Western Kentucky University

Advancing Psychological Research with Technology
REU (Research Experience for Undergraduates) Program

3rd Annual REU Research Conference

August 4, 2017

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REU PROGRAM OVERVIEW

What is the REU program?

The Research Experience for Undergraduates (REU) program provided undergraduate students enrolled in colleges and universities where there are limited research opportunities with a unique opportunity to gain hands-on research experience on a topic related to the program theme, which focused on the utilization or examination of technology as a means of advancing psychological research. Students spent 10 weeks (May 30, 2017 - August 4, 2017) working closely with a faculty mentor on research utilizing technological advances in the areas of clinical, cognitive, developmental, educational, industrial/organizational, and/or social psychology. Students also participated in developmental workshops and activities related to topics such as ethics, research methods, statistics, computer software, and presentation skills. At the conclusion of the program, students presented their findings at a mini research conference to university faculty and staff.

What is the overarching purpose of the program?

This program provided students with the opportunity to gain hands-on research experience while furthering our understanding of human behavior and cognition. All students are expected to disseminate their research findings at a national or international conference following completion of the program, and students are strongly encouraged to submit their research findings for publication. Our goal was to have participants develop strong skills as psychological researchers, thereby increasing the likelihood that program participants will pursue graduate degrees and/or careers in psychology.

The theme of the REU site, which was focused on the integration of modern technology into psychological research, not only allowed students to gain exposure to working with cutting-edge technology not available in a number of psychology departments, but to also learn about research topics that are highly relevant to today's society. As such, the program provided participants with both a strong set of research skills and a better understanding of modern issues being addressed in the field of psychology.

SUMMER HIGHLIGHTS

Workshops for Research and Professional Development

Library resources and writing a literature review
Guided literature review writing and APA expectations
Ethics and submitting to the IRB
Experimental design
GRE preparation
SPSS and Excel overview
Writing a method section
Guided method writing
Statistics and data analysis
Writing results and discussion sections and creating tables and figures
Developing your CV and personal statement
Building and delivering presentations
Maintaining work-life balance
Mock poster and oral presentation sessions
Developing interview skills

Faculty Brown Bag Research Presentations

Masculinity is Reactive: Mortality Salience Increases Masculine, but not Feminine, Self-Stereotyping (Dr. Aaron Wichman)
The Impact of Rhythmically-Paired Music on Physical Rehabilitation: Acute Stroke Patient Outcomes (Dr. Krisstal Clayton)
Visual and Haptic Solid Shape Perception (Dr. Norman)
The Development of Emotion Regulation (Dr. Diane Lickenbrock)
It Isn't Crazy If It Works: What We Know About Sports Fandom (Dr. Rick Grieve)
Is an Academic Career in Your Future? (Dr. Kelly Madole)
Cultural Differences in Response to Self-Doubt (Dr. Qin Zhao)
Aging and Causal Learning (Dr. Sharon Mutter)
Bingocize: A Health Promotion Intervention for Older Adults' Cognitive and Physical Well-Being (Dr. Matthew Shake)
Putting Age in Context: Age-Related Differences in Context Specificity (Catherine Luna)

Field Trips Exploring Local Culture and History

Mammoth Cave Historic Tour – Mammoth Cave National Park, Cave City, KY

Thank you to the following faculty from the Psychological Sciences and Psychology Departments who led REU workshops and/or participated in research brown bags:

Diane Lickenbrock, Rick Grieve, Lance Hahn, Kelly Madole, Andy Mienaltowski, Sharon Mutter, Farley Norman, Jenni Redifer, Aaron Wichman, Qin Zhao, Matthew Shake, Krisstal Clayton, Reagan Brown, Natalie Perkins, Mike McClay, and Catherine Luna

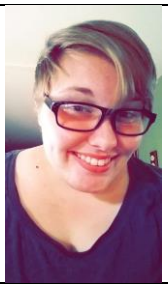
STUDENT SPOTLIGHTS

Danny Chon is a rising senior at Marist College in Poughkeepsie, NY. He will graduate with a B.A. in Psychology and French in May 2018. After graduation, Danny plans to work in the field and eventually apply to a Ph.D. program after more experience.

Mersedes Engle is a senior at Birmingham-Southern College in Birmingham, AL. She will graduate with a B.S. in Psychology in May 2018. After graduation, Mersedes plans on teaching in New Orleans with Teach for America before pursuing a master's program in Social Psychology.

Alexis Jones is a rising junior at Columbia College of Columbia, SC. She will graduate with a B.A of Psychology and a B.A. of Spanish in May 2019. After graduation, Alexis plans to apply to master's programs for clinical psychology and work in the field to address PTSD in adults with traumatic childhoods. She specifically wants to work with individuals from low socioeconomic backgrounds.

Karli Molignoni is a senior at Kutztown University in Kutztown, PA. She will graduate with a B.S. in Psychology in May 2018. After graduation, Karli intends to pursue a doctoral degree in clinical psychology and hopes to ultimately work in private practice and/or pursue a career in academia.



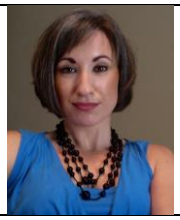
Machella Raymond is a senior at The State University of New York at Potsdam in Potsdam, NY. She will graduate with a B.A. in Psychology and Philosophy in December 2017. After graduation, Machella plans to apply to Masters programs in Clinical Mental Health Counseling and Social work with the hopes to pursue a career in counseling.

Peter Schultz is a senior at Mercer University in Macon Georgia, originally from Minnesota. He plans on graduating with a B.S in Psychology and a B.A in Music in May 2018. Afterwards he plans on working toward a PHD in psychology with a focus in cross-cultural studies and childhood and adolescent development.

Kathleen Springer is a rising senior at Bridgewater College in Bridgewater, VA. She will graduate with a B.S. in Psychology with a minor in Neuroscience in May 2018. Springer plans to apply to clinical psychology programs and later work at a research university as a clinical psychologist.

Kennedy Wesley is a rising junior at Mercer University in Macon, GA. She will graduate with a B.S. in Psychology in May 2019. After graduation, Kennedy plans to apply to masters' programs for clinical mental health counseling and pursue a career as a licensed professional counselor. She hopes to one day run her own practice.

Faculty Mentor Spotlights



Dr. Krisstal Clayton is a Social Psychologist who joined the WKU faculty in 2009 after completing her Ph.D. at the University of New Mexico. Her research investigates the impacts of music therapy on stroke rehabilitation, as well as moral attitudes about promiscuity and attitudes toward the criminal justice system.

Dr. Rick Grieve is a Clinical Psychologist who joined the WKU faculty in 2002 after completing his Ph.D. at the University of Memphis. His research currently examines men's eating disorders, specifically muscle dysmorphia.

Dr. Diane Lickenbrock is a Developmental Psychologist who joined the WKU faculty in 2012 after completing her Ph.D. at the University of Notre Dame and a post-doc at the Pennsylvania State University. Her research currently examines the development of emotion regulation beginning in infancy.

Dr. Sharon Mutter is a Cognitive Psychologist who joined the WKU faculty in 1991 after completing her Ph.D. at George Washington University. Her research currently examines how age-related changes affect causal learning.

Dr. Jenni Redifer is an Educational and Cognitive Psychologist who joined the WKU faculty in 2012 after completing her Ph.D. at the University of Florida. Her research currently focuses on examining factors related to student learning and achievement.

Dr. Aaron L. Wichman is a Social Psychologist who joined the faculty in 2009 after coming from The Ohio State University. His research focuses on response to psychological threats. It considers the interplay between personality and the situation in determining outcomes.

Catherine Luna is the Graduate Assistant of this year's program. She is currently pursuing her master's degree is Psychological Sciences, concentrating in Cognition, from Western Kentucky University. She was also a student in the 2016 REU program.

CONFERENCE SCHEDULE

9:00 Welcome

9:15 Oral Abstract Session

Parent Personality and Infant Temperament as Predictors of Infant Cardiac Physiology
Presenter: Kennedy Wesley *Faculty Mentor: Dr. Diane Lickenbrock*

The Influence of Ambiguity on Context Use in Associative Learning
Presenter: Machella Raymond *Faculty Mentor: Dr. Sharon Mutter*

The Effect of Music Therapy on Gait Improvement
Presenter: Danny Chon *Faculty Mentor: Dr. Krisstal Clayton*

Interactions Between Right-Wing Authoritarianism and Perceived Threat from Muslim Immigrants
Presenter: Alexis Jones *Faculty Mentor: Dr. Aaron Wichman*

Muscle Dysmorphia, Art Appreciation, and Masculinity
Presenter: Kathleen Springer *Faculty Mentor: Dr. Rick Grieve*

If Authoritarians Wanted to Protect Civil Liberties, would they be Displeased if they Succeeded?
Presenter: Mersedes Engle *Faculty Mentor: Dr. Aaron Wichman*

Pairing Self-Selected Music with Stroke Balance Rehabilitation
Presenter: Peter Schultz *Faculty Mentor: Dr. Krisstal Clayton*

Perceived Benefits and Barriers to Treatment of Muscle Dysmorphia
Presenter: Karli Molignoni *Faculty Mentor: Dr. Rick Grieve*

9:45 Poster Session

Students will present their research in more detail and answer questions during this session. See the list of oral abstracts for poster topics.

11:30 Lunch with the Researchers

Students and their guests are invited to attend a catered lunch with REU faculty.

RESEARCH ABSTRACTS

Parent Personality and Infant Temperament as Predictors of Infant Cardiac Physiology

Kennedy E. Wesley & Diane M. Lickenbrock, Ph.D.

Introduction

During the first years of life, infants are beginning to learn how to regulate their emotions (Thomas et al., 2017). Cardiac physiology is one indicator of regulation. Infants who are higher in baseline respiratory sinus arrhythmia, a measure of parasympathetic function, are better able to regulate their emotions (Stifter & Fox, 1990). A goodness of fit between parent personality and infant temperament might lead to the best child developmental outcomes (Mangelsdorf et al., 1990). *Parent personality*, for example, has been found to predict parenting and subsequent child outcomes, such as negative emotionality (Clark, Kochanska, & Ready, 2000). *Infant temperament*, or individual differences in reactivity and regulation (Rothbart & Bates, 2006), has been shown to predict infant cardiac physiology (Huffman et al., 1998). However, research has not examined the goodness of fit between parent personality and infant temperament to predict infant cardiac physiology (e.g., RSA) with mothers versus fathers. The goal of the current study was to evaluate whether parent personality and infant temperament predicted infant cardiac physiology with mother-infant and father-infant dyads.

Method

Participants

Mothers, fathers, and their 4-month old (+/-14 days) infants (*n*=49, 61.2% male) participated in the study. Parents were married (93.9%), Caucasian (Mothers: 87.8%, Fathers: 91.8%), highly educated (100% of mothers vs. 75.5% of fathers completed some college) and, 61.2% of families had an income of $74,999 or less yearly. Parents' mean age was 30.67 (range: 21-44) for mothers and 32.89 (range: 22-49) for fathers. Families were compensated $20 for their time.

Procedure

Parents completed two packets of questionnaires (in home, in laboratory) and a demographic interview. Parents separately participated in a 180-s baseline segment, a 270-s face-to-face play task (Still-Face Paradigm, SFP; Tronick et al., 1978), and a 180-s recovery segment with his/her infant. Cardiac physiology (heart rate variability) was recorded via 7 electrodes on the upper torso (MindWare BioLab 3.013). Parent order was counter-balanced. Laboratory visits were audio/video-recorded.

Measures

Parent Personality. The BIS and three BAS subscales (Drive, Fun-seeking, and Reward) from the Behavioral Inhibition System/ Behavioral Activation System Questionnaire (BIS/BAS; Carver & White, 1994) were used to examine parent-report of personality.

Infant Temperament. The Negative Reactivity, Orienting, and Surgency subscales of the Infant Behavior Questionnaire-Revised (IBQ-R; Gartstein & Rothbart, 2003) were used to assess parent-report of infant temperament.

Infant Baseline Respiratory Sinus Arrhythmia (RSA). Trained laboratory technicians observed the data in 30-s intervals for artifacts using an HRV Editing Program for the first baseline (MindWare BioLab 3.013).

Results

For mothers, a significant Fun-seeking X Infant Negative Reactivity interaction was revealed (*B*=-1.145, *SE*= .484, *t*= -2.365, *p*=.022). Follow-up simple slopes tests revealed that for infants low in negative reactivity, as their mothers' fun-seeking increased, their baseline RSA increased (*B*=1.230, *SE*=.497, *t*=2.475, *p*=.017). For fathers, two significant interactions were revealed: 1) a Father BAS Reward X Infant Surgency interaction (*B*= -1.728, *SE*= .696, *t*= -2.482, *p*=.017) and 2) a Father BAS Reward X Infant Orienting interaction (*B*= -1.611, *SE*= .588, *t*= -2.741, *p*=.009). Simple slopes tests revealed that for infants low in surgency (*B*=1.412, *SE*=.583, *t*=2.423, *p*=.020) and low in orienting (*B*=.971, *SE*=.442, *t*=2.195, *p*=.033), as their fathers' BAS reward increased, their baseline RSA also increased.

Discussion

Results revealed similarities and differences in predictors of infant baseline RSA with mothers and fathers. Components of BAS and infant temperament predicted infant baseline RSA. For mothers, BAS fun-seeking was found to predict infant baseline RSA; whereas, for fathers, BAS reward predicted infant baseline RSA. Infant negative reactivity seemed to play more of a role with mother-infant dyads, whereas infant surgency and orienting played more of a role with father-infant dyads. Findings link to the previous literature on mother versus father play styles, with mothers being more involved in social or object-based play (Forbes et al., 2004) while fathers are more involved in rough and tumble, physical play (Lewis & Lamb, 2010). Due to the small sample size and some of the overall multiple regression models being only trends, results need to be interpreted with caution. The current study is ongoing, and future analyses will include a larger sample. Findings stress the importance of the goodness of fit between parent personality and infant temperament as predictors of infant baseline RSA.

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The Influence of Ambiguity on Context Use in Associative Learning

Machella D. Raymond & Sharon A. Mutter

Introduction

Associative learning is important because we are constantly learning the relationship between things, or cues, in our environment and their consequences, or outcomes. The context, or the setting, that we learn these associations in can help us to remember these relationships later on (Harris, Jones, Bailey, & Westbrook, 2000). Additionally, when cues can lead to more than one outcome ambiguity arises (Bouton 1984). A study by Lucke, Lachnit, Koenig, and Uengoer (2013) looked at how participants use context in ambiguous and unambiguous situations. They found that participants in ambiguous situations were more likely to use context than those in unambiguous situations. Our study aims to replicate their findings, and eventually to extend our research to older adults. Thus, we hypothesize that participants in ambiguous situations will show a context effect, and participants in unambiguous situations will not show a context effect.

Method

Participants

Eight college students between the ages of 18-25 were recruited for this study, through flyers that were distributed throughout campus. The participants received monetary compensation for participation. Those who were color-blind or who were non-native English speakers were excluded from the experiment.

Apparatus and Stimuli

This study was adapted from a restaurant food-illness paradigm used by Lucke, Lachnit, Koenig, and Uengoer (2013). The following foods were used as the food cues H, X, Y, Z, and F1-F8: banana, broccoli, celery, chicken, grapes, lettuce, orange, pear, salmon, steak, tomato, and tuna. The Canadian Cabin and the Swiss Chalet were the restaurant names randomly assigned to contexts A and B. Food and restaurant names were randomly assigned to each participant. The two possible outcomes were the occurrence or no occurrence of diarrhea. The experimental task was presented on a Macintosh computer using SuperLab Pro 4.5.

Procedure

The study had two conditions, they were the context Relevant Group (RG) and the context Irrelevant Group (IG). The independent variable that was manipulated for this study was ambiguity. The RG was presented with an ambiguous situation because food cues X and Y were associated with different outcomes in different context. The purpose of this manipulation was to encourage participants in the RG to pay attention to the context. However, for those in the IG, the outcome associated with the food cues X and Y was the same in each context. Thus, they were presented with an unambiguous situation, and the context was irrelevant to learning for them.

In the main task, the participant started with a pretest to assess for individual preferences of the foods. Next, the participant was exposed to 10 learning blocks for Phase 1 and 10 learning blocks for Phase 2. In both learning Phase 1 and Phase 2, eight food cues were presented with their respective restaurant. Then, participants were asked to predict whether diarrhea would occur. After they made their prediction, they received feedback which told them the actual outcome. The trials in both phases were repeated, randomly, 10 times. Finally, the participant completed two testing blocks. In the Test Phase the participants were tested on stimuli Z and H. In both testing blocks Z and H were presented in both contexts and then participants had to predict the

outcome. However, during the Testing Phase, feedback was not given after the prediction was made.

Results

In the Test Phase, participants in the RG gave much higher outcome predictions for stimulus Z in context A (100) than they gave for stimulus Z in context B (0). However, participants in the IG only gave slightly higher outcome predictions for stimulus Z in context A (50.63) than they gave for stimulus Z in context B (44.38). Currently, we are waiting to collect more data. However, once we have more participants in our study, we plan to run a mixed factorial analysis of variance (ANOVA) to analyze the data.

Discussion

As hypothesized, participants in the RG showed a context effect. While those in the IG did not show a context effect. However, more data still needs to be collected in order to strengthen these claims. Our study is on-going, so we plan to collect more data on younger adults. Future research will investigate whether these context effects extend to older adults as well.

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The Effect of Music Therapy on Gait Improvement

Danny Chon & Dr. Krisstal Clayton

Introduction

In the U.S., it is estimated that each year, around 795,000 people have either a new or recurrent stroke (Mozaffarian et al., 2016). Problems with gait, or walking fluidity, are common among stroke patients (Jorgensen, Nakayama, Raaschou, & Olsen, 1995). Gait is important to regain for stroke patients, as it is necessary for daily living functions (Richards et al., 1993), and can reduce the likelihood of a stroke patient falling (Nyberg & Gustafon, 1995).

Recently, several novel approaches to stroke rehabilitation have emerged. In particular, music therapy has been shown to improve in-patient hospitalization by reducing anxiety, pain levels, improving the mood of hospital patients, and increase shoulder and elbow joint flexion in stroke patients (Evans, 2002; McCaffrey & Freeman, 2003; Jun, Roh, & Kim, 2012). However, there is little research that demonstrates improvement in walking fluidity due to music therapy. Thus, the purpose of this study is to examine music therapy as an intervention for gait rehabilitation as measured by the Tinetti Gait Assessment (Tinetti, 1986).

Method

Participants

Participants (Male = 17, Female = 11, Age Range = 41-82) were 28 conveniently sampled stroke patients from Southern Kentucky Rehabilitation Hospital. Data from 10 participants were excluded as they did not complete the study. Stroke patients were only included in the study with the approval of their physical therapist, if the stroke was of moderate impairment, fluent in English, and if the patient said they enjoyed listening to music. Participants were excluded if they had a previous stroke, hearing loss to both ears, history of substance abuse, any diagnosed psychological disorder except depression and anxiety, were unable to give consent, or experienced a mild or severe stroke. As compensation, the participants were given the option for free post-rehabilitation assessments.

Procedure

On day one, research assistants were notified of potential participants by the physical therapists (PT) and were given their patient administration slip (PAS) along with an intake Tinetti Gait Assessment. The PAS included the patient's demographics, area of stroke, and medical history. Participants were randomly assigned to either the Music group or the Control group before recruitment to prevent researcher bias. After the patient's written consent, research assistants helped patients create a playlist of songs the patient enjoyed listening to using the Music Assessment Tool-Modified (Heiderscheit & Chlan, 2009) and a laptop with Spotify.

On day 4, participants were administered another Tinetti Gait Assessment to see their progress from day 1. On day 5, participants were given an iPod shuffle and a pair of headphones for the duration of the experiment. For the Music group, the iPod contained a playlist of music that the participant chose, whereas for the Control group, the iPod contained rhythmic beats chosen by their physical therapist. The physical therapist instructed the patient to move to the beat, so that exercises were rhythmically paired with the tracks on the iPod. This exercise and iPod track pairing lasted the duration of the patients' hospital stay. The Tinetti Gait Assessment was also administered to measure their walking ability. On discharge day, the patient was administered the Tinetti Gait Assessment, provided feedback about the music exercise program, and debriefed if they chose to not return for the free post-discharge assessments. If the patient did choose to return for the post-discharge assessments, patients were debriefed after their last visit to the rehabilitation hospital.

Materials

This study was a mixed bivalent design exploring the effects of personally-selected music on gait. Study materials included the Tinetti Gait Assessment, the Music Assessment Tool-Modified, a laptop, an iPod shuffle, and a pair of headphones.

The Tinetti Gait Assessment evaluated various functions such as indication of gait, foot clearance, and step continuity or lack thereof (*e.g.* Indication of Gait: Any hesitancy or multiple

attempts, No hesitancy). The range of scores were between 0 and 12 with a maximum score of 12 indicating the best possible gait. The Music Assessment Tool-Modified aided in creating the patient's music playlist by assessing the patient's taste for music. The patient was asked the different types of genres they liked, if they enjoyed any artist or band in particular, any songs that made them happy, and any song that brought back fond memories. In addition, notes were taken about genres, musicians, and songs the patient did not like.

Results

Difference scores for the Music group (n = 13) and Control group (n = 5) were calculated using the mean scores from all participants (N = 18). Two difference scores were measured, the first being between discharge day and baseline, and the second being between discharge day and day 4. Results in the Music group showed an average increase of 4.00 points between baseline (*M* = 4.08) and discharge (*M* = 8.08), and an average increase of 2.39 points between day 4 (*M* = 5.69) and discharge (*M* = 8.08). Results in the Control group showed an average increase of 1.60 points between baseline (*M* = 6.60) and discharge (*M* = 8.20), and an average increase of 0.20 points between day 4 (*M* = 8.00) and discharge (*M* = 8.20).

Discussion

Results for this pilot study suggest that personally-selected music does improve gait recovery based on the mean increase of scores from baseline and discharge. Although participants in both the Music group and Control group showed improvement, the difference score for the Music group (4.00) was larger than the Control group (1.60). While the results are promising, the small sample size prevented inferential statistical analyses. Additional participants are needed to support our hypothesis that patient-selected music which is rhythmically paired with walking exercises significantly improves patient's' gait.

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Interactions Between Right-Wing Authoritarianism and Perceived Threat from Muslim Immigrants

Alexis R. Jones & Dr. Aaron L. Wichman

Introduction

Anti-Muslim prejudice in the United States is widespread. Much of it stems from the belief that Muslims are dangerous, and are a threat to American values. In this study, we assessed how differences in right-wing authoritarianism (RWA) moderates perceived symbolic and realistic threat from Muslims in the US. Bob Altemeyer (1981) developed the RWA scale to predict prejudice in different types of people. The scale specifically incorporated three 'traits' that would describe a right-wing authoritarian: conventionalism, authoritarian submission, and authoritarian aggression. Someone high in RWA would have values of social order, stability, cohesion, control, and tradition, while someone low in authoritarianism would have values of personal liberty, individual autonomy, social diversity, and openness to change (Duckitt & Sibley, 2010).

Integrated threat theory (ITT) proposed by Stephan and Stephan (2000) states that an ingroup may perceive members of another (minority) group as threatening. This theory outlines two kinds of threat: realistic and symbolic threat. Realistic threats are classified as physical threats; these could include, for example, perceived threat to one's own safety or to one's own economic privileges. An example of a symbolic threat, or value threat, is perceived threat to the validity of one's worldview. By developing a scale that incorporated ITT to measure the level and type of threat that people perceive and using a modified version of the RWA scale, our study's purpose was to assess the relationship, if any, that right-wing authoritarianism has with Americans' likelihood of feeling threatened by Muslim immigrants.

Method

A survey was designed using Qualtrics and distributed using Amazon's Mechanical Turk (MTurk). There were 548 participants (252 women and 242 women) aged 18 to 71 (M=35.7 SD=10.7).

Attack Vignette

Participants read a description of an attack on a local government building which were described as either a "brutal" attack or a "terrorist" attack. For example, the "brutal" attack vignette started off by saying, "A brutal attack on a local government building early Monday afternoon killed five maintenance workers who were cleaning the facility." The 'terrorist' attack vignette replaced the word *brutal* with *terrorist*.

RWA

RWA was measured using a modified 6-item version of the RWA scale. An example of one of the items is: "What our country really needs, instead of more "civil rights," is a good stiff dose of law and order."

ITT

A10-item Likert scale survey was used to measure attitudes towards Muslim immigrants using Integrated Threat Theory. The scale consisted of items like "Muslim immigrants may want to attack American people" and "Most Muslim immigrants have trouble understanding what Americans are like."

Results

The effect of the terror vignette was evaluated without regards to differences in right-wing authoritarianism. Results showed that the 'terror' vignette, as opposed to the attack described as a 'brutal' attack, increased perceptions of symbolic threat only.

To examine the relationship between RWA and the different threat types, 3-way regressions were run. Realistic threat was regressed on a dummy-coded vignette type, along with standardized symbolic threat and RWA. This analysis showed that symbolic threat interacted with RWA to predict realistic threat (t (1, 224) = -1.98, b = –.11, p = .05). This interaction is shown in Figure 1. Symbolic threat was also regressed on a dummy-coded vignette type, as well as standardized Realistic Threat and RWA, with all interactions. This analysis showed that Realistic Threat interacted with RWA to predict symbolic threat (t (1, 224) = 2.17, b = .12, p = .03). This interaction is shown in Figure 2.

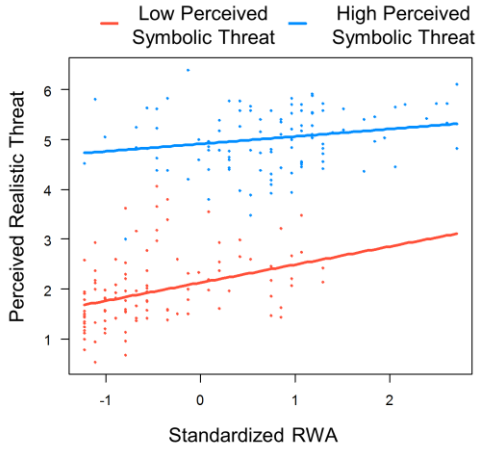

Figure 1. Symbolic threat and RWA to predict realistic threat

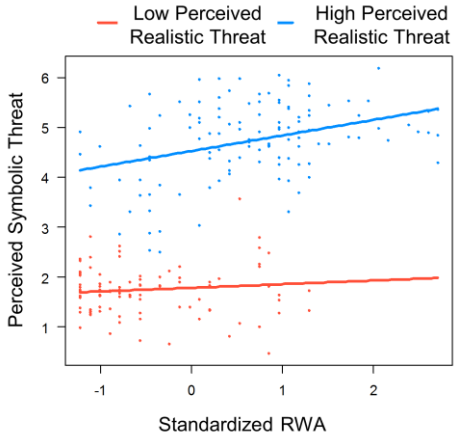

Figure 2. Realistic threat and RWA to predict symbolic threat.

Discussion

Because the 'terror' vignette increased perceptions of symbolic threat only, it was indicated that exposure to descriptions of terror attacks (a realistic threat) may increase perceived value conflicts (symbolic threat) with Muslims. This was evaluated without incorporating the effects of RWA. When RWA was incorporated, it was found that RWA moderated the correlation between symbolic and realistic threat perceptions. Specifically, when one was higher in RWA, even low levels of perceived symbolic threat predicted higher perceived realistic threat. In contrast, RWA predicted higher perceived symbolic threat only in the presence of high levels of perceived realistic threat. This means that RWA appears to specifically increase sensitivity to symbolic threat in such a way that even if there is no real threat to their existence, people high in RWA are more likely than people low in RWA to feel physically threatened when the perceive that someone disagrees with their worldview. Essentially, authoritarians feel physically threatened even when they perceive that someone's values only slightly conflict with their own. On the other hand, non-authoritarians only perceive these higher levels of physical threat when someone's worldview differs greatly from their own.

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Muscle Dysmorphia, Art Appreciation, and Masculinity

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Introduction

Muscle Dysmorphia (MD) is a specifier of body dysmorphic disorder (Nemeroff, et al., 2013). It has been conceptualized as an eating disorder (Grieve, 2007) and as a disorder similar to obsessive-compulsive disorder (Olivardia, 2001). It is experienced more commonly in men than in women (Chandler, Grieve, Derryberry, & Pegg, 2009) and is characterized by a desire to appear muscular, often followed by excessive exercising and usage of potentially dangerous diet supplements (Olivardia, 2001).

Studies by Leder et al. (2012, 2014) demonstrate that emotional art appreciation and logical art appreciation are opposed to one another. Positive affect is correlated with better performance on creative tasks and negative affect is correlated with better performance on logical tasks (Kounios & Beeman, 2009). Thus, it seems that individuals with MD, who experience more negative affect (Olivardia, Pope, & Hudson, 2000), are more likely to use a logical approach to understanding art. Furthermore, Mednick's (1962) research has found that creative thinking relies on loose associations between items, whereas logical thinking uses more rigid associations between items. Buhlmann's (2011) study has shown that individuals with body dysmorphic disorder have a stronger implicit association between "attractive" and "important" compared to controls. This stronger association might indicate that individuals with MD are more likely to use logical thinking. This inspires the first hypothesis of this study: men who score higher on the Muscle Dysmorphia Questionnaire (MDQ) will be more likely to use a logical appreciation of art instead of a creative/emotional appreciation of art. In addition, because men with MD often do not have insight into their disorder (Olivardia, 2001), the second hypothesis of this study is that men who score higher on the MDQ will have less insight into their art appreciation style.

Method

A convenience sample of 166 men from Amazon Mechanical Turk participated in this study. Participants received $.50 (US) each to participate. Of these, the data of 26 participants was excluded because they answered incorrectly three times or more to a manipulation check to ensure they were paying attention. The mean age of participants was 33.22 (*SD* = 10.44). The sample consisted of 69 (49.6%) Caucasian participants, 51 (36.4%) Asian participants, 6 (4.3%) Latino/Hispanic participants, 4 (2.9%) African-American participants, 4 (2.9%) bi-racial participants, and 5 (3.5%) participants of other ethnicities. Regarding their highest amount of education, 25 (17.9%) participants held master's or professional degrees, 74 (52.9%) participants held bachelor's degrees, 24 (16.4%) participants had received some college, 7 (5.0%) participants held associate degrees, 8 (5.7%) participants held high school diplomas, and 3 (2.1%) participants held G.E.D.'s.

Participants completed a 10-item questionnaire assessing age, ethnicity, height, weight, country of origin, highest amount of education, income amount, marital status, exercise history, and health history. They also completed the MDQ (Grieve et al., 2014), a 34-item questionnaire that assesses symptoms of MD. In addition, they completed the Art Rating Test (ART), a 41-item assessment designed specifically for this study. The ART uses 10 famous pieces of art and asks the participants to rate each piece from 1 (*not beautiful/pleasing to the eye*) to 10 (*very beautiful/pleasing to the eye*). Then the participant ranks possible factors for eating rating, which are either creative/emotional or logical. After each of the 10 pictures were rated and their factors for the rating ranked, each participant judged whether his approach was mostly creative/emotional or logical.

Results and Discussion

To evaluate the first hypothesis, two linear regression analyses were conducted to determine whether MD symptoms would predict art appreciation style. The first analysis used the first factors for each artwork and revealed that MDQ scores predicted art appreciation style ($\beta = -.362$, $p = .000$, $R^2 = .131$). This negative linear relationship reveals that higher scores on the MDQ are associated with creative/emotional art appreciation. The second analysis used a points system for all factors and demonstrated that MDQ scores predicted art appreciation style ($\beta = -.231$ $p = .012$, $R^2 = .053$). This negative linear relationship further supports that higher scores on the MDQ are associated with emotional/creative art appreciation.

To evaluate the second hypothesis, participants were divided into two groups based on MDQ scores, resulting in a group with high MDQ scores and a group with low MDQ scores. A Pearson's correlational analysis demonstrated that for men with high MD, a -.322 correlation existed for total factor ranking scores and participants' judged art appreciation style. This negative correlation indicated that men who score higher on the MDQ were more likely to describe their art appreciation style as logical, and thus, had low levels of insight.

Regarding the first hypothesis, the data collected and analyzed in the present study contradicted it. It may be that individuals who score higher on the MDQ, and who thus present more MD symptoms, may be less familiar with art because art is commonly seen as a feminine pursuit. Doss and Hopkins' (1998) multicultural masculinity model included hypermasculine posturing and achievement, which are both reflected in MD. It may be that individuals with MD seek to assert their masculinity by increasing their muscularity. A creative appreciation of art does not require an appreciation of specific colors or styles, which might make it feel more masculine. Regarding the data supporting the second hypothesis, it further seems that individuals who scored higher on the MDQ might have held that it is more masculine to be logical than to be emotional/creative, leading them to judge their art appreciation style as logical.

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If Authoritarians Wanted to Protect Civil Liberties, would they be Displeased if they Succeeded?

Mersedes A. Engle & Dr. Aaron L. Wichman

Introduction

When faced with threatening circumstances, people will react in a variety of ways. In our research, we were interested in understanding how people high in Right Wing Authoritarianism (RWA) would react to the threat of a terrorist attack, as measured by their decision to give up or protect civil liberties.

How people react to threat can be in part based upon the extent of their social ideologies. In this case, we focused on the RWA social ideology. RWA is characterized by authoritarian submission, general aggressiveness, and strong adherence to social conventions and values (Altemeyer, 1981).

Although terrorist attacks can produce loss and fear, they can also produce tension between the fundamental need to feel secure and the aspirations to maintain democratic values and culture (Davis & Silver, 2004). This tension can lead to an increase in the support for restrictions on civil rights and liberties (Canetti-Nisim et al., 2009, Davis & Silver, 2004). This tension over maintaining democratic values and culture and a need to feel safe can be viewed as a trade-off between civil liberties and security.

Through the civil liberties trade-off between freedom and security, and the presence of a terrorist attack threat, people will vary in what civil liberties they are willing to give up to maintain security and protection.

Although past research has investigated how people high in RWA react to threats, how threats influence civil liberties, and how threats and RWA lead to prejudice, there exists a gap in the research of how threat, social ideologies, civil liberties, and prejudice all interact together. Our research seeks to address how the RWA social ideology and threat from a terrorist attack will influence people's decisions to give up civil liberties or protect civil liberties.

Method

548 participants were recruited via convenience sampling through Amazon's Mechanical Turk. Our total sample after accounting for exclusion requirements comprised of 476 participants (242 male, 232 female; mean age =35.85 SD = 10.7). Non-native English speakers and non-American citizens were excluded as well. All participants were paid $2.50 for their participation.

After giving informed consent, participants were asked to complete a six question measure about Right Wing Authoritarianism (e.g. "Our country will be destroyed someday if we do not smash the perversions eating away at our moral fiber and traditional beliefs").

Participants read an attack vignette describing an attack at a local government building. Following the vignette, participants completed a seven-item Civil Liberties vs. Security Measure adapted from Davis & Silver (2004). Participants were asked to select the option that best matched their opinion (e.g. "1-In order to curb terrorism in this country, it will be necessary to give up some civil liberties, 4- Neutral, 7-We should preserve our freedoms above all, even if there is some risk of terrorism").

After completing the measure of Civil Liberties, participants were told that the researchers would be sharing recommendations for policy makers based upon what the majority of participants in the study had endorsed in the Civil Liberties vs. Security Measure. At this time, participants were randomly presented with recommendations that either agreed or disagreed with their personal responses to the Civil Liberties vs.

Security measure. Following this section, participants were asked to rate their displeasure or pleasure with the potential recommendations.

Results & Discussion

Attitude toward the possible recommendation was regressed on standardized RWA, civil liberties attitudes, dummy-coded Contra or Pro recommendations, and all interactions. This analysis showed a significant 3-way interaction between RWA, civil liberties attitudes, and feedback type (*t* (1, 465 = *-6.53, b* = -0.95, *p* = .00).

RWA interacted with recommendation condition and civil liberties attitudes to predict recommendation attitudes. Among people who were relatively anti-civil liberties, higher RWA predicted more positive attitudes toward the recommendation in the majority agree condition, and less positive attitudes in the majority disagree condition. However, among people who were more pro-civil liberties, the reverse occurred. Higher RWA predicted less positive attitudes in the "agree" and more positive attitudes in the "disagree" condition.

People who are higher in RWA and are pro-civil liberties may experience ambivalence between their strong RWA ideology that values aggression, submission to authority, and conventionalism, and their desire to protect and maintain civil liberties. Due to this inconsistency between RWA and pro-civil liberties, authoritarians may believe in the value of civil liberties, but simultaneously be displeased when these are protected in the face of terror attacks.

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Pairing Self-Selected Music with Stroke Balance Rehabilitation

Peter Schultz & Dr. Krisstal Clayton

Introduction

Strokes are the fifth leading cause of death in the United States effecting one person every 40 seconds (Mozaffarian et al., 2016). A key concern for stroke patients is their increase in falling potential after experiencing stroke-related motor impairments. Exercise programs focused on balance training can drastically reduce this risk (Schoene, Valenzuela, Lord, & de Bruin, 2014). Balance is a main determinant of a patient's independent abilities and a factor that physical therapists consider when discharging patients (Duncan et al., 2005).

Previous research has shown listening to music while performing rehabilitation exercises improves balance in patients with Parkinson's disease (Volpe, Signorini, Marchetto, Lynch, & Morris, 2013). However, that form of music-rehabilitation pairing usually takes place in a large group with a standard playlist. The current study aims to maximize the effects of music on balance recovery by pairing self-selected music with individualized stroke therapy exercises. We hypothesize that the addition of self-selected music will increase balance in stroke patients at a greater rate than without.

Methods

Participants

Data was collected from 28 stroke patients at an eastern rehabilitation center in the United States, with 17 patients in the Music condition and 11 in the Control condition. 17 of the participants were males and 11 were females with the age range from 41 to 82. Due to complications at the rehabilitation center, only 21 participants completed the study with 15 in the Music condition and 6 in the Control condition. To be in the study, patients were required to be between the ages of 30 and 90, be a fluent English speaker, have no more than a moderate level of stroke, no history of stroke, and enjoy listening to music. Patients were excluded if they had a history of previous stroke, had a complete loss of both legs and/or both arms, were diagnosed with a psychological disorder other than depression, were hearing impaired or could not provide informed consent.

A research assistant presented the study to the patients as a new exercise program focused on pairing rhythmic beats derived from their favorite songs with their prescribed rehabilitation exercises. Patients were guided through the complete informed consent form before deciding whether or not to join the study.

Materials

To assess the patients' balance, the Berg Balance Scale Test (Berg, 1992) was administered by a licensed and trained physical therapist. The Berg Balance Scale is a widely used as a standardized measure for balance and ability to perform tasks without risk of falling. The test includes 14 items rated on a five-point scale from 0 to 4, and includes instructions for each task as well as a scoring rubric. The test uses a variety of tasks including: standing unsupported, picking up items off the floor, and balancing with one foot on a stool. The tasks are to be performed in chronological order with increasing difficulty (Berg,1992).

Procedure

To determine if music or a metronome rhythmic beat improved balance, patients were randomly assigned to either a Music or Control (metronome beat) condition. There is evidence to suggest rhythmic beats can help patients regain their motor function (Yoo & Kim, 2016), but no evidence that pairing self-selected music can help patients regain their motor function. Each day patients received standard physical therapy. Daily procedures for patients' rehabilitation are provided below:

Day 1: Intake Day: On the first day of admittance into the rehabilitation center, patients were administered the Berg Balance Scale by their physical therapist. Following this initial session, a research assistant recruited the patients. Patients in the music condition collaborated with the research assistant to compile a list of songs to be potentially paired with their exercises. From that list, 20 minutes of music were selected and given to the patient's physical therapist (PT) on

an iPod shuffle. In the Control condition, the PT was given an iPod shuffle with a variety of metronome beat speeds.

Day 4: Reassessment: Patients in both conditions were re-administered the Berg Balance Scale by their physical therapist.

Day 5: Music Intervention: Patients were given an iPod shuffle with either their songs (Music condition) or a selection of metronome beats (Control condition) and a pair of headphones to listen to the music while doing their exercises. The exercises were matched with the rhythmic timing of the songs or metronome beat from this point until the patient's discharge.

Discharge day: Patients were re-administered the Berg Balance scale by their physical therapist.

Results and Discussion

Patient's balance was assessed using the Berg Balance Scale (Berg, 1992) on Day 4 of their stay at the rehabilitation center and on their Discharge Day (D-Day). To determine if one condition had higher balance scores the average difference between D-Day and Day 4 was calculated (see Table 1). Patients in the Music condition improved their score 6.7 more points than the Control.

Table 1. Average Berg scores for patients in control and Music conditions

	Day 1 Berg	Day 4 Berg	D-Day Berg	Change in Berg D-Day–Day4
Music	19.27	28.20	38.87	10.67
Control	20.17	27.83	32.33	4.5

Patients in both samples had a similar average improvement in their Berg scores between Day 1 and Day 4. However, after the interventions were added on Day 5 those in the Music condition had greater Berg score improvement than those in the Control Condition. This data suggests that patient selected music has an impact on improving balance in stroke patients beyond rhythmic benefits of a metronome beat. Both groups received a form of rhythmic pairing, but those in the Music condition still had greater improvement over those in the Control condition. With the target Berg score at 45 for functional independence (Berg, 1992), not all patients quite reached the optimal score in either group. However, those in the Music condition were comparatively closer than those in the Control condition despite starting with relatively similar scores. Further research is needed to run adequate statistical analysis and determine the significance of this effect, but the current study has strong implications for the positive effect of patient-selected music on balance rehabilitation.

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Perceived Benefits and Barriers to Treatment of Muscle Dysmorphia

Karli M. Molignoni & Frederick G. Grieve

Introduction

Body image and eating disorders have been widely recognized among the female population; however, these disorders were not recognized among men until recently. One of the main disorders being studied by those in the field is muscle dysmorphia. The disorder is most commonly found in young men and is characterized by attempts to gain increasingly unrealistic amounts of muscle mass as a result of perceiving oneself as inadequate in muscularity (Grieve, 2007). Essentially, men with muscle dysmorphia see themselves as too small and feel the need to build very large amounts of muscle. Those who study muscle dysmorphia have a general grasp on the contributing factors of muscle dysmorphia, the symptomology, and the classification of the disorder. However, there is not as much research on treatment outcomes. For the following study, we investigated the impact that severity in symptomology has on likelihood to seek treatment, the barriers that men perceive in regard to seeking treatment, and the effectiveness of various types of therapy.

It is critical to examine the lived experiences of men with muscle dysmorphia so that we can most effectively treat the disorder. It is important to get a clear picture on how the disorder is impacting men's' lives. It is also important to more fully understand which areas of a person's life are improved as a result of therapy for body image. In this particular study, we hypothesized that men presenting with more severe symptomology would be less likely to go to treatment. In addition, we hypothesized that cognitive behavioral therapy would be the most effective treatment for men who have gone to treatment and that it would be the most effective predicted treatment for those who have not been to treatment.

Method

A sample of 200 adult men was recruited from Amazon Mechanical Turk. A total of 149 men fit all of our criteria. The mean age of participants was 35.23 (SD = 12.41), with a range of 19 to 76. Participants were asked for their height and weight for the calculation of body mass index (BMI; M = 26.49 SD = 5.85). Lastly, participants were asked to indicate the number of hours they worked out in a given week (M = 21.29, SD = 23.95). A series of five questionnaires were distributed electronically and included a Demographics questionnaire, the Muscle Dysmorphia questionnaire (Grieve et al., 2014), the Body Assessment Scale (Lorenzen, Grieve & Thomas, 2003), the Barriers to Treatment Questionnaire, and the Improved Body image questionnaire, both created for this particular study.

Results & Discussion

Participant scores on the Muscle Dysmorphia Questionnaire (Cronbach's alpha = .92) were calculated to measure symptomology of muscle dysmorphia *(M* = 98.80, *SD* = 24.33, Range = 45 – 157, Potential Range = 34 – 204). Scores on the Body Assessment Scale (Cronbach's alpha = .95) were calculated to measure participant perspectives on particular aspects of their bodies (M = 76.64, SD = 19.15, Range = 30 – 125, Potential Range = 25 – 125). Scores on the Improved Body Image Questionnaire (Cronbach's alpha = .95) were calculated to determine improvement in body image as a result of therapy (M = 28.92, SD = 8.44, Range = 11 – 44, Potential Range = 11 – 44). Scores on the Barriers to Treatment Questionnaire (Cronbach's alpha = .82) were calculated to determine the level of impact that particular factors had on access to treatment for those with muscle dysmorphia (M = 14.80, *SD* = 4.96, Range = 7 – 25, Potential Range = 7 – 28).

The results for the first hypothesis, which stated that higher symptomology of muscle dysmorphia would be associated with a lower likelihood of seeking treatment, showed that the opposite is actually true. Not only does more severe symptomology lead to a higher chance of someone seeking treatment, but it also is associated with a higher number of perceived barriers to treatment and participants rated them as more severe barriers. Higher scores on the Body Assessment Scale also indicated a higher likelihood of seeking treatment. Regarding the second hypothesis, which stated that cognitive behavioral therapy would be the most effective form of treatment for muscle dysmorphia, all treatment styles (CBT, DBT, ITT, Combination of modalities) were found to be equally effective compared to the "other" category. In addition, a median split of the MDQ scores showed that higher scorers tend to be younger in age. In other words, as men age, they tend to be less preoccupied with their body image.

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Faculty Mentor & Student Contact Information

The REU program faculty would like to thank each of the REU students for making this program a success. We appreciate all of your hard work this summer and look forward to continuing our collaboration as we prepare these projects for dissemination at national and/or international conferences over the next year. We wish you the best of luck and look forward to hearing about your graduate school and career success.

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