2010 study by Lin and Yen of the US Food and Drug Administration, consumer knowledge of fat was assessed using adult participants (n = 1,798) randomly chosen from all across the 50 states. (4) The phone survey included questions on the following types of fat: saturated fat, trans fat, partially hydrogenated fat, omega 3 fatty acids, polyunsaturated fat and monounsaturated fat. Only 20% were able to recognize the good fats and associate them with a lower risk of heart disease. The study also found that some consumers were severely misinformed about certain fats, with many believing that all were bad and should be limited.

Another study (Grimes, Riddell and Nowson, 2009) examined consumers' (n = 474) knowledge of the health risks of a high sodium diet and assessed the use and understanding of labeled sodium information on products. (5) A shocking 65% of participants were unable to show an understanding of salt and sodium as being the same thing; however, participants did express that they could improve their overall health by lowering the amount of salt in their diets. Half of participants were not able to pick low salt foods by using the labels.

These studies show a clear picture of how uncertain and undereducated some consumers are when examining food products and understanding how each component of a nutrition label relates to health. This lack of knowledge contributes to growing obesity rates and hypertension in adults as well as teens and children; however, not everyone is trapped in ignorance. Even those who understand labels, terms and relatedness to health still choose foods deemed unhealthy.

This study aimed to asses participant knowledge of basic nutrition through a survey on fats (monounsaturated, polyunsaturated, saturated and trans fat), sodium and factors of importance relating to food choice (cost, nutritional value, time it takes to make and taste). Dietary habits were also assessed through the survey. Participants were offered healthy and unhealthy foods, and their choices were recorded before the survey and after debriefing. It was hypothesized that "unhealthy snack" participants would feel compelled to switch to a healthy snack after being debriefed on how unhealthy certain snacks are, including the one they chose, based upon the nutritional components in the survey.

Method

Participants

There were 71 participants in this study, 23 male and 48 female. They were all college students at the a large Southern University that were 18 years and older. The average age was 21.5 (SD = 3.58).

Procedures

Participants were first shown an informed consent form (see appendix) and asked to choose a snack but not eat it until after completing the survey. After taking and returning the survey to the researcher, they were given a debriefing pamphlet that went through information that was asked of them on the survey. It contained information on the different types of fat, sodium, ingredients that should be limited and websites to find more information. Examples of using this knowledge were given by use of the nutritional labels on the snacks provided, including the one chosen by the participant. The researcher was honest about which snacks on the table were healthy and which were not when asked. After debriefing and answering any questions the participants had, the researcher observed whether participants cared enough to switch an unhealthy snack for a healthy one or retained a healthy snack if one was already chosen.

Materials

A survey containing 12 questions was given to participants directly after they chose a snack from the table. The survey assessed basic nutritional knowledge such as the differences in types of fat, the relationship between salt and sodium, ingredients that should be limited and currents habits pertaining to participants' diet. The survey also requested participants to fill in their age, gender and major. The snacks available were a mix of healthy snacks and unhealthy snacks. The healthy snacks were 3 bags of organic apples, 3 bags of organic oranges, 25 organic bananas, 3 variety packs of Clif Kid Z Organic Bars (amount per pack: 8 Honey Graham and 8 Chocolate Chip) and lastly Trader Joe's Blueberry, Strawberry and Apple Breakfast Bars. The unhealthy snacks were 2 variety packs of Nabisco snacks (amount per pack: 5 Oreos, 5 Nilla Waffers, 5 Nutterbutters, 5 Chips Ahoy, 5 Peanut Butter Ritz Bits and 5 Cheese Ritz Bits), 2 candy variety packs (amount per pack: 6 Plain M&M's, 6 Peanut M&M's, 4 Original Skittles, 3 3 Musketeers) and 24 Honeybuns. All snacks were purchased at Trader Joe's (all fruit) and Costco (Cliff Bars, candy bars, processed snacks) with the exception of one package of Cliff bars, which the Cliff Bar company graciously sent for the study.

Results

Researchers hypothesized that "unhealthy snack" participants would switch to a healthy snack after being debriefed on how unhealthy certain snacks are based upon the nutritional components in the survey. There was a significant correlation between the participant's age and their current dietary habits, which showed that the older a person is the better habits score they have, $r(69) = -.36$, $p = .01$. There was also a significant correlation between knowledge and age in that the higher the participant's age the better knowledge score they have, $r(69) = -.25$, $p = .04$. Another significant correlation was found between participant's knowledge and current dietary habits, which showed that participant's with a good knowledge score also had a good habits score, $r(69) = .28$, $p = .02$. There was also significance when examining participant snack choice (healthy or unhealthy) with their least and most important relationship to food. Of the participants who chose an unhealthy snack, 67% chose "Taste" as their most important relationship to food. Of the participants who chose a healthy snack, 33% labeled "Nutritional Value" as their most important relationship; however, another 33% of healthy snack participants chose "Cost" as their most important relationship as well. Of unhealthy snack participants, 39% chose "Nutritional Value" as their least important relationship, which tied with "Time it takes to make" with another 39% of unhealthy snack choosers. Of the healthy snack participants, 67% labeled "Time it takes to make" as their least important relationship. Only 11% (n = 8) of participants chose to switch their snack overall, which meant there was no statistical significance when comparing the snack chosen with the option of switching snacks. Of the unhealthy snack choosers, 19% (n = 13) did switch to a healthier snack. The last finding showed that 29% of all participants did not know that salt and sodium were the same thing.

Table 1

Mean and standard deviations for correlations between Age, Habits and Knowledge

	Mean	Std. Deviation
Age	21.5	3.582
Habits	11.26	4.255
Knowledge	1.61	4.509

Discussion

It is astonishing that 29% of participants didn't know that salt was sodium. This lack of knowledge puts these participants at risk for hypertension, heart attack and stroke since they have no way of calculating their daily salt intake, which is possibly a lot higher than recommended since the CDC reported that stroke is the third leading cause of death in the US, which killed approximately 136,000 people in 2007. (6)

The correlations in the study seem to make sense for what would typically be found among the population. It is expected that people with a higher age would have more experience and knowledge pertaining to food, which could be why they had better habits scores than participants who were younger. It also makes sense that the unhealthy snack participants chose "Taste" as their most important relationship since many of our most unhealthy foods taste the best from high processing, fats and sugars. Cost was also a huge factor with unhealthy snack choosers; however, cost didn't seem to matter to healthy snack choosers. This could be because healthy foods are usually more expensive than highly processed foods, so a person who buys healthy foods already expects cost to be more.

The hypothesis that unhealthy snack choosers would switch was not supported based on the significance level in the data. There are many possibilities as to why a participant will chose not to switch their snack: some may have already chosen a healthy snack, some may not care about what they eat, others may be too embarrassed or uncomfortable with the idea of changing what they already chose, or it may simply be that some unhealthy snacks are too hard to pass up when compared to healthier options. These different variables are endless for the 89% of participants who chose not to switch their snack. None of the healthy snack choosers switched their snack; however, 19% of the unhealthy snack choosers did switch to a healthy snack. It was refreshing to help these participants better understand the foods they were consuming and see them actually care enough to pick better options.

Limitations and Future Research

Time was a huge limitation for my sample size because many students did not want to take the time to complete my survey even if they did get a snack. Many had to get to classes or simply had other things to do. I also only had three opportunities to collect data: 20 min the first time, two hours the second and three hours on the third. Environment and weather could have also affected my study because it was conducted first inside, then outside on one rainy day and one sunny day. The manner in which data were collected the first time could have also affected my study. It was indoors in a classroom with about twenty participants, so these participants did not get the individual attention and debriefing like everyone else. These things could all be improved by making sure every participant has the same environment and all get individual attention during debriefing.

Future research should be done assessing the attitudes and knowledge of college students to better understand the education level college students are at when examining food products and, more importantly, how that knowledge affects their dietary choices. This type of research shows how much education is needed in our schools and colleges, so it is important to conduct this type of research at many universities with more students.

In the bigger picture, the lack of caring about unhealthy food consumption and/or lack of knowledge promotes an unhealthy diet, which could lead to a variety of diseases and ailments later in a college student's life. The World Health Organization reported that heart disease is the number one killer in the world, taking the lives of 7.25 million people a year. (7) Atherosclerosis, the hardening of the arteries, is the most common cause of cardiovascular disease, which is often a result of an unhealthy diet along with lack of exercise, obesity and smoking. (8) This is why it is gravely important to ingrain a proper nutritional education not only in college students but in all students through every grade. A person's quality of life, health expenses and overall physical and mental health are greatly affected by the foods they eat in the past, present and future; however, many students have the attitude that only future foods will affect them when they get older. This is dangerous thinking because the foods we eat now affect our future selves and cells as well as their current immune systems, bodily functions, health and overall risk of disease.

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Figure 1.
Scatterplot showing correlation between Knowledge and Age.

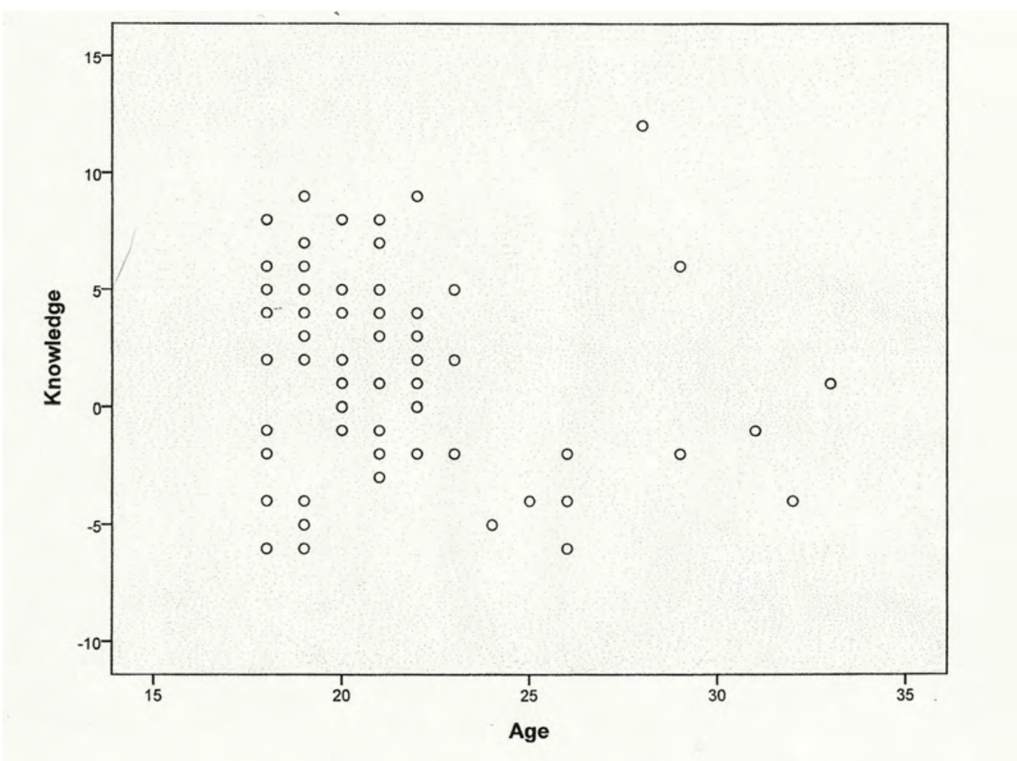


Figure 2.
Scatterplot showing correlation between Knowledge and Habits.

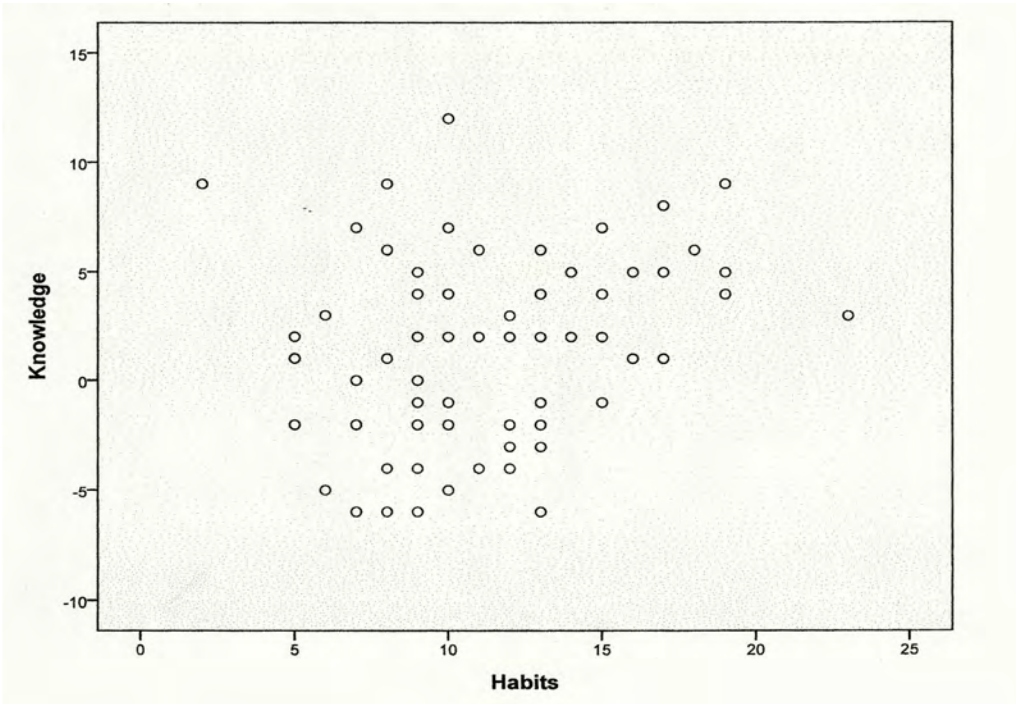


Figure 3.
Scatterplot showing correlation between Habits and Age.

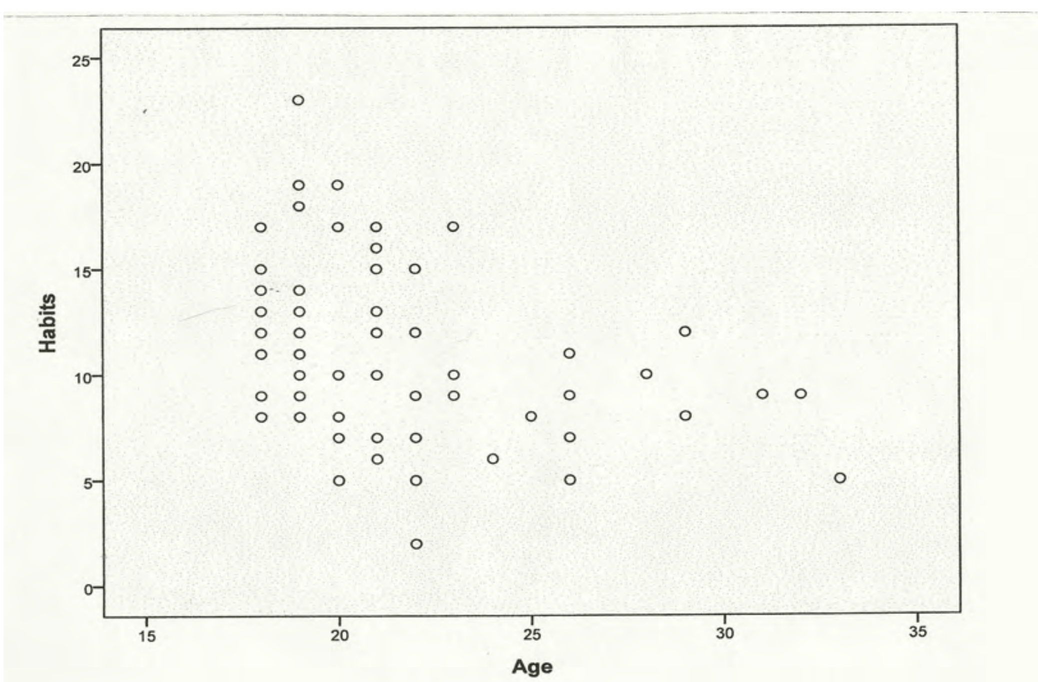
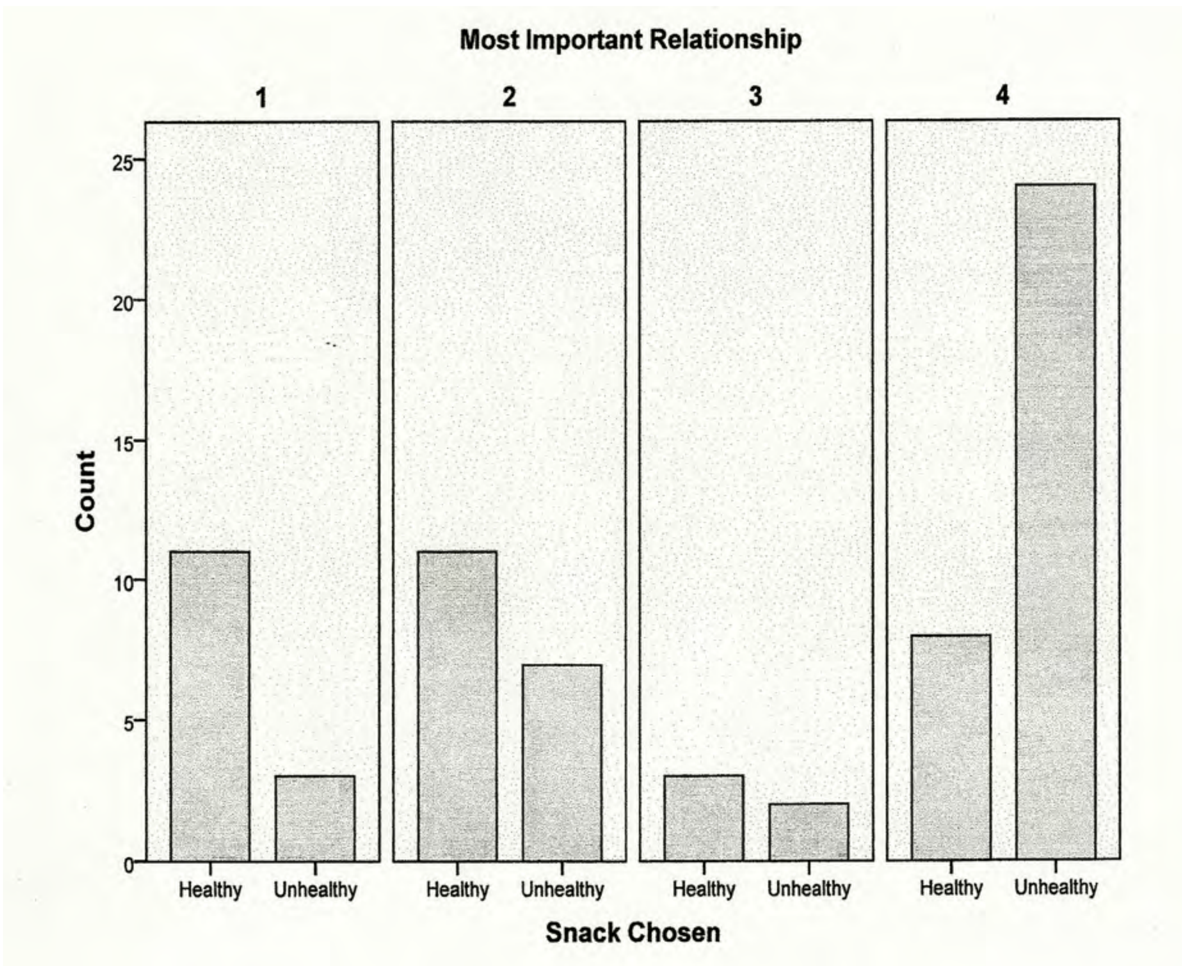


Figure 4.

Bar graph showing participant's Most Important Relationships (1-Nutritional Value, 2-Cost, 3-Time it takes to make, 4-Taste).



College Students: A Study of Personality, Financial Knowledge, Financial Well-Being/Distress, SES, and Confidence in Money Management

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Abstract--During the recent economic downturn, many people have suffered due to the accumulation of too much debt. Research has found that debt that accrued during college years tends to follow an individual for up to twenty years after college (Brett & Chamberlain, 1997). This study sought to understand the relationships between current levels of debt, GPA, confidence in money management, personality, financial distress/ financial well-being, financial knowledge, and family's socioeconomic status to see if specific types of people were more likely to have high debt levels and to see what variables were commonly related to feelings of financial well-being and distress. One hundred and fifty-five Psychology students from a large southeastern public university participated in this study by completing questionnaires, and the data was analyzed using the bivariate Pearson correlation test. The results of this study found that of the students that have accumulated debt, a great deal of debt was acquired, and that financial distress increased as debt increased. Additionally, results found that confidence in money management was significantly related to financial distress/well being. Findings from this study indicate that it would be beneficial to have a financial advising center present in universities to help students better understand how to avoid debt and to help students increase their confidence in their money management. This study was the first to look at confidence in money management and further research could be done to expand the knowledge of this variable to see how it impacts a person's money management habits.

Introduction

Literature Review

During the recent economic downturn, many people have suffered due to the accumulation of too much debt. Many people were given home loans that had interest rates that adjusted after a few years, causing their mortgage payment to soar to unaffordable amounts. As these mortgage payments rose, so did the number of foreclosures, which inevitably caused a decrease in surrounding properties' values. Neighbors were unable to refinance adjustable rate mortgages due to the decrease in property values and lack of equity in their homes. They either had to forge through, paying astronomical mortgage payments for homes worth much less than they were purchased for, or stop paying on a clearly now bad investment, cut their losses, and foreclose as well. Other people were given thousands, even tens of thousands, of dollars in revolving credit, such as credit cards, or given large loans to purchase luxury items like automobiles and boats. As the banks were losing revenue and Wall Street was collapsing, many people began losing jobs and could no longer pay the bills for their "keeping up with the Jones' lifestyle." They were forced to face tough decisions that included repossession, bankruptcy, and foreclosure.

It makes sense that the earliest time that an individual could have started this spiral into financial failure is at the age of eighteen, the youngest that an individual is allowed to apply for and receive credit. A great deal of research has been done on this population of financial infants. Most of this research focuses on college students, because debt that accrued during college years tends to follow an individual for up to twenty years after college (Brett & Chamberlain, 1997). A study conducted by The Institute for College Access and Success (2009) showed that 67% of students graduating from a four-year college had debt from student loans, and the average amount of these loans was $23,200. There will be some that will blame this high number on private schools and costly out-of-state tuition rates. Sadly, while this data does include loans from private and private-for-profit schools, these high numbers cannot solely be blamed on their expensive tuition rates. Graduates from less expensive, public universities had an average of $20,200 in student debt, only slightly less than the overall average. To bring these numbers a little closer to home, the average debt of UNCC graduates in the years 2006 and 2007 was $17,730, with 56% of the graduates having student debt.

What is even more frightening than these high amounts of student debt is that the average college senior has $2,169 in credit card debt, and most senior level college students have four or more credit cards. At the young age of eighteen, 56% of college students obtain a credit card for the first time, and by the time students are in their last year of school, 91% have credit cards. Only 21% of these students are paying off their balances every month, while an alarming 11% make less than the minimum payment required each month (Nellie Mae, 2005).

So, who or what is to blame for all of these daunting statistics? It is a well-known truth that people who obtain a college education tend to make more money in their lifetime and have more opportunities for jobs and promotions within their company. This is often referred to as “the million dollar question,” because statistics show that people who obtain a bachelor’s degree will, on average, make a million dollars more in their lifetime. This little statistic is why a vast majority of students attend college: to get a good job and make a lot of money. With this picture of their future in mind, they spend a great deal of money on tuition, housing, and books. The lucky 35% percent of college students have parents, family, or other people that can pay for their education so that the student doesn’t have to go into debt (Sallie Mae, 2009). Another lucky group receives their education for free from the accumulation of scholarships.

But what about the group of students that do not have parents that have been saving for their college education since birth or haven’t found other people or organizations that are willing to pay for their education? We have all heard about this “need-based-assistance,” namely grants. Grants are based on a family’s estimated family contribution (EFC). To be eligible for grants, the student’s Free Application for Federal Student Aid (FAFSA) must show that the combined income for both parents falls in the lowest economic grouping. As this income starts to cross over the $30,000 line, the EFC starts to increase and the assistance decreases. It is not common for students from this lowest economic grouping to attend college. In fact, Long and Riley (2007) point out that in 2004, only 43% of high school graduates whose families make less than $30,000 attend college immediately following high school, compared to 75% of high school graduates that come from families that make over $50,000.

Furthermore, these grants are a product of the government’s endeavor to encourage post-secondary education, but their livelihood is also a product of the current financial and monetary policies. Long and Riley (2007) highlight Collegeboard’s findings that the maximum Pell Grant, which is the largest need-based program in the United States, decreased by 20% from 1975 to 2005 after accounting for inflation. Finally, these grants are based on the difference in the EFC and the cost of tuition up to the maximum amount. Due to this maximum limit, a grant barely puts a dent into a more expensive private education. It also doesn’t allow much money for living expenses such as room and board, groceries, and books. So, while any assistance is helpful, almost all students are forced to find other avenues to fund their education with the popular choice being loans.

If the only debt students left college with was a sum of student loan debt, it wouldn’t be the worst thing. Student loans have a lot of positive aspects to them. They don't need to be repaid until after a student graduates, and many loans also don't begin earning interest until after graduation. The problem is that students that begin college directly after high school experience a whole new world of freedoms, particularly those students that move away to go to college. No longer can parents watch their every move, and after the age of eighteen, parents don't have the rights to a lot of information about their child, specifically financial information.

Credit card companies see this as an opportunity to obtain customers and will specifically market credit cards to college students. They provide the option of a "student credit card," which can be obtained without any credit history at the price of a higher interest rate. Credit card companies also provide special options for the look of the card, such as a card with a team logo, cute animals, charities, or other pictures that attract young adult populations. Finally, credit card companies emphasize incentives to obtaining the card, such as free vacations, free popular items like TVs or other electronics, or even cash back. They conveniently don't advertise that obtaining these highly desirable free items requires the accumulation of tens of thousands of points, which means they must spend an exorbitant amount of money, much more than their credit limit allows.

Not only do students value the incentives obtained with a new credit card, but they also welcome this newfound easy access to money. Students alleviate the feelings of not being able to afford things by swiping their credit card, ignoring the fact that they have to pay it back (plus interest) later. Students are also using these credit cards as a much easier alternative to the complex FAFSA. Instead of expending a large amount of time and energy trying to accurately fill out the FAFSA, they can type their credit card number online and pay their tuition in less than a minute. Lastly, for students that don't have enough grant money coming in to pay for costs of living, a credit card is a much more appealing alternative than working to live.

So what can students do to prevent making these major mistakes which lead to financial failure? Some might argue that the best fight against credit companies' marketing strategies and the seeming reliance on student loans is financial literacy. Financial literacy is defined on the Federal Student Aid website as the "education on the management of personal finances." Perry and Morris (2005) found that there is a significant positive relationship between financial knowledge and responsible financial management behavior. In their study they mailed surveys to approximately 23,000 people between the ages of 20 and 40 who made less than $75,000 annually. Almost half of the people who were mailed a survey returned it. The survey asked the participant to rate themselves either poor, fair, okay, good, or excellent on certain items in three areas: responsible financial behavior, locus of control, and financial knowledge. The self reporting of both the participants' financial behavior and financial knowledge is a possible limitation to this research, because we do not know how accurate the reporting is.

Many organizations advocate for financial education for young adults. Jump$tart Coalition is the most well known organization. Jump$tart tests high school students every year to determine their financial literacy. The mean score only slightly deviates from 52% each year. Jill Norvilitis (2006) surveyed various colleges in the United States to determine how educated college students were about financial and credit matters. She used nine questions taken from Jump$tart's assessment specifically related to credit. Results showed that a college student's average financial knowledge score was 60%, only slightly higher than the mean high school students' score, and only one student scored over 90%. In another study (Jones, 2005), students had significantly higher scores on general questions about credit, as opposed to more specific questions. Furthermore, female students and non-white students scored significantly lower on the financial knowledge assessment than male students and white students. According to Norvilitis' (2006) research, financial knowledge is one of the strongest predictors of debt, and as she points out, it is also the most amenable to change.

It is advised by researchers and professionals in the finance industry that the solution to the problem of students having a weak financial background is to formulate formal education in the school system. Unfortunately, this has still not happened. Borden, Lee, Serido, and Collins (2007) taught a one-half hour financial seminar, to study the impact it would have on students' financial knowledge, attitudes, and behavior. They found that participation in the seminar triggered significance positive changes in students' intended credit behaviors. Furthermore, another study found that students were interested and wanted to know more about money management (Masud et al. 2004). Borden, Lee, Serido, and Collins suggest that frequent financial seminars would be the most effective approach, as it would be a consistent reminder and reinforcement for responsible money management.

Taking a closer look at students' credit card balance levels reveals that there are other indicators of high debt levels. To begin with, specific demographic groups are more prone to debt. African-Americans have been found to hold more credit cards and higher balances than non-Hispanic whites (Grable, 2006). Age is also indicative of debt and a higher number of credit cards, but, this makes sense since older people have more time to accumulate debt (Norvilitis et al. 2006). Research has also found that females tend to carry more credit cards than males, possibly because women shop more than men (McCall and Eckrich, 2006). In a study of medical students, those whose families fell into the lowest income group had the highest amount of student debt. This is most likely due less money available to them from their families. Contrary to the belief that as the family income level rises student debt should fall, when the middle and high income groups were compared, their debt levels were similar. Cooter et al. (2004) suggested that this could be due to "borrowing by choice" as interest rates get lower for those with stronger financial backgrounds.

It seems likely that a person's attitude towards debt would be a strong indicator of a person's debt levels. If a person is not tolerant of debt, he or she is less likely to get into debt. If a person views debt as normal and a part of life, then it is expected he or she will go into debt. Research actually paints a different picture on this relationship. Davies and Lea (1995) found a surprise in their study, which looked at the relationship between attitudes and student debt. Instead of a person's attitude determining debt levels, it is actually a person's behavior that influences attitudes. A number of students started out in college determined not to go into debt; however, they had to obtain debt in order to live the lifestyle they wanted to. After going into debt, they became more tolerant to the idea of being in debt. As college students get closer to graduation, the concept of a good paying job starts to become more tangible. Students start imagining that they are going to make high salaries once they graduate, and it becomes easier to fall into more debt based on the idea that it will be easy to pay off once the student graduates. Unfortunately, a study in New Zealand found that 50% of students were overly optimistic in their expectations of their starting salary out of college (Seaward, 2000). Research that extended Davies and Lea's work found that debt became less tolerated as students left the university. Therefore, while obtaining more debt does make our attitude more tolerant to debt, it is not a permanent attitude change. This optimism theory, identified in Seaward's research, extends past New Zealand and is found to be present in America as well. Norvilitis (2006) found that students in America were also overly optimistic when it came to determining how long it will take to pay off debt and expected income after graduation.

As more debt accrues, minimum payments increase, and there is significant pressure to be able to pay these bills. This pressure causes stress, which Lange (1998) found to significantly impact feelings of psychological well-being. As participants' estimates of their debt increased, their feelings of stress due to their financial situation increased as well. The author noted that students were able to cope with short-term or daily financial stress, but they were unable to cope with long-term, chronic financial stress. That is, if a student has an unexpected bill, they can cope with that added stress and expense if it can be paid off fairly quickly; however, if the student is perpetually making less money than he or she needs to live, and doesn't see an end to that pattern, he or she will be unable to cope with that.

It would seem that high levels of debt would have more than just an impact on the psychological well-being of college students. College students face a number of pressures with school and constant change, that added stress from their finances would cause a hindrance in their academic performance. Pinto, Parente, and Palmer (2001) did a study to see what kind of impact credit card usage had on college student performance, and their study resulted in some interesting findings. They divided their sample into low performers (GPA < 2.5) and high performers (GPA > 2.5). They found that in both groups, as debt increased, so did the number of hours worked, and there was no significant relationship between the number of hours worked and academic performance. This is contrary to personality factors: extraveother studies that have found that once a student begins to work more than eighteen hours a week, their grades begin to fall (Dundes, 2006).

Even though Pinto, Parente, and Palmer's findings found no significant relationship between hours worked and academic performance, they did find that the low performers claimed they felt the need to work more, and furthermore, blamed their poor academic performance on that need to work. The authors suggested that the low performing group was simply trying to rationalize their performance, and that high debt levels were not necessarily at fault for their poor performance. Rational thinking would assume that low performers were experiencing financial stress and stress from poor grades; therefore, they should have more anxiety than the high performing group. Again, findings did not support this rational thinking. Results showed that the high performing group experienced significantly higher levels of anxiety than low performers. The authors suggested that consistent high levels of anxiety are common among high performers, and that is what motivates them to succeed.

Little research has been conducted to see if specific types of people will experience high debt levels and/or financial distress. That is, does personality or other factors cause a person to get into a great deal of debt or experience financial distress? Norvilitis (2006) found that delay of gratification was a strong indication of debt; however, sensation seeking, materialism, and compulsive buying were not found to be indicators of debt. Self-destructiveness has also been found to not be an indicator of poor credit card use and high debt (Politano, 1997). Authors, Pinto, Mansfield, and Parente, found that external locus of control and self esteem is not necessarily consistent with higher credit card spending in college students, as previous research has suggested. They suggested that college students, in general, have higher self-esteem, so it is hard to create a diverse sample.

So the questions that still remain to be answered are: what types of people are most likely to accumulate debt, and what is related to feelings of financial well-being and distress.

The Present Study

The objective of this study is to define the relationships between the following variables: family's socioeconomic status, current levels of debt, GPA, confidence in money management, personality, financial distress/financial well-being, and financial knowledge. The following hypotheses will be tested:

1. There will be a significant positive correlation between financial knowledge and financial well-being. Also, there will be a significant negative correlation between financial knowledge and financial distress.
2. There will be a significant positive correlation between financial well-being and confidence in money management. Also, there will be a significant negative correlation between financial distress and confidence in money management.
3. There will be a significant negative relationship to financial well-being and the personality factor: neuroticism.
4. There will be no significant relationship between GPA and financial distress, as found in previous research studies.
5. There will be a significant negative relationship between family's SES and financial distress.
6. There will be a significant positive relationship between financial distress and current levels of debt. Also, there will be a negative relationship between financial well-being and current levels of debt.

7. There will be a significant positive relationship between financial knowledge and confidence in money management skills.
8. There will be a significant positive relationship between financial knowledge and family's SES.
9. There will be a significant negative relationship between financial knowledge and current levels of debt
10. There will be a significant positive relationship between current levels of debt and rsion, openness to experience/intellect. Low levels of debt will be associated with conscientiousness and neuroticism
11. There will be a significant negative relationship between SES and current levels of debt.

Method

Participants

One hundred and fifty-five students in two separate psychology classes participated in this study. The sample was made up of 31 males and 124 females with a mean age of 23. The majority of the sample was white (n=100), followed by African-American (n=26), and Asian, Pacific Rim (n=12). The two least represented groups were Hispanic (n=7) and other (n=8). Most of the participants were either college juniors (n=59) or seniors (n=71). There were only 20 sophomores, 2 graduate level students, and there were no freshman that participated. Only 8 participants were married compared to 143 participants that were single.

Procedure

All students in the class were given manila envelopes that contained the questionnaire. The study was completely anonymous and their consent was indicated by participation. They filled out the questionnaire independently, and when they finished they inserted their questionnaire in the manila envelope and sealed it.

Materials

The questionnaire is a compilation of the following measures:

1. Demographics: This set of questions asks gender, age, race, year in college, grade point average, marital status, socioeconomic status, and current level of debt, specified as student debt, revolving debt, fixed loans, housing debt, debt to people, and other debt.
2. Confidence in Money Management: This is a set of four questions, created specifically for this study and is designed to assess how confident the participant is with his or her money management abilities. Questions include how comfortable they are managing their finances, how often they ask for advice about money management, how anxious or comfortable they feel when they make big financial decisions, and how much more they wish they knew about managing their money. Participants respond on a likert scale with a 5 meaning that they feel a great sense of confidence in their money management and a 1 meaning they do not feel confident in their ability to manage their money.
3. Personality: Participants' personality will be assessed using a shortened version of Dr. Oliver D. John's Big Five Inventory Personality Test. This inventory assesses personality based on the Five Factor Method for agreeableness (A), conscientiousness (C), extraversion (E), neuroticism (N), and openness (O). This shortened version consists of ten questions with each factor being represented by two questions. Participants use a likert scale to respond to how much they agree or disagree with how the statement describes them. A 5 means that the participants strongly agree that the statement describes them and a 1 means that they strongly disagree with how the statement describes them.
4. Financial Knowledge: The participants' financial knowledge will be rated on how successful they are at correctly answering twelve questions taken from the Jump$tart Coalition for Personal Financial Literacy's National Financial Literacy Challenge, which the US Department of the Treasury sponsors. Jump$tart's goal is to encourage personal financial management curriculum

in K-12 schools. They create a new Financial Literacy Challenge each year and offer awards based on how well students do on it. This shortened version's questions are from 2007. This shortened version was created by Bankrate.com to provide to the public an assessment of financial knowledge. Answers are multiple choice and are either right or wrong. Each participant will be rated from 0 -12, based on the number of answers that are correct, with 0 being the least financially literate and 12 being the most financially literate.

5. Financial Well-Being/Distress: The variable of financial well-being/distress is measured using the InCharge Financial Distress/ Financial Well-Being Scale. This is designed to measure how participants feel about their current financial state. Answers can range from 1, meaning that the participant is very distressed to 10, meaning the participant feels a great sense of financial well-being. This measure has been tested and found to be both reliable and valid. (Prawitz, Garman, Sorhaindo, O'Neill, Kim, and Drentea, 2006)

Results

This study utilized the bivariate Pearson correlation test on multiple variables to determine their relationships with each other. The variables are as follows: gender, age, race, marital status, GPA, class, total debt, dependency, SES, confidence in money management, C, N, O, A, E, FDWB, and financial knowledge.

Hypothesized Relationships

Hypothesis 1 was not supported meaning that FDWB is not significantly related to financial knowledge. Hypothesis 2 was supported and found a significant relationship between confidence in money management and FDWB $r(140) = .301$, $p<.01$. Hypothesis 3 was supported finding a significant relationship between the personality factor neuroticism (N) and FDWB $r(142) = -.226$, $p<.01$. Hypothesis 4 was supported, confirming prior studies' results, finding that GPA and FDWB are not related. Hypothesis 5 was supported finding a relationship between SES and FDWB $r(142) = .321$, $p<.01$. Hypothesis 6 was supported finding a significant relationship between total debt and FDWB $r(137) = -.244$, $p<.01$. Hypothesis 7 was not supported finding that a significant relationship did not exist between confidence in money management and financial knowledge. Hypothesis 8 was not supported finding that a significant relationship did not exist between financial knowledge and SES. Hypothesis 9 was also not supported finding that a relationship did not exist between financial knowledge and total debt. Hypothesis 10 was not supported finding that personality factors: E, N, C, and O did not have a significant relationship to total debt acquired. Finally, hypothesis 11 was not supported finding that there was not a significant relationship between total debt and SES.

Other Findings

More relationships were found between variables than hypothesized. The personality factor, C, was found to be related to GPA $r(153) = .173$, $p<.05$, confidence in money management $r(153) = .177$, $p<.05$, and FDWB $r(142) = .184$, $p<.05$. Confidence was also significantly related to the personality factor, N $r(153) = -.215$, $p<.01$. Age and marital status were the only demographically related variables that had significant relationships with other variables. Age was significantly related to FDWB $r(138) = -.185$, $p<.05$, total debt $r(145) = .629$, $p<.01$, and financial dependency on others $r(151) = -.310$, $p<.01$. Marital status and total debt had a strong relationship $r(144) = .535$, $p<.01$. As other research has suggested, GPA and SES were significantly related $r(153) = -.183$, $p<.05$. Financial dependency on others was related to total debt $r(148) = .217$, $p<.01$ and to SES $r(154) = -.324$, $p<.01$. The only significant relationship with financial knowledge was GPA $r(153) = .204$, $p<.05$. When looking at the different categories of debt, revolving debt, student debt, housing debt, and other debt had significant relationships with FDWB $r(141) = -.241$, $p<.01$, $r(138) = -.260$, $p<.01$, $r(141) = -.173$, $p<.05$, $r(139) = -.199$, $p<.05$, respectively. Fixed debt was found to be related to the personality factor N $r(154) = .182$, $p<.05$ and debt to people was found to be significantly related to the personality factor O $r(154) = -.172$, $p<.05$.

Discussion

Interpretation of Results

The purpose of this study was to examine the relationships between numerous variables to see if specific types of people were more likely to have high debt levels and to see what variables were commonly related to feelings of financial well-being and distress. Of all of the demographic variables studied, age, marital status, and SES were the only variables that had significant relationships with the financial variables. This research found, as previous research also found, as age increased, so did the amount of debt (Norvilitis, 2006). Marital status was also related to debt, presumably due to the tradition of getting married, buying a house, and having children; all of which are expensive life choices. Finally, as expected, as the SES background of a college student rose, the financial dependency of a student on someone else rose as well. This supports conventional thinking in that if there is money available to the student from family, he or she will be more financially dependent; but if the family does not have money to support the student, he or she will have no choice but to pay for it alone, which could lead to an increase in financial distress.

Personality, as measured using the Big Five Factor model, did not play a part in the total debt accumulated; however, N was negatively related to FDWB. Due to the fact that high N scorers are nervous and worrisome in all aspects of their lives, it is to be expected that they would worry about their finances as well.

As predicted, FDWB and total debt were related. Furthermore, FDWB was related to some of the specific types of debt: revolving, student, housing, and other. The two types of debt it was not related to were debt to people and fixed debt. A lack of a relationship between FDWB and fixed debt could be due to the idea that car loans are perceived as normal, and for most people, as long as the payment is low enough to consistently be able to pay, it is not a stressful debt. The mean of the debt to people was only ~$116. It is possible that the participants did not see their debt to others as an amount that would cause them stress, and perhaps considered it as something they could pay when they got their next paycheck. As Lange (1998) described it, this small loan might be considered as a short-term stressor, and not a chronic stressor, which college students are unable to cope with. Another possibility for the lack of relationship is to consider what the relationship is between the participant and the people they owe money to. If the participants owe money to people they feel will support them and assist them in a time of financial crisis, they may not consider that the debt is something to feel anxious about.

Confidence in money management was another variable that was related to FDWB. This paper will later discuss future ways that this variable can be studied and ideas for what may be causing this relationship.

Practical Applications

Of the students that have accumulated debt, a great deal of debt was acquired. One has to wonder if these students realize just how much money they owe, and what it is going to take to pay all of this money back. As financial independence increased, so did total debt. Are these financially independent students managing their money unwisely or is debt an unavoidable product of their financial independence? Whatever the scenario is, it seems like something that might be beneficial to students is a financial advising center in the school. This could be separate from offices of financial aid, and its mission could be to help students achieve financial goals and learn smart money management habits so that they can lead a financially healthier lifestyle during and after college. Lessons on budgeting, financial planning, and money management could be taught through this center, and furthermore, students could meet with certified financial counselors to get one-on-one help with how to manage their finances for today and carrying them into the future.

Giving students the opportunity for formal education in personal finance and the opportunity to work with someone one-on-one to deal with their own situation could create more independent and confident money-managing adults. Stories of people getting conned out of money, people who left their spouse to manage the money and now they have nothing, and people acquiring so much debt that they are forced into bankruptcy might decrease.

One step further is to take this "money management advising" and market it in the community. As SES got lower, financial independence of college students got higher, and so did debt accumulated. If people in the community could be taught healthy money management practices, they might pass those good behaviors onto their children or might be able to achieve a higher economic standing.

Limitations of This Study and Future Research

It is important to note that this study had several limitations. Initially, it was surprising that this study did not find similar relationships between the demographic variables, such as gender and race, to financial variables such as debt and financial knowledge. However, after reviewing the sample's demographics, this could be due to the recruitment of the participants. The pool of participants was from two Psychology classes, both taught by the same professor; therefore it was not a completely random sample. Certain groups of people only had minimal representation such as males, minorities, married people, people from a very low and very high SES, people with very low GPAs, and graduate students. Freshman level college students had no representation. Future research should use a more diverse sample to see better how the demographic variables relate to financial variables.

Findings from this study contradicted the results from the research conducted by Perry and Morris (2005). They found that financial knowledge and responsible financial management behaviors were positively related; however this research found no relationship between financial knowledge and financial well-being, which one would think would be a result of responsible financial behaviors. There are a couple of reasons why this contradiction might have occurred. First, the quiz was made up of questions that assessed general financial knowledge, such as the question about car insurance, instead of knowledge specifically about debt and credit. One does not need to know about car insurance to have debt, therefore it is not important if they know about insurance for the purpose of this study. Future research should find or create an assessment that specifically relates to the knowledge that college students need to know and knowledge of credit and debt. Questions that might be more useful to ask are: how long does it take to pay off a credit card with X balance if you only pay the minimum payment each month and if you graduate college with X amount of dollars in student loans, how much can you expect your monthly payment to be. These questions would be answered based on knowledge that is more meaningful to college students. Also, the wording on the quiz could be overwhelming to a person who does not have a background or a lot of experience in finance. Someone may have known what a "CD" is, but when it was spelled out as a "certificate of deposit," they may not have recognized it. Future research should use more elementary terms or provide a list of definitions or explanations of words that may not be recognized.

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