Abstract

This project explores the pedagogical benefits of using a two-phase testing process in undergraduate courses. The two-phased test enhances learning and increases retention of material. It applies the Ignatian principles of experience (e.g., application, analysis, synthesis) and reflection (e.g., thoughtful consideration of subject matter) to enhance learning and performance. The two-phase test assesses individual student performance while allowing collaborative learning within small groups. Phase 1 is just like any other test; students answer test items as individuals. Phase 2 places students in an established group to answer the same questions again. Phase 2 is often filled with lively conversation and debate. Students discuss the answers until all group members agree or they vote to determine the group’s answer. Students get immediate feedback about the concepts they (mis)understood and are forced to consider the subject matter in new ways to synthesize knowledge within the group. I will compare student performance in two sections of the same course: one with two-phase tests and one with a standard one-phase test. We know that groups typically outperform individuals, but we do not know the extent of the benefits provided by this testing process. I will compare the answers of individuals and groups to investigate whether collaborative test taking mainly helps students with factual knowledge or if it also helps them apply theories to solve problems and synthesize information in written responses. This will benefit my career in two ways. First, it will advance my classroom teaching and allow me to more effectively facilitate student learning. Second, it will lead to a publication which will further my research into teaching effectiveness. I will share this information with my colleagues at Loyola through Focus on Teaching and Learning and the Ignatian Pedagogy seminar. This may inspire my colleagues to try this learning tool in their classes.
Technical Description of Project

**Benefits.** Identifying the scope of the benefits of two-phased testing will inform psychological research on group performance and allow for a concrete evaluation of how the Ignatian principles of experience and reflection contribute to learning. I want to increase student opportunities to experience and reflect on material in large classes (i.e., 48-100 students). We teach to a range of student abilities. Some instructional techniques work well for the advanced students but fail to connect with students who struggle with the course material. Two-phase testing allows the strong students to synthesize and communicate information to their peers in a way that pushes their learning to new heights. Students who struggle bypass the intimidation of asking a professor for help and learn by hearing the material explained in a new way by their peers. This individual level of attention is not always feasible in large classes, but breaking students into collaborative groups makes it possible. This project allows me to test specific questions about majority/minority influence within group decision making in the context of a collaborative learning activity that utilizes Ignatian practices.

**Theory, methods, and data.** “If you ask someone else for help on a problem in an exam, you are cheating...But if you don’t ask someone for help on a problem in the real world, you are a fool.” Dan Schwartz, a cognitive psychologist at Stanford University, describes a discrepancy we often observe between the classroom and the real world. Although we expect collaboration in nearly every job context, we often prevent students from practicing this skill in the classroom when something important is at stake (Wieman, Rieger, & Heiner, 2014). Preliminary research on two-phase testing shows that it provides a number of transferable skills. Students provide and receive immediate feedback, build relationships with peers from diverse backgrounds, increase awareness of heterogeneous learning styles, and improve communication skills (Gilley & Clarkston, 2014).
Collaborative learning is an accepted practice in group activities and projects. It has a number of pedagogical benefits including less anxiety, less dropout, more retention of content, and more positive student perceptions of a course (Bloom, 2009). However, collaboration is typically not encouraged during high stakes performance on tests. Research on group decision making suggests that collaboration may improve learning by fostering social interdependence, increasing motivation, and allowing for greater cognitive elaboration (e.g., Olivera & Straus, 2004; van Ginkel & van Knippenberg, 2008). To date, research has not explored the psychological mechanisms responsible for the benefits of collaborative testing. The proposed project focuses on two potential mechanisms—social interdependence and cognitive elaboration. Social interdependence is the necessary exchange of information that occurs among students engaged in the group phase of a test. Cognitive elaboration of the material is required to analyze peer contributions and synthesize information into a coherent and agreed upon response.

I am teaching two sections of Social Psychology in the spring of 2016. I intend to use the same exam in both classes. In one section I will only administer the test to individual students. In the other section, I will employ the two-phase process by having students first complete the test by themselves and then complete the same test again with a small group. I will include three types of multiple choice items: factual knowledge, application, and theory comparison. I will also include at least one short answer item on each test. This will allow me to hold the instructor and material constant and only vary the method of the test.

I will compare student performance across the two sections. First, I will compare overall test scores and look for change from the first test throughout the semester. I may find equivalent performance. Alternatively, I may find that students who experience the two-phase test show higher scores after the first test than students who experience the traditional exam. Second, in the two-phase section I will compare individual to group scores. In line with past research, I expect that groups will
outperform most individuals in the class. Third, I will conduct a detailed analysis of performance in the
two-phase test section. I will separate the factual, application, and theory questions and determine
whether groups perform better than individuals for all three types of questions. It is possible that groups
may only perform better than individuals on factual knowledge questions where the correct answer is
easy to demonstrate. Alternatively, if groups are better at integrating and synthesizing information than
individuals then I may find performance benefits for the more complex multiple choice items as well as
for the short answer. In particular, I may examine the short answer portion for evidence of cognitive
elaboration. I will be able to test the scope of the benefit of collaborative testing to see whether it
impacts all types of performance—perhaps especially items that require cognitive elaboration—or
whether it only helps for relatively easy items.

I will test this idea by comparing individual and group answers. I may find a simple pattern of
“majority rules.” If most group members chose A, for example, then the entire group would choose A. I
expect this will be especially true for factual knowledge items. However, I intend to check whether there
are times when the minority overpowers the majority for items that tap more complex concepts. For
example, I may have two high performers in a group of 6. If those two high performers got the item
correct as individuals and the remaining four members of their group got the item incorrect as
individuals then the minority of two must convince the majority of four to change their answer. I will see
how often the minority are successful. For a minority to bring the majority to its side, it must build and
leverage social interdependence. I will also look at self-reflections on the group test process for evidence
of social interdependence that may enable the minority to have sway with the majority. After each test,
individuals will answer a short survey about the testing process (see appendix). This will allow me to see
if factors like perceived open-mindedness or liking the group facilitate social interdependence and
cooperative learning on the test.
Mission. This project contributes to Loyola’s mission as a Jesuit University committed to caring for the whole person. Collaborative learning provides opportunities for students of all levels of skill and knowledge to benefit from the testing process. How often do we have the opportunity to teach through testing? Both high and low performers are challenged with this testing process. Discussing the test with a small group allows students to see each other as individuals with unique backgrounds and perspectives, to build connections with each other even as they build connections in the course material. Attempting to explain oneself to others during the group test forces students to reflect on what they learned on a deeper level. It also requires that they synthesize the material and apply it to solve a problem. Further, they must take the perspective of fellow group members to understand arguments for or against their favored answer. In doing so, this project challenges students to consider various ways of knowing through experience and reflection.

More concretely, this project contributes to institutional priority #1: ensuring student access and success. Two-phase testing helps retain students who may otherwise drop out of a course. This project may provide insight into why collaborative testing has such benefits. This project also contributes to institutional priority #2: advancing our mission through faculty development. It will develop and engage a faculty member who is committed to social justice in teaching and research by rewarding me for applying the Jesuit humanistic tradition in the classroom.

Qualifications. My experience as a teacher and researcher make me well qualified to conduct this project. I have been teaching at Loyola for almost 10 years. During that time I have learned a good deal about Ignatian Pedagogy by regularly attending the Focus on Teaching and Learning conferences. I have both organized and attended other teaching seminars and workshops at Loyola to enhance my understanding of Ignatian Pedagogy and continue to improve my classroom teaching. For example, this spring I attended the 2.5 day workshop on integrative course design led by Dee Fink. My skill in the
My curiosity about teaching effectiveness means that I am always trying something new, even in my classes that I have taught a dozen times. Each time I teach a class I identify one or more ways that I may improve it based on student questions during class and informal conversations outside of class. In fact, it was one of my Research Methods for Psychology students who prompted me to investigate the feasibility of two-phase tests. He jokingly asked if they could take their test as a group. I said not that day, but we could work together to investigate whether we could use it for the final exam. Our collaboration showed it would be worthwhile and I have been increasing my use of the technique ever since. Importantly, I believe it is essential to evaluate our instructional techniques to establish whether they help, harm, or have no impact on student learning. I have published one paper (with a graduate student) that tested whether and how a classroom activity helped students learn difficult material (Melchiori & Mallett, 2015). I look forward to this new collaboration into the use of two-phase testing with a different graduate student (Rayne Bozeman).

My research background also makes me well qualified to conduct this project. I am trained in the use of experimental and quasi-experimental design. I have extensive experience creating surveys and scales to assess psychological concepts. I am also well versed in data management and analysis. My vita demonstrates my ability to conduct extensive research projects that lead to publication in respected journals.

IRB approval is necessary for this project. However, I have an approved protocol for a less formal investigation of whether students enjoyed the two-phase testing process. The existing IRB application covers all of the procedures necessary to test the questions in this proposal.
References


Individual, Programmatic, and Institutional Impact

This project will benefit myself, my graduate and undergraduate students, and faculty in my department and the university. I will benefit from diving more deeply into the usefulness of a new teaching tool. I am curious about how the two-phase testing process enhances student learning and retention. This project will satisfy my curiosity and allow me to fine to the testing process to further enhance benefits. This award will allow me to purchase resources that will increase my familiarity with Ignatian pedagogy (e.g., books about collaborative learning techniques). Analyzing student performance at the level of specific test items is time consuming. I will also be able to pay my graduate student for work on the project. This award will also provide extra compensation for my time spent on a detailed analysis of the scope of benefits of collaborative testing. This work is above and beyond the time I have and will spend investigating this method, altering my tests to conform to the new procedure, grading additional exams, and conducting a preliminary evaluation of the value inherent in collaborative testing. My graduate student will also gain skills and we will both (hopefully) earn a publication or two from the project. My undergraduate students will benefit in terms of knowledge (of their own learning process as well as course material) and performance.

This project extends my past work on teaching effectiveness. I have published a paper on how to teach students about sensitive topics like social stigma. This project also extends my work on teaching effectiveness to collaborative learning and the process of group decision making. This is new territory for me as my past work has only examined individual performance. It may inspire new collaborative learning activities for my classes as well as new research ideas. I have begun to consult with my colleagues who specialize in group decision making. We have discovered areas of mutual interest which may eventually lead to collaboration on additional research projects, some of which may be well suited for external funding.
Timeline and Dissemination Plan

January – May 2016: I will teach two sections of Social Psychology and evaluate test performance. I will administer four tests to each class as explained in the proposal.

May 2016: meet with FCIP staff to discuss progress

May – August 2016: Myself and my graduate student will analyze data collected in the spring and begin to draft a manuscript for publication. This will require a detailed comparison between individuals and their groups as well as a between groups comparison for evidence of minority influence. We will also submit a proposal to present at the fall Focus on Teaching and Learning conference.

September 2016: I will present the results of this project to the Ignatian Pedagogy series. The specific date of the presentation will be determined by CFIP administration. I will also prepare a short tutorial on how to administer a two-phase test. This may be distributed among Loyola faculty.

October 2016: We will submit a manuscript for publication to the journal Teaching of Psychology.

November 2016: We will submit an abstract to present results of this study at the Midwestern Psychological Association Annual meeting.

December 2016: Depending on the results of the study, we may also be able to submit a manuscript for publication to the journal Group Processes and Intergroup Relations.

Spring 2017: present at Lunch and Learn
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EDUCATION

Dissertation Title: Self-Protective Coping Strategies Used by Targets of Discrimination
M.A. Psychology, The Pennsylvania State University, 1999
B.A. Psychology, University of Alaska Anchorage, 1997

PROFESSIONAL EXPERIENCE

2013-present Associate Professor, Department of Psychology, Loyola University of Chicago
2007-2013 Assistant Professor, Department of Psychology, Loyola University of Chicago
2005-2007 Research Assistant Professor, Department of Psychology, University of Virginia
2003-2005 Postdoctoral Fellow, Department of Psychology, University of Virginia

GRANTS, HONORS AND AWARDS

Spring 2015
Recipient, Sujack Teaching Award: Recognizes excellence in the classroom, concern for student development, and the impact of teaching both at Loyola and in the broader community.

Nominated for the Transformative Education Award
Nominated for the Hayes Award for Advising & Mentoring
Finalist, Faculty Member of the year (student nominated)

Spring 2014
Recipient, Transformative Education Award: Recognizes commitment to student development and going beyond their role to address the needs and concerns of underrepresented students. This individual provides students with the opportunities to explore issues regarding diversity, identity development, multicultural education, social justice, and leadership initiatives.

Finalist, Faculty Member of the year (student nominated)
Nominated for the St. Ignatius Loyola Teaching Award

Spring 2013
Gannon Center Faculty Fellowship
Understanding Women’s Reactions to Sexual Harassment
Summer 2015
Summer 2012 Loyola University Chicago Faculty Research Award
Summer 2009

Spring 2009 Nominated for SuJack Teaching Award

2005-2007 Russell Sage Foundation Grant ($133,884)
Affective Forecasting: Implications for Outgroup Contact

2002 – 2003 Africana Research Center Grant ($3200)
Minimizing the Consequences of Perceived Discrimination


PUBLICATIONS (student co-authors in bold)

Peer Reviewed Journal Articles


-- mentioned on The Psych Report website http://thepsychreport.com/research-lead/social-psychology-research-lead/respect-liking-goal-respected-like-influences-womans-responses-sexism/


--covered by the Yale Climate Connections Radio program.


**Edited Books and Chapters**


**Papers under Review**


Mallett, R.K., Melchiori, K.J., & Wilson, T.D. The use of ingratiation and self-promotion affect the positivity of interracial interactions.
Papers in Preparation


Mallett, R.K., Slover, H. Psychological distance affects bystander evaluations of and responses to racial discrimination.


PRESENTATIONS

Invited Talks


Mallett, R.K. & Melchiori, K.J. (May 2014). Confronting sexism depends on the goal to be respected outweighing the goal to be liked. Midwestern Psychological Association annual convention, Chicago, IL.


Campus Climate Survey. Loyola University Chicago, presented to representatives of Student Athletics, Residence Life, The Gannon Center, Student Advisors, DSMA, and the Vice President of Student Affairs. July 2010.


The Intergroup Forecasting Error. Stanford University, School of Business and Psychology Department. April 2009.


We Don’t Always Get What We Expect: The Intergroup Forecasting Error. Northwestern University, Psychology Department. November, 2007.

Conference Presentations (student co-authors in bold)


Mallett, R.K. & **Bozeman, R.** (2015). May we take the test as a group? Focus on Teaching and Learning Conference, Chicago, IL.


Reuther, L., Melchiori, K. J., & Mallett, R. K. (April, 2013). Threats to belonging influence the motivation to be respected and liked following sexist questions. Loyola Undergraduate Research Symposium.


Melchiori, K.J. & Mallett, R.K. (January, 2013). Imagining the Self versus Another as the Target of Sexual Harassment Affects Accessibility of Respect-Related Thoughts. SPSP annual convention, New Orleans, LA.

Mallett, R.K. & Melchiori, K.J. (January, 2013). Respect and Liking Goals Explain Variability in Women’s Intended Responses to Sexual Harassment. SPSP annual convention, New Orleans, LA.

Wagner, D. E., Mallett, R. K., Peterson, R. (January, 2013). Are men’s reactions to imagined confrontations driven by the desire to be respected or liked? SPSP annual convention, New Orleans, LA.


Harrison, P. R., & Mallett, R. K. (January, 2011). The double-edged sword: Mortality salience decreases eco-guilt when values and behavior align. SPSP annual convention, San Antonio, TX.


Harrison, P. R., Mallett, R. K., & Bryant, F. B. (May, 2010). Environmentally-friendly behavioral intentions: Imposing structure on a unitary construct. Midwestern Psychological Association annual convention, Chicago, IL.


Mallett, R. K. (January, 2010). Greening behavior through eco-guilt. SPSP annual convention, Las Vegas, NV.


Harrison, P. R., Mallett, R. K., & Graupner, J. (May, 2009). Pathways to Pro-Environmentalism: The Influence of Environmental Importance, Worldview and Mortality Salience on Eco-guilt. Midwestern Psychological Association annual convention, Chicago, IL.


Mallett, R.K., Harrison, P. R., Wagner, D. E., & Spahn, K. (February, 2009). Knowing is Half the Battle: The Role of Uncertainty in the Intergroup Forecasting Error. SPSP annual convention, Tampa, FL.


Mallett, R.K. & Swim, J.K. (February, 2004). Protecting the self from discrimination. SPSP annual meeting, Austin, TX.

Mallett, R.K., Huntsinger, J.R., & Swim, J.K. (February, 2003). No Hate at Penn State: The impact of perceived legitimacy on student responses to a campus hate crime. SPSP annual meeting, Los Angeles, CA.

Mallett, R.K. & Swim, J.K. (February, 2002). But it's not my fault! Predicting feelings of collective guilt in White Americans. SPSP annual meeting, Savannah, GA.


TEACHING EXPERIENCE

Course Instructor


Science and Society, Fall 2009.


SERVICE

Departmental Service

Committee on Diversity Affairs, September 2007- present.
Faculty Co-Chair, Spring 2013-present.


Social Area Research Series—Coordinator, Fall 2008-Fall 2010;
Co-coordinator, Fall 2012-Spring 2013.

Social Training Track Coordinator, August 2013- August 2015.
Workshops I regularly conduct for undergraduate students

Vitae Writing; What can I do with a four-year degree in Psychology?; Writing a Personal Statement; Graduate School Possibilities; How to Create a Poster Presentation.

Sample of University Service

Search Committee: Director of Student Diversity and Multicultural Affairs  July-September 2015
Role: Search Committee member

Climate Change Conference Group  Fall 2014-present
Role: Advisory Board Member

Student Diversity and Multicultural Affairs  Spring 2014-present
Role: Advisory Board Member

Gannon Center Faculty Fellow, Gannon Center for Women and Leadership  Spring 2013-Fall 2014
Role: Faculty affiliate responsible for designing university-wide events

Achieving College Excellence, Office of the Provost  Fall 2011-Spring 2013
Role: Program Mentor  Fall 2016-present

Multicultural Learning Community, Residence Life, Psychology, English, Sociology  Fall 2009-Fall 2010
Role: Founding Member

Campus Diversity Survey, (Student Diversity and Multicultural Affairs)  Fall 2008-Summer 2010
Role: Survey Designer, Co-investigator

SuperSTARS program, Department of Student Diversity and Multicultural Affairs  September 2007-December 2010
Role: Program Mentor

Sample of Professional Service

Mentoring

Gay Alliance in Social Psychology (GASP), Mentor, September 2007-present.
GASP Mentoring Luncheon: Table Host. January 18, 2013. New Orleans, LA.


Midwestern Psychological Association, Program Committee, Fall 2016-Spring 2020.
**Ad Hoc Reviewer**


**Grant Review Panels.** National Science Foundation—Social Psychology Panel, Social Sciences and Humanities Research Council of Canada


**PROFESSIONAL AFFILIATIONS**

American Psychological Society

Midwestern Psychological Association

Society for Experimental Social Psychology

Society for the Psychological Study of Social Issues

Society of Personality and Social Psychology

Social Psychology Network