WKU

Western Kentucky University

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

2ND Annual REU Research Conference

August 5, 2016

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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, 2016 - August 5, 2016) 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
APA expectations and ethics
Experimental design
GRE preparation
SPSS and Excel overview
Writing a method section
Guided method writing
Statistics and data analysis
Is an academic career for you?
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
Getting into graduate school
Developing interview skills

Faculty Brown Bag Research Presentations

Cognitive Strategies (Dr. Jenni Redifer)
Examining the Implications of Technology Use at Work (Dr. Amber Schroeder)
It Isn't Crazy if It Works: What We Know about Sport Fandom (Dr. Rick Grieve)
Nonsuicidal Self-Injury and Suicidal Behaviors in Adolescents (and Young Adults) (Dr. Amy Brausch)
Applied data analysis: Data science and The Field of Institutional Research (Taylor Blaetz)
Masculinity is Reactive: Mortality Salience Increases Masculine, but not Feminine, Self-Stereotyping (Dr. Aaron Wichman)
Examining Individual Differences in Emotion Regulation (Dr. Diane Lickenbrock)
Incremental Beliefs about Ability Ameliorate Self-Doubt Effects (Dr. Qin Zhao)
Aging and Causal Judgment: Revision of Causal Beliefs (Dr. Sharon Mutter)
How do Interest and Cognitive Ability Affect Mind Wandering during Reading? (Dr. Matthew Shake)

Field Trips Exploring Local Culture and History

Lost River Cave Boat Tour – Lost River Cave, Bowling Green, KY
Belmont Mansion – Nashville, TN

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

Diane Lickenbrock, Rick Grieve, Lance Hahn, Kelly Madole, Andy Mienaltowski, Sharon Mutter, Farley Norman, Amy Brausch, Jenni Redifer, Amber Schroeder, Aaron Wichman, Liz Lemerise, Qin Zhao, Matthew Shake, Reagan Brown, Amy Brausch, and Taylor Blaetz

STUDENT SPOTLIGHTS

Lisa Dazzell is a rising junior at the City University of New York Lehman College in Bronx, NY. She will graduate with a B.A. in Psychology in May 2018. After graduation, Lisa plans to apply to doctoral programs for clinical psychology and later conduct clinical research on mental health disorders and their impact on individuals from low socioeconomic backgrounds.

Angela Engle is a senior at Webster University in St. Louis, MO. She will graduate with a B.A. in Psychology in December 2016. After graduation, Angela plans to apply to masters programs for clinical mental health counseling and pursue a career as a licensed professional counselor.

Eva Frishberg is a senior at Bard College in Annandale-On-Hudson, NY. She will graduate with a B.S. in Psychology in May 2017. After graduation, Eva plans to apply to Ph.D. programs in Clinical Psychology and work in the field to address learning disabilities.

Jaroth Lanzalotta is a senior at Reed College in Portland, OR. He will graduate with a B.A. in Psychology in May 2017. After graduation, Jaroth plans to apply to doctoral programs for social psychology and pursue a career as a professor, then take over the world.

Zoua Lor is a rising junior at St. Olaf College in Northfield, MN. She will graduate in May 2018 with a B.A. in Psychology and a concentration in Statistics. Zoua plans to matriculate into a clinical/counseling psychology doctoral program. She aspires to practice psychology and pursue a career as a professor.

Cody Mashburn is a senior at Young Harris College in Young Harris, GA. He will graduate with a B.S. in Psychology and a minor in Philosophy in May 2017. After graduation, Cody plans to apply to Ph.D. programs in Cognitive Psychology and Cognitive Neuroscience to pursue a career as a professor.

Kali Odd is a senior at Hastings College in Hastings, NE. She will graduate with B.A. in Psychology and a minor in Communication Studies in January 2017. After graduation, Kali plans to apply to Ph.D. programs in Industrial/Organizational Psychology and pursue a career as a professor.

Makenna Snyder is a senior at Missouri Western State University in Saint Joseph, MO. She will graduate with a B.S. in Psychology with a minor in Wellness in May 2017. Makenna plans to apply for doctoral programs in occupational therapy and hopes to specialize in pediatrics as a practicing therapist and eventually conduct art-based intervention research.

Catherine Woosley is going to be a senior at Western Kentucky University. She will graduate in May 2017 with a B.S. in Psychological Sciences and a B.A. in Music. She will continue her study of psychology at Western Kentucky University working on her master's in Psychological Sciences with a concentration in Cognitive Development.

Faculty Mentor Spotlights

Dr. Amy Brausch is a Clinical Psychologist who joined the WKU faculty in 2011 after completing her Ph.D. at Northern Illinois University. Her research currently examines non-suicidal self-injury in adolescents.

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. 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. Amber Schroeder is an Industrial-Organizational Psychologist who joined the WKU faculty in 2012 after completing her Ph.D. at Clemson University. Her research currently focuses on examining the validity of online social media use in organizational settings.

Dr. Matthew Shake is a Cognitive Psychologist who joined the WKU faculty in 2012 after completing his Ph.D. at the University of Illinois. His research currently examines how cognitive aging affects language processing and comprehension.
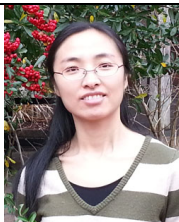
Dr. Qin Zhao is an Educational Psychologist who joined the WKU faculty in 2008 after completing her Ph.D. at the University of Florida. Her research currently focuses on how to enhance metacognitive ability.

CONFERENCE SCHEDULE

9:00   ORAL ABSTRACT SESSION

Cessation of Nonsuicidal Self-Injury: How Do Those Who Desire to Stop Differ from Those Who Do Not?
Presenter: Angela Engle   *Faculty Mentor: Dr. Amy Brausch*

Size Discrepancy: Actual vs. Ideal Body Image of Men with Muscle Dysmorphia
Presenter: Lisa Dazzell   *Faculty Mentor: Dr. Rick Grieve*

Us vs. Them and Especially Them: Rival Derogation in Sport Fans
Presenter: Jaroth Lanzalotta   *Faculty Mentor: Dr. Rick Grieve*

A Comparison of Self-explanation and Practice Retrieval: Impacts on Verbatim Recall and Inference Generation
Presenter: Zoua Lor   *Faculty Mentor: Dr. Jenni Redifer*

Self Doubt Effects Depend on Beliefs about Ability
Presenter: Eva Frishberg   *Faculty Mentor: Dr. Qin Zhao*

Ambiguity Leads to Context-Specificity in Predictive Learning
Presenter: Catherine Woosley   *Faculty Mentor: Dr. Sharon Mutter*

Predictive Learning Biases Selective Attention Orientation
Presenter: Cody Mashburn   *Faculty Mentor: Dr. Sharon Mutter*

Bingocize: The Effect of Exercise Intervention on Cognition, Functional Performance, and Health Behaviors in Older Adults
Presenter: Makenna Snyder   *Faculty Mentor: Dr. Matthew Shake*

Consistently off the Mark: Examining Structure in the Cybervetting Process
Presenter: Kali Odd   *Faculty Mentor: Dr. Amber Schroeder*

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.

12:30   INVITED SPEAKER

Dr. Chaitra Hardison: *Women on the Front Lines: Establishing Physical Standards for Ground-Combat Jobs*

RESEARCH ABSTRACTS

Size Discrepancy: Actual vs. Ideal Body Image of Men With Muscle Dysmorphia
Lisa Dazzell & Frederick Grieve

Introduction

The current study was designed to examine size discrepancies between actual and ideal body shape in men with and without Muscle Dysmorphia (MD). MD is a body dysmorphic disorder where individuals are preoccupied with the body and believe it to be more underdeveloped than it actually is, when in fact, individuals with MD are lean and muscular, especially in comparison to the average person (American Psychiatric Association, 2013). Men typically have the disorder, and experience a larger size discrepancy between their self-reported and actual body image. Pope et al., (2000) verified the hypothesis that men want to be more muscular and lean than they currently are. However, subjects in the study were not screened for MD or asked to provide estimates of their actual body shape and size. It may be likely that men with MD experience a greater desire for muscle mass than the average male.

Method

Participants

Participants were 251 men aged 18 to 72 (*M* = 30.7, *SD* = 9.1), who workout at the gym three or more times per week for at least 45 minutes at a time. Race/ Ethnicity was composed of 25 Blacks or African Americans, 24 Hispanics or Latinos, 73 Asians/Pacific Islanders, 118 Caucasians, 7 Native Americans or American Indians, and 4 other. Participants were recruited from Amazon Mechanical Turk, and from Western Kentucky University.

Measures

Muscle Dysmorphia Questionnaire. The Muscle Dysmorphia Questionnaire (MDQ; Grieve et al., 2014) is a 34-item self-report questionnaire examining characteristics of MD on a six-point Likert-type scale, ranging from 1 (*strongly disagree*) to 6 (*strongly agree*).

Bodybuilder Image Grid. The Bodybuilder Image Grid (BIG; Hildebrandt, Langenbucher & Schlundt, 2004) is a 5x6 grid displaying several male body types and shapes with varying body fats and muscle masses (Williams, 2013).

Fat-Free Mass Index. The fat-free mass index (FFMI; Kouri, Pope, Katz, & Oliva, 1995) is a measure of height in relation to body weight, used to identify muscle mass.
$$FFMI = \frac{W((1 - BF\%)/100)}{H2 +6.1\times(1.8-H)}$$

Procedure

Participants completed a 50-item questionnaire composed of eight demographic questions, followed by five questions about their body, e.g., "What is your ideal weight?" After completing the body questions, participants took the MDQ followed by the BIG, where they indicated their actual and ideal body shape using the grid. The weight and height provided by participants were used to calculate FFMI of actual and preferred body type for each participant. The body fat measures were determined based on the BIG scale. Size discrepancy was found by calculating the difference between actual FFMI and Ideal FFMI.

Results

An independent samples *t*-test revealed that there was a significant difference between the high and low MDQ score groups *t* (44) = -33.6, p < .001. Participants in the high MDQ score group (*M* = 151.19, *SD* = 8.01) indicated higher scores on the MDQ

than participants in the low MDQ group (*M* = 65.32, *SD* = 9.13). Another independent samples *t*-test revealed no significant difference between the high MDQ score group and the low MDQ score groups on body mass index (BMI), $t(32.4) = -.67$, $p = .51$. Further, an independent samples *t*-test revealed no significance between the high MDQ score group and the low MDQ score groups on actual muscle mass, $t(41) = -1.31$, $p = .20$. Finally, an independent samples *t*-test revealed no significance between the high MDQ score group and the low MDQ score groups on ideal muscle mass, $t(42) = -1.81$, $p = .08$.

Discussion

The results indicate that there is a difference in perceived actual and ideal body shape of participants. In general, men want to become more muscular. There is no difference in people with high MD and people with low MD when it comes to actual muscle mass, which indicates that people with MD think of themselves as smaller than the average person, when in fact they are either more muscular or average as well. While the difference between high MDQ score group and low MDQ score group and ideal muscle mass was insignificant, the results of the independent *t*-tests indicate that we are off to a good start, and participants in the high MD score group would have a greater preferred ideal muscle mass. Future studies should be done on more men with MD, and researchers should take participant's body measurements.

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Cessation of Nonsuicidal Self-Injury: How Do Those Who Desire to Stop Differ from Those Who Do Not?

Angela Engle & Amy M. Brausch

Introduction

Non-suicidal self-injury (NSSI) is defined as the deliberate destruction of one's own tissue without intent to die and for reasons that are socially unacceptable (Nock, Joiner, Gordon, Lloyd-Richardson, & Prinstein, 2006). Individuals generally begin engaging in this behavior around the ages of 13 or 14, and it is found to be equally prevalent among males and females (Klonsky & Muehlenkamp, 2007). A meta analysis reported a mean lifetime prevalence rate of NSSI as 18% internationally (Muehlenkamp, Claes, Havertape, & Plener, 2012). However, there is no literature comparing individuals who report wanting to stop self-harming and those who do not. The aim of the present study was to analyze how these two groups differed based on NSSI methods and functions, psychopathology, and distress tolerance. It was hypothesized that those who want to continue NSSI would have higher rates of psychopathology and lower levels of distress tolerance, engage in more severe methods of NSSI, and have more intrapersonal functions than those who want to stop self-injuring.

Method

Participants were 347 college students with a history of NSSI from a larger study of 1200 college students. Those with NSSI history were divided into Continue NSSI (n=43) and STOP NSSI (n=304) groups based on their response to an item about their desire to stop NSSI. Participants completed the following self-report measures: Inventory of Statements About Self-Injury (ISAS; Klonsky & Glenn, 2009), the Center for Epidemiologic Studies Depression Scale, the Zung Self-rating Anxiety Scale (ZSAS), the Eating Attitudes Test 26 (EAT-26), and The Distress Tolerance Scale (DTS; Simons & Gaher, 2005).

Results

A t-test showed no significant differences in distress tolerance or levels of psychopathology. Paired comparisons examining mean differences in lifetime frequency of NSSI indicated that the Continue NSSI group had a significantly higher lifetime frequency of NSSI (M=24.78, SD=24.64) than the Stop NSSI group (M=16.75, SD=18.77), $t(331) = -2.39$, $p = .018$. However, another t-test revealed no significant differences in the number of NSSI methods reported between the two groups ($t(331) = -.875$, $p > .05$). More t-tests revealed that there was no significant difference in the frequency of severe methods reportedly used by participants between the two cessation desire groups ($t(337) = -1.02$, $p > .05$). However, individuals in the Continue NSSI group used minor self-harm methods (M=18.35, SD=17.86) significantly more frequently than those in the Stop NSSI group (M=12.12, SD=14.34), $t(331) = -2.40$, $p = .017$. A one-way, between subjects ANOVA revealed that there were no significant differences in interpersonal functions between the two groups ($F(1,331) = 1.26$, $p > .05$), but there were significant differences concerning intrapersonal functions. People in the Stop NSSI group rated intrapersonal functions as significantly more relevant (M=2.05, SD=1.47) than the Continue NSSI group (M=1.26, SD=1.36), $F(1,335) = 10.58$, $p = .001$. Specifically, affect regulation (M=3.37, SD=1.94) was rated as especially relevant for those in the Stop NSSI group compared to the Continue NSSI group (M=2.20, SD=2.04), $F(1,336) = 13.09$, $p < .001$.

Discussion

The first hypothesis that those who do not want to stop NSSI would have higher rates of psychopathology and lower levels of distress tolerance was not supported. It is

possible that there were no significant differences because of the size discrepancy between the "stop" and "continue" cessation desire groups. It may also be the case that cessation desire has no effect on the levels of psychopathology. Having any history of NSSI puts individuals at an increased risk for higher rates of depression and anxiety compared to those with no history of NSSI (Klonsky & Muehlenkamp, 2007).

The second hypothesis that those who do not want to stop self-harming would engage in more severe methods of NSSI was also not supported. Conversely, those who do not want to stop NSSI engaged in significantly more minor methods of NSSI. This might be the case because those who do not want to stop may not perceive their behavior as NSSI and possibly psychologically harmful.

The final hypothesis that the Stop NSSI group would have more interpersonal functions and the Continue NSSI group would have more intrapersonal functions was not supported by the results. Inversely, individuals who want to stop NSSI reported significantly more intrapersonal functions, specifically, affect regulation. Those who state affect regulation as a function for NSSI may be more emotionally stable than those who do not. People's attitudes moderate whether or not they perform help seeking behaviors (Pumpa & Martin, 2015). One study found that positive attitudes towards help-seeking significantly predicted greater intentions to seek help. Future research in this area would help practitioners tailor interventions to specific subgroups for better outcomes.

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Self-Doubt Effects Depend on Beliefs about Ability
Eva Frishberg & Dr. Qin Zhao

Introduction

Self-doubt is the metacognitive representation of uncertainty about one's abilities. Past research has shown a negative correlation between self-doubt and self-esteem (Hermann, Leorardelli, & Arkin, 2002; Wichman & Hermann, 2010) and a link between self-doubt and maladaptive coping mechanisms such as self-handicapping and subjective overachievement (Jones & Berglas, 1978; Oleson et al., 2000).

The negative consequences of self-doubt arise most prominently when people believe that their ability is fixed. Research suggests that some people believe that ability is malleable and develops incrementally over time, through effort, while others believe that ability is fixed, stable, and innate. Individuals with incremental beliefs are more willing to face challenges and persist on difficult tasks, relative to entity believers (e.g., Dweck, 1999; Dweck & Leggett, 1988; Hong et al.,1999; Molden & Dweck, 2006).

The present research investigated whether beliefs about ability can be manipulated, and if so, whether those beliefs can subsequently moderate the effects of self-doubt on well-being and task performance. This study is a replication based on Zhao and Wichman (2015) showing correlational evidence that incremental beliefs about ability ameliorated the negative consequences of self-doubt. The purpose of this study is to provide causal evidence of belief manipulation directly moderating self-doubt effects.

Method

Participants

A sample of 89 English-speaking participants, 37% women, between the ages of 21 and 69 (*M* = 32.9, *SD* = 9.7) were recruited from Amazon's Mechanical Turk (M Turk), and were randomly assigned to either incremental or entity belief conditions. Each participant was compensated $5.00 on completion of the study.

Procedure and Measures

All sessions were conducted online. After receiving instructions, participants completed a measure of self-doubt (Oleson et al., 2000), before being asked to read a scientific article, as part of a "reading comprehension" task, that was actually a manipulation of ability beliefs. The articles, as used by Miele and Molden (2010), contained fictitious scientific evidence that supported the idea that intelligence is genetically determined and remains stable over time (entity condition) or is determined by the environment and can be changed (incremental condition), respectively. After reading, participants were asked several open-ended questions about the article to increase the impact of the manipulation, and then given a measure of ability beliefs (De Castella & Bryne, 2015).

Participants then took several well-being measures, prior to engaging in the performance tasks. The measures include the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellgan, 1988), the Performance Self-Esteem scale (Heatherton & Polivy, 1991), and the anxiety measure adapted from the Test Anxiety Inventory (TAI; Spielberger et al., 1980).

After the tasks, which included a verbal anagram task and a verbal reasoning test, participants filled out several measures of Task Involvement, Effort, and Enjoyment (Elliot & Harackiewicz,1996) and subsequently provided demographic information, including ACT scores. Finally, participants were debriefed and compensated.

Results

Manipulation of ability beliefs was effective. Exposure to the incremental (versus entity) manipulation caused higher incremental scores, $t(87) = -3.92$, $p < .001$. *MIncremental* = 36.6, *SD* = 11.3; *MEntity* = 27.1, *SD* = 11.5.

In terms of task performance, we found a two-way interaction between self-doubt and manipulated beliefs about intelligence on anagram performance, $B = 1.08$ (*SE* = .36), $p = .025$, such that there was a negative association between self-doubt and performance in the entity belief condition, $p < .05$; but no significant association between self-doubt and performance in the incremental belief condition, $p > .05$. No significant effects were found for the verbal reasoning task, $p > .05$.

In terms of task engagement, higher self-doubt was associated with lower task involvement, $B = 1.16$ (*SE* = .54), $p = .035$ and lower task effort, $B = .48$ (*SE* = .20), $p = .02$. Task involvement and effort were higher in the incremental condition than in the entity condition $p < .05$, but there was no interaction between self-doubt and manipulated belief about ability, $p > .05$.

For measures of well-being, higher self-doubt was associated with lower positive affect, higher negative affect, lower performance self-esteem, and higher task anxiety, $p < .05$, but these self-doubt effects were not moderated by manipulated beliefs about ability, $p > .05$.

Discussion

Consistent with our hypothesis, participants who were exposed to incremental beliefs about ability experienced insignificant negative effects of self-doubt on performance on the anagram task. In contrast, for participants who were exposed to entity beliefs, higher self-doubt was associated with lower task performance. These findings suggest that self-doubt may have negative effects mostly when it is interpreted as signaling that ability is immutably low. Due to a high percentage of missing ACT scores, we were unable to use ACT scores to control for academic ability or as an additional predictor. Further research is needed to determine whether there will be self-doubt and belief effects on verbal reasoning performance among low ability individuals.

Main References

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Note. Additional references are available upon request: evafrishberg@gmail.com

Us vs. Them and Especially Them: Rival Derogation in Sport Fans
Jaroth Lanzalotta & Frederick G. Grieve

Introduction

An in-group is any group with which an individual identifies. In-groups benefit members' self-esteem and well-being, and provide information via social cues about one's environment when there is ambiguity (Abrams, Wetherell, Cochrane, Hogg, & Turner, 1990; Mael & Ashforth, 2001). Identification with a group leads to internalization of group attitudes and favor toward other in-group members. This favor does not extend to out-groups – groups with which one does not identify due to relevant differences with the in-group – leading to pervasive biases in intergroup contexts (Abrams et al., 1990; Balliet, Wu & De Dreu, 2014).

Like all in-groups, sport fans exhibit biases in favor of their in-group and gain psychological health benefits from the social connections that fandom provides (Wann, 2006; Wann & Grieve, 2005). It is also known that level of identification with a team influences behavior and attitudes. For example, high-identified fans respond to threats to their identity by strengthening their association with the team, whereas low-identified fans tend to distance themselves (Wann, 2006). Sport rivals threaten in-group identity due to the ongoing history of competition (Tyler & Cobbs, 2015). Rivalry is especially important to high-identified fans, who pay more attention to rivals and experience greater pleasure in their failure (Havard, Eddy, & Ryan, 2016).

Intergroup discrimination, the tendency to favor in-groups over out-groups, has been thoroughly established in the literature. However, many studies have suggested that this discrimination can be explained entirely by in-group favoritism and that out-group derogation does not generally occur (Balliet, Wu, & De Dreu, 2014). Lacking in this research, however, is a check for how strongly participants identified with their in-group or opposed out-groups. As much of the research has been done using artificially-constructed groups, sport fans are more likely to strongly identify with their team and feel negatively toward their rivals.

We aim to investigate the contexts in which out-group derogation occurs by targeting a well-known rivalry between the University of Kentucky (UK) and University of Louisville (UL) men's basketball teams. For comparison, we include a team with which neither UK nor UL has a history of competition, Northern Illinois University (NIU). We hypothesize that low-identified fans will not discriminate between any of the three teams. High-identified fans will favor their team over the other two, and NIU over their rivals. Furthermore, derogation will be predicted by feelings of opposition to rival and dysfunctional fandom.

Method

Under the cover story that a sports network was test-screening basketball highlights, participants gave informed consent then completed a questionnaire packet about their sport fandom. Identification for each team was assessed using the Sport Spectator Identification Scale (SSIS; Wann & Branscombe, 1993). Sense of rivalry for each team was assessed using the Sport Rivalry Fan Perception Scale (SRFPS; Havard et al., 2013). Participants also reported their tendency for confrontation using the dysfunctional fandom scale (Wakefield & Wann, 2006), and identification with general sport fandom using the Sport Fandom Questionnaire (SFQ; Wann, 2002).

Participants were then brought to a separate room containing four confederates to watch two-minute highlight videos for each of UK, UL, and NIU. Videos were presented in a random order, and confederates were previously trained to cheer only during the first video. Participants were video-recorded during this time and later coded

for cheering or antagonistic behavior toward confederates. Participants additionally completed a five-item video evaluation for each team immediately following that team's video.

Discussion

Data collection is ongoing. This study will help elucidate the role that out-groups play in intergroup discrimination. Our major hypothesis is that greater identification with an in-group will lead both to greater in-group favoritism and out-group derogation. However, derogation will only occur for particular out-groups, such as rivals, that threaten in-group identity. This will nuance our understanding of group dynamics, and provide a basis for further studies to investigate out-group derogation.

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A Comparison of Self-Explanation and Practice Retrieval:
Impacts on Verbatim Recall and Inference Generation
Zoua Lor & Jenni L. Redifer

Introduction

Working memory is the agent responsible for processing desired information and inhibiting irrelevant distractions during complex cognitive tasks (Baddeley & Hitch, 1974). Individual differences in working memory capacity (WMC) are predictive of success during cognitive activities like reading comprehension (Daneman & Carpenter, 1980). As such, WMC and retrieval of information from long-term memory are strongly related, due to the need to retrieve appropriate information in order to perform successfully on complex cognitive tasks.

Employment of effective and appropriate retrieval strategies can promote greater recall regardless of an individual's WMC. Performance improves for those with low working memory capacity (WMC) if they are taught to employ the same effective strategies that those with high WMC use (Dunlosky, Rawson, Marsh, Nathan, & Willingham, 2013; Unsworth, Brewer, & Spillers, 2012). For this reason, we were interested in whether working memory capacity continued to impact performance after participants learned to use an effective retrieval strategy. Thus, it is important to examine the impact of WMC on performance and strategy use in addition comparing retrieval strategies. A recent meta-analysis of research on learning strategies detailed the ineffectiveness of several common strategies, highlighted the benefits of effortful strategies like practice retrieval (PR, free recall of information), and called for further examination of strategies that may be helpful, such as self-explanation (SE, explaining information to oneself while learning) (Dunlosky et al., 2013). We compared retrieval performance between participants assigned to rereading (RR), PR, and SE to determine long-term retrieval benefits and examined whether strategy success varied with WMC.

Method

A total of 124 participants were recruited through Amazon's Mechanical Turk (MTurk). All parts of the study were completed online. In Part One, participants provided informed consent, and were randomly assigned to either the RR (control), PR, or SE condition. Before beginning the study, participants completed a one-question qualification survey about their familiarity with the study content (the human ear). Participants who indicated they had extensive training or familiarity with the structure of the human ear were excluded. The exposition text, "The Human Ear," (Karpicke & Blunt, 2011), was used for this study. In the RR condition, participants read the human ear passage for four minutes the first time and three minutes the second time. In the PR condition, participants read the passage for four minutes. They then typed as much as they could remember, without concern for exact wording or order, without a time limit. Participants in the SE condition completed SE training (example explanations, guidance questions, and practice examples) before reading and explaining the passage (they read the passage one section at a time and typed their explanation accordingly before reading the next part of the passage). The SE condition had no time limit.

At the end of Part One, participants answered a seriousness check (Aust, Diedenhofen, Ullrich, & Musch, 2013). Only participants who passed the attention checks and seriousness check were invited back one week later for Part Two. In Part Two, participants completed a recall test (composed of verbatim recall and inference questions) and WMC tasks (shortened Operation Span and shortened Symmetry Span) (Oswald, McAbee, Redick, & Hambrick, 2014). Lastly, participants completed a final seriousness check and provided demographic information.

Results & Discussion

Retrieval scores were measured by the number of correct responses on the recall test. Although mean test performance was highest in the SE condition, followed by the PR and RR conditions, respectively, a one-way between-subjects ANCOVA examining the impacts of strategy condition, working memory, and prior knowledge on participants' retrieval test scores revealed that strategy condition did not significantly impact performance, $F(2,75) = 1.67$, $p = .20$. Previous knowledge was the only significant predictor of test performance, $F(1,75) = 17.57$, $p < 0.001$. Impacts of strategy condition and WMC for inference scores and verbatim scores were also non-significant. Weak non-significant correlations between WMC tasks and college GPA, and WMC tasks and test performance suggest that participants may not have taken the WMC tasks or test seriously and/or reported incorrect GPAs. A possible explanation for these unexpected findings is environmental variation among MTurk participants compared to traditional laboratory participants. Researchers may want to consider the appropriateness of MTurk samples for tasks that require high levels of attention and concentration. Aside from further examination of the validity and reliability of online participants, future research should consider using either fictional or other lesser-known information to reduce the effect of prior knowledge over strategy assignment and WMC, as well as the influence of other individual differences, such as test anxiety, on the successful application of recently-learned strategies.

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Predictive Learning Biases Selective Attention Orientation
Cody A. Mashburn and Sharon A. Mutter

Introduction

Over the past few decades, numerous theories have been put forth to explain the relationship between attention and predictive learning. One of them, the Mackintosh (1975) model, predicts that, as learning occurs, selective attention will favor more predictive cues over less predictive ones. This change in selective attention supposedly drives increased rates of learning about predictive cues (Le Pelley, Beesely, & Griffiths, 2011). There is, however, a dearth of direct measurements of this shift, making researchers' claims suspect. Le Pelley, Vadillo, and Luque (2013) successfully adapted a dot probe task to document this attentional shift toward predictive cues. It remains to be seen, however, whether their results are replicable. Thus, the current study was conducted with the following hypotheses: 1) predictive cues will capture attention more rapidly than non-predictive cues (a main effect of Congruence), and 2) because the change in selective attention occurs as a function of learning, the preference for predictive cues will strengthen as more learning occurs (an Epoch x Congruence interaction).

Method

Participants

Nineteen younger adults (M_{age}: 20.74, SD_{age}: 2.21) were recruited from Western Kentucky University. Colorblind individuals were excluded from participation.

Stimuli

Stimuli were four colored squares. Two squares were filled with either a light or a dark green, while the other two had thick or thin right leaning black lines on a blue background. The dot probe was a small white square.

Design and Procedure

This experiment had two tasks. In the categorization task, the color of one of the squares predicted category membership. The green squares predicted category membership for ten participants, and the lined squares predicted category membership for the rest. The main IV of interest was block (# of learning trials), and was within-subjects. The DV on the categorization task was the percentage of correct responses.

The dot probe task had two IVs. One, Congruence, was determined by which squares were predictive for a given participant. Congruent trials were those in which the dot probe appeared on top of a predictive square; it appeared on non-predictive squares on incongruent trials. The other, Epoch, is analogous to the Block variable in the categorization task. Both were within-subjects (Le Pelley et al., 2013). The dot probe DV was median response time (RT).

Participants began with the dot probe task to capture their baseline reaction times to the stimuli. Upon trial onset, a fixation cross was presented for 500ms. Then, two squares (one green, one lined) appeared to the right and left of the cross. The dot probe appeared on one of these squares 250ms later. Participants responded to the location of the dot probe using keys marked LEFT and RIGHT. They pressed the LEFT key if the probe appeared to their left, and the RIGHT key if to their right. Each stimulus pairing appeared twice in each block (once in each left/right position) for a total of 16 experimental trials. Each block also had four control trials.

After the first dot probe block, participants did the categorization task. The cross and squares were the same as in the dot probe task. This time, participants had to learn which of two categories into which a stimulus pairing fell. If they thought that the correct category was UP, they pressed a key marked UP and a DOWN key if they thought

DOWN was correct. Each block consisted of eight trials, with each stimulus pair represented twice (once in each left/right position). The categorization task was done in four-block phases. There were eight phases of the categorization task in all (Le Pelley et al., 2013). These alternated with nine blocks of the dot probe task.

Results

A one-way ANOVA with Block as a factor confirmed that accuracy improved across blocks, signaling learning over time, $F(31,558)= 9.727$, $p < .001$, $\eta^2_p = .351$.

Median RTs from the nine dot probe blocks were combined into five epochs. To do so, average median RTs were calculated for each block. RTs from two consecutive blocks were then averaged together to create four epochs. The fifth epoch consisted of the average median RT from the baseline. These were entered into a 2 x 5 repeated measures ANOVA with Congruence and Epoch as factors, which revealed a main effect of Congruence, $F(1,72) = 16.201$, $p = .001$, $\eta^2_p = .474$, with significantly faster RTs for congruent trials. There was also a main effect of Epoch, $F(4,72) = 8.045$, $p < .001$, $\eta^2_p = .309$, with RTs decreasing across epochs. The Epoch x Congruence interaction was marginal, $F(4,72) = 2.358$, $p = .061$, $\eta^2_p = .116$, and was explored using simple effects analyses. These revealed that congruent and incongruent trials did not differ in the baseline and first epoch, $F(1,18) = .552$, $p = .467$, $\eta^2_p = .03$ and $F(1,18) = 3.104$, $p = .095$, $\eta^2_p = .147$, respectively. However, RTs on congruent trials were significantly faster at epoch 2, $F(1,18) = 4.652$, $p = .045$, $\eta^2_p = .205$, epoch 3, $F(1,18) = 5.305$, $p = .033$, $\eta^2_p = .228$, and epoch 4, $F(1,18) = 14.943$, $p = .001$, $\eta^2_p = .454$.

Discussion

Consistent with our predictions, response time data revealed a significant attentional advantage for predictive cues over non-predictive ones. Furthermore, this advantage developed and strengthened over time. This study successfully replicated the major findings of Le Pelley et al. (2013). These findings support the Mackintosh (1975) model (i.e., attention toward predictive cues increases with learning and in turn cause more rapid learning about those cues), and confirm the dot probe as a viable measure of attention in predictive learning. Future research will use this same procedure to investigate possible age differences in how predictive learning affects younger and older adults' selective attention orientation.

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Consistently off the Mark: Examining Structure in the Cybervetting Process
Kali R. Odd & Amber N. Schroeder

Introduction

Organizations are utilizing social networking sites (SNSs) in a variety of employment practices, including recruitment, selection, and termination (Davison, Maraist, & Bing, 2011). During the hiring process, organizations are increasingly relying on a cost and time effective process known as cybervetting, which is where organizations employ SNSs or other Internet search engines to seek information about job applicants (Berkelaar & Buzzanell, 2014; Brown & Vaughn, 2001). There is little empirical support that exists for using cybervetting as a job applicant screening method, and organizations participating in this method are often doing so without a structured process (Roth, Bobko, Van Iddekinge, & Thatcher, 2016). As with job interviews, cybervetting evaluations are based on qualitative information, and many diverse features are considered in the decision-making process (Roth et al., 2016). In the job interview context, studies have found that adding structure increases the psychometric properties of the process, including reliability and validity (Campion, Palmer, & Campion, 1997, 1998). Therefore, the purpose of the present study was to examine the effects of increasing structure in the cybervetting process. We expected that adding structure to the cybervetting process would increase interrater reliability. We also examined whether cybervetting ratings demonstrated convergent validity with other data sources.

Method

A total of 119 participants (mean age = 34.83, SD = 10.41; 56.70% female; 81.90% White/Caucasian) were recruited from Amazon's Mechanical Turk, an online crowdsourcing tool. Sixty participants were assigned to the repeated measures group, where they completed the unstructured condition followed by being randomly assigned to one of the three structured conditions. Fifty-nine participants were assigned to only a structured condition (i.e., they did not complete the unstructured condition). Participants evaluated three Facebook profiles that had a wide degree of variance on five constructs: job performance, cognitive ability, personality, communication skills, and professionalism. In all conditions, participants rated the profiles using a four-item applicant suitability scale (Cable & Judge, 1997; Cole, Feild, Giles, & Harris, 2004).

In the unstructured condition, participants rated the profiles on applicant suitability. In the first structured condition, participants were given definitions of key constructs to consider (i.e., personality, cognitive ability, written communication skills, and professionalism) and rated the profiles on applicant suitability. In the second structured condition, participants were given definitions of key constructs to consider, rated the profiles on each key construct, and rated the profiles on applicant suitability. In the third structured condition, participants were given key constructs to consider, asked to base their judgments of each construct on specific profile features (e.g., photos and wall posts), rated the profiles on each key construct, and rated the profiles on applicant suitability.

Results

To test interrater reliability, intraclass correlations (ICCs) were examined in each condition. The results indicated that interrater reliability did not increase when structure was added ($ICC_{unstructured}$ = .99, $ICC_{structured1}$ = .98, $ICC_{structured2}$ = .99, and $ICC_{structured3}$ = .98). To examine whether high reliability coefficients in each condition were due to raters' inability to identify applicant differences across profiles, applicant suitability ratings across the three profiles were compared within each condition using a repeated

measures ANOVA. The results indicated that evaluations did differ across profiles, $F_{\text{unstructured}}(2,124) = 67.76$, $p < .01$; $F_{\text{structured1}}(2,78) = 45.34$, $p < .01$; $F_{\text{structured2}}(2,78) = 76.55$, $p < .01$; $F_{\text{structured3}}(2,78) = 43.14$, $p < .01$. Post hoc tests indicated the 10 of 12 paired comparisons were significant at $p < .05$. In examining convergent validity, one-sample t-tests were conducted with self-report ratings and test scores from the actual applicant depicted in each profile as the reference points. The results indicated that rater evaluations were significantly different ($p < .05$) from the self-report ratings and test scores of the applicants in 35 of 48 cases. In 50% of the cases, raters significantly overestimated the applicants' self-report ratings and test scores, and in 23% of the cases, raters significantly underestimated those self-report ratings and test scores.

Discussion

In the current study, raters using a cybervetting approach to screen job applicants were consistent in their evaluations of applicants, but their evaluations did not converge with the self-report ratings and test scores of the applicants. Therefore, study findings call into question the validity of the cybervetting process. As such more research is needed on the validity and utility of cybervetting approaches. In particular, future research should investigate how criterion-related validity coefficients with a cybervetting approach compare to coefficients seen with other applicant evaluation methods.

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Bingocize: The Effect of Exercise Intervention on Cognition, Functional Performance and Health Behaviors in Older Adults

Makenna Snyder & Dr. Matthew Shake

Introduction

Older adults are becoming an ever-growing portion of the population (Ballesteros, Kraft, Santana, & Tziraki, 2015), making it increasingly important that we understand the consequences of the aging process. Efficacious and cost-effective interventions to improve function would benefit the wide variance of older adults in our communities.

Physical Activity. Physical activity benefits many aspects of aging as well as decreasing risk for diseases (Kramer, Colcombe, McAuley, Scalf, & Erickson, 2005). Kramer et al. (2005) found that exercise does have an effect on cognitive function.

Cognitive Training. Current cognitive interventions lack transferability (Ball, et al., 2002). Physical activity and cognitive improvement have a relationship (Ballesteros, et al, 2015). Exercise may have cognitive benefits not demonstrated by strict cognitive training (Kramer, et al., 2005).

Current Study. We hypothesize that participation in Bingocize, a multi-modal exercise intervention, will improve cognitive and functional performance and health behaviors.

Method

Thirty-nine participants (mean age = 72.03 years) were recruited from senior centers in Kentucky and Tennessee. Eligibility: participants had to be at 2) least 55 years or older 2) English as their first language 3) have normal vision 4) no color blindness 5) and no history of neurological or mobility impairment. Prospective participants were required to 1) complete the Physical Activity Readiness Questionnaire (PAR-Q), 2) to meet minimal physical standards and 3) pass the Telephone Mini Mental State Examination. Participants were grouped by facility; each facility was randomly assigned to either the experimental (exercise) group or control (health education only) group.

Measures

Functional Performance. Functional performance, or physical performance, was measured with the SPPB which assesses lower extremity function (Puthoff, 2008). This battery consists of three tasks: balance tests, a 4 meter walk, and the chair stand test.

Health Knowledge and Patient Activation. A Health Knowledge test was used to assess knowledge about topics such as osteoarthritis and fall risk before and after intervention. The Patient Activation Measure (PAM) is a measure used to improve health outcomes by using risk models to predict activation levels.

Cognitive Function. To assess cognitive ability we used an abbreviated version of the EXAMINER battery using the following tasks: verbal fluency (category and phonemic), flanker, set-shifting, dot counting, and anti-saccade.

Design & Procedure. Facility coordinators administered the individual intervention sessions for 60 minutes, twice a week, for 10 weeks. Participants in both groups used the Bingocize application, but the control group only received health education questions. The game operates by the coach spinning a virtual wheel that appears on all participants' screens, which randomly pairs a number with an exercise or health education question.

Results

All tasks were analyzed with a 2 x 2 repeated measure of analysis (ANOVA).

Cognitive Function. There were no significant pre- to post- nor group assignment effects for the following tasks: Phonemic fluency, Flanker, dot counting, and set shifting. Category fluency and anti-saccade scores show differences from pre- to post- that are probably due to testing effects.

Functional Performance. There were significant changes from pre- to post- for the SPPB, $F (1, 36) = 6.42$, $p = .02$, $\eta_p^2 = .15$, but no difference between control and exercise groups. There was a significant interaction for arm curl repetitions, indicating that from pre to post, $F (1, 36) = 4.23$, $p = .05$, $\eta_p^2 = .12$, the exercise group improved in the number of repetitions whereas the control group remained the roughly the same.

Health Knowledge and PAM®. The difference in scores on the Health Knowledge Test between pre and post was significant, $F (1, 37) = 111.61$, $p = .000$, $\eta_p^2 = .75$, along with the PAM®, $F (1, 37) = 6.30$, $p = .02$, $\eta_p^2 = .15$. This suggests that all participants improved in their health knowledge and activation level during the 10 weeks.

Conclusions and Future Directions

The exercise group showed greater improvement of upper extremity strength between pre- and post- testing. Participants in both groups improved in their Functional Performance and in their Health Knowledge. This suggests that exposure to health education could have beneficial effects. Participants also increased in their activation levels, indicating that their overall sense of responsibility for their health outcomes increased. In this phase of data collection there seems to be no differences between the exercise and control groups but only 1/3 of total sample size has been collected.

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Ambiguity Leads to Context-Specificity in Predictive Learning
Catherine Woosley and Dr. Sharon Mutter

Introduction

Every aspect of acquired knowledge is learned in some form of context; however, it is unclear when and why context is encoded. According to the Retrieval Theory of Forgetting, information can be made context specific by inducing individuals to pay attention to the context (Rosas et. al, 2006). Ambiguity during learning increases attention to context. Once one attends to context, all information acquired in that context becomes context-specific. With continual reinforcement of cues there is no ambiguity, and thus no reason to attend to context. However, partial reinforcement creates ambiguity because cues produce an outcome in only half of the trials. Consequently, one is more likely to pay attention to context as a potential predictor of the presence of the outcome (Rosas et al., 2013). Moreover, partial reinforcement of cues causes enough ambiguity that all other cues presented in that context become context-specific. The current study sought to replicate this effect of ambiguity on context-specificity in predictive learning (c.f., Callejas-Aguilera & Rosas, 2010). Context specificity was manipulated by either continually reinforcing cues (true discrimination, TD) or partially reinforcing cues (pseudo-discrimination, PD) in two contexts during learning. Context effects in predictive judgments were examined by presenting cues for test in either the same context used during learning or in a different context. We hypothesized that participants would ignore context in the TD-TD condition, so predictive judgments for target cues would not be affected by switching the context. However, participants should attend to context in the PD-TD condition, so predictive judgments for target cues would be lower in switched contexts than in the same context as learning.

Method

Participants

A total of eighteen participants were recruited for the study. All participants were college students between the ages of 18-25. Participants were recruited through flyers and other psychology laboratories at Western Kentucky University. Exclusion criteria were color blindness, determined by "Ishihara's Tests for Colour Deficiency – Concise Edition," and non-native English speaker.

Stimuli and Materials

The task was adapted from Callejas-Aguilera and Rosas's (2010) restaurant and gastric illness scenario in which participants learn to predict the probability of a food leading to an illness. The task was programmed in SuperLab Pro 4.5. There were two experimental conditions: true discrimination – true discrimination (TD-TD) and pseudo discrimination – true discrimination (PD-TD). For TD blocks, all cues were either always followed by the illness or always followed by no illness (continuous reinforcement); for PD blocks, non-target cues were sometimes followed by illness and sometimes followed by no illness (partial reinforcement), whereas target cues (C1 or C2) were continuously reinforced. Food cues were randomly selected from the appendix of food categorized by typicality in Mutter and Asriel (2016).

In the learning phase, participants received 12 trials of each cue-outcome pairing divided into 6 blocks. The TD-TD condition had 3 blocks of trials in context A as TD and 3 blocks of trials in context B as TD. The PD-TD condition had 3 blocks of trials in context A as PD and 3 blocks of trials in context B as TD. A rating scale appeared at the bottom of each screen for the participant to judge the likelihood of the stimulus to lead to a positive outcome of diarrhea. The post-test screens were the same as the learning

trials except without feedback and each target cue was presented in its original context from the learning trials (Same Context) and in the other context (Switched Context).

Procedure

All procedures and measures were approved by the Institutional Review Board at Western Kentucky University. The experimenter first read a narrative to instruct the participant. First, the participant rated the probability of each food stimulus as a positive predictor of diarrhea in a pre-test. Then the participant completed the 6 learning phase blocks. In the post-test, the participant rated the probability of each target cue to lead to diarrhea in the Same Context and Switched Context. After the experimental task, participants completed individual differences tests to provide a measure of their cognitive abilities to compare with older adults in a future experiment.

Results

The independent variables of interest were Conditions (TD-TD and PD-TD), Contexts (Same and Switched), and Cues (C1 and C2). The dependent variable was the post-test probability judgment ratings. A Cue (2) x Context (2) within-subjects ANOVA for each Condition revealed a significant main effect of Context in the PD-TD condition, $F(1,8) = 5.79$, $p = .043$, but context was not significant in the TD-TD condition, $F(1,8) = .68$, $p = .434$.

Discussion

As hypothesized, the mean post-test predictive judgments for the target cues in same and switched contexts were not significantly different for the TD-TD condition, but there was a context effect in the PD-TD condition. Therefore, the ambiguity created by partial reinforcement led to context-specificity for target cues learned simultaneously with the ambiguous cues, even though the target cues themselves were not ambiguous. Despite the absence of a significant Cue x Context interaction in the PD-TD condition, the data suggests the context effect was greater in PD than in TD. Additional data is needed to clarify this trend. Future research will examine whether older adults exhibit the same effect of context-specificity when ambiguity is present during learning.

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