ABOUT PSI CHI
Psichi is the International Honor Society in Psychology, founded in 1929. Its mission: “recognizing and promoting excellence in the science and application of psychology.” (Note: Our new mission statement is available at http://www.psichi.org/?page=purpose) Membership is open to undergraduates, graduate students, faculty, and alumni making the study of psychology one of their major interests and who meet Psi Chi’s minimum qualifications. Psi Chi is a member of the Association of College Honor Societies (ACHS), and is an affiliate of the American Psychological Association (APA) and the Association for Psychological Science (APS). Psi Chi’s sister honor society is Psi Beta, the national honor society in psychology for community and junior colleges.

 Psi Chi functions as a federation of chapters located at over 1,100 senior colleges and universities around the world. The Psi Chi Central Office is located in Chattanooga, Tennessee. A Board of Directors, composed of psychology faculty who are Psi Chi members and who are elected by the chapters, guides the affairs of the Organization and sets policy with the approval of the chapters.

 Psi Chi membership provides two major opportunities. The first of these is academic recognition to all inductees by the mere fact of membership. The second is the opportunity of each of the Society’s local chapters to nourish and stimulate the professional growth of all members through fellowship and activities designed to augment and enhance the regular curriculum. In addition, the Organization provides programs to help achieve these goals including conventions, research awards and grants competitions, and publication opportunities.

JOURNAL PURPOSE STATEMENT
The twofold purpose of the Psi Chi Journal of Psychological Research is to foster and reward the scholarly efforts of psychology students as well as to provide them with a valuable learning experience. The articles published in the Journal represent the work of undergraduates, graduate students, and faculty. To further support authors and enhance journal visibility, articles are now available in the PsycINFO® and EBSCO Academic Search Complete® databases. In 2016, the Journal also became open access (i.e., free online to all readers and authors) to broaden the dissemination of research across the psychological science community.

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<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
<th>Institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>The Red Badge of Research (And the Yellow, Blue, and Green Badges, Too)</td>
<td>Steven V. Rouse</td>
<td>Pepperdine University</td>
</tr>
<tr>
<td>19</td>
<td>Evaluating Peer-Peer Depression Outreach: College Students Helping Peers Approach and Respond to Students in Crisis</td>
<td>Carter J. Funkhouser, Audrey L. Zakriski*, and Janet Dee Spoltore*</td>
<td>Connecticut College</td>
</tr>
<tr>
<td>29</td>
<td>The Virtual Self: Avatar and Individual Determinants of Mood</td>
<td>Ivana Wang, Steven V. Rouse*, and Elizabeth Krumrei Mancuso*</td>
<td>Pepperdine University</td>
</tr>
<tr>
<td>39</td>
<td>Donate, Everybody’s Doing It: Social Influences on Charitable Giving</td>
<td>Anne C. Partika</td>
<td>The College of Wooster</td>
</tr>
<tr>
<td>46</td>
<td>Student Perceptions of Their Psychology Department’s Learning Objectives for the Major</td>
<td>Veronica E. Scherbak, Joan T. Bihun*, and Mitchell M. Handelsman*</td>
<td>University of Colorado Denver</td>
</tr>
<tr>
<td>54</td>
<td>Burdensomeness, Belongingness, and Suicidal Desire Among Hispanic/Latino Individuals: Examining the Effect of Ethnicity in the Interpersonal Theory of Suicide</td>
<td>Laura Acosta, Christopher R. Hagan, and Thomas E. Joiner*</td>
<td>Florida State University</td>
</tr>
<tr>
<td>64</td>
<td>Memory for Missing Parts of Witnessed Events</td>
<td>Lindsay T. Hobson and Kenith V. Sobel*</td>
<td>University of Central Arkansas</td>
</tr>
<tr>
<td>72</td>
<td>2016 Journal Reviewers</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The Red Badge of Research
(And the Yellow, Blue, and Green Badges, Too)

Steven V. Rouse
Pepperdine University

ABSTRACT. Following guidelines created by members of the Open Science Collaboration, Psi Chi Journal of Psychological Research will begin awarding badges to journal articles that meet criteria for openness and transparency in the research process. The Open Data badge will be awarded to articles that post their research data in a public-access online repository. The Open Materials badge will be awarded to articles that post their surveys, tests, and other research materials. The Preregistration badge will be awarded to articles that publicly specify in advance their methodology and intended statistical analyses. In addition to the badges created by members of the Open Science Collaboration, Psi Chi Journal will also award a Replications badge, unique to this journal, to reward studies that replicate past research. With the Center for Open Science’s Open Science Framework as a free resource for researchers seeking any of these badges, these represent new best practices in contemporary psychological research.

Sometimes, when you are in the middle of a crisis, it is impossible to fully know whether the critical situation will lead to disaster or provide an opportunity for positive growth. The field of psychology is currently experiencing a crisis, and it is a very public one. Popular press outlets as varied as Discover (Yong, 2014), Slate (Baker, 2016), The Atlantic (Bloom, 2016; Yong, 2015), the Washington Post (Nutt, 2016), National Public Radio’s Morning Edition (Vedantum, 2015), and even the Chronicle of Higher Education (Bartlett, 2016) have all brought the “replication crisis” out of the world of academic conventions and organizational newsletters, and into the light of public attention.

Each of those popular press articles described the origin and current status of the “replication crisis” in fairly similar ways. In the last few years, questions were raised about whether a specific well-respected researcher had falsified data for dozens of his articles1. These questions sparked an effort to determine whether other research could be replicated. The results of these replication efforts were dismaying because many studies (even some quite famous ones) failed to replicate. In one massive replication effort (Open Science Collaboration, 2015), 100 articles from three well-regarded journals2 were replicated, but only 36% of the replications were statistically significant, and (on average) the effect sizes of the replications were only half as strong as the effect sizes of the original articles. Several different explanations could be put forward to explain this surprising lack of replication.

First, and I suspect that this is the most frequent cause of nonreplication, seemingly minor methodological differences between the original study and the intended replication (which the replicating researcher may consider negligible or not even be aware of) might introduce factors that systematically change the results; in this case, the second study is not technically a replication but is instead a variant of the first study. For example, in a gender-priming study, the gender of the research assistant performing the priming procedure might influence the

1The details of the fraud case are described in depth by Bhattacharjee (2013).

2The three journals studied were Psychological Science, Journal of Personality and Social Psychology, and Journal of Experimental Psychology: Learning, Memory, and Cognition.
effect of the manipulation. The differences in the results between the original study and the subsequent one do not need to undermine the results of the first (or call into question the ethicality of the first researchers). Rather, these differences might bring attention to the need for additional research to systematically explore the factors that moderate the previously observed relationship.

Second, perhaps journal policies increase the likelihood of Type I error being published. For example, if a journal only publishes articles with statistically significant findings, the journal might publish one article that obtained statistical significance and reject 19 articles that failed to do so; this would lead to the belief that an effect exists, even if this was just a statistical anomaly.

Third, perhaps researchers engage in “p-hacking,” or seemingly innocuous post hoc adjustments to the data or the analyses in order to obtain a statistically significant p value. For example, a researcher whose hypothesis failed to find statistical support might decide to simply change from a two-tailed test to a one-tailed test, or might collect responses from a few additional respondents to increase the statistical power, or might decide to eliminate outliers who are skewing the results. Any of these decisions might be very appropriate to make when initially planning the study, but if introduced post hoc to get one’s results just under a p value of .05, they increase the likelihood that the results would not replicate.

Fourth, perhaps falsification of data occurs more frequently than assumed. Despite the central position of integrity in psychological ethics, perhaps the pressure to publish leads some researchers to adjust their data in order to be able to publish their work. Regardless of the reason, we are experiencing a crisis in psychological science; if we cannot replicate some of the basic findings of our science, will the information we present be credible to the public (or to ourselves, for that matter)?

To use a crisis as an opportunity for positive growth, steps need to be taken to minimize the behaviors that led to the crisis and encourage alternative behaviors. This was the rationale for the development of the Center for Open Science (COS); if openness and transparency are encouraged in the research process, not only will the quality of the data improve, but the public confidence in the findings will be restored. One of the COS’s first accomplishments was the development of three “badges,” seen in Figure 1. These badges were developed to provide a way for research journals to designate articles that meet criteria for high standards of research openness, as described in depth at https://osf.io/tvyxz/wiki/1.%20Badges. As seen in Figure 2, the badges can be published on the journal article itself, commending the authors for their open research practices. Several prestigious psychological research journals including Psychological Science, Clinical Psychological Science, Journal of Research in Personality, Social Psychology, Journal of Social Psychology, and European Journal of Personality have begun awarding badges. Now, Psi Chi Journal of Psychological Research has endorsed the COS’s recommendations and now awards the following badges.

**Open Data**

**What Is It?**
The Open Data badge will be given to journal articles for which the data are stored in an open-access online site. Basically, this means that the
authors agree to post their data in such a way that others could download the data and reanalyze it on their own. For example, Dietze and Knowles (2016) earned this badge for an article that explored the relationship between social class and motivational relevance. Using three separate experiments, Dietze and Knowles showed that higher class participants looked at other people less often than those from lower classes; for example, eye-tracking software was used to show that higher income participants spent less time looking at people in scenes of city streets than did lower income respondents, which suggested that social status was negatively related to the likelihood of attending to other people. All of the data for this manuscript have been permanently archived at https://osf.io/zgg7m/, with time-stamps that show that the data were made publicly accessible on August 11, 2016, approximately two months before the online publication of the article. Because the data are available for anyone to download and reanalyze, the article was awarded the Open Data badge.

The COS specifies three criteria for awarding this badge. First, all of the data must be permanently stored at an open-access, time-stamped website, from which anyone could download the data. Any variables that identify the respondents should be deleted because publicly available data must still protect the confidentiality or anonymity of the research subjects, but all other variables collected must be provided. If the data have already been processed (for example, if a scale score has been created based on several individual items in the data set), the raw data that were used to calculate the scale must also be provided. Second, a data codebook needs to be available. Providing open data would be meaningless unless other users could tell what each variable represented. For this reason, the authors need to provide a data dictionary or explanation of what each variable (and each score on each variable) represents. Third, the researcher must provide authorization to allow others to use, copy, and distribute the data. Although the researcher may retain credit and copyright (when applicable), the data are publicly available to be used by anyone else.

**What Potential Concerns Should Be Considered First?**

Before uploading one’s data to a public website, several issues must be considered. First, if any identifying data are included in the data set, these variables should be deleted prior to being uploaded. The participants’ rights to confidentiality should never be sacrificed for the sake of openness. Second, though, and closely related, is the concern that participants might consider it intrusive to post the data even when their identifying information has been removed. For that reason, I have started to include a statement on consent forms that reads “As part of the Open Science movement, the data collected from this project will be publicly archived in perpetuity at https://osf.io but my identifying information will be eliminated from the data set prior to uploading.” Third, if researchers state that they have met the criteria for Open Data, it is assumed that the entire data sets (except for any identifying information) have been uploaded. In some cases, though, a data set might include variables that are not reported in the research report; for example, a researcher planning a series of studies that would utilize the same data set might not want others to analyze other variables that are intended for future research reports. If the publicly uploaded data only represents a subset of the data collected, the researcher must clearly state that other variables from the project were deleted prior to archiving. However, all nonidentifying variables used for the statistical analyses must be available.

**Open Materials**

**What Is It?**

The Open Materials badge indicates that the researcher has uploaded all of the surveys, tests, stimuli, and other materials that were used in the collection of the data. This allows other researchers to have access to procedures and items that would be needed to replicate one’s study. For example, Eom, Kim, Sherman, and Ishii (2016) earned this badge for an article that explored cultural variables that predict proenvironmentalism action. As part of this project, responses from a sample of European-American college students were compared with the responses given by Japanese college students to a survey about consumer behavior. The survey, permanently archived at https://osf.io/fb3kq/, asked respondents to indicate which of two products they would purchase; in some cases, one product had environmentally friendly elements (such as Chinet True Green Paper Cups) and the other one did not (such as Chinet Comfort Cups). Eom and colleagues demonstrated that, for the European-American respondents, the choice of environmentally friendly options was correlated with self-rated environmental concern, but for the Japanese students, the choice was correlated with
the degree to which the respondents perceived those choices as being normative. Because the survey is permanently archived at https://osf.io/fb3kq/, any other researchers could replicate the research. Therefore, this article was awarded the Open Materials badge.

The COS specifies three criteria for awarding this badge. First, all of the research measures, stimuli, and surveys must be archived in a permanent, publicly available, open-access repository in a digitally sharable format. Second, any research components (such as a biological material, equipment, or stimuli that are not in a digital format) that cannot be uploaded have to be described in enough detail to allow for a full replication. Third, information has to be provided to explain the use of the materials, so that other researchers could fully replicate the procedure that generated the data.

What Potential Concerns Should Be Considered First?

Although many research measures can be uploaded for public access, some research measures should not. For example, if a researcher purchased copies of a proprietary personality test for use in a study, uploading a copy of the test would violate the test’s copyright. In addition, public release of test items themselves might violate the American Psychological Association’s Ethical Principles of Psychologists and Code of Conduct, because section 9.11 directs psychologists to protect the security of test questions in order to maintain the integrity of the assessment process. In these circumstances, the test materials should not be uploaded. Rather, the researcher should clearly indicate which tests were used, providing enough information to allow other researchers to purchase or access the tests (assuming they meet qualifications for test use), thereby replicating the procedure.

Preregistered

What Is It?
The Preregistered badge indicates that the researchers clearly articulated important aspects of their research methodology prior to collecting data, saving these research plans in a time-stamped website. After answering questions such as those listed in Table 1, the researcher saved the responses in a website that “froze” the research plans prior to data collection. For example, Lau, Morewedge, and Cikara (2016) earned the Preregistration badge for an article that explored the extent to which respondents expected stronger emotional reactions for in-group members or out-group members, relative to unspecified people. One of their analyses asked Republicans and Democrats to imagine someone from their own party, the opposing party, and an unspecified person losing a competition, and the respondents were asked to estimate how unhappy the person would be. Respondents expected the opposing party members to be most upset, relative to members of their own party and the unspecified individuals. Moreover, all three hypothetical people were expected to be more upset at the situation than a hypothetical Buddhist would be. This suggested that expectations of emotional responses are affected by in-group biases, out-group biases, and even stereotypes of Buddhist nonreactivity. Prior to data collection,

| Typical Questions Asked in the Preregistration Process (Paraphrased From the Center for Open Science’s “Prereg Challenge”) |
| Questions related to the study information |
| 01. What is the project’s working title? |
| 02. Who are the authors? |
| 03. What research questions will be answered by this project? |
| 04. What hypotheses will be tested for statistical significance? |
| Questions related to the sampling plan |
| 05. Do the data already exist? If yes, what steps have you taken to ensure that you are not aware of the results of any planned analyses? |
| 06. What plans have you made to recruit participants and collect data? |
| 07. How large do you intend for your sample to be, and how did you arrive at this number? |
| 08. If you might terminate data collection before reaching the intended sample size, what systematic “stopping rule” will you use? |
| Questions related to the variables |
| 09. What manipulated variables or treatment conditions are planned (if any)? |
| 10. What measured variables or outcome measures are planned? |
| 11. What indices (such as total scores from a series of research measure questions) will be calculated (if any)? |
| Questions related to the research design |
| 12. Would you describe the study as an experiment, observational study, meta-analysis, or “other”? |
| 13. How would you describe the study design (such as between-subject, within-subject, or mixed design)? |
| 14. Will there be randomization, and if so how will this be performed? |
| Questions related to the data analysis |
| 15. Do you plan to transform, recenter, or recode the data? |
| 16. How will you decide whether or not to exclude data from the analyses? |
| 17. How will you handle missing or incomplete data? |
| 18. What statistical tests will be used for each hypothesis? |
| 19. Do you have any planned follow-up analyses such as pairwise comparisons? |
| 20. What criteria (such as p-values) will you use to determine whether the results are statistically significant, and will these tests be one-tailed or two-tailed? |
| 21. Do you have any planned exploratory analyses that are not related to the hypotheses listed above? |
| Other questions |
| 22. Although optional and relatively uncommon, do you have any analysis scripts (such as SPSS syntax files that were created with pilot data) that you would like to preregister? |
| 23. Is there any additional information that you believe should be preregistered in order to be transparent about the research plans? |

Note: Retrieved from “Preregistration Challenge: Plan, Test, Discover” by the Center for Open Science at https://osf.io/jea94/
Lau and her colleagues preregistered their study at https://osf.io/x8etz/ in a two-page document, these researchers specified their hypotheses, independent variables and dependent variables, sample size and means of recruitment, data collection procedure, and planned statistical analyses. Because these essential research details were registered in a time-stamped format, the article was granted the Preregistration badge.

Four criteria have been specified by the COS in order for a study to receive this badge. First, the registration has to be saved on a public website created for preregistration purposes, time-stamping and rendering the preregistration plans noneditable. In other words, simply saving a pdf file on one’s own privately created website would not be sufficient. Second, the preregistration must be saved and frozen prior to collecting data or initiating an intervention. In other words, the prefix “pre” is important; the registration must occur before a researcher could be influenced by the data. Third, the eventual design and analysis must follow the preregistered plans. Finally, the results of all preregistered analyses must be disclosed in the journal manuscript; additional analyses may also be reported, but the results of the preregistered ones must be provided.

However, the COS guidelines allow two exceptions to the requirements described above. First, a “DE” (i.e., Data Exists) notation can be given to a Preregistration badge if the data had already been collected prior to the registration but the researcher had not yet performed any analyses. Imagine, for example, a researcher who gains access to a large pre-existing data set, and wishes to run novel analyses. In general, this would appear to violate the second requirement listed above. However, the researcher could still preregister the analyses by transparently indicating that the existing data had not yet been examined. Second, a “TC” (i.e., Transparent Changes) notation can be given to a preregistration badge if unexpected changes required a shift in the research design or analyses. Imagine, for example, a researcher who plans to use specific statistical analyses, but when the article is submitted to a journal, a reviewer recommends a more appropriate statistical procedure. In general, a different statistical analysis would appear to violate the third requirement listed above. However, a footnote could be included to explain why the change occurred, transparently explaining the rationale for the changes.

**What Potential Concerns Should Be Considered First?**

In most cases, Preregistration would not require a dramatic change to one’s research practices because a conscientious researcher will already have considered the questions listed in Table 1 prior to collecting data. In fact, in many cases, these questions had to be answered as part of the Institutional Review Board approval process. The primary difference is that a preregistered study simply makes these answers public, and the researcher commits to take reasonable steps to follow those plans. In many ways, the most revolutionary aspect of the Preregistration badge is that it honors transparency in the planning phase of research.

Nevertheless, some have expressed concern about this practice. In a pair of editorials written in her role as President of the Association for Psychological Science, Goldin-Meadow raised two concerns that she hoped psychological research journals will consider as they are implementing Preregistration badges. First, will the initiation of Preregistration badges cause a bias against exploratory research (Goldin-Meadow, 2016a)? After all, scientists must first discover phenomena before they begin to examine causal factors, and psychological science would be weaker if the value of such exploratory research were minimized. Second, will the use of Preregistration badges (which are more relevant to some types of studies than others) cause a marginalization of studies that do not fit the Preregistration model (Goldin-Meadow, 2016b)? After all, Goldin-Meadow argued, Preregistration seems very well-suited for specific laboratory studies in which a single independent variable is manipulated, but may be less appropriate for large, “messy,” nonexperimental studies.

Although she concluded that neither of these concerns should prevent journals from awarding Preregistration badges, she concluded that it will be important to avoid elevating the status of some studies and procedures while devaluing others. In response to Goldin-Meadow’s concerns, three advocates of Preregistration badges (two of whom serve as editors for journals that have implemented these badges) explained that Preregistration does not prevent exploratory research (Lindsay, Simons, & Lilienfeld, 2016). Rather, this process simply asks researchers to differentiate between planned, hypothesis-driven analyses and those that are more exploratory in nature. Registration serves as a useful adjunct to flawed human memory; as research projects progress, it is not uncommon for
one’s memories to shift and fluctuate—which can increase the probability of Type I errors. Preregistration allows the reader to know which results were confirmatory (with specific methods and hypotheses specified before seeing the data) and which were exploratory (which can be an exciting and important part of the research process). Moreover, they noted that Preregistration need not stifle a researcher; as described above, as long as changes are transparent and accompanied by a compelling rationale, additional analyses and even revised analyses are perfectly within the framework of a Preregistration. But preregistration, they argued, is not limited to lab-based experimental studies; any quantitative research with inferential statistical tests can be preregistered—even archival research. This simply requires specifying one’s predictions before running the analyses.

Because of the value of Preregistration, the COS has created a $1,000,000 Preregistration Challenge, which is described at https://cos.io/prereg/. As part of this challenge, one thousand researchers will win prizes of $1,000 each. To be eligible for this award, the researcher must preregister the study and then have it published in a journal that awards Preregistration badges following the COS’s guidelines; now that Psi Chi Journal of Psychological Research has initiated these badges, publication in this journal qualifies for the award.

Replication

What Is It?
In addition to the three badges that were introduced by the COS, Psi Chi Journal of Psychological Research has taken a trailblazing step by introducing a fourth badge to denote replication studies (see Figure 3). As noted by Edlund (2016), replications are an important part of the scientific process, yet some journals are hesitant to publish replications because of an incorrect belief that replications add little to the body of scientific literature. For this reason, replicating researchers must take care to consider whether their study is a true replication or an intentional variant. However, because of word-count limitations in most research journals, some of the minor methodological decisions made by the original researcher might not have been published in the original article. To truly replicate the study, then, replicating researchers should attempt to contact the original researcher and request the original materials used in the study or inquire about their willingness to review the planned methodology of the replication. For example, Jonas et al. (2017)
demonstrated that the input of the original researcher might improve the quality of the planned replications. When a special journal series was announced in which one specific publication would be replicated several times, the authors of the planned replications submitted their proposals to the author of the original publication who worked with the replicating researchers to precisely replicate some aspects of the original article while also systematically manipulating other factors. Together, seven replications of the same article led to a more nuanced understanding of when the previously observed effect would and would not replicate. Therefore, rather than just relying on the information provided in the original article and making assumptions about the similarity of the research methodologies, researchers conducting a replication are urged to make attempts to contact the original authors.

**Getting Started**

Each of the badge-earning journal articles described as examples above posted their data, materials, or preregistration at the same general website, with an https://osf.io/web address; this refers to the Open Science Framework (OSF), which was created by the COS to provide a free and versatile resource for researchers. Once you create an account on this website, you will be able to create a separate “project page” for each study you are conducting. With unlimited free storage, you can designate each of your coauthors as a “contributor,” giving you a shared space for storing all research-related electronic files. Initially coded as “Private,” you can change the status to “Public” when you reach a point at which you wish to seek a badge for your research manuscript. In addition, built-in Preregistration services guide you through the types of questions listed in Table 1, freezing your responses when you wish to have them preregistered. Therefore, the OSF provides a single resource that allows researchers to easily begin adapting their research processes to seek COS badges for their research articles. Visit https://osf.io/support/ for tutorials and answers to frequently asked questions.

**Conclusion**

As noted by Lindsay et al. (2016), times are changing, but the changes are positive. Although the replication crisis was triggered by a verified case of fraud, and then initiated a troubling concern about the inability to replicate a large number of studies published in highly respected journals, these badges provided psychological researchers with an opportunity to consider how to best conduct research in such a manner as to lead to replicable research. According to the Center for Open Science, the answer is found in transparency: open access of research materials, open access of research data, and open access of preplanned research methods and analyses. Because Psi Chi’s mission is “recognizing and promoting excellence in the science and application of psychology,” it is appropriate that *Psi Chi Journal of Psychological Research* is among the first peer-review psychological journals to recognize best practices of research transparency by awarding badges for Open Materials, Open Data, Preregistration, and Replication.

**References**


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“The Measure Ye Mete”: Does Prosocial Priming Lead to Harsher Moral Judgment?

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ABSTRACT. The present research investigated the effects of general moral priming and social identity (i.e., institutional) priming on moral judgment. Undergraduate students (N = 233) from a private religious university were randomly assigned to 3 priming conditions, differing in the content of a paragraph of scrambled words they read; the prosocial cooperation condition was primed with a moral fable, the social identity condition was exposed to an institutional prime (i.e., the religious university), and the control condition was primed with a neutral paragraph. Participants judged 3 mildly disruptive social situations (jaywalking, speeding, and smoking) and 2 scenarios related to the university’s local honor code (facial hair and modesty). The fable group judged most harshly in the jaywalking scenario, $F(2, 230) = 3.22, p = .042, \eta^2 = .027$, and the university group in the facial hair scenario (i.e., an honor code infraction), $F(2, 230) = 3.27, p = .040, \eta^2 = .028$. Proselyting mission service, whether completed or planned, was a significant predictor of harsher judgment in the honor code scenarios—facial hair, $F(1, 149) = 3.99, p = .048, \eta^2 = .026$, and modesty, $F(1, 149) = 10.63, p = .001, \eta^2 = .067$. This variable also interacted with the experimental condition on the facial hair scenario, $F(2, 145) = 3.05, p = .05, \eta^2_p = .040$. Further, it seems that these primes were most efficacious in scenarios perceived as more morally harmful.

Although early research on moral judgment has viewed the moral thinker as a logical and calculating agent, recent research has made it clear that conceptions of morality are more nuanced (Greene, Morelli, Lowenberg, Nystrom, & Cohen, 2008; Uhlmann, Pizarro, & Diermeier, 2015; Wheatley & Haidt, 2005). For example, if morality was utilitarian (i.e., focused on objective consequences), one would expect judgments of similar situations to be uniform across diverse populations. Instead, it seems that morality is at least partly a socially driven process, heavily influenced by culture (Lamont, Schmalzbauer, Waller, & Weber, 1996), symbolism (Zarkadi & Schnall, 2013), and affect (Schnall, Haidt, Clore, & Jordan, 2008). Because conflict, whether interpersonal or societal, so frequently stems from disagreements about morality (Rai & Fiske, 2011), understanding the factors that influence moral judgment seems critical in explaining and resolving conflicts. To explore additional factors in the moral judgment process, this study sought to explore how priming can impact judgments of others’ social behavior.

The Adaptive Nature of Moral and Religious Judgment

Haidt (2001) defined moral judgment as evaluations of others “with respect to a set of virtues held to be obligatory by a culture or subculture” (p. 817). The social intuitionist hypothesis posits that an intuition that something is wrong precedes rational justification for a judgment; this process occasionally leads to inconsistent moral judgments. That is, rather than calculate the objective harm of an action, people tend to make judgments based on affective state (Strohminger, Lewis, & Meyer, 2011) and the virtue that is currently most salient
in the mind (Van Tongeren, Welch, Davis, Green, & Worthington, 2012). Although moral thinkers generally remain unaware of their biases (Pinker, 2008), affective judgment likely arose as a useful heuristic with an evolutionary benefit. That is, patterns observed in others often provide important signals about their moral qualities and value as potential ingroup members (Critcher, Inbar, & Pizarro, 2012; Uhlmann et al., 2015). Thus, the subjectivity that most would view as flawed and inconsistent in modern moral judgment might have been adaptive in past societies because of the rapid inferences it allows one to make about others.

Evolutionary psychologists have proposed that religious rituals are adaptive for similar reasons; shared religious values promote “coalitional psychology” and prosocial behavior, particularly within an ingroup (Kirkpatrick, 2012; see also Shariff, Piazza, & Kramer, 2014). Religious rituals and customs allow people to signal their morality and beliefs to other ingroup members using signals (e.g., religious piercings, self-harm, dress standards, time-intensive activities) that are too costly for nonbelievers to fake (Murray & Moore, 2009; Sosis, 2004). Because religious prosociality depends on these signals and their related beliefs in a morally concerned deity, nonbelievers who fail to display the correct signals are often seen as freeriders or considered untrustworthy (Gervais, Shariff, & Norenzayan, 2011). Religious priming often leads to fairness, especially toward ingroup members, whether by increasing prosocial behavior (Shariff & Norenzayan, 2007) or by facilitating judgment toward unfair behavior (McKay, Efferston, Whitehouse, & Fehr, 2011). In short, it seems that religious thoughts in many ways cause believers to act as though they are being watched (i.e., by a supernatural being; Gervais & Norenzayan, 2012).

The Effects of Priming on Judgment
Moral Foundations Theory claims there are six innate moral foundations, though people differ on their moral “tastes” (Haidt, 2012). Further, a particular stimulus can increase awareness of specific moral dimensions (e.g., participants who are exposed to a prime of cleanliness tend to report more conservative political views, a position that emphasizes the moral foundation of sanctity; Helzer & Pizarro, 2011). Not surprisingly, participants (especially those reporting higher religious commitment) who recalled experiences of forgiveness gave more lenient evaluations of morally ambiguous scenarios than those who recalled experiences of punitive justice (Van Tongeren et al., 2012). Individuals’ responses to moral or religious priming can also depend heavily on their participation in a belief system (e.g., donating money, providing volunteer service, or abiding by a specific code of conduct; cf. McKay et al., 2011) and acculturation (Cohen, 2015; Cohen & Rozin, 2001; Cohen, Malka, Rozin, & Cherfas, 2006). Thus, religious priming does not reliably affect nonreligious individuals, and it seems to depend on “the cognitive activation of culturally transmitted religious beliefs” (Shariff, Willard, Andersen, & Norenzayan, 2015, p. 1). One may expect, then, that moral or religious priming would activate generally the culturally relevant values internalized by an individual.

Even within a single belief system, different aspects of religious experience can produce dramatically different effects. For instance, asking Israeli Jews in the West Bank and Gaza about their religious attendance (i.e., an institutional prime) increased support for a well-known Jewish terrorist, but asking how often they prayed had no such effect (Ginges, Hansen, & Norenzayan, 2009). In this case, making participants’ religious attendance salient likely elicited thoughts related to the institution (e.g., loyalty) rather than moral principles specific to Judaism. Another study found that depictions of violence in sacred texts, especially when commanded by God, can increase aggression, particularly among believers (Bushman, Ridge, Das, Key, & Busath, 2007). In short, although the effects of religious or moral primes are not always intuitive, it does seem that specific primes are most effectual toward relevant stimuli. In other words, institutional primes may selectively affect judgments relevant to a specific institution (i.e., relevant costly signals, or local norms) but general moral primes may elicit responses more consistent with general moral principles or reasoning.

In light of these findings, we hypothesized that a moral prime of prosocial cooperation (general moral concept) would elicit consistently stronger judgments toward general disruptive social behavior than an institutional (i.e., university) prime or a control prime. We also hypothesized that an institutional prime would elicit similar or harsher judgments in situations specific to a religious university (i.e., local costly signals). Finally, our second hypothesis was that the effects of the moral prime and the institutional prime (where relevant) would be stronger among those who have completed or plan to complete an extended period of mission service. In other words, we anticipated that those
in the mission group would have a heightened sensitivity to both moral and institutional priming, and would respond to these primes with harsher judgment toward mildly disruptive social behavior.

Method

The present experiment was conducted at a private midsize religious undergraduate university in the Intermountain West region of the United States. Matriculated students agree to abide by a code of conduct including standards for dress, grooming, curfew, and morality. This code is a salient aspect of student life because, for many, these standards represent ideals taught in their youth within this general religious culture. Moreover, as undergraduates at this university, they are expected to hold to these standards, which are rigorously enforced. In particular, women are asked to wear appropriately modest clothing including skirts and dresses that are at least knee length. Men are to keep their hair professional in appearance and to shave daily. Both men and women are to be honest and avoid substances including alcohol, drugs, and tobacco. Students are reminded of these standards in multiple advertisements across campus during the school year as well as by clergy in the local congregations and by teaching faculty. Additionally, an extended period of proselyting service (e.g., missionary service) is encouraged during young adulthood, often before or during students’ university studies. Students, therefore, are heavily influenced to abide by the university’s code of conduct due to teachings in their youth and missionary service standards, thus giving this code a relatively higher moral status than it might attain otherwise. Therefore, this code of conduct provides a unique opportunity to study social judgment toward disobedience to social norms.

Participants

Two groups of participants completed an online survey on cognitive perceptions. The first group was a random sample of 500 students provided by the university (n = 173; response rate of 34.60%). Random sampling was accomplished by assigning random numbers to all current students in a database; students were then randomized again, and the first 500 were chosen. The second group was a convenience sample of 350 undergraduate students in psychology classes at the same university who had expressed interest in participating in research for course credit (n = 194; response rate of 55.43%). All participants were offered the opportunity to enter a random drawing for one of 12 gift cards (eight $10 cards and two $25 cards). Because of technical issues with the online survey data collecting program, we were unable to conclusively prevent duplicate responses within our sample (e.g., one person completing the survey more than once). Due to our concerns regarding sufficient priming and duplicate responses, we excluded those who indicated low comprehension of our priming paragraph (as described below) as well as those who did not spend at least 10 s on the page displaying the priming stimulus, making a final combined sample size of 233 participants (M age = 21.10; SD age = 3.30; 65% women), or 63.49% of the original 367 participants. Racial demographics were not collected for either group of participants. Data for the entire university was 88.35% White, 6.93% Hispanic/Latino, 1.28% Asian American, and 1.18% Black, however it is important to note that these figures do not necessarily reflect the present experimental sample.

Procedure

After approval was given by the Brigham Young University–Idaho institutional review board (F2014-015), participants in each sample were randomly assigned to one of three conditions: two experimental and one control. They received a link to one of three surveys via e-mail, differing only in the priming stimulus, which consisted of a paragraph of scrambled words (i.e., letters scrambled within each word). The first experimental group read a paragraph regarding the affiliated university’s transition from a 2-year college to a 4-year university; the second experimental group read a short children’s fable emphasizing prosocial cooperation (i.e., “The Lion and the Mouse”); finally, the control group read a short paragraph commenting on the mind’s ability to read scrambled words. Participants then indicated how long it took them to read the paragraph (“Less than 30 s,” “Between 30 and 60 s,” or “More than 60 s”) and how well they understood it on a 7-point Likert-type scale from 1 (not at all) to 7 (extremely well). To ensure the manipulation primed participants sufficiently, final analyses included only participants who spent more than 10 s on the priming page and whose self-report comprehension was greater than 3 on the 7-point scale.

Participants rated a series of statements describing five morally ambiguous scenarios (i.e., jaywalking, speeding, facial hair, modesty, smoking) on a 7-point scale from 1 (strongly disagree)
to 7 (strongly agree), as outlined in the Appendix. As such, larger values are indicative of a stronger judgment of the inappropriateness of the particular behavior. As noted above, the facial hair (Scenario 3) and modesty (Scenario 4) scenarios are unique to the university honor code (i.e., although smoking is also prohibited, this prohibition comes from wider reaching religious and cultural standards). We thus differentiated between these two “honor code items” and the other three, which we designated as “nonhonor code items,” meaning that they are not specific to the university honor code. Although the facial hair scenario depicts a more clear infraction of university dress standards, a skirt that stops at the knees is more ambiguous and could be interpreted either way. The scenarios were presented in the order outlined in the Appendix for all participants. Although this makes order effects a possibility, our analyses focused on differences between experimental conditions, and order effects would not ostensibly affect one condition over another. Further, no trend between the items (e.g., participants judging progressively less harshly) suggested any significant order effects.

**Measures**

After judging these moral scenarios, participants provided some demographic information and completed a battery of self-report psychosocial measures. Measures included collected status of religious mission service (“I have served a mission,” “I have not served a mission but plan to,” or “I have not served a mission and don’t plan to”) and personal social identification with the university (3-item measure created for this study on a 5-point Likert scale, 1 = strongly disagree, 5 = strongly agree, e.g., “Being a student at this university is a central part of my identity”).

**Mood.** Participants then completed assessments of positive and negative affect over the past month using the eight items of the PANAS (Watson, Clark, & Tellegen, 1988) on a 5-point scale (1 = not at all, 5 = extremely; e.g., enthusiastic, bored). The internal consistency coefficient for negative moods was .549 and it was .598 for positive moods. These low coefficients need to be considered when interpreting the results.

**Conflict.** Interpersonal conflict with others was assessed using an 8-item measure adapted from Wright, Mohr, and Sinclair (2014) on a frequency Likert-scale in the past month (e.g., “In the past month, how often have you been shown a lack of respect or felt underappreciated by people around you?”). The internal consistency coefficient for the conflict measure was .708.

**Personality.** Neuroticism was assessed using a 10-item measure on a 5-point agreement scale (Goldberg, 1999; 1 = strongly disagree, 5 = strongly agree, “I often feel blue”). Cronbach’s alpha suggested adequate internal consistency α = .888.

**Results**

Descriptive results including means, standard deviations, and effect sizes are presented in Table 1. Although the scenarios were expected to represent separate constructs (i.e., the two honor code items were expected to elicit higher judgment from the university condition), the reliability estimate of the five scenarios was moderate (α = .73). Mean judgment on the 7-point scale was highest for the fable condition (M = 2.94, SD = 1.16), lowest for the control condition (M = 2.59, SD = 1.14), and more moderate for the religious university condition (M = 2.73, SD = 1.13). Across experimental conditions, average judgment was highest for the jaywalking (M = 3.19, SD = 1.73) and facial hair scenarios (M = 3.19, SD = 1.88). Both of these scenarios received significantly harsher judgment than the smoking (M = 2.51, SD = 1.47; p < .001), modesty (M = 2.50, SD = 1.72; p < .001), and speeding (M = 2.32, SD = 1.48; p < .001) scenarios (see Figure 1). There were statistically significant differences between the experimental conditions on age (MSocial identity = 20.79, SDSocial identity = 3.20; Mcontrol = 20.68, SDcontrol = 2.70; Mfable = 21.88, SDfable = 3.91), F(2, 228) = 3.22, p = .042, η² = .027, and neuroticism (MSocial identity = 2.25, SDSocial identity = 0.69; Mcontrol = 2.34, SDcontrol = 0.67; Mfable = 2.54, SDfable = 0.75), F(2, 229) = 3.13, p = .044, η² = .027. Further, those in the university condition consistently reported a

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Fable (n = 76)</th>
<th>Social Identity (n = 64)</th>
<th>Control (n = 93)</th>
<th>F</th>
<th>η²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jaywalking</td>
<td>3.58 (1.81)</td>
<td>3.88 (1.63)</td>
<td>3.09 (1.68)</td>
<td>3.22</td>
<td>.027</td>
</tr>
<tr>
<td>Speeding</td>
<td>2.53 (1.61)</td>
<td>2.74 (1.26)</td>
<td>2.28 (1.51)</td>
<td>1.24</td>
<td>.011</td>
</tr>
<tr>
<td>Facial Hair</td>
<td>3.29 (1.92)</td>
<td>3.59 (1.84)</td>
<td>2.84 (1.83)</td>
<td>1.27</td>
<td>.028</td>
</tr>
<tr>
<td>Short Skirt</td>
<td>2.69 (1.73)</td>
<td>2.64 (1.83)</td>
<td>2.26 (1.62)</td>
<td>1.58</td>
<td>.014</td>
</tr>
<tr>
<td>Smoking</td>
<td>2.62 (1.53)</td>
<td>2.42 (1.49)</td>
<td>2.47 (1.42)</td>
<td>0.39</td>
<td>.003</td>
</tr>
</tbody>
</table>

*p < .05; Five Analysis of Variance tests were conducted (df = 2, 230), and statistically significant differences were found in two of these. Eta-Squared (η²) was computed to estimate the effect size between priming conditions.
higher GPA ($M = 3.62, SD = 0.36$) than the fable ($M = 3.36, SD = 0.50$) and control ($M = 3.50, SD = 0.42$) conditions, $F(2, 194) = 5.08, p = .007, \eta^2 = .050$. Although men and women gave similar judgments on four of the five scenarios, men judged the modesty scenario much more harshly than women ($M_{men} = 2.91, SD_{men} = 1.89; M_{women} = 2.28, SD_{women} = 1.58; p = .007; \text{Cohen’s } d = 0.37$). There were no other statistically significant differences on any demographic or psychosocial variables collected between the experimental conditions.

**Hypothesis 1: Moral Priming and Judgment**

To investigate Hypothesis 1, we computed mean difference estimates using one-way Analysis of Variance (ANOVA), as outlined on Table 1. On the three nonhonor code scenarios, the fable group provided the harshest judgment, although a significant main effect was found only in the jaywalking scenario, $F(2, 230) = 3.22, p = .042, \eta^2 = .027$. A significant main effect was found in only one of the honor code-specific scenarios; the facial hair scenario received the harshest judgments from the social identification condition, $F(2, 230) = 3.27, p = .040, \eta^2 = .028$. Thus, the first hypothesis was partly confirmed because we found a significant main effect between two items in the anticipated direction (i.e., the fable prime led to higher judgments than the control prime across scenarios, and the university prime led to higher judgments in the honor-code specific scenarios).

**Hypothesis 2: Mission Service**

Mission service including past or intended service was a significant predictor of harsher judgment in three of the five scenarios: speeding ($M_{mission} = 2.50, SD_{mission} = 1.54; M_{nonmission} = 2.10, SD_{nonmission} = 1.38$), $F(1, 231) = 4.28, p = .04, \eta^2 = .018$, facial hair ($M_{mission} = 3.46, SD_{mission} = 1.93; M_{nonmission} = 2.88, SD_{nonmission} = 1.78$), $F(1, 231) = 5.59, p = .019, \eta^2 = .024$, and modesty ($M_{mission} = 2.94, SD_{mission} = 1.90; M_{nonmission} = 1.98, SD_{nonmission} = 1.30$), $F(1, 231) = 19.25, p < .001, \eta^2 = .077$. Because only three male participants reported neither having completed nor planning to complete a proselytizing mission, we compared the ratings of men and women within
the mission group on all items. Although there was originally a significant sex difference on the modesty scenario, it should be noted that men and women in the mission group judged this item very similarly ($M_{\text{men}} = 2.98$, $SD_{\text{men}} = 1.89$; $M_{\text{women}} = 2.88$, $SD_{\text{women}} = 1.93$). Thus, it is possible that the sex difference on that item is due primarily to the over-representation of mission service among men. Still, there was a difference between male and female missionaries’ ratings on the smoking scenario, $F(1, 125) = 4.01$, $p = .047$, $\eta^2 = .031$, with women ($M = 2.81$, $SD = 1.48$) giving a more harsh assessment than men ($M = 2.28$, $SD = 1.44$).

**Interaction Effects**

Using two-way ANOVA analyses, we also explored potential interaction effects between religious service and experimental condition (see Figure 2). Because of the lack of men in the nonmission group, these analyses included only female participants (48 in the service group, 103 in the nonservice group) to avoid comparing an almost completely female nonmission group with a mixed mission group. Thus, these interactions may differ for men, particularly on the smoking scenario.

Mission service was again a significant predictor of harsher judgment on the honor code items: facial hair ($M_{\text{mission}} = 2.90$, $SD_{\text{mission}} = 1.78$, $M_{\text{nonmission}} = 3.54$, $SD_{\text{nonmission}} = 1.93$), $F(1, 149) = 3.99$, $p = .048$, $\eta^2 = .026$, and modesty ($M_{\text{mission}} = 2.88$, $SD_{\text{mission}} = 1.93$, $M_{\text{nonmission}} = 2.00$, $SD_{\text{nonmission}} = 1.31$), $F(1, 149) = 10.63$, $p = .001$, $\eta^2 = .067$. With regard to the facial hair scenario, there was a significant interaction effect between group and religious service, $F(2, 145) = 3.05$, $p = .05$, $\eta^2 = .040$ (see Figure 2). Although interaction effects were not present for any other scenarios, this analysis did show a main effect for experimental condition on the modesty item, $F(2, 145) = 3.22$, $p = .043$, $\eta^2 = .043$. Though not conclusive, these analyses suggested that individual differences (e.g., religious devotion) can, in some instances, moderate the effects of priming on moral judgment. As hypothesized, it seems that a prime tends to be more effective in relevant situations (i.e., the honor code scenarios for the university prime) and for those with more invested in the scenario (i.e., the mission group).

**Discussion**

Moral judgment is an inevitable social phenomenon that carries an important role in conflict. Although processes leading to judgment are imperfect and susceptible to bias, moral disagreements and judgments of others have the potential to damage valuable interpersonal relationships as well as create tension and misunderstandings between groups. In light of research demonstrating that judgmental processes rely on mental states, which can be influenced through priming (Van Tongeren et al., 2012), we conducted the present study to examine the effects of different types of priming (i.e., prosocial cooperation, social identity, control) on judgments of ambiguous or disruptive social scenarios. To our knowledge, the concept of general prosocial priming has not been compared with specific (i.e., institutional) priming in the existing literature regarding moral judgment. The present study provided experimental evidence that, at least within a religious population, prosocial priming facilitates harsher moral judgment toward general ambiguous or harmful scenarios, while a specific prime can facilitate harsher judgment toward relevant stimuli. These findings have important implications for the understanding of how moral judgment works within relationships and society in general.

**Moral Priming and Judgment**

First, we found partial support for the first hypothesis because our results demonstrated higher judgment in the fable group across scenarios and similar judgment in the university group in the honor code scenarios. In the case of the facial hair item, the university condition gave harsher judgments than both other groups; this is likely because facial hair is not generally considered a moral issue outside of adherence to the university honor code, while modesty is widely considered a moral issue independent of university standards. Although the differences in means were in the expected direction, only the jaywalking and facial hair scenarios showed a main effect. One possible explanation for this is that these were the least ambiguous of the scenarios (i.e., participants judged these scenarios much more harshly than the other scenarios).

Although it was expected that ambiguous scenarios would elicit the strongest differences, one possibility is that priming can amplify judgment where harm is already perceived, but does not increase perception of harm in ambiguous scenarios. That is, priming that leads to stricter judgment toward unfair behaviors may have its strongest effect in a case universally recognized as unfair. For example, if participants perceive little harm in slightly exceeding the speed limit, a prime that moderates judgments of harmful actions will
likely be less potent than in a scenario describing unambiguous harm. In summary, it seems that general moral priming, like religious priming, led to judgments favoring fairness in a religious university setting. It further seems that a specific (i.e., institutional) prime also led to harsher judgments toward those who break locally accepted standards or norms.

In addition to priming condition, it appears that moral judgment was mitigated by other factors including missionary service status. The pattern of ratings in the mission group suggested that those who chose to serve proselyting missions differed in meaningful ways from those who did not. That is, it seems the mission group’s moral sense (or their advocacy for punitive measures) and sensitivity to moral priming was heightened in many scenarios, both religious and nonreligious. Because the mission group included those who planned on missionary service in the future, these differences were likely due to personality and acculturation rather than the actual mission experience. It further seems that judgment on different scenarios can be affected by different factors. For instance, individuals in the mission group consistently judged the modesty scenario more harshly than those in the nonmission group, suggesting that modesty was a core value for those in the mission group. Further, the interaction between mission status and experimental condition on the facial hair item suggested that finding factors that consistently affect judgment may be difficult.

These findings were consistent with existing research. For instance, McKay et al. (2011) also found a priming stimulus to selectively affect moral judgments in specific subpopulations (those who had donated money to a church). In line with Cohen et al. (2006), cultural factors may impact what morality means (e.g., Protestants and Jews differ on views of forgiveness, leading to very different moral assessments). The present study demonstrated that a relatively homogenous group primed with a general prosocial or specific institutional stimulus showed increased judgments toward perceived violation of social norms. Even within the population, there are likely other, even more specific, factors that influence what an individual views as moral. Besides religious devotion, these factors may include personality, ethnicity, political affiliation, and geographic location (Haidt, 2012; see also Pinker, 2008). Thus, these factors may also interact with priming stimuli.

**Limitations and Future Research**

It is important to note this study’s potential limitations. First, as with all studies utilizing volunteer participants, there is potential for nonresponse bias, though we did have a rather strong response rate for an online survey study sent to students across an entire campus. Although we expected our efforts of random assignment to help maintain internal validity, an online survey, we relied on participants’ honesty in taking the time to read the priming paragraph and provide responses that accurately represent their experiences. Moreover, our hidden timer to measure the amount of time participants spent reading the paragraph produced a wide time range, suggesting that there may be considerable differences in how seriously each participant took the survey. Finally, we were unable to verify that each of our student participants only completed the survey one time across our sample, although our exclusion criteria likely mitigated this issue. As such, it is difficult to have complete confidence in the full veracity of the data, though this is a common limitation of self-report methodology.

The present study examined the effects of priming at a specific religious university, and caution should be taken in generalizing results to other populations. Future research is needed to examine how prosocial priming and social identity priming compare in other secular and religious populations. The relationship observed in this study between priming stimuli and judgment should be replicated among larger samples and with additional primes to investigate whether a similar pattern of results emerges. Moreover, many of the observed effects are tentative and require further inspection such as the interaction effects between religious service and the treatment variable. Finally, modalities other than an online survey should be explored for potential replication.

**Implications and Conclusion**

The current study demonstrated that prosocial priming led to harsher moral judgment toward ambiguous or disruptive social situations, and that specific institutional priming may lead to harsher judgment in relevant scenarios, at least within the context of a religious university. It also gave evidence that a prosocial prime can facilitate general moral thinking in a broader range of moral situations than specific primes. One potential application of these findings is in understanding conflict—parties in conflict often find it difficult to understand why the other cannot understand their
point of view. If acculturation has such an impact on perceptions of morality (or even what is relevant to morality), this helps explain such frustration as being a product of existing factors (e.g., beliefs or attitudes) as well as cognitive and affective states during social interaction and judgment. The results presented here indicated that these and other variables interact in complex ways, which will likely vary between populations and perhaps even within persons.

In sum, this study shed further light on the relationship between morality and the judgment of others’ behavior. Although we remain unsure about many specific effects, especially in relation to causality, we can conclude that morality seems far more complex than a simple utilitarian calculation. Indeed, morality and associated moral judgments seem to stem from an amalgamation of cultural factors, belief systems, symbolism, as well as transient factors such as affective state and salient moral constructs induced by priming methods.

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### APPENDIX

<table>
<thead>
<tr>
<th></th>
<th>List of Scenario Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>01.</td>
<td>As you are on your way to class, you notice someone jaywalking across the street. This person deserves to get a ticket.</td>
</tr>
<tr>
<td>02.</td>
<td>You observe someone driving 29 miles per hour where the posted speed limit is 25 miles per hour. This person deserves a ticket.</td>
</tr>
<tr>
<td>03.</td>
<td>You observe a male student enter the fitness center on campus at 10:00 a.m. who has not shaved that morning. He should not be allowed to enter the fitness center.</td>
</tr>
<tr>
<td>04.</td>
<td>You observe a female student walk into a weekly conference with a skirt that stops at her knees. She should be prevented from sitting in the conference by an usher.</td>
</tr>
<tr>
<td>05.</td>
<td>You observe someone smoking near the swing sets at a local park. This person should not be trusted.</td>
</tr>
</tbody>
</table>

Note. Participants rated their agreement with these items on a 7-point Likert-type scale from 1 (strongly disagree) to 7 (strongly agree).
Evaluating Peer-Peer Depression Outreach: College Students Helping Peers Approach and Respond to Students in Crisis

Carter J. Funkhouser, Audrey L. Zakriski*, and Janet Dee Spoltore*
Connecticut College

ABSTRACT. This study evaluated the effects of a peer-peer depression outreach program for college students (Depression OutReach Alliance [DORA] College Program). Fifty-six college students participated in either the DORA program or a control program and completed pretest, posttest, and follow-up assessments. These assessments measured responses to and desired social distance from an at-risk male peer, self-stigma and perceived social stigma associated with psychological help-seeking, knowledge of depression and suicide, and crisis response skills. Results indicated that DORA participants reported improved crisis response skills, $t(50) = 2.55, p = .014, d = .71$, desired less social distance from the distressed peer, $t(26) = 3.07, p = .005, d = -.60$, and perceived there to be less social stigma related to seeking psychological help after the intervention, $t(26) = 2.71, p = .012, d = -.52$. Implications for college student depression and suicide outreach are discussed.

Mental health issues among college students are a serious public health problem in the United States. According to an annual survey of U.S. undergraduate students, 1.6% had attempted suicide and 8.0% had seriously considered suicide in the last 12 months. Additionally, 46.5% of students reported feeling that things were hopeless and 31.8% reported having been so depressed that it was difficult to function in the last year (American College Health Association, 2013). Considering that the majority of students who are depressed or suicidal do not receive treatment (Downs & Eisenberg, 2012; Eisenberg, Golberstein, & Gollust, 2007) and 80 to 90% of students who die by suicide had no contact with their college counseling center (Gallagher, 2014; Reetz, Barr, & Krylowicz, 2013), more effective outreach and prevention programs that encourage students to seek help are needed.

Several factors support a focus on peer-peer initiatives in these efforts (Kirsch et al., 2014). A recent survey of college counseling center directors found that 94% of directors reported that their counseling center is serving increasing numbers of students with severe psychological problems (Gallagher, 2014). Indeed, counseling centers’ top strategy for handling the growing demand and increasing complexity of students’ problems has been to spend more time training faculty, staff, and peers to respond appropriately to distressed students and make appropriate referrals. Peers, in particular, have the potential to offer a socially supportive network and encourage students to seek help. Research has indicated that college students experiencing emotional distress or suicidality are most likely to turn to a peer (Drum, Brownson, Burton Denmark, & Smith, 2009). Yet, peers too often do not suggest professional help (Evans, Hawton, & Rodham, 2005), offer sufficient support (Barnes, Ikeda, & Kresnow, 2001), provide helpful consultation (Drum et al., 2009), or even know about their college’s mental health resources (Westefeld et al., 2005). Thus, college support staff may be unaware of many students in distress when the first report is made to a peer.

Stigma regarding mental illness and receiving psychological treatment among college students may play a role in these response patterns. Self-stigma, defined as the internalization of negative attitudes held by others (Corrigan & Rao, 2012),
is negatively associated with both help-seeking behavior and the likelihood of encouraging a peer with mental illness to seek professional help (Jorm, Blewitt, Griffiths, Kitchener, & Parslow, 2005). Perceived stigma, the perception of these negative attitudes in others, is associated with attitudes toward seeking psychological help (Komiya, Good, & Sherrod, 2000) and help-seeking intentions (Deane & Todd, 1996), though perhaps not as consistently as self-stigma (Eisenberg, Downs, Golberstein, & Zivin, 2009). Encouragingly, studies have shown that stigmatizing attitudes among college students can be modified through both education and contact with individuals with mental illness (Kosyluk et al., in press; Morse & Schulze, 2013). Therefore, outreach programs that aim to decrease stigma may increase peer helping behaviors and referrals.

The Depression OutReach Alliance (DORA) College Program offers a peer-peer approach to depression outreach and suicide prevention (Screening for Mental Health, 2010). It is based on Signs of Suicide (SOS), a school-based prevention program for middle and high school students that incorporates two widespread suicide prevention approaches by integrating a didactic component to promote effective intervention with distressed peers with a self-screening for depression and other risk factors for suicidal behavior (Aseltine & DeMartino, 2004). SOS has been shown to enhance knowledge of suicide and depression, improve attitudes toward these issues, and reduce the rate of suicide attempts by approximately 40% (Aseltine & DeMartino, 2004; Aseltine, James, Schilling, & Glanovsky, 2007). Although DORA contains many of the same elements as SOS, no research has studied the effects of DORA. Thus, it is listed in the Suicide Prevention Resource Center’s (SPRC) Best Practices Registry for suicide prevention under Section III (meets current standards, but no outcome evaluation).

DORA consists of an educational video, student workbook, and structured discussion in small groups led by a peer health educator in collaboration with college counseling center professionals. The 16-minute educational video profiles college students who have experienced depression and suicidal ideation, but are now in recovery with support from peers and mental health professionals. The video also uses an acted scenario to model a successful student intervention with a depressed male peer and features interviews with college counselors to destigmatize counseling. Participants receive a student workbook to be used in conjunction with the video with tips for offering empathic support, an optional self-risk assessment, guidance for finding “the right therapist for you,” and signs and symptoms of depression, anxiety, and suicidal behavior. Finally, the peer-led discussion explores themes from the video.

There are several reasons to evaluate DORA, including its SPRC section III listing. Most importantly, DORA differs from other suicide prevention programs in that it is primarily implemented by a peer leader rather than a mental health professional. Kirsch et al. (2014) argued that peer-peer outreach programs have great potential but are underutilized and noted that their empirical base, although largely positive, is small. Additionally, DORA’s explicit focus on student gatekeepers is important. The DORA video provides student-centered education about depression and recovery, addresses specific concerns peers may have about intervening and making referrals, and shares first-person accounts from eight students representing a wide range of potential peers. Other widely used gatekeeper training programs like Question, Persuade, Refer, Mental Health First Aid, and Campus Connect have often focused on training faculty, staff, or resident advisors (Lipson, Speer, Brunwasser, Hahn, & Eisenberg, 2014; Pasco, Wallack, Sartin, & Dayton, 2012; Tompkins & Witt, 2009), and are not designed specifically with student/peer gatekeepers in mind.

Therefore, the current study examined the short-term effects of DORA on responses to and desired social distance from a male peer at risk for suicide, crisis response skills, self- and perceived stigma associated with psychological help-seeking, and knowledge of depression and suicide in a controlled trial. The control group participated in an identically structured fire safety program that consisted of a video, pamphlet, and structured discussion. It was hypothesized that, after participating in their respective programs, DORA participants would demonstrate better crisis response skills than control participants. It was also predicted that, after exposure to the program, DORA participants would be more likely than control participants to include strategies recommended by DORA in their responses to a hypothetical depressed male peer. A male peer was the focus for these assessments because DORA utilizes a male peer in the acted scenario, and research shows that impressions of male depressed peers may be especially negative and peer intervention less likely (White & Stillion,
The DORA group was also expected to report less desired social distance from the distressed peer and greater knowledge of suicide and depression than the control group after participating in the program. Finally, because the DORA video provides contact with college students who were depressed but have since recovered and this kind of contact has been shown to reduce stigma (Corrigan, Powell, & Al-Khouja, 2015), it was predicted that DORA would decrease participants’ self-stigma and perceived social stigma associated with receiving psychological help.

**Method**

**Participants**
A total of 56 undergraduates participated in either DORA or the control program and all of the assessments. Data from four DORA participants who had previously seen the DORA video were excluded from all analyses, however, resulting in a final sample of 27 DORA participants (66.7% women) and 25 control participants (60% women). All participants were enrolled in an introductory Psychology course at a small private, 4-year residential college in the Northeastern United States. Participants were predominantly first-year students and sophomores (84.6%) and European American (57.7%), with 13.5% Hispanic/Latino, 15.4% Asian American, 9.6% African American, and 3.8% other. Tests revealed no demographic differences between the DORA and control participants.

**Materials**

**Vignette and open-ended prompt.** To assess responses to and desired social distance from a distressed peer, participants read a vignette depicting a depressed male peer exhibiting suicide risk factors. Suicide risk features were based on those presented in Mueller and Waas (2002). Beneath the vignette, participants were asked, “What would you say and/or do in this situation? Please be specific and describe everything you would say and do.”

Participants’ open-ended responses were later coded for the presence/absence of eight different helping patterns. Five corresponded to the recommended peer intervention steps in the DORA video: (a) *State specific behavioral changes you have noticed,* (b) *Express concern for his well-being,* (c) *Let him know that you are there for him,* (d) *Tell him you will help him whenever,* and (e) *Put forth the suggestion of talking to a mental health professional.* A sixth category, *problem-focused help (other),* was coded if a response involved an action that addressed the friend’s suicidality, did not involve professional help, and was not better characterized by another category. Another, *professional help (other),* was coded if the response mentioned contacting or referring the at-risk friend to a faculty or staff member who was not a mental health professional. A final category, *social support,* was coded if the response mentioned including the distressed peer in any social activity but not directly addressing the suicidality (e.g., hang out with him).

A response could contain none or any number of these elements, and each category was coded as either present or absent. Responses were coded by two trained raters who were blind to condition and assessment point. Training consisted of instruction in coding definitions, practice distinguishing between similar categories, and independent coding of a practice set followed by comparison of assigned codes and discussion to resolve discrepancies. Twenty percent of responses were double-coded to assess inter-rater reliability, resulting in an overall Cohen’s Kappa of 0.83. Individual category reliabilities ranged from 0.72 to 1.00 with the exception of *state behavioral changes* (κ = 0.48). Reliability for this category was likely affected by its low frequency in the reliability set. Results for this category will be interpreted with caution.

**Behavioral Response Inventory.** After completing the open-ended response, participants rated how likely they would be to respond with specific behaviors on a 5-point Likert scale. Twenty items were designed for the current study, with some adapted from a survey used by Wanner (2007). Although the majority of the items were desired responses (e.g., “Ask if he is thinking of ending his life,” “Suggest that he go to counseling services,” “Talk to an adult about John”), some items were not (e.g., “Mind your own business and let him have his privacy”). Because principal components factor analysis did not produce any meaningful factors, items were analyzed individually, with Bonferroni correction for multiple comparisons.

**Social Distancing Scale (SDS).** This is an adaptation of Jorm and Griffiths’ (2008) SDS for college students (e.g., “Please rank your willingness to work closely on a group project with this peer”; Borenstein, 2011). Using six items, it measured willingness to make social contact with the depressed peer on a 4-point Likert-type scale. Cronbach’s alphas for the SDS were .77, .85, and .83 at the pretest, posttest, and follow-up, respectively.

**Self-Stigma of Seeking Help Scale (SSOSH).** This 10-item scale assessed participants’ attitudes...
about seeking help for mental health using a 5-point Likert scale. The SSOSH has high published internal consistency, test-retest reliability, and validity (Vogel, Wade, & Haake, 2006), and internal consistency in the present study was strong ($\alpha = .85, .88, .95$).

**Stigma Scale for Receiving Psychological Help (SSRPH).** Using five items, the SSRPH assessed participants’ perceptions of how stigmatizing it is to receive psychological treatment using a 4-point Likert-type scale. The SSRPH has demonstrated construct validity (Komiya et al., 2000), and Cronbach’s alphas in the present study were adequate ($\alpha = .78, .79, .79$).

**Suicide Intervention Response Inventory 2 (SIRI-2).** The SIRI-2 was used to evaluate crisis response skills during the posttest. Two items were excluded because they were not relevant for our college sample (items on spouses and children). A third was discarded due to expert panelists’ inability to identify which response was more facilitative (Neimeyer & Bonnelle, 1997). Thus, 22 of the original 25 items were used. Each item presents a hypothetical comment from a suicidal student and two possible helping responses. Participants rated the appropriateness of each response on a 7-point Likert-type scale. Scores were calculated based on the difference between participants’ ratings and the mean expert rating for each response. The SIRI-2 has strong test-retest reliability (Neimeyer & Bonnelle, 1997) and showed adequate internal consistency in the present study ($\alpha = .77$).

**Suicide and Depression Knowledge Questionnaire.** Participants’ knowledge of suicide was measured with eight true/false items (Wanner, 2007), while nine true/false items from the Adolescent Depression Knowledge Questionnaire (Hess et al., 2004) assessed depression knowledge. Five additional items about fire safety and other college health/safety issues (e.g., “The first thing you should do in a fire is find and pull a fire alarm.”) were interspersed throughout the questionnaire to make the control condition video appear more relevant to the rest of the study. Only the depression and suicide knowledge items were analyzed. Because scores on the depression items correlated with scores on the suicide items at baseline, $r(50) = .32, p = .020$, the two scales were combined for data reduction. Items were scored such that a correct response received 1 point, for a maximum possible score of 17 points. Internal consistency was poor ($\alpha = .40, .53, .56$), so results should be interpreted with caution.

**Familiarity With Mental Illness Scale.** This 10-item scale used in Morse (2013) asked about participants’ past and current mental health struggles and treatments. A parallel set of 10 items assessed whether “someone close to” the participant has had such experiences.

**Procedure**

Participants completed a presession survey, an experimental session, an immediate postsession survey with peer leader present and supervisors on call, and a follow-up survey approximately one week after the experimental session. The follow-up was identical to the pretest (minus the informed consent), and both were completed independently in response to a Qualtrics link sent via e-mail. On average, participants completed the pretest 3.86 days ($SD = 4.53$) before attending the experimental session. The posttest was completed immediately after the session, and the mean number of days between the posttest and follow-up was 7.43 ($SD = 0.77$).

This study was advertised as investigating “College Student Health and Safety: Responding to Peers in Distress,” and participants completed the pretest after signing up for an experimental session. At the beginning of the pretest, participants were asked to provide informed consent for the entire study. They were then presented with the vignette and open-ended question, and subsequently completed the Behavioral Response Inventory, SDS, SSOSH, SSRPH, and Suicide and Depression Knowledge Questionnaire. It is worth noting that the Suicide and Depression Knowledge Questionnaire was completed last. Therefore, the low reliability of these scores might have been due to participant fatigue. After completing these measures, participants were debriefed. The posttest contained these same measures along with the SIRI-2 (administered after the SSRPH) and the Familiarity With Mental Illness Scale. The SIRI-2 was only included in the supervised postsession survey because its content was considered to be potentially triggering. The Familiarity With Mental Illness Scale was only needed once and was included here as part of a protocol requiring the checking of depression and suicide responses before participants left the room, and the activation of a tiered intervention system for currently depressed or suicidal individuals (details available from the first author). Only once was this protocol activated, and at the lowest tier of required responses.
The experimental session began with participants completing the Familiarity With Mental Illness Scale. Students then participated in either DORA or a control program. Due to time constraints, our implementation of DORA did not include an optional icebreaker activity involving trivia questions, and the structured discussion was shortened to 10 to 15 minutes compared to the recommended 20 minutes. The control program was an identically structured fire safety program for college students called “Get Out and Stay Alive” (U.S. Fire Administration, 1999). This program featured a 16-minute video that chronicles three fatal fires that have occurred on college campuses through brief interviews with firefighters and students, and provides important information about campus fire safety. For the control program, this video was accompanied by a pamphlet (U.S. Fire Administration, 1999) and was followed by a structured discussion of themes in the video. Participants signed up for a session not knowing whether it was DORA or control. Sessions were alternated and balanced over day of the week and time of day. DORA and the control program were implemented with small groups (\(M_{\text{DORA}} = 7.75, M_{\text{Control}} = 6.25\)) at four sessions each. All procedures were approved by the Connecticut College Institutional Review Board.

**Results**

**Preliminary Analyses**

All data were screened for completeness prior to analyses. Three participants did not respond to an item in the posttest survey, so mean substitution was used. Two participants did not provide an open-ended response at the follow-up, so those analyses used a sample of 50. Random assignment was not feasible because participants signed up for a group session that fit their schedule. A variety of time slots were needed to address students’ scheduling constraints, so the decision was made to match DORA and control sessions for time of day/day of week with the hope of balancing student characteristics across conditions (e.g., student athletes, students with evening labs). Therefore, we tested for pre-existing differences between the intervention and control groups. Analyses of baseline differences revealed only one: DORA participants perceived there to be more stigma associated with seeking help than did control participants at the pretest, \(t(50) = 2.52, p = .015, d = .69\).

Fifteen participants (9 DORA and 6 control) reported having received training about the mental health or safety of their peers in the past. There was only one difference between these participants and others: Participants who had received past health and safety training were more likely than participants without this training to suggest that the at-risk peer seek help from a mental health professional in their pretest open-ended responses, \(\chi^2(1) = 4.22, p = .040, \phi = .29\). All analyses were conducted using SPSS (v. 20).

**Main Analyses**

**Crisis response skills.** It was hypothesized that the DORA group would score lower (better crisis response skills) than the control group on the SIRI-2 after participating in the program. Results revealed that the DORA group (\(M = 72.36, SD = 19.53\)) did show better crisis response skills than the control group (\(M = 86.94, SD = 21.69\)), \(t(50) = 2.55, p = .014, d = .71\).

**Social distance, knowledge, self-stigma of seeking help, and perceived social stigma associated with receiving help.** A 2 (group; DORA/control) x 3 (time; pretest, posttest, and follow-up) repeated-measures Multivariate Analysis of Covariance (RM MANCOVA) was conducted on participants’ desired social distance from the at-risk peer, knowledge of depression and suicide, self-stigma of seeking help, and perceived social stigma associated with receiving psychological help to test the hypotheses that the DORA participants’ self-stigma, perceived social stigma, and social distance would decrease, and their knowledge would increase, over time compared to control participants. Sex was included as a covariate in the analysis because men tend to have higher self-stigma and perceived social stigma associated with seeking help (Eisenberg et al., 2009; Komiya et al., 2000), less knowledge of suicide (Aseltine & DeMartino, 2004; Mitchell, Kader, Darrow, Haggerty, & Keating, 2013), and greater desire for social distance from people with mental illnesses (Marie & Miles, 2008). It is important to note that the results did not change when the analysis was rerun without sex as a covariate. Descriptive statistics for this analysis are summarized in Table 1.

The multivariate Time x Group interaction was significant, Pillai’s trace = .18, \(F(8, 192) = 2.43, p = .016, \eta^2_p = .09\). Further univariate analyses revealed a significant Time x Group interaction for social distance after a Greenhouse-Geisser correction, \(F(1.62, 79.43) = 4.72, p = .017, \eta^2_p = .09\), and for perceived social stigma of receiving help, \(F(2, 98) = 4.17, p = .018, \eta^2_p = .08\). To elucidate these Time x Group interactions, post-hoc paired
In addition to analyzing participants’ open-ended responses, items of the Behavioral Response Scale investigated changes in the total sample’s social distance, perceived social stigma, and knowledge between time points and found four differences. Participants decreased social distance from the peer at pretest than at posttest, \( t(26) = 2.49, p = .016, d = .35 \), and at the follow-up, \( t(51) = 2.20, p = .032, d = .31 \). Also, knowledge increased from pretest to posttest, \( t(51) = 2.13, p = .038, d = .29 \), and from the pretest to the follow-up, \( t(51) = 2.38, p = .021, d = .33 \). Separate paired \( t \) tests for each group found that, although DORA participants’ knowledge did not significantly increase from pretest to posttest, \( t(26) = 1.24, p = .225, d = .24 \), it did increase slightly between the pretest and follow-up, \( t(26) = 2.15, p = .041, d = .42 \). In comparison, changes in the control group’s knowledge were not significant at the posttest, \( t(24) = 1.74, p = .095, d = .33 \), or follow-up, \( t(24) = 1.35, p = .191, d = .28 \). Additionally, changes in the total sample’s perceived social stigma of receiving help were not significant at the posttest, \( t(51) = 1.28, p = .208, d = .18 \), or follow-up, \( t(51) = .42, p = .674, d = .06 \).

Responses to the at-risk peer. Analyses of open-ended responses were conducted using Fisher’s Exact Tests because expected cell counts were repeatedly less than five for several categories. As noted earlier, tests of pretest responses revealed no preexisting differences. One-tailed tests were used to examine directional hypotheses for group differences in postsession and follow-up responses: DORA participants were expected to offer more DORA-modeled responses, refer for help more often, and be more problem focused and less reliant on social support. Analyses of posttest responses revealed that, immediately after exposure to the program, DORA participants (48.1%) were significantly more likely than controls (12.0%) to let the at-risk peer know that they were there for him, \( p = .005, \phi = .39 \). There were no other post-test differences. At follow-up, DORA participants (30.8%) continued to be more likely than controls (8.3%) to let the peer know that they were there for him, \( p = .050, \phi = .28 \). Additionally, they were marginally more likely than controls (15.4% vs. 0.0%) to state specific behavioral changes they had noticed, \( p = .065, \phi = .29 \), and were significantly less likely to offer social support (3.8% vs. 25.0%), \( p = .039, \phi = .31 \), or contact or refer the at-risk friend to a faculty or staff member who was not a mental health professional (0.0% vs. 20.8%), \( p = .020, \phi = .35 \).

In addition to analyzing participants’ open-ended responses, items of the Behavioral Response Scale investigated changes in the total sample’s social distance, perceived social stigma, and knowledge between time points and found four differences. Participants decreased social distance from the peer at pretest than at posttest, \( t(26) = 2.49, p = .016, d = .35 \), and at the follow-up, \( t(51) = 2.20, p = .032, d = .31 \). Also, knowledge increased from pretest to posttest, \( t(51) = 2.13, p = .038, d = .29 \), and from the pretest to the follow-up, \( t(51) = 2.38, p = .021, d = .33 \). Separate paired \( t \) tests for each group found that, although DORA participants’ knowledge did not significantly increase from pretest to posttest, \( t(26) = 1.24, p = .225, d = .24 \), it did increase slightly between the pretest and follow-up, \( t(26) = 2.15, p = .041, d = .42 \). In comparison, changes in the control group’s knowledge were not significant at the posttest, \( t(24) = 1.74, p = .095, d = .33 \), or follow-up, \( t(24) = 1.35, p = .191, d = .28 \). Additionally, changes in the total sample’s perceived social stigma of receiving help were not significant at the posttest, \( t(51) = 1.28, p = .208, d = .18 \), or follow-up, \( t(51) = .42, p = .674, d = .06 \).

**Table 1**

<table>
<thead>
<tr>
<th>Outcome Variable</th>
<th>Scale Range</th>
<th>DORA Group, M (SD)</th>
<th>Control Group, M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T1</td>
<td>T2</td>
<td>T3</td>
</tr>
<tr>
<td>Social Distance</td>
<td>6–24</td>
<td>13.26</td>
<td>11.70</td>
</tr>
<tr>
<td></td>
<td>(2.43)</td>
<td>(2.13)</td>
<td>(2.20)</td>
</tr>
<tr>
<td>Self-Stigma of Seeking Help</td>
<td>10–50</td>
<td>23.78</td>
<td>23.00</td>
</tr>
<tr>
<td></td>
<td>(5.33)</td>
<td>(5.46)</td>
<td>(4.76)</td>
</tr>
<tr>
<td></td>
<td>(2.17)</td>
<td>(2.33)</td>
<td>(2.01)</td>
</tr>
<tr>
<td>Knowledge</td>
<td>0–17</td>
<td>13.48</td>
<td>13.85</td>
</tr>
<tr>
<td></td>
<td>(1.85)</td>
<td>(1.70)</td>
<td>(1.59)</td>
</tr>
</tbody>
</table>
Inventory were analyzed individually with exploratory RM ANCOVAs to assess the likelihood that participants would utilize specific helping behaviors in response to the at-risk peer. These analyses produced no significant results after accounting for multiple comparisons.

**Discussion**

The present study sought to evaluate the effect of a peer-peer depression outreach program for college students (DORA) on various outcome measures related to college student intervention with distressed peers. DORA participants showed better overall crisis response skills, desired less social distance from a distressed peer, and perceived less social stigma related to seeking psychological help after the intervention compared to controls. Decreasing distressed peers’ social isolation was one of our most substantial effects, and one that is directly relevant to intervention goals. DORA also reduced participants’ desired social distance from a hypothetical depressed, at-risk male peer. This medium-sized effect was seen immediately after the intervention and at the one-week follow-up. This is an important finding because reducing the social distance and isolation that distressed students (especially men) often experience is necessary to facilitate peer intervention and referral.

As predicted, DORA participants showed stronger crisis response skills than control participants by endorsing more therapeutic responses to hypothetical suicidal statements immediately after the program. Although only assessed at posttest, this was one of our most substantial effects, and one that is directly relevant to intervention goals. DORA also reduced participants’ desired social distance from a hypothetical depressed, at-risk male peer. This medium-sized effect was seen immediately after the intervention and at the one-week follow-up. This is an important finding because reducing the social distance and isolation that distressed students (especially men) often experience is necessary to facilitate peer intervention and referral.

In addition, DORA decreased participants’ perceived social stigma surrounding help-seeking, but the effect size of this change declined in the one week follow-up from medium to small. Reducing perceived social stigma is a promising first step toward encouraging students to seek help when they experience mental health problems because concern regarding what others may think is often cited as a barrier to seeking treatment among distressed college students (Downs & Eisenberg, 2012). However, a recent study indicated that the relationship between perceived social stigma and the willingness to seek counseling may be mediated by self-stigma and attitudes toward seeking help (Vogel, Wade, & Hackler, 2007), suggesting that decreasing perceived social stigma may not be enough to encourage students to seek help. Relatedly, one study found self-stigma related to help-seeking to be more predictive of willingness to recommend psychological help to a peer than perceived stigma (Jorm et al., 2005).

Some modest differences in response skills were also observed when participants were asked to provide an open-ended description of how they would respond to the at-risk peer. DORA participants were more likely than controls to tell a peer that they were there for him (immediately, and one week later) and state specific changes they had noticed in the peer’s behavior (one week later), two responses specifically recommended by DORA. In addition, DORA participants were less likely than controls to offer generic social support or refer the peer to a faculty or staff member who was not a mental health professional at the follow-up. Participants were not asked to reveal their reasoning, so it is impossible to explain these differences conclusively. However, one possible explanation is that control participants had less of an understanding of how to respond effectively to the peer, and thus responded with supportive but not optimal, and not DORA-specific, approaches more often.

Although DORA did influence the likelihood of some types of responses, it is important to note that DORA did not have a significant impact on the likelihood of other types of responses including referring the peer to a mental health professional. This is concerning because being there for someone and stating behavioral changes may have less impact than directly encouraging a peer to seek professional help. It is possible that DORA’s use of a peer leader in its implementation elicited greater engagement with the social aspects of peer intervention, and a greater sense of personal responsibility, but did not sufficiently reduce barriers or increase the perceived importance of referring to a mental health professional.

In contrast to the open-ended responses, a questionnaire inquiring about the likelihood of
Evaluating Peer-Peer Depression Outreach

Contrary to predictions, DORA did not have a significant effect on participants’ self-stigma related to psychological help or knowledge of suicide and depression. There are several possible reasons we were unable to detect differences on these measures. First, these outcomes focus less on how to respond to or comfort a peer than those where our differences were found. Additionally, self-stigma can be resistant to change (Link, Struening, Neese-todd, Asmussen, & Phelan, 2002) and may require a longer or more intensive intervention. Also, self-stigma of seeking help was low at baseline in this sample, making it difficult to influence. Knowledge is often easier to change than self-stigma (e.g., Jacobson, Osteen, Sharpe, & Pastoor, 2012), but might not have been targeted intensively enough in the current DORA implementation and may have been inadvertently affected in the control group from repeated exposure to scenarios and questions about depression and suicide. Finally, results for these outcomes could have been affected by the relative brevity of the structured discussion in this study’s implementation.

Although the results of this study are encouraging, the study had several limitations. Perhaps the largest limitations involve the adaptation of DORA for the purposes of this study. In particular, the structured discussion was 5 to 10 minutes shorter than what is recommended by DORA, and an optional trivia activity was not included. Therefore, it is possible that intervention effects would have been more pronounced if participants had been exposed to the whole program. Other limitations are related to the study’s methodology. Analyzing participants’ responses to an individual in a vignette is inherently limiting; it is possible that these responses do not actually predict participants’ behavior in real-life. Also, due to concerns about the emotional toll it might have taken on participants, the SIRI-2 was only administered at the posttest. It would be useful to know if these effects persist and if preexisting group differences might have affected this result. Furthermore, the lack of results for the Behavioral Response Inventory items and the knowledge measure could have been a product of the scores for these measures having low reliability. In addition, our focus on a male peer was intentional, but this limited the generalizability of our results to college students’ responses to distressed female peers. In fact, research has suggested that sex of the vignette protagonist influences participants’ responses (White & Stillion, 1988).

Our inability to randomly assign participants to conditions was also a limitation, and although participants did not know what type of session for which they signed up and tests of pretest group differences suggested that the groups only significantly differed in their perceived stigma of seeking help, it is possible that this difference (and/or other nonsignificant group differences) affected the results. Another limitation was the possibility of demand characteristics. Although it is unlikely that control participants knew that they were “controls”—the study was advertised vaguely, and the assessments included questions about fire safety—it is possible that some control participants deduced that they were in the control group. If this was the case, this insight might have affected control participants’ responses (Nichols & Maner, 2008).

Additionally, the modest sample size resulted in limited statistical power. We originally sought to recruit a larger sample, but were constrained by logistical issues associated with recruiting participants for group sessions, having one person run all groups, confining data collection to avoid time-of-semester effects, and completing the entire project within one academic year. Of note, however, is that this study’s sample was only slightly smaller than those of other studies evaluating suicide prevention programs (Jacobson et al., 2012; Pasco et al., 2012; Stuart, Waalen, & Haelstrom, 2003).

Although the current research represented...
a good beginning, further research is needed to evaluate DORA and other peer-peer programs. First, DORA’s effect on real life peer-helping responses and help-seeking behaviors should be studied. This is important because, although several changes were statistically significant, many of the effect sizes were modest. Research studying DORA’s impact on real-life behaviors could determine if these changes are practically significant and meaningful. Second, the effects of DORA should be examined over a longer period of time. Third, although DORA recommends a peer facilitator, which is valuable because it expands capacity and offers peer modeling of nonstigmatizing attitudes, this program is also used on our campus for student residence advisor training with counseling staff facilitators. It would be interesting to compare effectiveness based on leader type. Fourth, future studies could identify which components of DORA are particularly effective and then investigate the possibility of doing partial implementations for specific purposes or combining effective components with other approaches. Ways to augment the effects and reach of DORA and other peer-peer programming could also be considered including interactive online educational components and an online peer learning community. Some of these innovations are being incorporated into newer programs marketed by the producers of DORA (Screening for Mental Health, 2015). Fifth, because there is a logical progression in the development of an evidence base for a given treatment (Southam-Gerow & Prinstein, 2014) and DORA had never been evaluated, the current study compared DORA to a control program rather than an active intervention. In the future, DORA should be evaluated in comparison to other programs with similar goals to determine incremental efficacy. Finally, research examining factors that influence college students’ peer-helping responses as well as moderators and mediators of intervention effects could inform further development of efficacious peer-peer outreach programs.

References


Evaluating Peer-Peer Depression Outreach

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**The Virtual Self: Avatar and Individual Determinants of Mood**

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**ABSTRACT.** Given the relevance of self-related process in avatar-based virtual environments, examining the role of avatar-self representation was intended for better understanding of its function in media users’ experiences. The current study examined the differences between actual- and ideal-self avatars in terms of impact on mood, as measured through positive and negative affect. Undergraduate students (N = 81) participated in an avatar-based gaming experiment, which assessed pre- and post-game play affect. Overall, participants experienced a statistically significant decrease in negative affect after game play, $t(80) = 4.18, p < .001, d = 0.41$, regardless of their avatar group condition. However, avatar group influenced the user experience in terms of positive affect, $t(79) = 2.06, p = .04, d = 0.46$, in that participants of the actual-self avatar group were associated with higher positive affect than those in the ideal-self avatar group post-game play. Self-esteem was found to be a statistically significant covariate in predicting both posttest positive affect, $F(1,78) = 6.03, p = .02, \eta^2_p = 0.07$, and negative affect, $F(1,78) = 13.27, p < .001, \eta^2_p = 0.15$. Avatar group intervention proved significant in predicting positive affect, despite the covariance of self-esteem, $F(1,78) = 4.44, p = .04, \eta^2_p = 0.05$; however, it was no longer statistically significant in predicting negative affect once the variance shared with self-esteem was accounted for, $F(1,78) = 0.04, p = .84, \eta^2_p = 0.001$. Specific mechanisms by which virtual self-representation might regulate affect were clarified; subsequent theoretical and realistic implications of the results are discussed further in the study.

Stereotypically, “gaming” has been a concept considered to be within the domain of the adolescent boy, equipped with a game console and eyes that never strayed from the television screen. However, the reality is that the reach of games runs far wider than one might imagine. In recent years, rapid development of sophisticated technology has expanded the original target audience to include a multifaceted demographic pool, ranging from the traditional adolescents, to early adult professionals, middle-aged homemakers, and even retirees—contradicting the stereotype that video gamers only exist within the bounds of a youth subculture (Yee, 2006b).

**Motivation for Engaging in Game Play**

Collaborative virtual environments (CVEs) make games appealing and effortless to join because they serve as digital systems that connect individuals worldwide via networking technology such as through virtual reality or, more commonly, video games (Yee, Bailenson, & Ducheneaut, 2009). These CVEs provide settings for entertainment purposes through outlets of stand-alone games, local or wide area network games, and the increasingly popular massively multiplayer online role-playing games (MMORPGs). MMORPGs alone, on a daily basis, garner up to millions of users, who each accumulate an average of approximately 22 hours of game play per week (Yee, 2006a). Players
Avatars, Individuals, and Mood

Wang, Rouse, and Mancuso

approach these games with varying motivations; Yee’s (2006b) five-factor model encompasses these user motivations under categories of achievement, relationship, immersion, escapism, and manipulation—with escapism proving to be the best predictor of pathological gaming (Li, Liu, & Khoo, 2011; Yee, 2006a). In this case, escapism refers to the tendency of an individual to “[u]se the virtual world to temporarily avoid, forget about, and escape from real-life stress and problems” (Yee, 2006b, p. 319). When immersed in the virtual world, users have the freedom to do what they want, and have the ability to become anyone they want to be through their avatars—their virtual identities.

Avatars

One of the most significant departures that avatar-based video games, computer games, and virtual reality technologies make from traditional media (e.g., television, movies) is the users’ ability to see a visual representation of themselves in the media. In third-person perspective games, players can observe embodied manifestation of the self and its visually presented actions, facilitating the formation of a relationship between players and their avatars (Jin & Park, 2009).

Avatars are digital representations of the self—in other words, extensions of the individuals who created them (Yee & Bailenson, 2007). In a virtual world, the avatar functions not only as the representation of one’s physical appearance, but also the mode through which an individual’s offline identity is expressed (Behm-Morawitz, 2013). Thus, the avatar may come to be more meaningful to the individual than just a virtual shell. The user has control over every detail during avatar creation. Therefore, virtual self-representation can vary across a vast spectrum because factors such as age, gender, ethnicity, and height are determined with the click of a mouse (Yee & Bailenson, 2007).

The way users choose to display their avatars is influenced by a number of factors. For instance, in competitive games, avatars are created more dissimilar to the actual self, assumedly to fit the requirements of the media stimuli (e.g., increased weapon equipment in World of Warcraft); in non-competitive games, on the other hand, avatar selection choices are more ambiguous because avatars need not be armored with strategic survival-directed customizations (Trepte & Reinecke, 2010). In noncompetitive games, users have the choice of creating an avatar similar or dissimilar to the self, with less consequence to their survival in the virtual environment. However, a study conducted by Trepte and Reinecke (2010) found a relationship they noted to be stronger in noncompetitive game settings, in which users who identified more with the avatars showing higher resemblance to their selves, also reported greater game enjoyment. When the factor of identification was mediated, avatar-user discrepancy still demonstrated a positive relationship with game enjoyment, leading the researchers to theorize that players’ preferences in avatar creation are twofold; although similar avatars seem to enhance the enjoyment experience, dissimilar avatars can serve self-related motives such as playing with different identities and ameliorating actual-self representation—both factors that may result in media enjoyment, though through different mechanisms of affect management (Trepte & Reinecke, 2010).

Given the increase in visual representation of the self and relevance of self-related process in avatar-based virtual environments, examination of the role of avatar-self representation may allow for better understanding of its function in media users’ experiences. Consequently, the specific mechanisms by which virtual self-representation might regulate affect must be clarified.

Self-Discrepancy Theory and Actual-Ideal Self-Discrepancy (AISD)

Higgins’ (1987) categorized self-discrepancies under three types of self-schema: the actual self, the ideal self, and the ought self. Higgins’ self-discrepancy theory claimed that, although the actual self personifies who individuals currently are (i.e., perceived self-concept), the ideal and ought selves represent who the individuals would like to be (i.e., assessing hopes, wishes, and aspirations), and how the individuals believe they should be (i.e., assessing duties, responsibilities, and obligations).

Self-discrepancy theory proposes that if people possess an AISD—in other words, if their understanding of their own own actual attributes do not align with the ideal condition they wish to achieve—the individuals will likely experience dejection-related emotions such as disappointment, dissatisfaction, and other negative affects associated with symptoms of depression (Higgins, 1987). Li, Liu, and Khoo (2011) supplemented this theory, as their findings revealed that, among adolescent gamers in Asia, those with higher levels of AISD tended to have higher levels of depression and were more likely to engage in escapism into games.

Possession of high AISD offers an explanation...
as to the negative affective mechanism underlying the self-discrepancy theory. However, negative affect may also be generated through a process by which an individual’s attention is specifically brought upon AISD, facilitating the recognition and acknowledgement of potentially high AISD through automatic and immediate comparison of the actual and ideal selves.

Objective Self-Awareness Theory
In this way, objective self-awareness theory builds on Higgins’ self-discrepancy theory, proposing the idea that focusing attention on the self brings forth objective self-awareness, which triggers an automatic juxtaposition between the self and standards (Silvia & Duval, 2001). In this context, objective self-awareness refers to when individuals are the object of their own conscious attention, and a standard is defined as a construct of correct behavior, attitudes, and characteristics (Duval & Wicklund, 1972). According to objective self-awareness theory, if a discrepancy is found between the self and a standard, the individual will likely experience negative affect—a response similar to that predicted by self-discrepancy theory. In order to reduce this uncomfortable state of dissociation, individuals can either change to better align with the expectations of the standard, or instead avoid the circumstances that make them evaluate themselves in the first place (Duval & Wicklund, 1972). Silvia and Duval (2001) developed new additions to this theory, focusing on expectations in relation to self-awareness; they found that, when AISD is high, focusing on the standard should lead to a negative evaluation of the standard. In a virtual environment, this theory can have significant implications regarding the avatar customization process because there are nearly endless combinations of possible avatar-persona creations, and thus potential for generating negative emotion when employing an ideal-self avatar.

Objective self-awareness theory suggests that, in the context of avatar-based virtual environments, directing an individual towards ideal-self avatar customization brings conscious attention to the self, triggering automatic comparison between the actual and ideal selves, and thus priming the individual with the mindset of AISD. According to both objective self-awareness theory and self-discrepancy theory, simply focusing on AISD produces negative affect, which in turn, can color the media user’s virtual experience. Drawing on these theories, one possible hypothesis is that participants who are instructed to create an ideal-self avatar (thereby priming AISD) would express higher negative affect than participants who were instructed to create an actual-self avatar.

Self-Presence Dimension
Although proponents of the self-discrepancy theory and objective self-awareness theory could argue that players experience more negative affect creating an ideal-self avatar, theorists of self-presence could argue the opposite. When users don virtual embodiments in the digital world, they often experience a sense of self-presence: a feeling of connectedness between their virtual selves and their actual selves, regardless of whether or not the avatars accurately represent their actual selves.

Self-presence occurs when media users experience either a physically manifested or psychologically imagined representation of their self, but as suggested by Trepte and Reinecke (2010), positive user experience may not necessarily depend on high levels of similarity between players and their avatars. In a series of exergame (i.e., interactive exercise-focused game) studies, researchers found that participants who created Mii avatars for the Wii game console actually felt stronger avatar-self connection and greater perceived interactivity when instructed to create a Mii reflecting their actual-self rather than a Mii reflecting their actual-self (Jin, 2009, 2010). Jin (2010) speculated that creating an ideal-self avatar may have more positive effects on self-presence partially due to the intrinsic human satisfaction of projecting a more positive self-image—even if only to oneself.

Just as self-presence defines the connection between the user and avatar, the extent to which self-presence is experienced can reflect the user’s level of immersion. Defined as “the degree to which users of interactive media feel involved with, absorbed in, and engrossed by stimuli from the media environment,” immersion is not only a key factor in motivating game play, but is also an important outcome variable that comes from interactive media experiences, as it can be examined and understood as a positive affective dimension of interactive media use (Jin, 2009, p. 762; Yee, 2006b). Thus, given the evidence in favor of ideal-self avatars promoting stronger self-presence and immersion, a contradictory hypothesis is that participants who are instructed to create an ideal-self avatar (thereby priming AISD) would express more positive affect than participants who were instructed to create an actual-self avatar.
**Psychological Well-Being**

Although these theories provide the basis to argue that ideal-self avatar creation will guide users toward certain affective states, it can also be argued that affective states may guide users’ choices in avatar creation. For instance, levels of psychological well-being can also come into play when determining the avatar’s appearance because individuals reporting higher life satisfaction also tend to create avatars higher in similarity to their actual selves, and individuals reporting lower life satisfaction tend to create avatars lower in similarity to their actual selves (Trepte & Reinecke, 2010). Other studies have suggested that low self-esteem is similarly correlated with higher levels of discrepancy between the participant and avatar created (Dunn & Guadagno, 2012).

Virtual worlds offer players the opportunity to create and live through idealized characters without physical world consequences, which may speak to why Bessiere, Seay, and Kiesler (2007) found the participants of their study, on average, rated their avatar as having favorable characteristics including being higher in conscientiousness and extroversion and lower in neuroticism. Although their study employed a competitive game setting, thus priming dissimilar avatar creation for participants of all psychological well-being levels, the pattern of idealized avatar customization manifested most prominently in participants with low self-esteem or higher levels of depression. Furthermore, those with lower levels of well-being rated their avatars significantly better than they rated their actual selves, whereas those with higher levels of well-being did not rate their avatars much better than they rated themselves (Bessiere, Seay, & Kiesler, 2007). Because lower ratings of psychological well-being have been distinctly associated with biased avatar-self representation, particularly in ideal-self avatar creation, factors of well-being have reason to be considered when clarifying the independent effects of avatar-self representation.

**The Current Study**

On the basis of the theories described, two contradictory hypotheses could be considered for predicting the effect of being asked to create an avatar that represents one’s ideal self (thereby priming AISD). First, in alignment with the self-discrepancy theory and the objective self-awareness theory, participants who have AISD primed would express higher negative affect than those who do not. Second, in alignment with the immersive nature of self-presence connection, participants who have AISD primed would express higher positive affect than those who do not. Although these two expected possibilities are contradictory, they are both theoretically plausible outcomes, which brings us to the question this current study sought to answer: How does AISD priming through avatar creation and use subsequently affect the moods of game play participants?

Aiming to identify whether creating and using an ideal-self reflecting avatar in game play would ultimately increase positive or negative affect, the current study was concerned with examining the impact of avatar-self representation on mood, differentiating the influence of actual-self versus ideal-self focus through separate priming conditions. With the increase in opportunity for virtual self-representation, as well as the relevance of self-related process in avatar-based virtual environments, examining the factor of avatar-self representation on mood may help clarify the avatar’s function in media users’ affective experiences.

The current study examined the role that avatars in a noncompetitive environment play in mood state among individuals outside of a gaming community because past research has relied heavily on populations of registered gamers and their pre-existing avatars in competitive game settings, not controlling for the possible interference of extraneous customization factors in avatar creation. Additionally, much of the existing literature involving avatar-self representation consider it an outcome variable, only observing the resulting avatar in relation to the individual. Consequently, very few studies introduce avatar-self representation as a predictor variable, and it has not yet been incorporated with the specific factor of mood. Previous studies regard positive user experience under concepts of connection, interactivity, or game enjoyment, whereas the current study measured user experience in terms of positive and negative affect levels of mood. Finally, although previous research used self-esteem primarily as a predictor variable, self-esteem has also shown evidence of being associated with biased avatar-self representation. Thus, to account for the possible interaction between psychological well-being and avatar-self representation, the factor of self-esteem was considered as a possible covariate.

We hoped the current study would provide insight on how the moods of players may be affected by the variation of AISDs in their respective avatars. In order to thoroughly explore the possible...
role of AISD on mood, the factors of actual-versus ideal-self assignment (i.e., low AISD priming versus high AISD priming) and self-esteem were assessed in regard to their effects on positive and negative affect.

Method

Participants
As a preliminary analysis, an a priori power analysis was conducted with G power. With parameters set for a two-tailed between-subjects design ($d = .5$, power = .65, $p < .05$), the recommended number of participants was 90. Thus, desired number of participants per group was set at 45. We used a convenience sample of 81 full-time undergraduate students ($32 = \text{men, 49 = women}$) from a small, private liberal-arts university in Southern California. All participants completed the full study, so attrition did not impact the number of participants. All students were at least 18 years or older ($M = 19.16, SD = 1.89$) and enrolled in a psychology course. The participant group included students of all school year levels (48.1% first-years, 23.5% sophomores, 21% juniors, 7.4% seniors), as well as varying races/ethnicities (46.9% White/European American, 12.3% Hispanic/Latino, 7.4% Black/African American, 1.2% Native American/American Indian, 23.5% Asian/Pacific Islander, 8.6% Biracial/Multiracial). The study was conducted under the oversight of the Pepperdine University Institutional Review Board.

Measures/Instrumentation
A survey was created, consisting of a demographic questionnaire, a measure of self-esteem, pretest and posttest measures of mood, and a posttest questionnaire.

Basic demographic survey. The basic information survey included demographic items for which the participants indicated their respective sex, age, school year level, and ethnicity.

Self-esteem scale. A self-esteem survey from the International Personality Item Pool (Goldberg et al., 2006) was used, measuring participants’ self-esteem with five positively keyed statements such as “I know my strengths,” as well as five negatively-keyed statements such as “I am less capable than most people.” Scores could range from 10 to 50 because the scale was measured on a five-point Likert-type scale, from 1 (very accurate) to 5 (very inaccurate). A reliability estimate of .84 has been previously reported for a normative sample (Goldberg et al., 2006); we obtained a reliability estimate of .75 for our sample. This portion of the survey also included a measure of the Five Factor model of Personality, but the scores from these scales are not included in these analyses.

Positive and Negative Affect Scale. The Positive and Negative Affect Scale (PANAS) was used in a pretest-posttest format to examine levels of positive affect and negative affect in immediate moods prior to game-play and after game-play in order to gauge participants’ overall changes in mood (Watson, Clark & Tellegen, 1988). Whereas the self-esteem scale measured a static variable, the PANAS was intended to measure immediate mood, asking participants to identify their agreement with 20 words describing different feelings and emotions (e.g., excited, irritable, and ashamed), using a 5-point Likert-type scale ranging from 1 (very slightly or not at all) to 5 (extremely). The PANAS scale score ranges from 20 to 100. The development of the PANAS revealed excellent factorial and external validity because it was found to provide effective, largely independent measures of positive and negative affect (Watson, Clark & Tellegen, 1988). The score also appears to be internally consistent and effectively reflects one’s general affective level through momentary moods ($\alpha = .89$ for positive affect and .85 for negative affect; Watson, Clark & Tellegen, 1988). The reliability estimates of our sample were .88 for both positive affect and negative affect.

Closing questions. The survey closed with a few questions, some of which involved a general inquiry regarding familiarity with avatar-based games (e.g., Out of a day that you play avatar-based games, how many hours do you play?).

The Sims 2. The CVE utilized was the computer-necessitated life simulation game, The Sims, which allowed for avatar customization and noncompetitive game-play in a virtual environment.

Design
Students who registered for participation in the study ($N = 81$) were randomly assigned to one of two experimental groups. The independent variable of avatar type consisted of two conditions: (a) instructions to create an actual-self avatar and (b) instructions to create an ideal-self avatar. The dependent variable, in turn, was postgame play mood. The participants in the actual-self priming condition ($n = 42$) were instructed to construct an avatar that accurately represented themselves in terms of physical appearance, and the participants in the ideal-self priming condition ($n = 39$) were
instructed to construct an avatar that mirrored the ideal-selves they hoped to achieve. In addition to a series of self-report surveys, participants completed a pretest-posttest measure of mood, separated by a brief game-play session in which they utilized their self-created avatars in The Sims.

Procedure

The study was first advertised through the web-based software for managing research participation, Sona Systems, to the convenience sample. Students received research credit in a psychology course for participating. Students registered for appointment times in the university’s computer lab, where they had 90 minutes to complete the study; at designated arrival times, students were randomly assigned to one of two sets of instructions. Each time slot accommodated a group maximum of three, as to limit participant interaction and prevent possible discussion of assignments; small group size was also preferred so that adequate guidance could be given if participants experienced technical difficulties with the game.

The computers were automatically brought to an opening page that presented the IRB-approved informed consent form; only upon completion of the consent form could students continue to the surveys: demographic questionnaire, self-esteem survey, and the PANAS pretest. After finishing the PANAS pretest, they were instructed to minimize the survey window, revealing the Sims software opened to the avatar-creation page. Participants proceeded to follow the instructions slip, which detailed different steps depending on which group the individual had been assigned to. They spent ten minutes creating either (a) an actual-self avatar that from an objective point of view accurately represented themselves or (b) an ideal-self avatar that from their point of view they would ideally like to achieve. The next steps were relatively uniform as the participants were informed that they had fifteen minutes to choose a desired household and complete everyday tasks using their newly created avatar. However, participants assigned to the actual-self avatar group were instructed to act with their avatar as they would realistically (e.g., “If you cook on a daily basis, you can have your avatar cook a meal”), while participants assigned to the ideal-self avatar group were instructed to act with their avatar as they would ideally (e.g., “If you wish to be a great cook, you can make your avatar cook a meal”). After the appropriated time, the researcher marked the end of the game and students were guided back to the online survey, which presented the post-game-play PANAS; in closing questions, game familiarity was assessed as participants were asked about some aspects of previous avatar-based gaming experience. The session was concluded by providing participants with additional contact information, should any questions arise.

In the process of completing the surveys, a number of participants left a few questions unanswered. With regard to the four incomplete answers on the self-esteem scale, a response of 3 (neither inaccurate nor accurate) was substituted for the missing responses. A more conservative approach was taken on the PANAS, as the 11 missing data cells out of 3,240 total were coded with a response of 1 (very slightly or not at all); this approach was conducted to prevent the appearance of stronger affect due to inflated mood scores.

Results

Prior Gaming Experience

Participants were generally unaccustomed to avatar-based games, as 71.6% of the sample reported that they did not play them at all; participants who reported playing avatar-based games reported playing an average of 1.44 hr (SD = 0.82 hr) on any given day that they did play: 16% reported playing less than 1 hr, 9.9% reported playing between 1–3 hr, and only 2.4% reported playing more than 3 hr.

Preliminary Analyses

A dependent-samples t-test was used to evaluate whether positive and negative mood changed from pretest to posttest within the full sample. The two-tailed, paired-samples t-test used to analyze the pretest-posttest affect data yielded no significant change in positive affect, t(80) = 1.52, p = .13, 95% CI [-0.43, 3.20], d = 0.34. However, a statistically significant change was observed in negative affect, as the avatar game play experience was associated with decreasing negative mood, t(80) = 4.18, p < .001, 95% CI [1.28, 3.61], d = 0.41. Before game play, the participants’ measure of negative mood was, on average, 16.37; after game play, the participants’ measure of negative mood was averaged at 13.93 (see Table 1).

An independent-samples t-test was conducted to determine if the two avatar groups (i.e., actual and ideal) were comparable in mood at the onset of the study. The t-test results revealed no statistically significant differences between groups in either pretest positive affect, t(79) = 1.12, p = .27, 95% CI [-1.55, 5.48], d = 0.25, or pretest negative affect,
Primary Analyses: ANCOVA

Two Analyses of Covariance (ANCOVAs) were employed to combine the variables of avatar group condition and self-esteem in predicting postgame play mood. ANCOVA allowed us to determine the significance of the contribution of the covariate, self-esteem, as well as whether the independent variable of avatar group intervention significantly predicted posttest mood over self-esteem.

To serve as the basis for the ANCOVA, Pearson correlational analyses were conducted to examine the relationship between self-esteem and posttest affect scores (see Table 2). Linearity found in the association between self-esteem and the dependent variable of posttest mood confirmed self-esteem as a possible covariate, as scores on the self-esteem scale were associated with change in both posttest positive affect scores, \( r(81) = .26, p = .02 \), and negative affect scores, \( r(81) = .38, p < .001 \).

The first ANCOVA was used to determine whether the avatar group intervention influenced posttest positive mood above and beyond the variance caused by self-esteem. Levene’s Test of Equality of Error Variances was again insignificant, \( F(1,79) = 1.42, p = .24 \), meaning that the homogeneity of variance assumption of ANCOVA was not violated. On the basis of the ANCOVA, we found posttest positive affect to be associated with both avatar group intervention and self-esteem levels (see Table 3) and the variable of avatar group condition was statistically significant in influencing posttest positive mood even after the statistically significant covariate of self-esteem was accounted for, \( F(1,78) = 4.44, p = .04, \eta^2 = 0.05 \). That is, even when controlling for self-esteem, the difference between avatar group means was statistically significant (see Table 4).

A second ANCOVA was used to determine whether avatar group intervention influenced posttest negative mood above and beyond the variance caused by self-esteem. Levene’s Test of Equality of Error Variances was again insignificant, \( F(1,79) = 2.28, p = .14 \), not violating the assumptions of ANCOVA. However, the results of the analysis showed that posttest negative affect was not associated with avatar group intervention, \( F(1,78) = 0.04, p = .84, \eta^2 = 0.001 \), once accounting for the variance shared with self-esteem (see Table 3). That is, when statistically controlling for self-esteem, the difference in posttest negative affect means between avatar groups was not significant (see Table 4).

Discussion

When comparing pretest and posttest mood in our sample as a whole, we found that participants, regardless of avatar-group condition, experienced an overall significant decrease in negative affect after game play, a finding not unlike that noted in a study conducted by Trepte and Reinecke (2010); like they speculated, enjoyment may not necessarily depend solely on similarity between players and
their avatars. However, upon further examination, similarity may have distinguishing effects, as participants of our actual-self avatar group were associated with higher levels of positive affect after game play than participants of our ideal-self avatar group. It may be because players with similar avatars find it easier to identify with them, as suggested by Trepte and Reinecke (2010), who found that stronger identification with similar avatars corresponded with higher levels of game enjoyment, particularly in noncompetitive games such as the one employed in the current study.

As the actual-self avatar group experienced stronger positive affect in response to interactive media use, the association possibly reflects higher levels of self-esteem (Jin, 2009), though Jin’s corresponding studies also claim that immersion and self-presence are experienced more strongly in favor of ideal-self avatars (Jin 2009, 2010). Or, as Jin (2009) qualified, priming the ideal self can elicit varying degrees or even opposite directional effects on the affective state of individuals, depending on their view of themselves. In the current study, we attempted to control for such factors that could possibly interfere with the mechanisms of affect direction, consequently explaining self-esteem as our covariate.

In using the variable of avatar group intervention to predict mood, self-esteem proved to be a key factor in predicting posttest affect. In terms of regulating positive mood, the avatar group intervention was statistically significant, even after accounting for the variation caused by self-esteem, suggesting that avatar-self representation may play a more substantial role in managing positive affect. In this case, participants who projected the actual-self avatar experienced higher levels of positive mood than participants who projected the ideal-self avatar. Meanwhile, in terms of regulating negative mood, self-esteem may present as a stronger predictor, because once its variance was accounted for, the factor of avatar group intervention was no longer significant, suggesting that self-esteem may be more salient in managing negative affect than positive affect. Previous studies have highlighted associations between lower levels of self-esteem and greater levels of avatar-self discrepancy, though the findings of this study suggest that self-esteem may potentially manage negative affect more than avatar-self representation (Bessiere et al., 2007; Dunn & Guadagno, 2011). Seeing as lower levels of psychological well-being have also been linked with escapism motivations, those factors in combination may have been contributory to the overall negative affect decrease in our sample—reflecting the players’ escape into the anonymity and fantasy of the virtual world, and muting negative mood states in the process (Li et al., 2011).

Neither self-discrepancy theory nor objective self-awareness theory were supported in our findings, as the ideal-self avatar group did not experience an increase in negative affect. In fact, those who created an ideal-self avatar even tended to experience a decrease in negative affect (Higgins, 1987; Silvia & Duval, 2001). Although these theories founded the hypothesis that creating an ideal-self avatar would bring focus toward the depressing discrepancy between the ideal-self and actual-self, and thus increase negative mood, it may just be that the opposite occurred due to the lack of opportunity for the ideal-self avatar group to experience strong character expression and immersion in an ambiguous, noncompetitive game such as The Sims—especially for inexperienced game players, such as the participants comprising majority of our sample. Additional limitations, in terms of the study sample, were that participants were drawn as a convenience sample from a small,
Christian, Liberal Arts University in Southern California, which may not be representative of many other geographical areas, much less representative of the wide-ranging demographic pool of users of avatar-based media today (Yee, 2006b). The sample size was also relatively small, with a total of 42 participants in the actual-self priming group and 39 participants in the ideal-self priming condition.

Although the literature offers a number of studies looking at avatar-self discrepancies in relation to the media user, this study is among few that introduce actual- and ideal-self groups as predictors rather than observational supplements, and may be one of the first to examine them in relation to mood and the affective experience. That being said, although specifically creating an ideal-self avatar (high AISD) did not have any noticeable independent effects on mood like hypothesized, it is worth recognizing that creating an actual-self avatar (low AISD) did. This can suggest that, in terms of avatar-self representation, choosing an actual-self reflecting avatar (low AISD)—or even just not choosing an ideal-self reflecting avatar (high AISD)—may possibly have a more positive effect on the player’s experience. In order to improve the clarity and effectiveness of relevant studies involving avatar-self discrepancy and mood, significant changes should be considered.

Future studies should consider gathering data from a more wide-ranging and representative sample of the population, including individuals both familiar and unfamiliar with avatar-based virtual environments, as to observe whether or not user experience plays any mediating or moderating roles. Future studies could also explore different media selections (i.e., competitive vs. noncompetitive, computer vs. video game), as different immersive aspects of games could influence character expression and interactivity, intensifying the effects of AISD between avatar and individual. Previous studies have used the Wii, a console with key motion-sensing capabilities that empower players to manipulate and interact with characters on screen via movement, but the Wii’s Mii avatars may not necessarily provide a mode of substantially realistic avatar customization (Jin & Park, 2009).

Thus, it could also be interesting to see a similar process executed in a virtual-reality environment, in which participants would have a similarly, if not more, hands-on approach to using their avatars, yet have access to more realistic customization options. A virtual reality setting may also allow the variable of avatar-self representation to be tested more objectively; for example, in testing the effects of actual-self avatars, virtual reality avatars can be created in the accurate image of participating individuals, and they could enter the simulation completely blind to conditions assigned to any other participant. Because the current study provided no objective measure of accuracy in comparing actual-self avatars to their respective participants, future studies should consider a virtual reality method to better control for possibly confounding variations in accuracy of avatar-self representation. In addition, participants had to be given written instruction to create an actual- or ideal-self avatar, so it is possible that demand characteristics could have influenced the results; once aware that other participants are assigned different instructions, participants might have responded with more or less incentive to act correspondingly to their assigned instructions. Virtual reality would be a suitable alternative for media selection, as it can also encourage a stronger sense of self-presence and immersion; consequently, it may result in a more visible impact on participants’ moods, allowing researchers to better observe how actual-and ideal-self appearance priming can affect the individual.

Finally, although the current study measured enjoyment in terms of mood and its positive and negative affective states, implications of user experience can only be inferred as far as affect can be interpreted. Main findings of the study revealed a decrease in negative affect for all participants, as well as a higher level of positive affect for participants of the actual-self avatar group; although these positive and negative affect effects can be considered “beneficial” mood developments, the reasons behind them are more ambiguous. For instance, the decrease in negative affect could be interpreted as a straightforward reduction of negative mood, but can also be interpreted as a reflection of escapism, causing debate for how “beneficial” these affect states are. Because the current study measured mood in terms of affect, future studies may consider supplementing direct measures of participant enjoyment of avatar-based gaming tasks, as it may help to more effectively interpret mood measures into more definitive implications of user enjoyment.

As avatar-based representation becomes more common in computer games, video games, and other virtual environments, understanding the role of avatar-self representation may allow for better understanding of its function in the affective experiences of media users. Although negative mood
decreased for participants as a whole, the potential influence of avatar-self discrepancy in this particular game context might have been overshadowed by the factor of self-esteem. However, the current study highlights an association between actual-self avatar creation (low AISD) and higher post-game play positive mood, suggesting that low avatar-self discrepancy may contribute to a more enjoyable game experience. Ultimately, in examining the concept of AISD and its relation to avatar customization and utilization, our findings hope to provide insight into the mechanisms by which avatar-self discrepancies might influence positive and negative mood states through game play.

References

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Donate, Everybody’s Doing It: Social Influences on Charitable Giving

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ABSTRACT. The present study examined social factors, specifically the bystander effect, social comparison, and dyadic sex similarity, on charitable giving. Using experimental methods, participants were told that they would be entered in a raffle where 10 participants would win $20 each, and then asked if they would be interested in donating a portion of their $20 award to the American Red Cross. Results showed a main effect of social comparison, with upward social comparisons increasing donations ($p = .04$, partial $\eta^2 = .04$). However, there was no main effect of bystander presence ($p = .28$, partial $\eta^2 = .01$). Additionally, no main effect of dyadic sex similarity was found ($p = .61$, partial $\eta^2 = .004$), but an interaction effect showed that social comparison increased donations only in different-sex dyads, not same-sex ones ($p = .03$, partial $\eta^2 = .08$). The findings of this study expanded the scope of research on prosocial behavior beyond traditional helping behavior and can inform nonprofit organizations as to which social variables can be harnessed and adapted to increase charitable donations.

From July 29, 2014, to August 29, 2014, $100.9 million were raised for the Amyotrophic Lateral Sclerosis (ALS) Association—a 3,504% increase from the $2.8 million raised during the same time period in 2013 (Munk, 2014). There was not a massive increase in diagnosis of the disease, and donations from other charities did not increase at the same rate, if at all. The ALS Association managed to increase donations in a simple, yet brilliant way.

During the summer of 2013, Americans took to their Facebook pages to promote the viral Internet trend of donating money to the ALS Association. Upon receiving a “challenge,” participants were supposed to dump a bucket of freezing cold ice water over their heads and donate $10 to the ALS Association. If they chose not to complete the ice bucket activity, they were supposed to donate $100. The whole process was to be video recorded and shared on social media, accompanied by a challenge to three other people to complete the Ice Bucket Challenge or donate to the ALS Association.

The ALS Ice Bucket Challenge is just one of many examples of prosocial behavior, or behaviors that benefit other people. Although people often credit altruistic reasons for their own prosocial behavior, they acknowledge social factors such as peer pressure as an important motivation for others’ prosocial behavior (Howard, Nelson, & Sleigh, 2011). Research has indicated that contextual factors have an important impact on helping behavior, especially in emergency situations (Schroeder, Penner, Dovidio, & Piliavin, 1995). Specifically, other people can influence whether (or how much) people choose to donate. Using experimental methods, the present study focused on two social factors that might influence charitable giving: the characteristics of other “bystanders” and a standard to which potential givers can compare themselves.

Prosocial Behavior

Broadly defined, prosocial behavior is an intentional and voluntary positive action, distinguished from the similar category of altruistic behavior in that motivation for prosocial behavior may be unspecified (Eisenberg, 1982). Prosocial behavior encompasses many positive actions including...
Social Effects on Charitable Giving

helping, cooperating, and altruism (Eisenberg, 1982; Schroeder et al., 1995). The present study focused on helping behavior, which is defined as “an action that has the consequences of providing some benefit to or improving the well-being of another person,” (Schroeder et al., 1995, p. 16). One type of helping behavior is charitable giving, the act of donating money to benefit the well-being of other people, often by donating to a community activism organization that works to improve the lives of less fortunate people (Ray, 1998).

In experimental laboratory studies using money, people share 20% of the money they are given (Camerer & Fehr, 2003). However, in the United States, people only share an average of 2% of their income with charitable organizations (Cryder & Loewenstein, 2012). This disparity suggests that context is an important factor in charitable giving. Specifically, Cryder and Loewenstein (2012) noted that, outside of the laboratory, the responsibility to donate is generally diffused among many people whereas, within the lab, the sole responsibility to share money is felt by the individual in the study. They suggested that this as a key reason why more money is shared in the lab. Although the current study occurred in a laboratory setting, it addressed the latter critique of previous research by considering how the presence of other people can influence charitable giving within a laboratory setting.

Social Influences on Prosocial Behavior

To understand the impact of social factors on charitable giving, two key social psychological topics should be considered: the bystander effect and social comparison. First, the bystander effect refers to how people are less likely to help when more people are present (Schroeder et al., 1995). Research on the bystander effect has suggested that participants in groups would donate less money than individual participants because the responsibility to help would be diffused among participants (Latané & Nida, 1981). Further, according to social impact theory, the effect of the researchers’ donation request should be decreased when it is distributed among multiple targets (Latané, 1981). Research has also supported the implicit bystander effect, wherein the bystander effect can be found in nonemergency situations as well as psychologically distant situations such as a hypothetical donation request (Garcia, Weaver, Moskowitz, & Darley, 2002).

Another way that other people can influence charitable giving is through social comparison, which is the act of comparing oneself to others (Corcoran, Crusius, & Mussweiler, 2011). Social comparison research has suggested that people are likely to imitate behaviors when the comparison standard is something to be emulated (i.e., an upward social comparison; Corcoran et al., 2011). Accordingly, if the perceived social norm is to donate a large portion of the prize, people will likely adhere to this norm and donate more (Gialdini & Trost, 1998). Research has also demonstrated that social comparison effects are fewer among dyads when compared to single participants (Garcia, Tor, & Schiiff, 2013). Research on the N-effect stipulates that social comparison concerns decrease when the number of people in the room increases (Garcia et al., 2013).

In addition to social comparison and the effect of bystanders, similarity between those in the dyads should be considered. Studies have found that, when bystanders share similar attitudes or group membership, people are more likely to conform to the helping behaviors of the other bystanders (Levine, Cassidy, Brazier, & Reicher, 2002; Smith, Smythe, & Lien, 1972). Further, research has found that similarity between individuals and their comparison standards increases the effect of social comparison (Corcoran et al., 2011). Although prior research has examined the effects of similarity between the donor and recipient of charity (Dovidio, Piliavin, Schroeder, & Penner, 2006), the impact of similarity among donors has not been studied as thoroughly. However, research on similarity and helping behaviors has indicated a potential influence of dyadic similarity on the helping behavior of charitable giving (Levine et al., 2002; Smith et al., 1972).

Current Study

Building from existing literature, the current experimental study tested the effect of bystander presence on participants individually and in dyads (i.e., with two people). This study had four hypotheses. First, a main effect of bystander presence was expected, with participants in dyads donating less money than individuals to charity. Second, we predicted a social comparison main effect; specifically, participants who were told that others would donate a substantial amount of money would then give more to charity than those who were not similarly primed. Third, an interaction effect was expected, with social comparison effects being less among dyads than single participants.
In this study, dyadic similarity was also considered. In the dyadic condition, the other participant in the room would serve as a comparison standard. Therefore, the fourth hypothesis predicted that an effect of dyadic similarity would only be found in the social comparison condition: Social comparison effects and subsequently, donation amounts, were expected to be greater for same-sex dyads than different-sex dyads.

Method

Participants
A sample of 126 college students between the ages of 18 and 24 years (M = 19.00, SD = 1.03) at a small midwestern college was used for this study. Of the participants, 83 (66%) were women, 40 (32%) were men, one participant (1%) identified with both sexes, and two participants (1.6%) did not respond. Additionally, participants represented a variety of nationalities including 102 (81%) U.S. citizens and 20 (16%) participants of other nationalities including Chinese (3.28%), Croatian (<1%), Filipino (<1%), Iraqi (<1%), Indian (1.64%), Vietnamese (1.64%), Zambian (<1%), Singaporean (<1%), Nepali (<1%), Thai (<1%), Ethiopian (<1%), Canadian (<1%), Bhutanese (<1%), and Italian (<1%). Three participants (2.4%) could not be categorized because they did not answer the question with enough description (e.g., responded “multicultural”), or they answered with their race rather than nationality (e.g., responded “White”). One participant (<1%) did not report a nationality. Participants were students, recruited through the psychology department at the college. Some students received partial course credit for participation.

Procedure
Institutional review board approval (#2014/09/7) was received from the College of Wooster Human Subjects Research Committee prior to starting the experiment. First, participants read and signed an informed consent form. They then completed a demographic survey on a computer. After completing the survey, participants began a diversion task to disguise the fact that the charitable donation request at the end of the study was actually being used for the analysis. Participants completed the 5 Love Languages survey by Gary Chapman (n.d.), a survey to assess how individuals communicate their feelings toward other people in both romantic and platonic relationships. This distraction task was chosen because it addressed prosocial behavior as the participant recruitment posting advertised, but differed from the specific focus of the study because it involved personality factors rather than situational factors. While participants completed the survey, the researcher played jazz music in the background to include an evident independent variable in case any participants were knowledgeable about experimental design.

Afterward, the researcher asked participants if they were familiar with the music and made note of the answer. No analysis was conducted on this answer because none of the participants were familiar with the music. Then, the researcher said to the participants,

Thank you very much for participating in this study. All participants in this study will be entered in a raffle for the chance to win $20. There will be about 100 participants, and there will be 10 winners. The drawing will happen sometime next semester after all participants have finished. With that, we are also collecting donations for the American Red Cross. Here’s a flyer that summarizes the Red Cross’s charity involvement and the work that they do both internationally and domestically. If you’re interested, you can donate a portion of your prize to the charity if you win. Please write down your desired donation commitment, if any, on this sheet, sign it, and it will be deducted from your prize if you should win.

In the not-primed condition, the researcher did not make any statements regarding the average amount of money committed for donation. However, in the primed condition, the researcher concluded the aforementioned quotation by saying, “The average donation commitment is $15.”

Next, participants completed the donation commitment form and signed it. This experimental design was based on experimental methodology from the behavioral economics dictator game (Eckel & Grossman, 1996; Hoffman, McCabe, Shackat, & Smith, 1994; Hoffman, McCabe, & Smith, 1996). After participants made their donation commitments, the researcher gave them a debriefing form that described the experiment including the deception used in the experiment. The researcher also explained that, due to a lack of funding, there would not actually be a raffle, but offered candy to thank them for participating.
Conditions

**Bystander presence condition.** Bystander presence was operationalized as whether a participant completed the study alongside another participant (dyad group) or alone (single group). Participants in the dyads were also asked whether they knew the other participant in order to control for personal connections outside of the laboratory.

**Dyadic similarity condition.** The independent variable of dyadic similarity was operationalized as sex similarity between the individuals in each dyad. Participants were assigned to same-sex or different-sex dyads based on the experiment timeslot they signed up for. This condition was only applicable for the dyad group.

**Social comparison condition.** Social comparison was operationalized as whether participants were given an average donation amount with which to compare their own donation amount. Participants in both the single and dyad groups were randomly assigned to either the primed or not-primed group. The primed group was told that the average donation commitment was $15; the not-primed group was not told anything about the average donation commitment.

Results

Participant donations ranged from $0 to $20, with only three participants not donating at all. On average, participants donated $14.15 ($N = 126$, $M = 14.15$, $SD = 6.08$, range: $0–20$). Men donated more money on average ($n = 40$, $M = 15.08$, $SD = 5.90$, range: $0–20$) than women ($n = 83$, $M = 13.91$, $SD = 6.15$, range: $0–20$). Regarding class year, there was little difference between the means. Mean donations were highest for juniors ($n = 18$, $M = 16.22$, $SD = 6.03$, range: $2–20$). First-years ($n = 67$, $M = 13.96$, $SD = 5.96$, range: $0–20$), sophomores ($n = 37$, $M = 13.51$, $SD = 6.22$, range: $0–20$), and seniors ($n = 4$, $M = 13.75$, $SD = 7.50$, range: $5–20$) donated similar amounts. U.S. citizens donated more money on average ($n = 102$, $M = 14.85$, $SD = 7.25$, range: $0–20$) than non-U.S. citizens ($n = 20$, $M = 9.44$, $SD = 5.63$, range: $0–20$).

It was predicted that participants who were alone would donate more than participants in dyads (H1), and that participants would donate more when given a high standard with which to make a social comparison (H2). On average, single participants donated more money ($n = 64$, $M = 14.70$, $SD = 5.85$, range: $2.5–20$) than participants in the dyad group ($n = 62$, $M = 13.58$, $SD = 6.30$, range: $0–20$). Additionally, participants in the primed group donated more money ($n = 64$, $M = 15.24$, $SD = 4.86$, range: $2.5–20$) than participants in the not-primed group ($n = 62$, $M = 13.02$, $SD = 6.98$, range: $0–20$). The results of a 2 x 2 between-subjects Analysis of Variance (ANOVA) indicated no main effect of bystander presence, $F(1, 125) = 1.16$, $p = .28$, partial $\eta^2 = .01$. However, there was a significant main effect of social comparison with a small effect size, $F(1, 125) = 4.41$, $p = .04$, partial $\eta^2 = .04$. No interaction effect between bystander presence and social comparison was found, $F(1, 125) = .11$, $p = .74$, partial $\eta^2 = .001$. The results are summarized in Figure 1.

Additionally, the effect of dyadic sex similarity was examined, but there was not a large difference between same-sex ($n = 31$, $M = 13.13$, $SD = 6.70$, range: $0–20$) and different-sex ($n = 31$, $M = 13.26$, $SD = 6.33$, range: $0–20$) dyads. It was predicted that, among the social comparison group, same-sex dyads would donate more than different-sex dyads (H3). The interaction between social comparison and dyadic similarity was examined using a 2 x 2...
between-subjects ANOVA. No main effects were found for social comparison, $F(1, 61) = 2.16$, $p = .11$, partial $\eta^2 = .04$, nor dyadic similarity, $F(1, 61) = .26$, $p = .61$, partial $\eta^2 = .004$. However, a significant interaction with a medium effect size was found, $F(1, 61) = 4.73$, $p = .03$, partial $\eta^2 = .08$, showing that individuals in different-sex dyads donated more when given a comparison standard (see Figure 2).

**Discussion**

With the increasingly public nature of charity in the form of donations, this study examined the effect of social comparison and the bystander effect on charitable giving. Additionally, this study considered the similarity of participants to see if donations varied as a function of how similar individuals were to another person in the room. First, the results of the present study did not support the hypothesis that bystander presence would impact charitable giving. Although the means indicated that participants in the single group donated more than those in the dyad group, the analysis did not reach significance. This finding suggests that diffusion of responsibility may not manifest the same way in instances of charitable giving as it does for helping in emergency situations, which is the focus of many studies on this topic (Darley & Batson, 1973; Latané & Nida, 1981; Smith et al., 1972). In emergency situations, only one bystander needs to take action in order to get help (e.g. an individual calls the police). However, in a charitable giving situation, people who are asked to donate likely understand that the more money donated to charity, the better for the cause or organization. Therefore, people may be equally likely to donate if they are alone or with others because, unlike in an emergency situation, the individual still feels responsible to help even if others are helping due to the persistent and expansive monetary needs of charitable organizations.

Moreover, existing research on the bystander effect has strongly supported that the presence of another person leads to diffusion of responsibility to help, even in implicit cases and situations involving donating money (Garcia et al., 2002; Latané & Nida, 1981). Consequently, methodological issues may explain the lack of statistical significance. Specifically, telling participants that there would be 10 raffle winners might have disrupted the bystander effect because the participants were under the impression that 10 people would be donating, regardless of how many people were in the room. Additionally, although the researcher did not watch participants complete the form, they were still aware of her presence in the room, therefore making none of the participants actually alone while they made their donations.

As with past research, the findings of this study supported the hypothesis that participants would donate more money when given a high standard of donations with which to make a social comparison. This finding was consistent with existing literature, including both empirical research findings (Shang & Croson, 2009) and social comparison theory (Corcoran et al., 2011). However, the results of the study did not support the N-effect hypothesis that social comparison effects would be greater in the single group than the dyad group (Garcia et al., 2013). The lack of statistical significance could be explained by how group size only increased by one person in the present study, and a greater increase may be necessary for the N-effect to occur.

This study also examined the effect of dyadic sex similarity on charitable giving. As expected, there was minimal difference between the means of same-sex dyads and different-sex dyads, and no main effect was found. However, research on social comparison has indicated that the effect of social comparison would be stronger for same-sex dyads than different-sex dyads because similarity to the comparison standard increases assimilation (Corcoran et al., 2011). Although the results of the present study did find a significant interaction effect between social comparison and sex similarity, the finding was contrary to the existing literature on social comparison (Corcoran et al., 2011) because social comparison only increased donations in the case of different-sex dyads, not same-sex dyads as predicted.

The surprising results on similarity may be due in part to how similarity was operationalized as sex similarity. Due to the nature of the distraction task, it is possible that participants were primed to think of love and, therefore, felt more social pressure when paired with a member of the opposite sex. However, because the researcher did not note participants’ sexual orientation, there is not enough evidence to support that explanation. Future research should determine if individuals are more susceptible to social comparison in the presence of a person whose sex they are attracted to.

Another possible explanation for the results regarding similarity is that the experiment was conducted on the campus of a liberal arts college and all participants were students at the college. In this
environment, sex may not be as salient an identity marker as in other environments. For example, the college has gender-neutral housing options and all single stall bathrooms have recently been changed to gender-neutral. Further, as previous research has shown, people often value relationships more than social categories, so the personal group of being a student at the college may be more important to participants than the broad category of sex (Wong-Rieger & Taylor, 1981). Thus, despite being asked to identify their sex on a survey at the beginning of the study, participants might not have thought of themselves as similar or different from the other participant based on sex.

Although the previous explanation addresses why dyadic similarity did not increase the effects of social comparison, it does not address why same-sex dyads actually showed diminished effects of social comparison. If sex was not salient enough for the similarity effect to be significant, perhaps there were other traits in the same-sex and different-sex dyad groups that impacted the effect of social comparison. A closer examination of the data revealed that the same-sex dyad group was predominantly women, although the different-sex dyad group had a more even sex distribution. For the same-sex dyads, one participant did not report sex, 24 participants were women, and only four were men. On the contrary, the different-sex dyad group was composed of 15 women and 16 men. Thus, perhaps sex itself increased social comparison effects within the dyad rather than sex similarity between participants. Dyadic similarity and sex had comparable interactions with social comparison because the average donation for different-sex dyads in the primed condition was $16.67 and, in the not-primed condition, $10.66, almost the exact same as the average donations for men in the dyadic primed or not-primed conditions, respectively (see Figure 3).

With a higher average donation for male than female participants in the primed condition, the data suggests that perhaps social comparison effects could be greater for men than women. Charitable giving requires a certain level of individual agency and power, and both agency and power are stereotypically masculine traits (Prentice & Carranza, 2002). Thus, male participants might have felt more pressure to donate money in order to conform to masculine stereotypes through agency and power. On the other hand, female participants might have felt stronger effects of social comparison if the task was a different kind of prosocial behavior (e.g. volunteering) because the feminine gender stereotype assumes communion and care (Prentice & Carranza, 2002). Future research should examine whether the nature of a prosocial task and the gender norms associated with that task impact the strength of social comparison on different sexes.

**Limitations and Future Directions**

The present study had a few limitations including the aforementioned limitation regarding the similarity condition based on sex. Another important limitation was that the researcher was unable to actually pay participants the $20 for participating in the study. Thus, the experimental scenario was hypothetical. Rewarding participants with money might make future research on this topic more realistic for participants so as to more fully capture their desire to donate. The presence of the researcher in the room during the donation task was also a limitation because the researcher might have served as a bystander and made it so that participants in the single group did not feel entirely alone.

Finally, future research should ensure an even gender and nationality distribution among participants in order to examine how these demographic factors relate to social influences on charitable giving.
giving. On average, U.S. citizens donated more to the American Red Cross than non-U.S. citizens, suggesting that U.S. citizens might have had a stronger desire to donate due to their ingroup connection to the charity. However, the distribution was too uneven to conduct a robust statistical analysis on this relationship. Therefore, future research should examine how group membership and similarity to the recipient influences charitable giving.

Conclusion
The findings from the present study provided exciting opportunities to increase prosocial behavior toward those in need. Future research in both scientific and applied settings should expand on the conclusions from the present study to see if similar principles can be used in different prosocial behaviors. Although the focus of this research was on charitable giving, the findings have implications for all kinds of prosocial behaviors, from helping in an emergency to volunteering to douse oneself in ice water to raise awareness and funds for a serious, but underrepresented disease.

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The goal of this study was to assess psychology majors’ beliefs about how much their psychology department values (a) the American Psychological Association’s (APA, 2013) learning goals (version 2.0), and (b) skills and other objectives that are valued by employers. Graduate programs and employers seek applicants who are knowledgeable and proficient in these two areas. Knowing how the psychology major is perceived by students may help psychology departments assess and improve the education they provide.

The APA’s (2013) five main goals, outlined in their Guidelines for the Undergraduate Psychology Major Version 2.0 are knowledge base in psychology, scientific inquiry and critical thinking, ethical and social responsibility in a diverse world, communication, and professional development (pp. 49–58). The APA states that all universities should value and expose psychology majors to these learning objectives.

Many of the skills in the APA Guidelines overlap with skills sought by employers. Appleby (2000) surveyed 39 employers who reported that they would be willing to interview psychology majors on the importance of skills that would affect their hiring decisions. Employers placed a strong emphasis on skills related to effective communication and interactions such as working with a team. They also rated ethical standards, initiative, and time management skills as important. Appleby (2000) asserted that students should learn and develop these skills while in college and should demonstrate that they have these skills in interviews. Landrum and Harrold (2003) found a similar trend. More specifically, in their study, 87 employers likely to hire psychology graduates rated the importance of 88 skills and abilities. The most highly rated skills were teamwork, relationships, and work ethic. Critical thinking and other communication skills also elicited high ratings from employers (Landrum & Harrold, 2003). Many of these skills overlap with those in the APA guidelines.

Employers have expectations that universities will teach students necessary skills. Hernández-March, Martin, and Leguey (2009) found that employers identified both technical field-specific knowledge and interpersonal skills as important. However, many employers are concerned that schools are not preparing graduates well enough for the job market (Hernández-March et al., 2009). They reported a gap between the level of skill they expected of applicants and the skill level they thought applicants actually had. Moreover, another recent survey of senior executives indicated...
that 59% of respondents “do not believe that U.S. colleges and universities offer curriculums that adequately prepare students for today’s workforce” (Survey, 2013, para. 6).

Psychology curricula may put more emphasis on knowledge and less on skills such as communication and critical thinking. Martini, Judges, and Belicki (2015) asked junior and senior psychology students to rate how much their coursework emphasized skill-based learning outcomes (SBLOs) such as critical thinking, and how much they considered these skills when doing assignments for class. The researchers found that students believed that little emphasis was being placed on SBLOs in their courses and that students did not think about these goals much when doing assignments (Martini et al., 2015). They also found that, regardless of class level, students were able to define critical thinking, communication, and collaboration only in very general terms that did not show a deep comprehension of the skills. Thus, the skill gap that employers are seeing may be partially explained by this lack of deep understanding (Martini et al., 2015).

Homa et al. (2013) analyzed a sample of introductory psychology course syllabi and found that they included objectives such as knowledge base and research methods more often than skills-based objectives such as critical thinking and communication skills. Goals such as career planning and development, and information and technology literacy appeared in fewer than 10% of syllabi. Although these findings were limited to introductory psychology, they are consistent with the idea that the skill gap may be partially due to psychology curricula failing to emphasize the importance of certain skills that psychology majors are expected to have. This does not necessarily mean that instructors are not addressing these skills; rather it may be that instructors are not explicit about developing these skills, and/or students are not appreciating the emphasis instructors place on them.

The APA (2013) provided suggestions to increase the effectiveness of the undergraduate psychology major, many of which revolve around intentionally and actively exposing students to the learning goals. The APA also suggested that teaching methods should help students develop skills. Martini et al. (2015) suggested that skill-based learning should be used in psychology classes, where students are explicitly and repeatedly made aware of what skills are being developed through their learning experiences. It is important that students be aware of what skills their psychology department values. Otherwise, they may not know what is expected of them and what they should focus on in their education.

Gaither and Butler (2005) surveyed 507 introductory psychology students about their expectations of how well their major will foster 60 skills that matched the learning goals listed in the original Undergraduate Psychology Major Competencies (APA, 2002). Students generally thought that application and research-related skills would be the most developed by the major. Moreover, students also believed that application, research skills, and critical thinking would be gained from within the major, while communication and technology-related skills would be gained outside the major. Gaither and Butler (2005) concluded that their findings mostly aligned with the APA learning goals. However, their study used the older version of the learning goals, which made a distinction between psychology-specific skills such as critical thinking, and liberal arts skills such as communication (Gaither & Butler, 2005, p. 547). Their study also included only students taking an introductory course. Therefore, they studied only expectations and not actual experiences with the major. Finally, the study looked at skills related to the APA learning goals and did not account for other skills that are sought by employers (Gaither & Butler, 2005).

In the current study, we built on the Gaither and Butler (2005) study; specifically, we wanted to assess whether students at various points in the psychology major believed that their major values the skills listed in the new APA learning goals and that employers find important. We also wanted to assess whether students believed that they were actually exposed to these skills through their major. Additionally, we also investigated student perspectives about how much their psychology department values goals and objectives that employers and the APA consider important.

For this study, we predicted that the results would show that the psychology department is doing a good job with learning goals relevant to knowledge and research methods but not as well in other areas. Additionally, it is predicted that seniors would rate learning goals as more important than nonseniors because they have been in the department longer and would have had more chances to be exposed to various learning goals. Finally, we hypothesized that GPA and engagement would be related to the ratings of goals’ importance such that the higher a student’s GPA and the more
Student Perceptions of Learning Objectives | Scherbak, Bihun, and Handelsman

academically engaged they were, the higher they would rate the importance of learning outcomes.

Method

Participants
We sent a link to the survey to all undergraduate psychology majors at the University of Colorado Denver, a public urban university. Of the 933 majors, 77 (8.25%) took the survey; 5.7% (n = 4) first-year students, 12.9% (n = 9) sophomores, 40% (n = 28) juniors, and 41.4% (n = 29) seniors. Most participants were pursuing a BA degree (n = 52, 74.3%), with some BS students (n = 17, 24.3%), and one nondegree psychology student (n = 1, 1.4%). Thirty-three students (47.1%) said that the University of Colorado Denver was their first college, 37 (52.9%) said that the University of Colorado Denver was not their first college. The average GPA of respondents was 3.31 (SD = 0.46). In terms of sex, 80% (n = 56) identified as women and 20% (n = 14) identified as men. The average age of respondents was 24.3 (SD = 6.2). Of note, the numbers do not add up to 77 because not everyone answered every question.

Procedure
We obtained approval from the Colorado Multiple Institutional Review Board (Approval #16-0122). Participants completed an online survey, which started with questions regarding their beliefs about how much the psychology department values certain learning goals. Students rated how much they believe the psychology department values each of 30 learning objectives on a 4-point Likert-type scale (1 = not at all important; 2 = somewhat unimportant, 3 = somewhat important, 4 = extremely important). These objectives included all 19 learning goals from the APA Guidelines and 11 skills that employers have said in the literature that they expect from students. The wording of the APA document was substantially preserved; certain objectives included a little explanation, and some were shortened to make them more accessible to students.

The first 19 items came directly from the APA Guidelines Version 2.0 (APA, 2013, pp. 49–58; reprinted with permission from APA), with our additions included in the parentheses and other changes noted in brackets (see Appendix).

The remaining items (20–30) represented skills and goals that are important for employers in general and employers of psychology majors. Although skills regarding technology and statistical analysis were generally rated as less important than other skills, they are included in this study for comparison (Appleby, 2000; Landrum & Harrold, 2003; see Appendix).

The second part of the questionnaire asked students to select goals from the same list of 30 goals to answer the following four questions: (a) “Out of these goals, select the three that you believe are the most important to the psychology department”; (b) “Out of these goals, select the three that are the most important to you”; (c) “Out of these goals, select the three that you believe you have been exposed to the most in your psychology courses”; (d) “Out of these goals, select the three that you are most confident in your ability.”

Students then answered questions regarding demographics, including information about sex, age, degree, class standing, psychology courses taken, and GPA. Finally, they answered this question about their academic engagement: “How engaged are you in college?” (1 = not at all engaged, 3 = moderately engaged, 5 = extremely engaged)

Results
Table 1 shows the means and standard deviations for the 30 goals in order of how students rated their importance to the psychology department. The ratings of the top eight goals were all above 3.5 (out of 4) and did not differ significantly from each other. The ratings for the lowest five goals were all below 3.0, and did not differ significantly from each other. To provide a general indication of differences in ratings among the items, we averaged the ratings from the eight highest- and five lowest-rated goals. The average of the eight highest-rated goals (M = 3.56; SD = 0.35) was significantly higher than the average of the five lowest-rated goals (M = 2.87; SD = 0.68), t(74) = 10.00, p < .001, d = 1.15.

Seniors and nonseniors differed significantly in their ratings of the following learning goals: critical thinking, leadership, self-efficacy and regulation, and psychological research (see Table 2); seniors rated those goals lower than did nonseniors. There were no significant differences for any of the other learning goals.

We hypothesized that GPA and engagement would be positively correlated with ratings of importance. However, most goals were not significantly related to GPA. Only decision making, apply psych to career goals, and content domains showed significant, and negative, correlations with GPA (see Table 3). Decision making and conflict management were negatively correlated with ratings of engagement. There
was a significant positive correlation between GPA and academic engagement, \( r(65) = .367, p = .002 \).

Students for whom the University of Colorado Denver was their first college rated the writing learning goal as significantly more important \((M = 3.70, SD = 0.53)\) to the department than students who had attended other universities before coming to the university \((M = 3.27, SD = 0.84)\), \( t(68) = 2.57, p = .012, d = 0.61 \).

There was no significant relationship between number of classes taken and ratings of goals, with the exception of sociocultural factors, \( r(21) = .464, p = .029 \). We derived the measure of number of psychology classes by adding the number of classes completed with the number of classes currently enrolled in.

Tables 4, 5, 6, and 7 show the most frequently selected goals in response to four questions: We asked participants to select the three goals that (a) “are most important to the psychology department,” (b) “are most important to you,” (c) “you believe you have been exposed to the most in your psychology courses,” and (d) “you are most confident in your ability.” The learning goals most frequently selected as most important to the department were content domains (39%), key concepts (31.2%), career prep (24.7%), sociocultural factors (19.5%), and scientific reasoning (19.5%). The learning goals that were selected most often as the most important to students were career prep (42.9%),

### TABLE 1

<table>
<thead>
<tr>
<th>Learning Goal</th>
<th>M</th>
<th>SD</th>
<th>Learning Goal</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>01. Describe key concepts, principles, and overarching themes in psychology (Key concepts)</td>
<td>3.66</td>
<td>0.50</td>
<td>16. Interact effectively with others (Interact with others)</td>
<td>3.28</td>
<td>0.80</td>
</tr>
<tr>
<td>02. Critical thinking</td>
<td>3.60</td>
<td>0.59</td>
<td>17. Apply psychological content and skills to career goals (Apply psych to career goals)</td>
<td>3.25</td>
<td>0.91</td>
</tr>
<tr>
<td>03. Apply ethical standards to evaluate psychological science and practice (Apply ethical standards)</td>
<td>3.60</td>
<td>0.52</td>
<td>18. Work ethic (desire and ability to learn; Work ethic)</td>
<td>3.22</td>
<td>0.79</td>
</tr>
<tr>
<td>04. Develop a working knowledge of psychology’s content domains (e.g., cognition, developmental, biological, sociocultural; Content domains)</td>
<td>3.55</td>
<td>0.74</td>
<td>19. Career preparation (this includes, formulate career plan based on self-assessment of abilities, develop skills desired by employers, working with a mentor, create and update a curriculum vitae or resume, etc.; Career prep)</td>
<td>3.17</td>
<td>0.99</td>
</tr>
<tr>
<td>05. Ethical decision making</td>
<td>3.55</td>
<td>0.62</td>
<td>20. Conflict management (e.g., handling disagreements; Conflict management)</td>
<td>3.13</td>
<td>0.92</td>
</tr>
<tr>
<td>06. Use scientific reasoning to interpret psychological phenomenon (Scientific reasoning)</td>
<td>3.51</td>
<td>0.58</td>
<td>21. Statistics and statistical analysis (Statistics)</td>
<td>3.12</td>
<td>0.80</td>
</tr>
<tr>
<td>07. Describe applications of psychology (Applications of psychology)</td>
<td>3.51</td>
<td>0.64</td>
<td>22. Exhibit effective presentation skills for different purposes (i.e. oral communication skills; Oral communication)</td>
<td>3.09</td>
<td>0.87</td>
</tr>
<tr>
<td>08. Demonstrate effective writing for different purposes (this includes use of appropriate grammar, different audiences, APA style, constructing arguments, etc.; Writing)</td>
<td>3.51</td>
<td>0.72</td>
<td>23. Build and enhance interpersonal relationships (Interpersonal relationships)</td>
<td>3.07</td>
<td>0.88</td>
</tr>
<tr>
<td>09. Listening skill (Listening)</td>
<td>3.41</td>
<td>0.72</td>
<td>24. Time management</td>
<td>3.06</td>
<td>0.94</td>
</tr>
<tr>
<td>10. Demonstrate psychology information literacy (e.g., understanding scientific articles; Psych info literacy)</td>
<td>3.39</td>
<td>0.73</td>
<td>25. Enhance teamwork capacity (teamwork skills; Teamwork)</td>
<td>3.00</td>
<td>0.81</td>
</tr>
<tr>
<td>11. Self-efficacy and self-regulation (e.g., performance evaluation, incorporation of and appropriate response to feedback, self-assessment and reflection; Self-efficacy and regulation)</td>
<td>3.39</td>
<td>0.70</td>
<td>26. Adopt values that build community at local, national, and global levels (Community values)</td>
<td>2.99</td>
<td>0.85</td>
</tr>
<tr>
<td>12. Interpret, design, and conduct basic psychological research (Psychological research)</td>
<td>3.38</td>
<td>0.65</td>
<td>27. Refine project management skills (Project management)</td>
<td>2.89</td>
<td>0.83</td>
</tr>
<tr>
<td>13. Incorporate sociocultural factors in scientific inquiry (e.g., how culture influences what we study; Sociocultural factors)</td>
<td>3.36</td>
<td>0.70</td>
<td>28. Computer/technology skills (Computer/technology)</td>
<td>2.89</td>
<td>0.86</td>
</tr>
<tr>
<td>14. Engage in innovative and integrative thinking and problem solving (Problem solving)</td>
<td>3.35</td>
<td>0.74</td>
<td>29. Leadership skills (Leadership)</td>
<td>2.85</td>
<td>0.91</td>
</tr>
<tr>
<td>15. Decision making</td>
<td>3.39</td>
<td>0.69</td>
<td>30. Creativity</td>
<td>2.71</td>
<td>0.90</td>
</tr>
</tbody>
</table>

Note: The italicized text in parentheses shows how we refer to individual learning goals in the article.
content domains (28.6%), apply psych to career goals (19.5%), and problem solving (16.9%). The top five goals students were exposed to the most were key concepts (51.9%), content domains (37.7%), writing (29.9%), psychological research (22.1%), and psych info literacy (20.8%). Finally, students were most confident in listening (32.5%), key concepts (23.4%), content domains (22.1%), work ethic (20.8%), and leadership (18.2%).

Discussion

As predicted, students rated some goals as more important to the psychology department than others. It appears as though the department is successfully communicating some of their goals, but failing to achieve—or at least communicate the importance of—others. For the most part, students report knowledge-related goals such as key concepts and content domains as more important to the department than goals that are more purely skill-based such as leadership and creativity. These results are partially consistent with the literature. For example, Homa et al. (2013) found that knowledge base, research methods, and application were included in over 55 percent of introductory psychology course syllabi. This fits with our findings that knowledge goals generally elicited higher ratings. Perhaps students are exposed to knowledge and application often in course syllabi, lectures, and/or exams, and for this reason believe it to be important to the department. Also, critical thinking appeared in 52 percent of syllabi in the Homa et al. (2013) study, and was also one of the most highly rated learning goals in the present study. All the other learning goals such as career planning and development, information technology literacy, and sociocultural and international awareness, were included in fewer than 20 percent of syllabi (Homa et al., 2013, p. 171). These results were somewhat consistent with the present ratings of learning goals: Goals that were not well-represented on syllabi were rated lower by our participants, with the exception of apply ethical standards. Students’ beliefs about what is important to their department appear to come partially from information included in the syllabus. However, other aspects of their education may influence students’ beliefs such as course assignments, classroom activities, and participation in other major-related activities.

One discrepancy between our results and previous studies concerns ethics. Apply ethical standards and ethical decision making appeared in the top five highest rated goals, suggesting that students believe that ethics is important to the department. However, this may not mean that the curriculum is teaching professional ethics. Rather, the results may reflect the fact that all course syllabi at University of Colorado Denver are required to have a section on academic honesty including such issues as plagiarism and copying from other students. Students may be interpreting the ethics-related learning goals as having to do with academic honesty policies more than ethics in psychology. If this is the case, then it is further evidence that students may base at least some of their beliefs about what is important to their department on what is in the syllabus. However, it may also mean that students have misinterpreted some of the learning goals.

Hernández-March et al. (2009) found that the skills that employers identify as having the greatest skill gap include those related to interpersonal skills (leadership, teamwork), time management, decision making, and problem solving. Consistent with their findings, we found that students rated interpersonal skills goals lower than knowledge-related goals.

We predicted that seniors would generally rate learning goals as more important than nonseniors.
However, this prediction was not supported. For the most part, there were no significant differences between seniors’ and nonseniors’ ratings of learning goals. In the instances that there were differences, seniors actually rated learning goals significantly lower than did nonseniors. In no case did seniors rate goals significantly higher. These findings may indicate a certain amount of disillusionment for seniors. Around junior year, students may still expect that learning objectives will be addressed in later courses, but by senior year students may realize or decide that they will not. Another interpretation may be that seniors rated certain goals lower because they were basing their rating on how much they believed they still needed to develop those skills. Therefore, they might have seen goals that they believed they had already achieved as less important.

One of the learning goals that seniors rated lower was critical thinking, which was actually one of the most highly rated goals overall. This could mean that there is also a certain amount of unfulfilled promise. Students may get the message in class that critical thinking is important and may expect it to be addressed and taught, but it may not be taught to the extent they expect.

Another explanation for how seniors versus nonseniors rated goals may be that seniors are more accurate in their ratings than nonseniors because they have had more experience within the major and more accurate information regarding courses than nonseniors. Thus, seniors’ ratings of goals may indicate accurate perceptions, disillusionment, or some combination of the two.

We predicted that GPA and academic engagement would be positively correlated with ratings of importance of goals. However, the only goals significantly correlated with either GPA or engagement were negatively correlated. Decision making and conflict management were negatively correlated with engagement. Decision making was also negatively correlated with GPA along with apply psych to career goals and content domains. This may be more evidence of disillusionment that some students may feel about the department’s learning goals. The only exception to this trend was that sociocultural factors was positively correlated with the number of psychology courses that students have taken or are currently taking. This result may indicate that the psychology department may be doing well with the goal of incorporating sociocultural factors into the curriculum, and that it may be addressed in several courses.

The learning goals that students most frequently selected in response to questions about importance to the department, importance to themselves, most emphasized, and most confidence, mostly fall under the first APA learning goal 1: knowledge base in psychology. Content domains was one of the top selected for all four questions. Key concepts, which also falls under APA Learning Goal 1, showed up in questions about

<table>
<thead>
<tr>
<th>TABLE 4</th>
<th>Most Selected Goals for “Most Important to the Psychology Department”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning goal</td>
<td>% of students selecting goal</td>
</tr>
<tr>
<td>Content domains</td>
<td>39.0</td>
</tr>
<tr>
<td>Key concepts</td>
<td>31.2</td>
</tr>
<tr>
<td>Career prep</td>
<td>24.7</td>
</tr>
<tr>
<td>Sociocultural factors</td>
<td>19.5</td>
</tr>
<tr>
<td>Scientific Reasoning</td>
<td>19.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TABLE 5</th>
<th>Most Selected Goals for “Most Important to You”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning goal</td>
<td>% of students selecting goal</td>
</tr>
<tr>
<td>Career prep</td>
<td>42.9</td>
</tr>
<tr>
<td>Content domains</td>
<td>28.6</td>
</tr>
<tr>
<td>Apply psych to career goals</td>
<td>19.5</td>
</tr>
<tr>
<td>Problem solving</td>
<td>16.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TABLE 6</th>
<th>Most Selected Goals for “Most Exposed to”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning goal</td>
<td>% of students selecting goal</td>
</tr>
<tr>
<td>Key concepts</td>
<td>51.9</td>
</tr>
<tr>
<td>Content domains</td>
<td>37.7</td>
</tr>
<tr>
<td>Writing</td>
<td>29.9</td>
</tr>
<tr>
<td>Psychological research</td>
<td>22.1</td>
</tr>
<tr>
<td>Psych info literacy</td>
<td>20.8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TABLE 7</th>
<th>Most Selected Goals for “Most Confident in”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning goal</td>
<td>% of students selecting goal</td>
</tr>
<tr>
<td>Listening</td>
<td>32.5</td>
</tr>
<tr>
<td>Key concepts</td>
<td>23.4</td>
</tr>
<tr>
<td>Content domains</td>
<td>22.1</td>
</tr>
<tr>
<td>Work ethic</td>
<td>20.8</td>
</tr>
<tr>
<td>Leadership</td>
<td>18.2</td>
</tr>
</tbody>
</table>
Student Perceptions of Learning Objectives | Scherbak, Bihun, and Handelsman

most important to the department, most exposed to, and most confident in, but not for most important to the student (APA, 2013, pp. 49–50). This suggests a possible connection between the goals students are exposed to and the goals they believe are important to the department. What students may be experiencing is that they are being exposed to knowledge-based goals, and that exposure tells them that they are important to the department.

Because they are being exposed to knowledge a lot, they gain confidence in their knowledge base in psychology. Students appear to be partially on the same page with the department in regard to what they believe is important. This may be especially true in our sample, because the average GPA was relatively high.

The most selected goal for importance to students was career prep, which did not show up as the highest mean values of exposure or confidence, but was the third most selected goal as most important to the department. However, more students rated this goal as important to themselves than as important to the department. This may suggest that, although students may be seeing some focus on this goal, they would like to see more of an emphasis. This may especially be true for students who are not planning on pursuing a career in psychology (Light, 2010). Career preparation might be a fruitful area to explore for psychology departments, especially those that do not have dedicated career-related courses.

The learning goal that students said they were most confident in was listening. However, there may be a difference between how employers interpret listening skills and how students see it. Students likely see listening as sitting in, and listening to, a class lecture. The focus may be different for employers. Listening was closely followed by key concepts and content domains in regard to confidence. These findings suggest that what students are learning is how to listen and they are learning about psychology. However, considering the skill gap that employers are seeing and all the other learning goals that are desirable for students, these may not be the only objectives the department should focus on.

Students may not be getting the message about learning goals that are more focused on skills such as creativity and leadership. Although some skills that are important for employers such as listening and work ethic came up as something students are confident in, others did not. Collaboration-related skills (teamwork, interpersonal relationships, leadership) and time management are generally rated as important to employers (Appleby, 2000; Landrum & Harrold, 2003). However, goals related to those skills (time management, leadership, interpersonal relationships, teamwork, project management) were rated in the bottom 10 and some in the bottom five (time management, leadership, project management) of the 30 learning goals. Also, with exception of leadership, none of those goals showed up in the top ranked for importance to department, importance to students, exposure, or confidence. This could mean that the Psychology Department is not doing well in achieving, or at least in conveying the importance of, these goals.

The present study did not assess how well students were actually achieving the goals. However, students may not know which skills they are supposed to be learning, and instructors may not be helping students acquire them. If departments actually do value these skills-based goals, faculty members may want to take a closer look at how they communicate their goals and how they develop syllabi, assignments, class activities, and other course aspects to achieve them. At the very least, instructors may want to tell students explicitly and consistently the purposes of course components.

Another factor that might have influenced some of the results is that students might not have had a complete or sophisticated understanding of some of the learning goals. Martini et al. (2015) found that students may have a superficial understanding of learning goals. However, if students do not understand what the goals are, this may be further evidence that they are not being explicitly exposed to them and taught what they are. Listing these goals in the syllabus may not be enough for students to get the message about their importance, or about their connection to assignments, assessments, etc.

The sample size in this study was small. Thus, we only have a partial picture of student perspectives. However, the mean GPA and ratings of academic engagement appear to be relatively high. Thus, our findings might reflect the perspectives of high-performing and engaged students. The perspectives of high-performing students may be especially illuminating because these students are arguably the most invested in doing well and may be more perceptive about what is going on in the department. At the same time, the ratings of the goals therefore may be an overestimate of what other students would see.
It would be beneficial to replicate this study at other types of universities. It would also be interesting to survey psychology faculty to see if their beliefs align with those of students, and also to assess levels of agreement within departments about their goals.

As an incremental step, however, the present study added to the understanding of student experiences with the psychology major. This study provided some indication of areas in which psychology departments may improve their efforts to maximize students’ acquisition of skills and knowledge, to make sure they are prepared for both graduate school and the job market. For example, departments may consider being clearer about goals in their descriptions of major requirements, course syllabi, and course materials. They may also want to enhance their efforts regarding skill-based objectives. Faculty members may enhance their efforts to align their teaching methods with departmental goals, and to help students understand the connections among goals, course assignments and activities, and their (students’) career goals.

References


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APPENDIX

| 01. Describe key concepts, principles, and overarching themes in psychology |
| 02. Develop a working knowledge of psychology’s content domains (e.g., cognition, developmental, biological, sociocultural) |
| 03. Describe applications of psychology |
| 04. Use scientific reasoning to interpret psychological phenomena |
| 05. Demonstrate psychology information literacy |
| 06. Engage in innovative and integrative thinking and problem solving |
| 07. Interpret, design, and conduct basic psychological research |
| 08. Incorporate sociocultural factors in scientific inquiry |
| 09. Apply ethical standards to evaluate psychological science and practice |
| 10. Build and enhance interpersonal relationships |
| 11. Adopt values that build community at local, national, and global levels |
| 12. Demonstrate effective writing for different purposes (This includes use of appropriate grammar, different audiences, APA style, constructing arguments, etc.) |
| 13. Exhibit effective presentation skills for different purposes (oral communication skills) |
| 14. Interact effectively with others |
| 15. Apply psychological content and skills to career goals |
| 16. Self-efficacy and self-regulation (performance evaluation, incorporation of appropriate response to feedback, self-assessment and reflection) |
| 17. Refine project management skills |
| 18. Enhance teamwork capability (teamwork skills) |
| 19. Career preparation (This includes formulate career plan based on self-assessment of abilities, develop skills desired by employers, working with a mentor, create and update a curriculum vitae or resume, etc.) (Original: “Develop meaningful professional direction for life after graduation.”) |
| 20. Time management |
| 21. Creativity |
| 22. Work ethic (desire and ability to learn) |
| 23. Leadership skills |
| 24. Ethical decision making |
| 25. Decision making |
| 26. Computer/technology skills |
| 27. Critical thinking |
| 28. Statistics and statistical analysis |
| 29. Conflict management |
| 30. Listening skills |


SCHERBAK, BIHUN, AND HANDELSMAN | STUDENT PERCEPTIONS OF LEARNING OBJECTIVES

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Burdensomeness, Belongingness, and Suicidal Desire Among Hispanic/Latino Individuals: Examining the Effect of Ethnicity in the Interpersonal Theory of Suicide
Laura Acosta, Christopher R. Hagan, and Thomas E. Joiner
Florida State University

ABSTRACT. The interpersonal theory of suicide states that thwarted belongingness, a perception of social isolation and lack of social connectedness, and perceived burdensomeness, a perception of being a burden on others, are important factors related to the development of suicidal desire. A strong familial connection, characteristic of Hispanic/Latino cultures, is associated with lower levels of thwarted belongingness. In this study, we tested the ability of thwarted belongingness, perceived burdensomeness, and ethnicity to determine current levels of suicidal desire among Hispanic/Latino and non-Hispanic White undergraduate college students. Based on previous research and the typically high value placed on family, Hispanic/Latinos were predicted to experience lower levels of thwarted belongingness and suicidal desire. Hispanic/Latino status was hypothesized to moderate the role of thwarted belongingness and perceived burdensomeness such that Hispanic/Latinos who reported high levels of thwarted belongingness and perceived burdensomeness respectively would experience the highest levels of suicidal desire. Undergraduate college students (N = 336), 24% Hispanic/Latino and 76% non-Hispanic White, completed self-report measures. Ethnic groups significantly differed on their current suicidal desire, t(193.81) = 2.21, p = .03, and perceived burdensomeness, t(229.74) = 3.06, p = .003, but not thwarted belongingness, t(333) = 0.74, p = .46. Ethnicity moderated the effect of thwarted belongingness and perceived burdensomeness on current suicidal desire. However, the direction of the effect was opposite of the predictions. These findings highlight the role of ethnicity to moderate the effects of established suicide risk factors, thwarted belongingness, and perceived burdensomeness in college students.
(Hoyert & Xu, 2012). Despite the population growth of Hispanic/Latinos in the United States, suicide research on Hispanic/Latinos remains scant. Theoretically informed hypotheses regarding differences in suicide rates for Hispanic/Latinos may be useful in addressing this research gap.

The interpersonal theory of suicide (ITS) states that, in order for individuals to die by suicide, they must have a desire for suicide and the capability to act on these suicidal desires (Joiner, 2005). According to this theory, suicidal desire develops from feelings of thwarted belongingness and the perception of burdensomeness. Thwarted belongingness is described as a perception of social isolation that consists of experiencing a lack of social connectedness; an individual experiencing thwarted belongingness often has thoughts such as “I am alone” and “There are no people I can turn to in times of need.” Perceived burdensomeness is described as a perception that one is a burden on close others such as family members; an individual experiencing perceived burdensomeness may have thoughts such as “I make things worse for the people in my life.” (Joiner, 2005; Van Orden et al., 2010; Van Orden, Witte, Gordon, Bender, & Joiner, 2008).

Past research has demonstrated that an unmet need to belong can contribute to numerous deleterious effects in cognition and behavior such as impairments in self-regulation including the loss of self-control and aggressive behaviors (Baumeister, DeWall, Ciarocco, & Twenge, 2005; Twenge, Baumeister, Tice, & Stucke, 2001). The need to belong and feel connected to others is often regarded as a fundamental human psychological need, which if unmet, can lead to feelings of loneliness, a lack of social support, and social withdrawal (Joiner, 2005; Maslow, 1970; Van Orden et al., 2010). This is also evident in the elevated rates of suicide that widowed, single, and divorced individuals experience compared to married individuals (Lee & DeMaris, 2007; Stack & Wasserman, 1993). According to Maslow’s (1970) hierarchy of needs theory, the desire to belong is an essential need that people are motivated to fulfill, surpassed by only safety and physiological needs. Furthermore, research has found that regular social interactions increase one’s sense of belonging. However, these regular interactions must be with those to whom one feels connected with and perceived as supportive (Baumeister & Leary, 1995). This increased sense of belonging can generally be obtained by having a meaningful connection to family (Davidson, Wingate, Rasmussen, & Slish, 2009). Despite suicide being one of the top causes of death among Hispanic/Latino youth, previous research has not yet examined possible risk factors and buffers for suicidal desire among Hispanic/Latino individuals specifically within the context of the ITS.

Hispanic/Latino communities place high value on the nuclear family as well as the extended family (Lugo Steidel & Contreras, 2003; Sabogal, Marín, Otero-Sabogal, Marín, & Perez-Stable, 1987). Hispanic/Latino children are socialized to be family oriented and to place obligation to family over themselves (Lugo Steidel & Contreras, 2003). A close relationship with family is a protective factor for suicidality among both male and female Hispanic/Latinos (Oquendo et al., 2005; Ungemack & Guarinaccia, 1998). Similarly, parent and family connectedness and bonding are resiliency factors for suicidal ideation in both male and female Hispanic/Latino youth (Borowsky, Ireland, & Resnik, 2001). Among Hispanic/Latino males, a good relationship with parents is a protective factor for suicidality (Locke & Newcomb, 2005). Family is regarded as the most important institution by Hispanic/Latinos originating from many different countries, and many Hispanic/Latinos report feeling a strong attachment and identification with their families, along with feelings of loyalty and solidarity (Knight et al., 2010; Sabogal et al., 1987).

These core cultural values are often termed familismo (familism) in Hispanic/Latino research, which is a shared core value present among many different Hispanic/Latino subgroups (Sabogal et al., 1987). The concept of familismo consists of a focus on family, which includes loyalty, unity, obligation to nuclear and extended family, placing the family as the most important unit, and placing family goals over individual goals (Laria & Lewis-Fernández, 2006; Lugo Steidel & Contreras, 2003; Sabogal et al., 1987; Schwartz et al., 2010). Previous research has shown that young Hispanic/Latinos endorse greater values of familismo compared to their European American peers (Fuligni, Tseng, & Lam, 1999). However, past research has not examined the extent to which cultural differences between Hispanic/Latinos and their non-Hispanic peers affect their experiences of thwarted belongingness, perceived burdensomeness, and suicidal desire.

These strong family values may account for the relatively better mental health (e.g. lower rates of suicide) of Hispanic/Latinos compared to other groups (American Association of Suicidology,
Latino Burden, Belonging, and Suicidal Desire | Acosta, Hagan, and Joiner

2012; CDC, 2015; Hoyert & Xu, 2012; Oquendo et al., 2005; Sabogal et al., 1987; Ungemack & Guarnaccia, 1998). This is likely because Hispanic/Latino family members provide a support system to each other where they can rely on each other for emotional support and external sources of support on a regular basis (Almeida, Molnar, Kawachi, & Subramanian, 2009; Sabogal et al., 1987). Among the benefits resulting from familismo, Hispanic/Latinos reported receiving social support and financial assistance from family members (Calzada, Tamis-LeMonda, & Yoshikawa, 2012).

Research has also shown that experiencing a reduction in familial responsibilities and interactions increases suicide risk (Stack & Wasserman, 1993). Responsibility to family is among the six primary factors that Linehan, Goodstein, Nielsen, and Chiles (1983) identified as major reasons to live. If individuals have a perceived responsibility or obligation to their families, they are less likely to think about suicide (Bakhiyi, Calati, Guillaume, & Courtet, 2016).

Research has also postulated that the role of sacrifice for the family in Hispanic/Latino culture may have a negative effect on individuals who migrate away from their family members in order to improve family conditions back home (Rojas, Grzywacz, Zapata Roblyer, Crain, & Cervantes, 2016). These individuals may experience a loss of social support, perceived isolation, and express ambivalence that their separation from family was actually accompanied by benefits to their family (Rojas et al., 2016). Therefore, it is important to examine the role of familism in Hispanic/Latino ethnicity because it may elucidate a thorough understanding of Hispanic/Latino suicidality.

Family conflict, such as perceiving that one is a burden on family, is a strong risk factor for suicidal behavior (Van Orden et al., 2010). The ITS posits that individuals who experience family conflict, unemployment, and physical illness have a higher likelihood of developing perceptions of burdensomeness (Joiner, 2005; Van Orden et al., 2010). However, the stress of unemployment itself is not enough to develop feelings of burdensomeness. Individuals must feel as if they have become a liability to close others (i.e., family members) in order for burdensomeness to be manifested (Van Orden et al., 2010). The belief that one is expendable and unwanted also comprises the perception of burdensomeness. This can be seen in individuals who have been recently incarcerated or those who are homeless (Van Orden et al., 2010).

Furthermore, research has demonstrated that the perception of responsibility to family is prominent within various Hispanic/Latino cultures, but not within non-Hispanic/Latino cultures (Campos, Ullman, Aguilera, & Dunkel Schetter, 2014; Garza & Cramer, 2011). The duration of residence with family members and family support reduces the probability of suicide attempts among Hispanic/Latino youths (Maimon, Browning, & Brooks-Gunn, 2010). Additionally, having more family members is associated with a decreased risk of lethal suicidal behavior (Van Orden et al., 2010).

The bond that Hispanic/Latino family members share is so strong that members who do not follow through with the expectation to provide support in times of need are viewed as violating significant cultural norms (Kao & Travis, 2005).

Research conducted by Oquendo and colleagues (2005) found that Hispanic/Latinos displayed lower levels of suicidal ideation and greater feeling of responsibility to family compared to non-Hispanic Whites. Given that providing and receiving familial support is a facet of the familismo values in Hispanic/Latino culture, adherence to familismo values could make a significant contribution to the feeling of belongingness among Hispanic/Latino individuals. Moreover, lower levels of family support and higher levels of cultural family conflict and family burden have been significantly associated with higher psychological distress (Darghouth, Brody, & Alegría, 2015). Molina & Alcántara (2013) have found this effect to be particularly salient to both U.S.-born Latinas and immigrant Latinas who may be particularly socialized to place family needs and concerns over their own. Their research indicated that the potential gains of perceived familial support and cohesion may be superseded by the negative effects of familial conflict and burdensomeness.

In the present study, we investigated the specific role of Hispanic/Latino ethnicity within the context of thwarted belongingness, perceived burdensomeness, and suicidal desire in a college population. We hypothesized that Hispanic/Latinos would display lower levels of suicidal desire and lower levels of thwarted belongingness compared to non-Hispanic Whites. We also hypothesized that (a) there would be an interaction between Hispanic/Latino status (ethnicity) and thwarted belongingness such that Hispanic/Latinos with higher levels of thwarted belongingness would report stronger suicidal thoughts, urges, and plans, and (b) there would be an interaction between Hispanic/Latino
status (ethnicity) and perceived burdensomeness such that Hispanic/Latinos with higher levels of perceived burdensomeness would report stronger suicidal thoughts, urges, and plans.

Methods
Participants
Participants were 336 undergraduate students (73% women, n = 245) enrolled in General Psychology courses in a large, urban, southeastern research university in the United States. The mean age of the sample was 18.99 (SD = 1.21, ranging from 18 to 23). Seventy-six percent of participants identified their ethnicity as non-Hispanic and their race as White (n = 254), and 24% identified their ethnicity as Hispanic/Latino (n = 82). Among those who identified their ethnicity as Hispanic/Latino, 55% identified their race as White (n = 45) and 45% identified their race as Hispanic/Latino (n = 37). For the purpose of this study, all who identified ethnically as Hispanic/Latino regardless of race and all non-Hispanic White were included. Because cultural ethnicity was hypothesized as the moderator of suicide risk and not specifically race, anyone who identified as Hispanic/Latino was included within the “Hispanic/Latino” sample. Hispanic/Latinos were chosen to be compared to non-Hispanic Whites because research has demonstrated that non-Hispanic Whites have the lowest familism scores compared to Hispanic/Latinos, African Americans, and Asians (Schwartz, Zamboanga, Rodriguez, & Wang, 2007). Further, non-Hispanic Whites mainly inhabit Western cultures, which are largely individualistic in nature, whereas non-Western cultures are largely collectivistic in nature (Schwartz, Montgomery, & Briones, 2006). Additionally, for the purpose of comparing Hispanic/Latinos to the majority culture of the local area, only Hispanic/Latinos and non-Hispanic Whites were included in this study.

Procedure
Participants first reviewed and electronically signed a statement of informed consent that included the general purpose, procedures, and goals of the study and then completed all other measures described below using the Qualtrics survey platform. The consent form stated that the purpose of the study was to investigate the relationship between an individual’s thought process in response to an upsetting event and certain behaviors, particularly suicidal self-directed violence. Responses to questions about suicide were screened for severe and imminent suicide risk by a clinically trained graduate student. If necessary, the participant was contacted for further evaluation and resources. No individual risk assessments were required. All participants completed this study for course credit with the opportunity to complete alternative assignments for credit instead of research participation. Contact information for mental health services was provided to all participants and the Florida State University institutional review board approved all procedures.

Materials and Measures
Demographics. A demographics questionnaire captured age, sex, and primary racial and ethnic identities. Due to the possible need for suicide risk assessments based on responses to suicide items, all participants were required to provide a phone number where they could be reached. Their contact information was not retained once it was determined that they did not need to be contacted for a risk assessment.

Interpersonal Needs Questionnaire (INQ). The INQ subscale of thwarted belongingness (INQ-TB) was designed to measure participants’ current beliefs of the extent to which they feel disconnected from others (Van Orden, Cukrowicz, Witte, & Joiner, 2012). The perceived burdensomeness subscale of the INQ (INQ-PB) was designed to measure current beliefs about the extent to which participants’ feel they are a burden on the people in their lives. Nine items measured belongingness (e.g., “These days, other people care about me”) and six items measured burdensomeness (e.g., “These days, the people in my life would be happier without me”). Participants indicated the degree to which each item was true for them recently (on a 7-point Likert-type scale). Scores were coded such that higher numbers reflect higher levels of thwarted belongingness and perceived burdensomeness. For the sample used in this study, internal consistency coefficients were strong for the thwarted belongingness items (α = .90), as well as the perceived burdensomeness items (α = .95). This measure has also repeatedly demonstrated strong levels of construct validity in a variety of populations (Hagan, Podlogar, Chu, & Joiner, 2015; Khazem, Law, Green, & Anestis, 2015; Van Orden et al., 2012).

Depressive Symptom Inventory-Suicidality Subscale (DSI-SS). The DSI-SS is a 4-item self-report questionnaire assessing the frequency and intensity of suicidal thoughts and desire during the
previous 2 weeks (Joiner, Pfaff, & Acres, 2002). The four item groups are suicidal thoughts, suicidal plans, control over suicidal thoughts, and urges to kill oneself. Each item group is comprised of four possible answers (e.g., “I do not have thoughts of killing myself”). Scores are coded on a 4-point ordinal scale with each item ranging from 0 to 3 and total scores ranging from 0 to 12 with higher scores reflecting increased severity of present suicidal desire. Previous research has demonstrated good reliability and validity characteristics among groups of 15- to 24-year-olds as a screening tool for suicide risk (Hagan et al., 2015; Joiner et al., 2002). Internal consistency coefficients for the sample used in this study were strong (α = .83).

Data Analytic Strategy
To test the association between Hispanic/Latino status (compared to non-Hispanic Whites) and suicidal desire, thwarted belongingness, and perceived burdensomeness, we conducted Pearson’s r correlations and independent-samples t tests. To measure the interaction between Hispanic/Latino status, thwarted belongingness, and perceived burdensomeness on levels of suicidal desire, we conducted multiple hierarchical linear regression analyses on the interaction of ethnicity (i.e., Hispanic/Latino or non-Hispanic White), thwarted belongingness, and perceived burdensomeness, which were all centered at their respective means, with suicidal desire as the dependent variable (Frazier, Tix, & Barron, 2004). Step 1 of the model included the mean-centered scores of the predictor and moderator variables (i.e., thwarted belongingness and ethnicity or perceived burdensomeness and ethnicity). In Step 2, we entered the interaction term of the predictor and moderator variables. This interaction term was calculated by multiplying the mean-centered scores of the two predictor variables. For all analyses, ethnicity was coded as 0 = non-Hispanic White and 1 = Hispanic.

Results
Table 1 presents the correlations between the variables included in all analyses. The correlation between ethnicity and suicidal desire was not statistically significant (r = -.10, p = .06). The correlation between ethnicity and thwarted belongingness was also not statistically significant (r = -.04, p = .46), although there was a significant association between Hispanic/Latino ethnicity and lower levels of perceived burdensomeness as predicted (r = -.13, p = .02). To further evaluate these hypothesized relationships and to account for the possibility of unequal variances between groups, we conducted independent-sample t tests. When accounting for unequal variances in suicidal desire and perceived burdensomeness, Hispanic/Latinos had significantly lower mean scores on current suicidal desire (M = 0.12, SD = 0.98), t(193.81) = 2.21, p = .03, and perceived burdensomeness (M = 6.76, SD = 2.36), t(229.74) = 3.06, p = .003, than non-Hispanic Whites (Mdesire = 0.34, SD = 0.69; Mburden = 7.89, SD = 4.07). The groups did not differ on their thwarted belongingness scores (Mthb = 17.70, SD = 7.87; Mwhite = 18.57, SD = 9.71), t(333) = 0.74, p = .46.

The regression analysis assessing the interaction of ethnicity and thwarted belongingness, $F(3, 331) = 22.34, p < .001$, explained 16.8% (Adj$R^2 = .17$) of the variance in suicidal desire scores in the sample. A significant negative interaction was found between ethnicity and thwarted belongingness such that non-Hispanic Whites with elevated levels of thwarted belongingness had notably higher suicidal desire scores, contrary to the direction of the predicted effect (see Table 2). The regression analysis assessing the interaction of ethnicity and perceived burdensomeness, $F(3, 328) = 29.79, p < .001$, explained 21.4% (Adj$R^2 = .21$) of the variance in suicidal desire scores in the sample. In addition, a significant negative interaction was found between ethnicity and perceived burdensomeness such that non-Hispanic Whites with elevated levels of perceived burdensomeness had notably higher suicidal desire scores, also contrary to the direction of the predicted effect. Both of these models demonstrated small effects ($f^2 = .02$ for both models). Multicollinearity was likely not a problem in either model because the lowest tolerance score was .75 and the highest Variance Inflation Factor score (Cohen, Cohen, West, & Aiken, 2002) was 1.04.

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### TABLE 1

<table>
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<th>Means, Standard Deviations, and Correlations</th>
<th>M</th>
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<th>3</th>
<th>4</th>
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<td>-</td>
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<td>9.29</td>
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<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>3. Perceived Burdensomeness</td>
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<td>3.76</td>
<td>-.13</td>
<td>.59</td>
<td>-</td>
<td>-</td>
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<td>4. DSI-55</td>
<td>0.29</td>
<td>0.92</td>
<td>-.10</td>
<td>.38</td>
<td>.44</td>
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</table>

Note: *p < .05, **p < .001. DSI-55 = Depressive Symptom Inventory-Suicidality Subscale. Ethnicity is coded (0 = non-Hispanic White, 1 = Hispanic).

1Sex was not correlated with any of the included variables (p values ranged from .37 to .97) so it was not included in any of the analyses.
**Discussion**

The purpose of this study was to examine the differences in suicidal desire between Hispanic/Latinos and non-Hispanic Whites to determine if possible differences exist that influence suicide risk. We examined the role of thwarted belongingness, perceived burdensomeness, and ethnicity in predicting levels of suicidal desire among college students. Our results indicated that Hispanic/Latinos and non-Hispanic Whites displayed different levels of suicidal desire and perceived burdensomeness. Based on previous research (Oquendo et al., 2005), and their lower rates of suicide fatalities (American Association of Suicidology, 2012; CDC, 2015), we hypothesized that Hispanic/Latinos would report lower levels of suicidal desire and lower levels of thwarted belongingness compared to non-Hispanic Whites. This hypothesis was partially supported. Hispanic/Latinos reported lower levels of suicidal desire and perceived burdensomeness compared to non-Hispanic Whites, but they did not display lower levels of thwarted belongingness.

We also hypothesized that there would be an interaction between ethnicity, thwarted belongingness, and perceived burdensomeness when predicting levels of suicidal desire among Hispanic/Latinos who reported high levels of thwarted belongingness and perceived burdensomeness having the highest levels of suicidal desire. This hypothesis was also partially supported. Although the predicted interactions were identified, the direction of the effect was the opposite of what was predicted, indicating that non-Hispanic Whites with elevated levels of thwarted belongingness and perceived burdensomeness reported elevated levels of suicidal desire, rather than Hispanic/Latinos. Prior research has suggested that one of the various cultural differences between Hispanic/Latinos and non-Hispanic Whites is their strong connection to family and culture (Sabogal et al., 1987). Non-Hispanic Whites primarily adhere to the Western individualistic orientation and Hispanic/Latinos adhere to the non-Western collectivistic orientation typically found in a variety of Central and Southern American countries (Christiansen, 1997; Triandis, 1989). This collectivistic perspective that grants importance to family and communal values can help an individual achieve a higher sense of belonging.

In contrast, the idiocentrism that is often associated with an individualistic perspective can lead to smaller and less satisfying social support networks, less skill in managing both one’s own and others’ emotions, lower intentions to seek help from family and friends for personal and suicidal problems, and higher levels of hopelessness and suicidal ideation (Scott, Ciarrochi, & Deane, 2004). However, results from the current study did not identify a difference in levels of thwarted belongingness between Hispanic/Latino college students and non-Hispanic White college students. Our study did support previous research, indicating that Hispanic/Latinos experience lower levels of suicidal ideation (Oquendo et al., 2005). Likewise, this study found that Hispanic/Latino college students may experience overall lower levels of perceived burdensomeness compared to their non-Hispanic White counterparts. The reasons for why Hispanic/Latinos displayed lower levels of suicidal desire compared to non-Hispanic Whites, yet did not display lower levels of thwarted belongingness are

---

### TABLE 2

<table>
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<tr>
<th>Predictors entered in set</th>
<th>b</th>
<th>SE</th>
<th>β</th>
<th>p</th>
<th>R²</th>
<th>ΔR²</th>
<th>f²</th>
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<tr>
<td>Ethnicty*</td>
<td>-0.185</td>
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<td>-0.086</td>
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<td>TB/PB</td>
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<td>0.005</td>
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<td>&lt; .001</td>
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<tr>
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<tr>
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<td>-0.100</td>
<td>.049</td>
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<tr>
<td>TB/PB</td>
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<td>0.005</td>
<td>0.359</td>
<td>&lt; .001</td>
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<tr>
<td>Ethnicty x TB/PB</td>
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<td>0.013</td>
<td>-0.122</td>
<td>.017</td>
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</table>

Note: DSI-SS = Depressive Symptom Inventory-Suicidality Subscale; TB = Thwarted Belongingness; PB = Perceived Burdensomeness

*p < .05; **p < .01; ***p < .001.

*Ethnicity is coded (0 = non-Hispanic White, 1 = Hispanic)
unclear and would require further investigation.

Because Hispanic/Latinos strongly value family unity, we anticipated that, when problems occur and Hispanic/Latinos feel like a burden or no longer feel that they belong, they would feel these effects more than individuals from more individualistic groups (i.e., non-Hispanic Whites). However, our results indicated that non-Hispanic White college students reported increased levels of suicidal desire in the face of perceptions of burdensomeness and thwarted belongingness. This may be indicative of the general risk of experiencing a lack of social connection, in that those with fewer or weaker interpersonal connections are at higher risk when connections are damaged.

There were several limitations in this study. One was that this study was limited to a sample of nonclinical college students, most of whom were White, with relatively few Hispanic/Latinos (n = 82). Another limitation was that in the present university (Florida State University, 2015), along with the majority of undergraduate institutions in the United States (National Center for Educational Statistics, 2015), women outnumbered men in the study sample. While this is not representative of the gender split for the nation, it is consistent with the sample from which it was drawn. Furthermore, all data were collected by self-report measures at one time point, restricting our ability to make predictions about future behavior.

Additionally, we used self-reported ethnicity as a proxy for individualistic and collectivist beliefs and actions because these data were not available. Because we did not include a measure for acculturation, it is possible that the sample of Hispanic/Latino participants could have been acculturated to American culture and therefore might have adhered less to their origin culture. Research has shown that family value and obligation decreased in importance as acculturation and exposure to the U.S. culture increased (Sabogal et al., 1987), and that higher levels of acculturation are associated with increased risk for suicidal ideation and attempts (Escobar & Vega, 2000). Those who self-identified as Hispanic/Latino in the current study may have already acculturated to American culture and may not adhere closely to their Hispanic/Latino culture. This could explain the null finding of differences in thwarted belongingness between Hispanic/Latinos and non-Hispanic Whites. Although, research has shown that highly acculturated Hispanic/Latinos adhere less to familism in general, highly acculturated Hispanic/Latino individuals do not differentiate with less acculturated individuals in the specific belief of familial support—the belief that family members have an obligation to offer emotional and financial support to each other (Lugo Steidel & Contreras, 2003).

The findings may be different with a larger and more diverse sample that would include nonstudents, individuals from other age groups, a more equal population sex representation, and a higher percentage of Hispanic/Latino individuals. Future research should use a measure of familism and cultural orientation along with ethnicity, and compare familism and ethnicity directly with burdensomeness, belongingness, and suicidal desire. Doing so may provide a clear perspective on the effects that familism and Hispanic culture may have on suicidal desire and the ITS. Furthermore, more diverse samples with more variability in age and education would provide information that may be more representative of the population. Another future direction could be to incorporate measures of acculturation in order to examine the effects of acculturation on perceived burdensomeness, thwarted belongingness, and suicidal desire. A viable option would be to draw the Hispanic/Latino sample directly from their origin country (e.g., Mexico, Cuba, or Puerto Rico) because Latin American countries tend to have lower suicide rates compared to Hispanic/Latinos residing in the United States (World Health Organization, 2014). Future research should also examine the possible differences between Hispanic/Latino undergraduate college students and Hispanic/Latino young adults who are not college students; it is unknown whether Hispanic/Latino undergraduate college students are more acculturated compared to other Hispanic/Latino young adults who are not college students.

Furthermore, previous research has shown that a score of 2 on the DSI-SS is an appropriate cut-off score to indicate clinical risk in a nonclinical population (von Glinzinski, Teismann, Prinz, Gebauer, & Hirschfeld, 2016). Because the average scores in our sample were less than 1, this may indicate that the scores were too low to accurately make a conclusion regarding serious suicide risk, which is the critical outcome predicted by the ITS (Joiner, 2005; von Glinzinski et al., 2016). Despite the ITS’s primary goal of serious suicide risk prediction, it also predicts less severe forms of suicidal ideation based solely upon the presence of thwarted belongingness and perceived burdensomeness in the absence of hopelessness (Van Orden et al., 2010).
Because the scores on the DSI-SS in our sample were comparable to those in previous research, which found support for the propositions of the ITS, this factor alone may not be responsible for these findings (Hagan et al., 2015).

Finally, because analyses on this topic had not been published previously to the beginning of our research, we were unable to conduct accurate, a priori, power analyses. Post-hoc power analyses conducted in GPower 3.1 (Faul, Erdfelder, Buchner, & Lang, 2009) indicated that both interaction analyses were underpowered (i.e., power < .80). Specifically, this study had a power level of .56 for the thwarted belongingness interaction and a power level of .68 for the perceived burdensomeness interaction. Low power might have limited our ability to detect a true effect of ethnicity as a moderator of the effect of interpersonal factors on suicidal desire in this sample. Future studies should investigate these variables in larger, and more clinically impaired, sample to more thoroughly assess the role of Hispanic/Latino ethnicity within the ITS.

An interesting direction for future research would be to assess the effects of Hispanic/Latino belongingness and burdensomeness on suicidal desire with hopelessness as an added variable. This could be achieved by adding a scale for general hopelessness or, in keeping with the ITS predictions, evaluating hopelessness specifically regarding thwarted belongingness and perceived burdensomeness (Joiner, 2005; Van Orden et al., 2010). Research has shown that high levels of hopelessness play an integral role as a moderator between the effects of thwarted belongingness, perceived burdensomeness, and suicidal desire (Hagan et al., 2015). Additionally, the ITS posits that, in order for active suicidal desire to develop, an individual must perceive their experience of thwarted belongingness and perceived burdensomeness to be stable and unchanging (i.e., feel hopeless; Van Orden et al., 2010). Research has also demonstrated that, among Hispanic/Latinos, hopelessness was positively correlated with suicidal ideation (Cheref, Lane, Polanco-Roman, Gadol, & Miranda, 2015). Furthermore, young Hispanic/Latinos typically report higher rates of feeling hopeless in the past year compared to young non-Hispanic Whites (Isasi, Rastogi, & Molina, 2016). As the Hispanic/Latino population is growing in large numbers, and suicide is a leading cause of death, it is important to examine the protective and risk factors of suicidal desire among Hispanic/Latinos and the possible underlying cultural facets of suicide in this population. Examining the interaction of all three risk-factor variables (i.e., hopelessness, thwarted belongingness, and perceived burdensomeness) may lead to a more thorough assessment of suicidal risk/desire among the Hispanic/Latino population.

References


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Memory for Missing Parts of Witnessed Events
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ABSTRACT. This study examined how children and adults fill in missing parts of witnessed events. In 2 experiments, children and adults studied 6 series of PowerPoint slides that each depicted a single event. At test in Experiment 1, participants viewed old slides, new slides, and slides that had been missing from studied events. Both children and adults falsely recognized missing slides more than new slides: $F(1, 104) = 162.97, p < .001, \eta^2_p = .61$ for children, and $F(1, 104) = 497.23, p < .001, \eta^2_p = .83$ for adults. These results suggest that participants filled in the missing parts of witnessed events. However, an alternative explanation is that children falsely recognized missing slides because the missing slides superficially resembled the studied slides. At test in Experiment 2, participants viewed old slides, new slides, and slides that contained the same items as studied slides but with the items rearranged in the slides so they were incongruent with studied slides. Both children and adults recognized old slides more than incongruent slides: $F(1, 90) = 16.86, p < .001, \eta^2_p = .16$ for children, and $F(1, 90) = 215.20, p < .001, \eta^2_p = .70$ for adults. This undermined the alternative explanation, thereby supporting the original explanation that the false recognition of missing slides in Experiment 1 is attributable to the filling in of missing information.

W hen there is one witness to a crime, the testimony from that individual could be the crucial piece of evidence that brings the perpetrator to justice (Brackmann, Otgaar, Sauerland, & Jelicic, 2016; Roberts & Powell, 2001). Of course, the testimony is only as reliable as the witness’s memory, which is notoriously susceptible to the creation of false memories (Gleaves, Smith, Butler, & Spiegel, 2004). The formation of false memories is particularly relevant when the witness is a child because children cannot as easily distinguish between fantasy and reality as adults (Brainerd, Reyna, & Forrest, 2002). Indeed, the bulk of evidence has shown that the formation of false memories declines with age, from about three years of age to young adulthood (Brainerd, Reyna, & Ceci, 2008; Otgaar, Howe, Brackmann, & Smeets, 2016). One glaring exception to this developmental trend is associated with the well-known Deese (1959), and Roediger and McDermott (1995) paradigm, which is generally known by its abbreviation: DRM. In fact, the general decrease in false memories with age is such a well-established pattern that the increase of false memories in the DRM with age has been called a developmental reversal (Otgaar & Smeets, 2010).

In the typical DRM experiment (reviewed in Gallo, 2010), participants study several lists of associated words such as sugar, sour, cake, ice cream, and so on, but do not study the word they are all associated with, which in this case is sweet. During the test, participants view words they studied (old), words unrelated to studied words (new), and nonstudied associated words (missing), and are asked whether they had seen those words in the study phase. Participants are likelier to falsely recognize missing words than new words; apparently, participants do not store a verbatim copy of studied words in memory, but instead extract and store the gist of the studied words (Gallo, 2010).
A review of developmental studies of the DRM (Brainerd et al., 2008) found that false recognition of missing words increases with age: between the ages of three and the early 20s, false recognition doubles. Children’s semantic networks are underdeveloped compared to adults (Fisher, Godwin, Matlen, & Unger, 2015), so they are less able to notice semantic connections between words. One objection to these results is that the words used in DRM experiments were normed for adults, so perhaps children fail to appreciate the semantic connections between words because they have different semantic networks than adults. However, studies in which experimenters carefully developed word lists normed for children (Anastasi & Rhodes, 2008; Metzger et al., 2008) found the same pattern in which false memories for missing words increased with age.

Although children’s grasp of semantic similarity between words is less developed than adults, children may retain more details in memory than they can express in words (Uehara, 2015). In a classic study (Heider & Simmel, 1944), adult participants viewed a short film that began with a triangle and circle spinning around each other, then after a moment a large triangle entered the scene, which bumped and pushed the small triangle off the screen. The circle entered a square structure, followed by the large triangle, then a “door” to the square closed. The small triangle reentered the scene, pried open the door for the circle to escape, then slammed the door, trapping the large triangle inside. The film ended with the circle and small triangle once again spinning around each other. When asked to describe the film, viewers did not merely say that three shapes were moving randomly, but instead described a love story, chase, and escape. In a later study (Berry & Springer, 1993), children aged 3, 4, and 5 years old who viewed the same video were just as able as adults to describe the film as a simple story involving three characters. This suggests that, although children are less likely than adults to extract semantic relations between words, they are equally likely to extract semantic details from simple events. Indeed, when young children (5 and 6 years old) and older children (between 10 and 12 years old) experienced a themed event, both younger and older children were better able to recall details consistent with the theme than generic details (Odegard, Cooper, Lampinen, Reyna, & Brainerd, 2009). This suggests that both younger and older children can extract the gist from their prior experiences.

Combining elements of the DRM and event perception, the present study investigated how children perceive and remember events, some of which have missing pieces. When viewing events in the real world, some parts of the events may be hidden from view. For example, while watching a football game at the stadium, a spectator may see the quarterback throw the football, but while the ball is in the air, the person seated directly ahead stands up, hiding the path of the ball from the spectator’s view. Fortunately, the man steps into the aisle quickly enough that the spectator can see the receiver catch the ball. If the spectator were to extract the gist of the event from the parts that were visible to her, would she later recall the ball flying through the air even though she had not actually seen that part of the play? Because both younger and older children extract gist from experienced events (Odegard et al., 2009), we hypothesized that both younger children and adults would fill in missing parts of witnessed events from the global gist of witnessed events. To test this hypothesis, for Experiment 1, we created several groups of PowerPoint slides that each depicted a single event. For some events, we showed all the slides to participants, and for other events, we removed one of the slides from the event. After participants viewed the events, we showed them (a) slides from events they had witnessed in their entirety (old slides), (b) slides that had been removed from witnessed events (missing slides), and (c) slides from events they had not seen at all (new slides). If the children and adults filled in missing pieces of witnessed events as we hypothesized, we expected that they would recognize old and missing slides but not new slides.

Experiment 1
Memory for Missing Slides

Method
Participants. We obtained permission from the Institutional Review Board at the University of Central Arkansas (UCA) to carry out both experiments and treated participants in accordance with the ethical guidelines stipulated by the American Psychological Association (2010). The title of our IRB proposal was Event Perception and False Memories, proposal number 15-198. Child participants were 17 preschool children (10 girls, 7 boys) between the ages of 4 years, 2 months, and 5 years, 4 months ($M = 4$ years, 8 months, $SD = 5$ months) who attend the UCA Child Study Center. To compare the results of the children to adults, we drew...
a sample of 37 undergraduate students (33 women, 4 men) between the ages of 18 and 35 ($M = 21.41$, $SD = 2.80$). Students enrolled in psychology courses were able to receive credit from their instructors for participating in the experiment.

**Materials.** We created six groups of five slides in PowerPoint that each depict a simple event, an example of which is shown in Figure 1. All study and test slides were presented on a computer. Participants viewed two of the events in their entirety, two events with the fourth slide removed, and did not view the other two events at all. The events were counterbalanced across participants so the event viewed in its entirety by one third of participants was the event with a missing slide for another third of participants, and was the unseen event for the final third of participants. The presentation order of study and test slides was also counterbalanced across participants. Responses were recorded on data entry sheets that we created in Microsoft Word.

**Procedure.** Any child whose parents signed an informed consent form was eligible to participate in the experiment. To obtain verbal assent, the experimenter introduced herself to each child by saying “I would like to show you some events on a computer, then I’ll show you some pictures on the computer and ask if you had seen the pictures before. Does that sound like something you would like to do today?” Undergraduate students were given an informed consent form. After obtaining verbal assent (from children) or informed consent (from undergraduate students), the experimenter clicked the mouse on the computer to begin a PowerPoint slideshow.

Participants studied four events consisting of slides presented in order. PowerPoint’s animation tool successively presented each study slide for one second. Then, after each set of slides constituting a single event, a blank slide appeared and remained on the computer screen. While the blank slide was visible the experimenter asked “Are you ready to view the next event?” After receiving verbal confirmation, she clicked the mouse to launch the next event. After the study phase, participants viewed the fourth slide from all six events, one at a time. The experimenter clicked the mouse to present a test slide, then after it appeared, she asked “Did you see this slide before?” Each test slide remained continually visible until participants provided a verbal response. For any participants who gave any response other than “yes” or “no” such as “I don’t know,” the experimenter gently urged the participant by saying “Which answer feels right, yes
or no?” For each event, the experimenter used a pen to record each response by circling either “Y” or “N” on a datasheet that had been printed with six numbered sets of Ys and Ns for each participant. The experimenter then clicked the mouse to present the next test slide.

Results
The independent variables were age (child or adult) and slide type (old, missing, or new). The dependent variable was the number of “yes” responses to the question “Did you see this slide during the study phase?” Because each participant viewed two old, two missing, and two new slides in the test phase, there were zero, one, or two “yes” responses for each participant and slide type. The mean numbers of “yes” responses from children and adults (depicted in Figure 2) were submitted to a 2 x 3 Analysis of Variance (ANOVA) with age as a between-subjects variable and slide type as a within-subjects variable. The main effect of age was significant, $F(1, 104) = 10.40$, $p = .002$, $\eta^2_p = .11$, indicating that children were likelier than adults to respond “yes,” perhaps because they wanted to be agreeable to the experimenter (Brackmann et al., 2016). The main effect of slide type was significant, $F(2, 104) = 357.46$, $p < .001$, $\eta^2_p = .87$. To test our hypothesis that both children and adults would recognize old and missing slides but not new slides, we planned to calculate contrasts between old and missing slides, and between missing and new slides for children and adults. The results from the planned contrasts showed that, for both children and adults, the difference between old and missing slides was not significant, both $p > .09$, but the difference between missing and new slides was significant: $F(1, 104) = 162.97$, $p < .001$, $\eta^2_p = .61$ for children, and $F(1, 104) = 497.23$, $p < .001$, $\eta^2_p = .83$ for adults. The age x slide type interaction was significant, $F(2, 104) = 6.82$, $p = .002$, $\eta^2_p = .12$, indicating that the difference between children and adults varied across slide type. We carried out simple effects analyses to further investigate this interaction. The differences between children and adults were not significant for either old or missing slides, both $p s > 1$, but children were significantly likelier to say “yes” to new slides than adults, $F(1, 52) = 4.33$, $p = .040$, $\eta^2_p = .077$.

Discussion
The significant difference between children and adults for new slides but not old or missing slides suggests that the main effect of age was driven primarily by children being likelier to respond “yes” to new slides. Nevertheless, although children were likelier to respond “yes” to new slides than adults, children could still distinguish between the missing and new slides, as indicated by the results from the planned contrasts. Indeed, the results from these planned contrasts, in which both adults and children were likelier to respond “yes” to missing slides than new slides, supported our hypothesis that both children and adults fill in missing parts of witnessed events. However, an alternative explanation is that children recognized missing slides, not because the missing slides fit into a witnessed event, but because the items on missing slides are the same items as in studied slides; for the event in Figure 1, children might have recognized the circle and triangle. After all, for word lists, children are likelier than adults to falsely recognize nonstudied words that rhyme with studied words (i.e., they are superficially related to studied words; Brainerd et al., 2002). In Experiment 1, missing slides presented at test were related both semantically and superficially to studied slides, so a limitation of Experiment 1 was that there is no way to distinguish between the two explanations.

In Experiment 2, instead of using test slides that were missing from studied events, participants viewed test slides that contained all the same items as studied slides, but the items were rearranged so that they were incongruent with the witnessed event. Although children are likelier than adults to falsely recognize rhyming words, children’s comprehension of simple events is similar to adults (Berry & Springer, 1993). With that in mind, we hypothesized that both children and adults would recognize old slides but not incongruent slides.

Experiment 2
Memory for Incongruent Slides

Method
Participants and Materials. Participants were the same as in Experiment 1. However, because of a technical problem, seven of the adults from Experiment 1 did not participate in Experiment 2, so just 30 adults (26 women, 4 men) between the ages of 18 and 35 ($M = 21.43$, $SD = 3.11$) participated in Experiment 2. We created six new events, and an incongruent test slide for each event. Incongruent test slides contained the same shapes as studied slides, but the shapes were rearranged on the slide, as with the example event and incongruent slide depicted in Figure 3.

Procedure. Participants studied four of the...
six events in their entirety, and none of the slides from two other events. At test, participants viewed the fourth slide from two studied events (old), two incongruent slides from studied events, and two slides from nonstudied events (new). Slide type was counterbalanced across participants as in Experiment 1. After viewing each test slide, participants were asked if they had previously seen the slide during the study phase. Responses (either “yes” or “no”) were recorded on a datasheet.

**Results**

The mean numbers of “yes” responses from children and adults (depicted in Figure 4) were submitted to a 2 x 3 ANOVA with age as a between-subjects variable and slide type as a within-subjects variable. As in Experiment 1, children were significantly more likely than adults to respond “yes,” $F(1, 45) = 14.96, p < .001, \eta^2 = .25$. The effect of slide type was significant, $F(2, 90) = 38.70, p < .001, \eta^2 = .46$. Planned contrasts showed that the difference between old and incongruent slides was significant for both children and adults: $F(1, 90) = 16.86, p < .001, \eta^2 = .16$ for children, and $F(1, 90) = 215.20, p < .001, \eta^2 = .70$ for adults. Although the effect size was smaller for children than adults, children could distinguish between old and incongruent slides. Also, the difference between incongruent and new slides was significant for both children and adults: $F(1, 90) = 55.75, p < .001, \eta^2 = .38$ for children, and $F(1, 90) = 11.79, p < .001, \eta^2 = .11$ for adults. As in Experiment 1, the age x slide type interaction was significant, $F(2, 90) = 12.96, p < .001, \eta^2 = .22$, indicating that the difference between children and adults varied across slide type. We carried out simple effects analyses to further investigate this interaction. The differences between children and adults were not significant for either old or new slides, both $F_s < 1$, but children were significantly likelier to say “yes” to incongruent slides than adults, $F(1, 45) = 4.93, p = .029, \eta^2 = .087$.

**Discussion**

As in Experiment 1, the main effect of age was driven primarily by children to be likelier than adults to respond “yes” to just one slide type, but unlike Experiment 1, it was incongruent slides rather than new slides for which children were likelier than adults to respond “yes.” Nevertheless, children were able to distinguish between old and incongruent slides as indicated by the significant contrast. The significant contrasts between old and incongruent slides for both children and adults from Experiment 2 supported our hypothesis that both children and adults would recognize old slides more than incongruent slides, which in turn supported the hypothesis from Experiment 1 that both children and adults recognized missing
slides because they fit into the flow of studied events. However, the significant difference between incongruent and new slides suggests that both children and adults occasionally falsely recognized incongruent slides. Perhaps both the semantic and superficial similarity between studied slides and missing slides in Experiment 1 contributed to the recognition of missing slides.

**General Discussion**

Children are generally more likely than adults to create false memories (Otgaar et al., 2016), but one exception to this trend is the DRM (Deese, 1959; Roediger & McDermott, 1995) paradigm, in which participants who study several word lists often falsely remember a nonstudied associate (Odegard & Smeets, 2010). Presumably, this results from children having underdeveloped semantic networks relative to adults (Fisher et al., 2015), but we thought children might have similar understanding of simple events as adults (Berry & Springer, 1993). Indeed, children can extract the global gist from their experiences (Odegard et al., 2009), so we hypothesized that, if pieces are missing from witnessed events, children would rely on the gist to fill in the missing pieces in their memories of the events.

In Experiment 1, children and adults recognized missing slides more often than new slides, supporting our hypothesis. The significant main effect of age was driven primarily by children being likelier to respond “yes” to new slides, which could either indicate children having more false memories than adults (Otgaar et al., 2016), or children trying to be agreeable to the experimenter (Brackmann et al., 2016). Unfortunately, it is difficult to distinguish between these possibilities, but the contrast between the two experiments’ results might provide some insight, as described below. Another notable feature of the results from Experiment 1 was the similarity across both ages for the responses to old and missing slides. Strictly speaking, responding “yes” to a missing slide is a kind of false memory because the missing slides had not actually been studied, but it also represents the successful extraction of gist from witnessed events. Although both younger and older children can extract the gist from experienced events, older children recall more details than younger children (Odegard et al., 2009). The lack of significant differences in Experiment 1 between children and adults for old and missing slides could either support that, in contrast to Odegard et al. (2009), children retain as many details as adults for our task and stimuli, or there was a ceiling effect. Replicating Experiment 1 with more study events and test slides would distinguish between these two possibilities as well as overcome other limitations described below, but our materials seemed to push children participants to the limit of their attention.

The results from Experiment 1 supported our hypothesis that children rely on global gist extracted from witnessed events to fill in missing pieces in their memories. However, children are likelier than adults to falsely recall nonstudied words that are superficially related to studied words (Brainerd et al., 2002), so an alternative explanation is that children recognized missing slides because they contained all the same items as studied slides. If this alternative hypothesis is true, children should recognize slides that contain all the same items as studied slides but the items are moved about so the slide does not fit into the flow of the event. In Experiment 2, children and adults could distinguish between old slides and incongruent slides, suggesting that this hypothesis cannot explain the lack of any difference between old and missing slides in Experiment 1. However, children and adults recognized incongruent slides more often than new slides, suggesting that superficial similarity may explain some of the recognition of missing slides in Experiment 1. Also, children recognized incongruent slides more than adults, which confirms the claim that children’s recognition relies more on superficial similarity than for adults. Unlike Experiment 1, children were not likelier than adults to recognize new slides in Experiment 2. Because all child participants in Experiment 2 had previously participated in Experiment 1, apparently some children learned from their experience in that experiment that not all test slides had been shown during study. Children’s rejection of new slides in Experiment 2 suggests that their willingness to recognize new slides in Experiment 1 is better explained by their desire to be agreeable with the experimenter (Brackmann et al., 2016) than a false memory (Otgaar et al., 2016).

**Limitations**

Researchers who study memory often transform raw response rates into a signal detection model that includes signal and noise distributions and a decision criterion (Otgaar et al., 2016). The dependent variable is called d’ (d prime), which represents the distance between the two distributions. Because d’ is independent of the
decision criterion, the signal detection model controls for biased decision-making strategies such as guessing (Swets, 1996). This is particularly relevant to our method because forcing participants to select either “yes” or “no” without an option to answer “I don’t know” could be expected to encourage guessing. One limitation of our study was that, for all conditions, each response (either yes or no) could be offered between zero and two times, a response range that is too narrow to create a meaningful signal detection model. Although an improved study would include more events per condition that could support a signal detection model, another limitation of our study was the short attention spans of the child participants. After viewing four events and six test slides, most children participants had reached their limit. One way to remedy both of these limitations might be to include participants who are a little older than the 4- and 5-year-old participants in our study. After all, Odegard et al. (2009) found that children between the ages of 5 and 6 can extract the gist from their prior experiences. Children who are a bit older may be able to focus their attention for long enough to view several more study events and test slides than in our experiments.

A second set of limitations concerns our sample. First, the reader should be cautious when interpreting our results given the limited sample size. Second, although we gathered each participant’s age and sex, we neglected to record other demographic information such as race and ethnicity, so we are unable to determine how these variables might have influenced our results. Third, the relative proportion of female to male participants was about even for the children, but for the undergraduate students, the proportion was about 10 to 1. Further, the representation of female undergraduate students in our study was disproportionate to the overall student population at UCA, which is about 60% female. This seems likely to be a symptom of the larger pattern that women are better educated than men (Darroch, 2014). Apparently, the female undergraduate students at UCA were more conscientious in meeting their course requirements than male undergraduate students (participation in experiments is a requirement for the General Psychology course, but alternative activities are available for anyone who prefers not to participate). This means that, although we had only intended to manipulate age, there was a confounding manipulation of conscientiousness between the children and adults. The solution to this problem is not readily apparent because female undergraduate students are disproportionately likelier than male undergraduates to participate in experiments for course credit.

**Future Directions**
Our study raises some questions that remain unanswered, and that we would like to try to answer in future experiments. First, why were both children and adults significantly likelier to respond “yes” to incongruent slides than new slides? Perhaps participants misinterpreted our question “Did you see this slide?” as “Did you see the items in this slide?” If so, they may have answered “yes” only when the items on the test slide were arranged in roughly similar configurations as in the study slides, which suggests that the likelihood of participants answering “yes” may vary with the degree of incongruence between the study and test slides. To test this, we could present events with a missing fourth slide, then at test, manipulate the incongruence between the study and test slide across participants. Second, do participants fill in only the pieces of events that occur within the context of the witnessed slides, or do they fill in beyond the witnessed slides? To test this, we could present events consisting of five slides, then at test show participants a “missing” sixth slide that had not been studied but could plausibly have occurred as a result of a witnessed event. One of the main contributions of our study to the field is the introduction of a stimulus that can be altered in countless ways, limited only by the researcher’s imagination. We would like to create new slideshows to test these and other questions, and hope that other researchers do so as well.

In summary, we found that children were as likely as adults to fill in missing details from the global gist extracted from witnessed events. Children are likelier than adults to falsely recognize test slides due to superficial similarity with studied slides, which can explain some but not all of children’s recognition of missing slides. Because participants did falsely recognize a missing slide, this suggests children and adults are indeed susceptible to false memories. Our research also suggests that children can adapt their memories to remember parts of an event that were hidden from perception. The entire event may be accessible for later recall. Using pictures when interviewing child witnesses may enable the interviewer to extract more detail than could be available through traditional verbal techniques.
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