ABOUT PSI CHI
Psi Chi is the International Honor Society in Psychology, founded in 1929 for the purposes of encouraging, stimulating, and maintaining excellence in scholarship, and advancing the science of psychology. Membership is open to graduate and undergraduate men and women who are making the study of psychology one of their major interests and who meet the 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 in the U.S., Canada, and Ireland. 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 serves two major goals—one immediate and visibly rewarding to the individual member, the other slower and more difficult to accomplish, but offering greater rewards in the long run. The first of these is the Society’s obligation to provide academic recognition to its inductees by the mere fact of membership. The second goal is the obligation of each of the Society’s local chapters to nurture the spark of that accomplishment by offering a climate congenial to its creative development. For example, the chapters make active attempts to nourish and stimulate professional growth through programs designed to augment and enhance the regular curriculum and to provide practical experience and fellowship through affiliation with the chapter. In addition, the organization provides programs to help achieve these goals including regional and Society conventions, research award and grant competitions, certificate recognition programs, chapter awards, and Society service projects.

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 this journal represent the work of undergraduates, graduate students, and faculty. Faculty mentors are identified by an asterisk next to their name or on a separate byline.

INSTRUCTIONS FOR CONTRIBUTORS
Submissions are accepted for review on an ongoing basis. Although manuscripts are limited to empirical research, they may cover any topical area in the psychological sciences.

1. A cover letter that includes:
   • identifying information for the primary author, including an e-mail address;
   • the primary author’s Psi Chi membership ID number;
   • a description of the primary author’s educational status (e.g., an estimated or actual date of graduation, or description of faculty appointment);
   • a statement that the manuscript is original (not published or accepted for publication elsewhere); and
   • a statement that the research was carried out with approval of an institutional review board and following proper procedures for the protection of human participants or animal subjects.

2. Sponsoring statement (undergraduate first authors only) provided by faculty mentor that specifies:
   • the research adhered to APA ethical standards;
   • the mentor has read and critiqued the manuscript on content, method, APA style, grammar, and overall presentation and mentor, affirming that it is high-level, quality work; and
   • the planning, execution, and writing of the manuscript represent primarily the work of the undergraduate student.

3. Cover page:
   • cover page in APA style (with manuscript title, authors’ names, institutional affiliations, and possibly an author note).

4. A masked manuscript following these guidelines:
   • all authors’ identifying information (e.g., name and school) is removed from the entire manuscript including author note, title page, and method section.
   • the manuscript is in Microsoft Word.
   • the manuscript includes figures, tables, and charts generated in either Microsoft Word or Excel (in black and white or grayscale only).
   • scanned images or illustrations (also in black and white or grayscale only) must have a resolution of at least 600 dpi resolution, and authors must be able to show that they have permission to use all images/illustrations.
   • the manuscript must adhere to APA style.

Relationships Between Academic Motivation, Self-Efficacy, and Academic Procrastination
Eric S. Cerino
Eastern Connecticut State University

Obstacles to Success for the Nontraditional Student in Higher Education
Sally Ann Goncalves and Dunja Trunk
Bloomfield College

The Relationship Between Childhood Family Environment and Adult Sexual Offending in a Sample of Sexual Offenders
Megan J. O'Toole and Elizabeth L. Jeglic
John Jay College of Criminal Justice, CUNY Graduate Center

Who's Texting in Class? A Look at Behavioral and Psychological Predictors
Nicole M. Olmsted and Christopher P. Terry
Elmira College

Activating Different Attributional Patterns in Chinese Bicultural Individuals With Language Cues
Sijia Li and Carrie M. Brown
Agnes Scott College

Predicting Empathy and Prosocial Behavior: Who Cares and When?
Kate A. Barford, J. Brian Pope, Thomas F. Harlow, and Emily P. Hudson
Tusculum College

Further Evidence That Individuals With a High Preference for Consistency Are More Susceptible to Cognitive Dissonance
Jon Nolan and Paul Nail
University of Central Arkansas

INVITED EDITORIAL: A Model for a Research Program That Encourages Undergraduate Students to Present and Publish Original Research
Jennifer L. Hughes
Agnes Scott College

EDITORIAL: Another Year of Great Strides
Melanie M. Domenech Rodriguez
Editor, Psi Chi Journal of Psychological Research
In schools and the workplace, procrastination can be defined as freely postponing an action with the awareness of the detriment it may cause in the future (Steel, 2007). Procrastination is a widespread problem that is expected to increase in prevalence due to less controlling management strategies (Steel, 2007). Trends toward a decrease in occupational structure and direction with an increase in workplace temptation (e.g., computer games, text messaging) gives individuals numerous opportunities to procrastinate.

Negative effects of procrastination can arise in multiple contexts. Along with failure to complete certain goals or tasks on time, procrastinating can cause a person disappointment and can lead to interpersonal problems if family or social responsibilities are unfulfilled (e.g., relying on others, letting people down, falling short of family expectations; Andreou, 2007). As organizations become progressively more lenient, the responsibility of performing tasks on time and with efficiency falls more fully on the specific worker.

Academic procrastination can be a substantive problem for some students (Steel, 2007), and the reasons for and functions of task postponement have gained a great deal of research attention over the last 10 years. However, little research has examined academic motivation and self-efficacy as unique predictors of procrastination. We hypothesized that academic motivation and self-efficacy together would have a strong negative relationship to academic procrastination among college students, with academic motivation having a stronger relationship than self-efficacy.

A sample of 101 undergraduate students (36.6% men, 63.4% women; M = 20.76, SD = 2.54, years of age) at a Northeastern public liberal arts university participated in the present study. Significant negative correlations of medium to large effect sizes between academic procrastination and 3 types of intrinsic, 1 type of extrinsic academic motivation, and general self-efficacy were shown. In a hierarchical regression model, academic motivation predicted academic procrastination, $R^2$ change = .33, $F(7, 93) = 6.54, p < .001$, but self-efficacy did not make a unique contribution to the model beyond the variance accounted for by academic motivation, $R^2$ change = .022, $F(1, 92) = 3.09, p = .082$.

ABSTRACT. Academic procrastination can be a substantive problem for some students (Steel, 2007), and the reasons for and functions of task postponement have gained a great deal of research attention over the last 10 years. However, little research has examined academic motivation and self-efficacy as unique predictors of procrastination. We hypothesized that academic motivation and self-efficacy together would have a strong negative relationship to academic procrastination among college students, with academic motivation having a stronger relationship than self-efficacy.

A sample of 101 undergraduate students (36.6% men, 63.4% women; M = 20.76, SD = 2.54, years of age) at a Northeastern public liberal arts university participated in the present study. Significant negative correlations of medium to large effect sizes between academic procrastination and 3 types of intrinsic, 1 type of extrinsic academic motivation, and general self-efficacy were shown. In a hierarchical regression model, academic motivation predicted academic procrastination, $R^2$ change = .33, $F(7, 93) = 6.54, p < .001$, but self-efficacy did not make a unique contribution to the model beyond the variance accounted for by academic motivation, $R^2$ change = .022, $F(1, 92) = 3.09, p = .082$.

Relationships Between Academic Motivation, Self-Efficacy, and Academic Procrastination

Eric S. Cerino
Eastern Connecticut State University

Faculty mentor: Kristalyn Salters-Pedneault, PhD
and psychological distress (Rice, Richardson, & Clark, 2012). Negative relationships have been found between procrastination and conscientiousness (Ferrari & Pychyl, 2012), intrinsic motivation (IM) and extrinsic motivation (EM; Prat-Sala & Redford, 2010), and self-efficacy (Gao, Lochbaum, & Podlog, 2011). A meta-analysis and theoretical review from Steel (2007) identified many additional variables that predict general procrastination including disliking the task at hand, specific characteristics of the task, individual differences (e.g., self-efficacy, depression), and conscientiousness.

Studies have found that college students with higher levels of conscientiousness exhibit lower levels of procrastination (Ferrari & Pychyl, 2012; Rabin et al., 2011; Steel, 2007). In fact, Ferrari and Pychyl (2012) found that students with higher levels of conscientiousness showed lower levels of procrastination and social loafing. Rice et al. (2012) found a strong relationship between psychological distress, procrastination, and perfectionism, and found minimal changes in levels of procrastination across the beginning, middle, and end of an academic semester.

Procrastination is common among college students (Rice et al., 2012). Klassen et al. (2010) studied a Canadian college student sample and found that 57% of students spend 3 or more hr a day procrastinating. Extensive research has assessed the association between achievement motivation, academic procrastination, and self-efficacy (Klibert et al., 2011; Prat-Sala & Redford, 2010). Klibert et al. (2011) studied achievement motivation using Elliot and Dweck’s (1988) mastery-oriented definition of the construct, which is centered around the aspiration to improve a person’s own motivations toward craving knowledge and learning scenarios and persisting through obstacles. Higher achievement motivation and more realistic goals are associated with higher capability for success and achievement (Gao et al., 2011). In a study conducted at a university in the United Kingdom, Prat-Sala and Redford (2010) found significant correlations between IM, EM, and self-efficacy in an academic setting.

**Academic Motivation**

Although a variety of predictors of procrastination have been explored, the current study looked specifically at academic motivation. Vallerand and Bissonnette (1992) defined seven specific subtypes of academic motivation: three types of IM (to Know, Toward Accomplishment, to Experience Stimulation), three types of EM (Identified, Introjected, External Regulation), and Amotivation. IM actions and thoughts are brought forth voluntarily with awareness of no external gain or reward; they are behaviors performed strictly for the pleasure of the behavior (Vallerand & Bissonnette, 1992). IM to Know indicates motivation out of the satisfaction from learning new material. IM Toward Accomplishment indicates motivation out of desiring both mind and physical sensory stimulations (Fairchild, Horst, Finney, & Barron, 2005).

In contrast, extrinsically motivated actions and thoughts are brought forth for goals or rewards extending past the act itself (Vallerand & Bissonnette, 1992). EM Identified indicates motivation from the person feeling as if they will benefit from it in the future. EM Introjected indicates motivation from an internalization of feelings such as guilt for not completing or pride in completing work. EM External Regulation indicates motivation from an external person applying incentive or limitation to an activity. Amotivated behaviors are characterized by a lack of self-determination, purpose, and care for internal or external rewards (Vallerand & Bissonnette, 1992).

Yoshida et al. (2008) studied the relationship between academic motivation and performing easy and difficult tasks in a sample of college students. After completing easy and difficult square or jigsaw puzzle tasks (signifying academic tasks), the participants’ motivational levels were scored. Yoshida et al. (2008) found that those with higher academic motivation tended to persevere to complete the difficult tasks, and those with lower academic motivation tended to continue working on easy tasks.

**Self-Efficacy**

Gao et al. (2011) defined self-efficacy as the belief in a person’s ability in specific scenarios such as believing in their capability to perform a task or learn given information. Prat-Sala and Redford (2010) showed that students with high levels of self-efficacy, in regard to reading and writing tasks, take on school with a strategic style, and those with low levels take on school with a lax and carefree style. The strategic style refers to a lot of time and consideration put into schoolwork, studying, and time management for optimal results. The lax and carefree approach refers to less time thinking about...
Motivation, Self-Efficacy, and Procrastination | Cerino

and working on school-related work. Participants with high levels of self-efficacy reported having higher goals they aimed to achieve, tying self-efficacy to academic motivation (Prat-Sala & Redford, 2010). Furthermore, self-efficacy mediated the relationship between achievement goals and physical activity in physical education classes (Gao et al., 2011). Achievement motivation and self-efficacy rise with success in academic settings, whereas procrastination seems to decrease students' academic performance (Klassen et al., 2010; Steel, 2007).

Klassen et al. (2010) identified self-efficacy as a type of motivational variable of learning. Self-efficacy can be divided into two forms: general (array of tasks) and perceived (specific action; Luszczynska, Scholz, & Schwarzer, 2005). The relationship of general self-efficacy to social-cognitive constructs such as goal-oriented views and intentions, and self-regulation is strong across cultures (Luszczynska et al., 2005).

In a cross-cultural study conducted in Singapore and Canada, motivational variables (e.g., self-efficacy through confidence in learning) and procrastination were found to be strongly related (Klassen et al., 2010). Here, self-efficacy was described as a source of motivation that an individual has that can influence their levels of procrastination. With regard to academic procrastination, the college student participants from Singapore and Canada both reported the most academic procrastination in writing tasks, as opposed to reading or studying. Negative procrastinators, defined in the study as individuals who saw procrastination as a negative influence on academics, procrastinated more and showed lower levels of self-efficacy (Klassen et al., 2010).

**Purpose**

Extensive research has identified various forms of motivation and self-efficacy as predictors of procrastination, but there has yet to be a study of the relationship between academic motivation, self-efficacy, and academic procrastination collectively. This study stemmed from the previous research tying motivation and self-efficacy together in academic settings (Gao et al., 2011; Klassen et al., 2010; Klibert et al., 2011; Luszczynska et al., 2005; Prat-Sala & Redford, 2010; Steel, 2007), and was an attempt to extend our knowledge on the relative contributions of motivation and self-efficacy to procrastination.

Various intervention strategies and treatment programs have been successful in reducing procrastination. For example, time management training (Van Eerde, 2003), and cognitive therapy techniques (e.g., making realistic goals; Ramsay, 2002) may reduce procrastination. Other treatments have targeted self-efficacy; a group treatment incorporating cognitive-based techniques has successfully increased self-efficacy, which in turn may lead to a decrease in procrastination (Wang, Qian, Wang, & Chen, 2011). However, few interventions have attempted to directly target academic motivation. The present study was an attempt to clarify the relative contribution of academic motivation and self-efficacy to procrastination to identify specific targets for future interventions. If academic motivation is a stronger predictor of procrastination than self-efficacy, perhaps interventions that attempt to increase specific academic motivational factors will be more efficacious in the treatment of procrastination.

In the present study, we assessed self-reported levels of different types of academic motivation, self-efficacy, and frequency of and reasons for procrastination in college students. We hypothesized that, consistent with previous studies, academic motivation and self-efficacy together would have a strong negative relationship to academic procrastination among college students. In addition, consistent with previous research that has emphasized the strong relationship between motivation and academic outcomes (Klassen et al., 2010; Klibert et al., 2011; Prat-Sala & Redford, 2010; Yoshida et al., 2008), we hypothesized that academic motivation would have a stronger negative relationship with procrastination than self-efficacy.

**Method**

**Participants**

We recruited 101 undergraduate students at a Northeastern public liberal arts university to participate in the present study through the psychology subject pool. In addition, we used convenience sampling to recruit participants from public spaces on campus. Of the 101 participants, 36.6% were men and 63.4% were women ($M = 20.76, SD = 2.54$ years of age). Self-reported race of the sample was 3% Asian, 6.9% Black, 83.2% White, with 6.9% participants identifying as “other.” Self-reported ethnicity of the sample was 7.9% Hispanic and 92.1% not Hispanic. In addition, 99% of the participants provided their cumulative grade point average ($M = 3.30, SD = 0.49$).
Academic procrastination. Academic procrastination was measured with the Procrastination Assessment Scale for Students (PASS) created by Solomon and Rothblum (1984), a 44-item questionnaire measuring frequency and reasons for procrastination. Part 1 (frequency of procrastination) is scored on a 5-point Likert-type scale from 1 (never procrastinate) to 5 (always procrastinate). Part 2 (reasons for procrastination) is also scored on a 5-point Likert-type scale from 1 (not at all reflects why I procrastinated) to 5 (definitely why I procrastinated). The frequency part identifies different tasks that the participant procrastinated on including Writing a Term Paper, Studying for Exams, Keeping Up With Weekly Reading Assignments, Academic Administrative Tasks, Attendance Tasks, and School Activities in general. Onwuegbuzie (2004) found good test-retest reliabilities of .82 for Part 1 and .89 for Part 2 (as cited by Özer et al., 2009). Ferrari (1989) established test-retest reliability for Part 1 of .74 and for Part 2 of .65 (as cited by Özer et al., 2009). Özer et al. (2009) found good internal consistency (α = .86) for their pilot sample. Solomon and Rothblum (1984) identified Fear of Failure and Aversiveness of Task as the two most prominent reasons for procrastination. In the present study, 12 Part 1 items identifying frequency, as well as the eight Part 2 items that correspond to Fear of Failure and Aversiveness of Task were measured (other items were not utilized in analysis). Good internal consistency was found (α = .82) for these 20 items.

Academic motivation. Academic motivation was measured by the Academic Motivation Scale (AMS; Vallerand & Bissonnette, 1992). This 28-item scale measures the level and preference or type of motivation an individual has in regard to college academic life (participants answer “Why are you going to college”; Vallerand & Bissonnette, 1992). In accordance to Vallerand and Bissonnette’s (1992) seven types of motivation, there are four items for each subscale. The AMS measures three kinds of IM (doing things out of the enjoyment from the task itself), three kinds of EM (doing things for an external benefit or reason), and a lack of motivation, coined as Amotivation (Vallerand & Bissonnette, 1992). The three kinds of IM include IM to Know, IM Toward Accomplishment, and IM to Experience Stimulation. The three kinds of EM include EM Identified, EM Introjected, and EM External Regulation.

Answered on a 7-point Likert-type scale, the AMS ranges from 1 (does not correspond at all) to 7 (corresponds exactly). Total scores for each subscale indicate preference for a certain kind of motivation with a higher score meaning more of that specific kind of motivation.

Fairchild et al. (2005) reported psychometric properties for the AMS. The scales demonstrated convergent and discriminant validity, with the IM subscale from the AMS converging with the work orientation and mastery subscales of the Work and Family Orientation Questionnaire (WOFO), and the EM subscale converging with the competitiveness subscale of the WOFO, among others (Fairchild et al., 2005). Each subscale demonstrated good internal consistency (as = .77 -.90; Fairchild et al., 2005). In the present study, the scale demonstrated good internal consistency for the 28-item scale (α = .88), as well as the individual subscales (as = .74-.90).

Self-efficacy. Self-efficacy was measured with the General Self-Efficacy Scale (GSE; Schwarzer & Jerusalem, 1995). This 10-item scale measures perceived general self-efficacy. Each item in the scale is answered on a 4-point Likert-type scale ranging from 1 (not at all true) to 4 (exactly true). Scores range from 10 to 40 with higher scores indicating better perceived general self-efficacy. The scale demonstrated good internal consistency (as = .86-.94; Luszczynska et al., 2005). Construct validity was indicated by positive correlations with work satisfaction and optimism and negative correlations with depression, anxiety, and stress (Luszczynska et al., 2005; Schwarzer & Jerusalem, 1995). In the present study, the scale demonstrated good internal consistency (α = .81).

Procedure
The Committee on the Use of Human Subjects in Research deemed this research exempt from IRB review in accordance with 45 CFR 46.101(b)2 and the Policy on the Use of Human Subjects in Research at the author’s university. Participants completed an informed consent form, followed by each measure in this order: AMS, GSE, and PASS. After completing the packet, they read a debriefing form.

Results
Analysis Plan
The hierarchical regression model was utilized because of its similarity to the study’s hypotheses. It was anticipated that academic motivation would have a greater contribution to academic motivation...
than self-efficacy would, and the regression model provided the ability to select the order of the predictors upon the criterion. This permitted academic motivation to be entered into Block 1 where its contribution to academic procrastination was analyzed both uniquely and collectively when self-efficacy was added to the model in Block 2. The strong negative relationship that academic motivation and self-efficacy have with academic procrastination was defined by the significant contribution the predictors made in the regression model, as well as academic motivation’s significant and unique contribution.

Seven subscales violated assumptions of normality. The following were positively skewed: AMS subscale Amotivation, and PASS subscales Academic Administrative Tasks and Attendance Tasks. The following were negatively skewed: AMS subscales IM to Know, IM Toward Accomplishment, EM Identified, EM Introjected, and EM External Regulation. To correct these violations, relevant variables were transformed using square root transformations with reflection for negative skewness. For clarity, means and standard deviations of the untransformed variables are reported in Table 1.

### Bivariate Correlations

Bivariate correlations were conducted to identify significant relationships between academic procrastination and academic motivation and self-efficacy (reported in Table 2). Per Cohen (1992), an $r$ of .30 to .50 indicates a medium to large effect size and .50 and larger indicates a larger effect size. Pearson’s $r$ zero-order correlations revealed significant negative relationships between academic procrastination and all three IM subscales, one EM subscale (EM introjected), and self-efficacy. In addition, there was a significant positive relationship between academic procrastination and amotivation.

### Hierarchical Regression

In addition to these individual correlations, a hierarchical regression was conducted to examine the contributions of academic motivation and self-efficacy to academic procrastination (Table 3). In a two-block procedure, Step 1 included the subscales of academic motivation and reported a significant contribution to academic procrastination, $R^2$ change = .33, $F(7, 93) = 6.54, p < .001$. Step 2, self-efficacy scores, did not have a unique contribution to the model, $R^2$ change = .022, $F(1, 92) = 3.09, p = .082$.

### Beta Coefficients

In the full regression model, IM to Know, IM to Experience Stimulation, EM Identified, and Amotivation were significant predictors of frequency of procrastination (Table 3). Self-efficacy and the other motivation types were not significant predictors in the full model.

### Discussion

The present study explored the relationships between academic motivation, self-efficacy, and academic procrastination in college students. It was hypothesized that academic motivation and self-efficacy together would have a strong negative relationship to academic procrastination, with academic motivation having a stronger negative relationship than self-efficacy. Although both academic motivation and self-efficacy were correlated with procrastination, a hierarchical regression analysis revealed that self-efficacy did not contribute to variance in procrastination beyond the variance accounted for by academic motivation.

As expected, academic motivation had a

---

**TABLE 1**

<table>
<thead>
<tr>
<th>Variable</th>
<th>$M$</th>
<th>$SD$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency of Procrastination</td>
<td>32.26</td>
<td>7.71</td>
</tr>
<tr>
<td>Writing a Term Paper</td>
<td>6.52</td>
<td>1.80</td>
</tr>
<tr>
<td>Studying for Exams</td>
<td>6.54</td>
<td>1.70</td>
</tr>
<tr>
<td>Keeping Up With Weekly Reading Assignments</td>
<td>6.23</td>
<td>1.92</td>
</tr>
<tr>
<td>Academic Administrative Tasks</td>
<td>3.90</td>
<td>2.23</td>
</tr>
<tr>
<td>Attendance Tasks</td>
<td>3.82</td>
<td>2.06</td>
</tr>
<tr>
<td>School Activities in General</td>
<td>5.24</td>
<td>2.00</td>
</tr>
<tr>
<td>Reasons for Procrastination</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fear of Failure</td>
<td>10.21</td>
<td>4.68</td>
</tr>
<tr>
<td>Aversiveness of Task</td>
<td>9.68</td>
<td>3.35</td>
</tr>
<tr>
<td>Academic Motivation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IM to Know</td>
<td>21.17</td>
<td>5.05</td>
</tr>
<tr>
<td>IM Toward Accomplishment</td>
<td>19.65</td>
<td>5.25</td>
</tr>
<tr>
<td>IM to Experience Stimulation</td>
<td>14.04</td>
<td>5.50</td>
</tr>
<tr>
<td>EM Identified</td>
<td>23.81</td>
<td>4.03</td>
</tr>
<tr>
<td>EM Introjected</td>
<td>21.60</td>
<td>5.40</td>
</tr>
<tr>
<td>EM External Regulation</td>
<td>24.10</td>
<td>3.87</td>
</tr>
<tr>
<td>Amotivation</td>
<td>6.91</td>
<td>4.70</td>
</tr>
<tr>
<td>General Self-Efficacy</td>
<td>32.06</td>
<td>4.11</td>
</tr>
</tbody>
</table>

Note: IM = Intrinsic Motivation; EM = Extrinsic Motivation.
greater influence on academic procrastination than self-efficacy. Within the Academic Motivation scale, the IM subscales showed stronger negative relationships to Frequency of Procrastination than the EM subscales. This may be due to the sample placing particular importance on internal benefits such as learning new information, accomplishing what is desired, and experiencing stimulating feelings in academic settings. Moreover, the only EM subscale that had a significant negative relationship to frequency of procrastination was the Introjected subscale. This makes sense because, by definition, the subscale involved internalizing external feelings, quite similar to the intrinsic subscales for academic motivation. The Amotivation subscale’s significant positive relationship showed that students who lacked academic motivation entirely tended to procrastinate more on academic tasks.

The results of this study were consistent with a number of previous studies (Gao et al., 2011; Klassen et al., 2010; Prat-Sala & Redford, 2010). The relationship between academic motivation and self-efficacy found by Prat-Sala and Redford (2010) was replicated in the current study.

The negative relationship between self-efficacy and academic procrastination found in this study was consistent with Klassen et al.’s (2010) findings. In addition, just as the cross-cultural study found reading and writing tasks to be most frequented, we found higher frequencies of procrastination in Writing a Term Paper, Keeping Up With Weekly Reading Assignments, and Studying for Exams. However, our findings were inconsistent with research identifying self-efficacy as a mediating variable for academic motivation (Gao et al., 2011). We found that self-efficacy did not make a significant contribution to a model of academic procrastination beyond variance predicted by academic motivation.

Several limitations should be considered in interpreting the findings of this study. For example, the sample was limited in size and diversity. With 50 of the 101 participants having a junior class standing, differences in coursework, stress levels, and priorities might have influenced the self-report measures. Further, the convenience sampling caused variability in setting (e.g., university library, dormitories, and other classrooms) for different participants. This could have led to disparity in results based on setting differential. In addition, the cross-sectional, correlational design limited the conclusions that can be drawn about the direction and nature of the relationships observed. Due to this lack of control, extraneous variables could have influenced participant responses.

In spite of these limitations, this work may have implications for college students and for universities. Academic motivation and self-efficacy were individually found to significantly contribute to academic procrastination, suggesting the importance for students to become aware of their own motivations and their confidence in their ability to succeed in an academic setting. IM subscales to Know, Toward Accomplishment, and to Experience Stimulation were found to have the strongest negative relationships to academic procrastination. Expanding these results to the general population of students could help generate a better understanding of important ways to motivate students toward procrastinating less, and hopefully increase academic success. Based on these findings, it is clear students should focus on identifying ways to motivate themselves internally.

With regard to intervention strategies and treatment programs, this study’s results suggested new avenues for intervention. Whereas existing interventions have focused on cognitive techniques such as time management (Ramsay, 2002; Van Eerde, 2003; Wang et al., 2011), it may be that interventions that directly target academic motivation are warranted. Importantly, it may be that procrastination interventions that target self-efficacy (Wang et al., 2011) are insufficient.

This study’s results can inform plans to minimize procrastination among college students.

### TABLE 2

<table>
<thead>
<tr>
<th>Variable Description</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Frequency of Procrastination</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. IM to Know</td>
<td>-.24***</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. IM Toward Accomplishment</td>
<td>-.34*** -.82***</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. IM to Experience Stimulation</td>
<td>-.36** -.60*** -.66***</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. EM Identified</td>
<td>-.003 .38*** .45*** .26***</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. EM Introjected</td>
<td>-.28*** .54*** .73*** .46*** .60***</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. EM External Regulation</td>
<td>.14 .13 .19 -.04 .66*** .37***</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Amotivation</td>
<td>-.36*** -.50*** -.44*** -.28*** -.52*** -.43*** -.26***</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. General Self-Efficacy</td>
<td>-.36*** -.49*** .54*** .33*** .17*** .28*** .02 -.39***</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: IM = Intrinsic Motivation; EM = Extrinsic Motivation. p < .05; **p < .01; ***p < .001.*
Although there is a great deal more to be done in addition to this study, potential plans can use this research as evidence to create informative programs to lower levels of academic procrastination in schools. These results, strengthened by the results of Andreou (2007), Gao et al. (2011), Klassen et al. (2010), and Prat-Sala and Redford (2010), can help students achieve goals they make for themselves, both in and out of the classroom, on time and with success.

Further research can increase knowledge on the relation between academic procrastination and other variables such as perfectionism, self-control, and self-regulatory beliefs. It would be interesting and valuable to explore academic procrastination’s potential role as a predictor of these variables, as well as academic motivation and self-efficacy. Because research including academic procrastination, academic motivation, and self-efficacy is so limited, a great deal more can be done to see if replicating the present study would produce similar or contradictory results in other universities and with differing research designs. The purpose of future studies should be to explore more reasons for procrastination and identify more ways to decrease procrastination levels among students.

### References


Cerino | Motivation, Self-Efficacy, and Procrastination

Retrieved from http://userpage.fu-berlin.de/health/engscal.htm

Author Note. Eric S. Cerino, Department of Psychology, Eastern Connecticut State University.
My thanks to Kristalyn Salters-Pedneault, Carlos Escoto, and Lyndsey Lanagan-Leitzel for their valuable guidance. I am particularly grateful to Kristalyn Salters-Pedneault for advisement and direction of this project.
Correspondence concerning this article should be addressed to Eric S. Cerino, Department of Psychology, Eastern Connecticut State University, 83 Windham Street, Willimantic, CT 06226. E-mail: cerinoe@my.easternct.edu
Obstacles to Success for the Nontraditional Student in Higher Education

Sally Ann Goncalves and Dunja Trunk* 
Bloomfield College

ABSTRACT. Retention and success rates for college and university students at 2- and 4-year institutions have been positively correlated with level of student engagement in their academic environment. For the nontraditional cohort of students, or those students who are 25 years of age and older and who may have family and/or employment obligations in addition to their educational pursuits, attrition rates are at higher levels than for traditional college students. This exploratory research sought to identify the obstacles identified by nontraditional students that prohibit successful academic outcomes. Face-to-face interviews were conducted with 10 nontraditional students at a small private college in New Jersey. Feelings of isolation, inattention to nontraditional student needs, administrative inflexibility in special circumstances, and the lack of a nontraditional student organization and liaison were identified as obstacles that continue to persist for nontraditional students’ academic success and engagement in their academic environment.

Attrition rates for nontraditional students are higher than for traditional college students, which can be partly attributed to difficulty for nontraditional students with immersing themselves in the academic environment (Kenner & Weinerman, 2011). Retention and success rates for college and university students at 2- and 4-year institutions are positively correlated with the level of student engagement (Wyatt, 2011). According to The National Survey of Student Engagement (NSSE), student engagement is the amount of time and effort devoted by students to their educational pursuits, in addition to the amount of resources institutions use to coordinate programs of study and other activities that prior research has shown to cultivate learning (What is student engagement?, n.d.). In 2006, the NSSE presented its annual report, and although the report had encouraging results for the overall student population, nontraditional students were less likely to have participated in engaging activities such as “community service, foreign language study, a culminating senior experience, research with faculty, and co-curricular activities” (Engaged learning, 2006, p. 13). The report also stated that part-time students who worked were less likely to interact with faculty and less involved in active and collaborative learning and enriching educational experiences compared to other students (Engaged learning, 2006).

In 2012, the Advisory Committee on Student Financial Assistance reported to the U.S. Department of Education that there is an inconsistency in defining nontraditional students (Pathways to success, 2012). According to this report, nontraditional students have customarily been defined using age, generally 25 and older, background characteristics such as culture, employment, and family, and at-risk-characteristics that may decrease the chance of degree completion. The 2012 report streamlined the definition of nontraditional student as any student who does not fit the template of a traditional full-time student aged 18 to 24 years.

As reported by Wyatt (2011), students who are
25 years and older account for approximately 43% of students enrolled on campuses throughout the United States, and this number is increasing. The Advisory Committee on Student Financial Assistance report (Pathways to success, 2012) indicated that fewer high school graduates today are pursuing the traditional college track due to financial barriers and that, from 2000 to 2009, there was a marked decrease in earned bachelor’s degrees. The report cited a 1996 analysis from the National Center for Education Statistics, which showed that only 31% of nontraditional undergraduates seeking a bachelor’s degree earned it within five years, compared to 54% of the traditional undergraduates earning degrees, with 38% of nontraditional students leaving in the first year compared to 16% of traditional students. The report also called attention to the significant influx of nontraditional students who are still not sufficiently accommodated in higher education. In 2012, the U.S. Census Bureau reported that, in 1980, the nontraditional student college enrollment was 3,910,000, which grew to 5,714,000 in 2000. This number increased to 7,486,000 in 2009. Higher learning institutions would benefit greatly by finding ways to retain this community of students, who are most likely working and/or juggling family commitments in addition to engaging their student roles.

In general, nontraditional students are highly motivated by their desire to acquire an education for intrinsic reasons such as improving self-esteem and self-concept (Taylor & House, 2010), whereas traditional students are more likely motivated by more extrinsic reasons such as following a life track that has been decided for them by a parent or hopes for future employment opportunities. Bye, Pushkar, and Conway (2007) reported that learning becomes more enjoyable for the nontraditional student when there is a perceived collaboration with professors, leading to increased intrinsic motivation and positive affect. Despite the large amount of research conducted to target problematic areas for nontraditional students with suggestions to alleviate these difficulties, many areas remain in need of improvement (Benshoff & Lewis, 1992; Wyatt, 2011; Zacharakis, Steichen, Dias de Sabates, & Glass, 2011). For example, there is still a need for improved communication with nontraditional students, and there remains a lack of organizations on campus dedicated to nontraditional students (Wyatt, 2011). Advising and orientation specifically for nontraditional students is in need of improvement (Benshoff & Lewis, 1992), and scheduling difficulties remain a concern for nontraditional students (Zacharakis et al., 2011). Scott and Lewis (2012) found that some campus environments are not hospitable toward nontraditional students and recommended future research to include “details to the voices of students in diverse settings to better understand the multiple perspectives that are involved in collegiate environments” (p. 8). The present study was designed to give voice to nontraditional students via personal interviews, and to capture their perceptions of the primary obstacles to academic success, as well as their suggestions for possible solutions to these problems.

**Method**

**Participants**
Participants included 10 (9 women, 1 man) nontraditional commuter students who were not asked to disclose their ethnicity at a small private liberal arts college in New Jersey. Participants ranged in age from 27 to 55 years ($M_{\text{age}} = 36$). In the present study, nontraditional students were defined as being over the age of 25, enrolled full- or part-time, and having family and/or employment obligations in addition to being students. Participants included seven full-time and three part-time students. Seven were employed, eight had family obligations, and one was an integral member of a religious ministry.

**Materials and Procedures**
Data for the present study were collected with the approval of the institutional review board at the researchers’ academic institution. Face-to-face interviews were conducted one-on-one with each participant. The interviewer was a nontraditional undergraduate student who was trained in conducting personal interview surveys by the faculty supervisor, as well as in a research methods course. Twenty-one open-ended questions were generated primarily to assess participants’ perceptions of their primary obstacles to academic success, as well as potential solutions to address these obstacles. Questions were developed based on prior research that targeted obstacles for nontraditional students (e.g., Benshoff & Lewis, 1992; Brown, 2002; Wyatt, 2011; Zacharakis et al., 2011). Other questions focused on demographics and campus experiences (see Appendix).

Participants were asked to describe their interactions with other nontraditional students, traditional students, professors/instructors, and college staff such as administrators, tutors, advisors, etc. They also spoke about participation in
extracurricular activities, goals, obstacles that detract from and experiences that enhance campus life, and whether these experiences could be attributed to their status as a nontraditional student, whether their needs were being met, and what could be done to enhance their experience.

Students were recruited in several ways including by e-mail from a list obtained from the Bursar’s office that included 239 e-mail addresses of the nontraditional students who were enrolled at the college, an e-mail sent by the honors program director to eight nontraditional honors students, and through flyers on bulletin boards near academic classrooms. All but one participant were included in both e-mail lists and none were questioned as to how they received information about the study or whether they were honors students.

Participants met face-to-face with the researcher individually on campus at a mutually convenient time in the library or in a conference room in a classroom building. Informed consent was obtained from each participant. Responses were audio recorded using a Livescribe smartpen, and the researcher took notes during the interviews using a Livescribe interactive notebook. The researcher followed the questions on the script in order, asking participants to elaborate on yes or no answers and short responses. The duration of each interview was approximately 35 min. Participation was voluntary and no compensation was provided.

The data captured by the Livescribe pen and notebook audio were transferred to an Asus laptop and transcribed by the interviewer. Data coding was a two-step process. First, each statement made by participants was categorized as positive, negative, or neutral in tone. Then key words and phrases were compared across responses to determine whether specific patterns emerged for each individual question. All data were coded by the primary investigator and double checked by the faculty supervisor.

Results
The interview sessions created a forum in which participants could communicate confidentially. Topics discussed by participants included their educational goals, their interactions with students, professors, staff, and administrative offices, their involvement with clubs and organizations, and their assessment of obstacles as well as positive factors contributing to their overall college experience.

Educational Goals
Seven participants reported career advancement as the primary motivation for returning to school. Four participants stated that undergraduate work was a means toward obtaining a graduate school education. Additional motivating factors that were mentioned at least once were influencing their children through example, finishing what they started, just wanting to get their degree, and discontentment with their prior professions. Other responses included employment opportunities, to finish and master something started, and to teach and help people.

Interactions With Other Students
When asked to describe interactions with other nontraditional students, all participants expressed some difficulties in interacting with other students including not knowing which students were nontraditional, an inability to mingle, feeling isolated and alone, and an overall lack of interaction with their peers. One participant stated:

I don’t know if I have had many interactions with many people at all, not even nontraditional, but I do get to meet some in class . . . we share a lot of the same experiences . . . it is nice to talk to people who go through some of your daily struggles, you know, kids, school.

Another participant said, “I don’t really know who is and who isn’t [a nontraditional student] so I don’t really interact with anyone.” A third participant stated, “I don’t hang around on campus and try to make friends. I don’t have time.”

When asked to describe experiences with traditional students, four participants stated that they had little to no interactions with them, or they did not know who were traditional versus nontraditional students. Four of the responses were positive. Of the two negative comments, one participant stated that the traditional students do not fully grasp the gravity of the education they are receiving. The other stated that fitting in was an issue and that most of the time spent on campus was solitary.

Interactions With Professors
The majority of participants described interactions with their professors as being positive. One participant remarked, “I feel comfortable going to them . . . I think because of the age thing. I don’t stop myself from going to them if I need help or if I need to talk to somebody.” Another participant stated, “It [age] has everything to do with it [my
Another participant stated that the financial aid department was receiving a full scholarship, but felt that, if they were not, their financial needs would not be met. One participant disclosed that what brought her to this particular campus was the assurance that she would have a reduced tuition as a result of her status as a nontraditional student. She claimed that, without explanation, her tuition has nearly doubled, which will culminate in a huge student loan bill upon graduation.

Interactions With Staff
There were diverse opinions on the question related to interactions with other college staff because this question encompassed a rather large group including administrators, advisors, and tutors. The tutoring department received mostly positive comments including one that the “tutoring has been awesome.” One participant stated that their experience was very good. Another described the overall staff as resourceful, willing to give advice, and that they try to be helpful. When asked if this could be attributed to their nontraditional student status, one participant responded that “Yes, I think that comes from maturity.” Another participant commented that they felt that they were an equal to the staff as far as being an adult.

Interactions With Bursar’s and Financial Aid Offices
The Bursar’s office was not viewed favorably by most participants. Comments included “they don’t know how to work with the public” and “I can’t say anything positive about the Bursar’s office. Their attitude is kind of standoffish.”

Opinions varied on the topic of the financial aid department from excellent and efficient to awful and not very pleasant. A few participants stated that they received unsolicited information on scholarships that was helpful, with one admitting that they were partly responsible for not getting information because they did not take the initiative and look in the college catalog. One participant was receiving a full scholarship, but felt that, if they were not, their financial needs would not be met. Another participant stated that the financial aid office never answers the telephone and that specific needs would not be addressed unless students specifically visited the department with questions. One participant said that she typically e-mails the department and only gets a response when “I start to say that I’m leaving school. I’m going to transfer, and I need all my stuff. Then I get answers real quick, unfortunately.” Another participant stated that the financial aid department caters to the traditional students; they leave out details and explain very little to anyone else. One participant disclosed that what brought her to this particular campus was the assurance that she would have a reduced tuition as a result of her status as a nontraditional student. She claimed that, without explanation, her tuition has nearly doubled, which will culminate in a huge student loan bill upon graduation.

Clubs and Organizations
Ninety percent of participants said that they would join a club or organization that was specifically geared toward the needs of nontraditional students if such a club existed. Some felt that it would be a great way to network with other nontraditional students about job opportunities and a way to share what activities were going on within the campus and commiserate about the particular needs of the nontraditional student. One participant stated, “There should be an actual room where there are nontraditional students, just to have something where there are people you can relate to, brainstorm, figure out new ideas and how to deal with things.” Likewise, another participant commented that it would be a good way to meet people outside of their major and “it would be nice to meet other people that are feeling the same stressors and feelings like my kids never see me, like things that traditional students wouldn’t understand.”

Advising
Eighty percent of participants thought it would be beneficial to have an advisor who only dealt with nontraditional students, and several participants suggested that an advising team would be useful. Several participants stated that they had had up to three advisors already, and that this was not helpful in meeting their needs. One participant stated that she was talked down to by an advisor and that she resented the fact that, as an adult, she was spoken to in such a way. Another participant recalled that an advisor made her feel like she was a “loser” and a “dummy,” resulting in her questioning why she was even pursuing an education and leaving her...
Obstacles for the Nontraditional Student | Goncalves and Trunk

in tears. The overall consensus was that having an advisor or team specifically for nontraditional students would be beneficial because it would help to remove barriers and scheduling issues that nontraditional students face due to outside obligations.

Obstacles
When obstacles on campus were addressed, participants expressed that feelings of isolation and not fitting in, lack of access to computers, scheduling conflicts, lack of course availability and course times, financial difficulties, and the lack of catering to nontraditional students detracted from the overall college experience. Not surprisingly, parking was also described as a major issue due to lack of parking spaces and the cost involved in obtaining a parking permit.

Advantages
In terms of positive factors, 50% of participants commented that their professors contributed to an enriching experience on campus. In addition, the small campus size, meeting encouraging people, and tutoring services also enhanced their college experience.

Overall Campus Experience
When asked if any campus experience, either positive or negative, was related to their status as a nontraditional student, several participants credited their maturity as the primary reason for being motivated and focused on getting an education. One participant stated, “I’m actually learning.” Negative aspects of being a nontraditional student were reported as not being able to participate fully as if one were a traditional student, not being able to spend much time on campus, and the overall lack of attention given to the nontraditional students’ needs.

Recommendations by Participants
Suggestions for how to enhance the nontraditional student experience included a mentorship program for incoming nontraditional first-year students, more flexibility with classes, meetings, clubs, improved advising and orientation, a quiet area with access to computers, a mini part-time or per diem dorm where students could either rest or organize their paperwork and regroup, and free parking. One participant suggested that offering jobs on campus to nontraditional students would be a way to increase student engagement. It would help keep nontraditional students on campus for longer periods of time rather than running back and forth from school to work and vice versa. Similarly, another participant suggested that more on-campus jobs that offered shadowing or internship opportunities would be a way for students to gain hands-on employment experience and enable students to spend more time on campus. This participant further rationalized that the more time students spent on campus, the more interest they would have in getting involved in campus activities.

Additional Participant Comments
At the end of the interview, each participant was given the opportunity to voice any additional comments regarding life as a nontraditional student. Responses included a need for more online classes to alleviate scheduling difficulties, an administrative office that is open at night to address and offer guidance for nontraditional student needs, a way to integrate more with the overall student population, and a need for a substantially increased security presence in the evening. One participant commented that the campus had a “village-like” atmosphere where few were afraid to ask questions, that there was a lot of community spirit, and that everyone on campus was very supportive.

Discussion
Nontraditional students’ perceptions of obstacles to academic success in the present study were highly reflective of the challenges faced by the nontraditional population of college students nationwide (Benshoff & Lewis, 1992; Falasca, 2011; Kenner & Weinerman, 2011; Russell, 2006; Wyatt, 2011). In the present interviews, the most positive responses from participants were derived from the question of interactions with professors. This finding was encouraging because the learning process is cultivated through this interaction (Bye et al., 2007). The present results suggested that nontraditional students are, by and large, experiencing a collaborative endeavor with professors.

The present results also suggested that there is much more that could be done to cultivate on-campus services and activities, which would lead to increased engagement and participation for the nontraditional student body and improve retention rates at the same time. One does not have to look further than institution websites to see that photographs of fresh-faced students still primarily reflect a nonrepresentative sample of the student population on campus. Few photos depict what one thinks of in terms of what the nontraditional
found that graduate students also have specific needs for a designated meeting area to focus on professional development workshops and a venue for social interaction with peers. The most obvious example, as far as attending to the needs of nontraditional students, was related to a response from a participant who was having difficulty completing an internship that was a requirement as an education major. This participant was employed in a school system as a secretary. To fulfill the requirement of the internship within her major, this individual was offered a paid student-teaching position through her employer. Despite the fact that she was offered a position as a student teacher off site from where she typically works and in a different role, she was not permitted to do the internship due to a conflict of interest. This was an individual who was a student, an employee, and a homeowner living with children and grandchildren. Taking an unpaid internship position would present serious financial hardships for this student, which could be avoided by allowing her to complete the paid internship. It is possible that there were either personal or administrative issues involved in this particular case that were not discussed, but this student exemplifies the necessity for administrators to explore options that would assist in resolving particular impediments and demonstrate a desire to accommodate nontraditional students’ special concerns.

The idea of an advising team or person specific to nontraditional students was greatly favored. Having an advisor(s) aware that the needs of nontraditional students differ from traditional students may alleviate scheduling difficulties and be more personalized to specific needs. An advisor for nontraditional students would be in a position to act as a liaison between students and administrators to facilitate problem-solving.

As described in the results, opinions regarding financial aid were varied. The overall consensus was that obtaining financial aid should be a more efficient process for the nontraditional student, who has little spare time between school, family, and employment to have to seek out multiple ways of financing their education, particularly when there is an entire department devoted to this task. An article written for the Lumina Foundation (Headden, 2009) stated that finances might be a barrier toward obtaining an education and that the system of loan and grants discriminates against working adults. Nontraditional students might benefit from having a nontraditional student financial...
aid advisor who is knowledgeable with the financial aid process for this population. Unless nontraditional students, as well as traditional students, are enrolled on a full scholarship, repayment of loans will be mandatory upon graduation. This is in addition to the other financial obligations that nontraditional students already have.

The recruitment process for the present study was interesting in and of itself. Although the participation rate was low overall, there was plenty of interest in participating. The total number of individuals interested in but unable to participate was not tracked. The opportunity to participate was over the course of one semester. All those interested in participation were contacted to attempt to schedule an interview. Participation would have been much greater had it not been for issues related to the time constraint associated with meeting face-to-face to be interviewed. This incidental finding suggested that there may be a desire to be more engaged. However, time constraints due to multiple commitments such as family and employment may make participation in on-campus activities difficult. Many responded that they hoped that the dean or other administrators would get to see the results and address some of the frustrations encountered by nontraditional students. When participants were given the informed consent form and were advised that all responses would be kept confidential, many stated that they hoped someone would see what they had to say. One participant commented:

You know, I wish the administration would really be more involved with the nontraditional students because we are like the up-and-coming people, and they are going for the younger group . . . but the nontraditional students, that’s what they’re getting now. I don’t think the administration has really looked at this . . . they are still looking at the ones that stay on campus . . . There is going to be more of us, but because they’re not, they are missing out on a lot. They are missing out on a lot of people that could be here.

A limitation of this research was the small sample size that included only one man and, therefore, could present a gender bias. This qualitative research is also subject to interviewer bias because there was only one interviewer, a nontraditional student, conducting the interviews. Participants were not told that the interviewer was a nontraditional student. However, it is possible that participants might have concluded this due to the physical characteristics of the interviewer. Selection might have also threatened internal validity because only those individuals where a mutually convenient interview time was possible participated. Some respondents refused participation after learning that, in order to participate, they would have to meet on campus to be interviewed rather than a telephone interview. Others scheduled a meeting time but either cancelled due to scheduling conflicts or did not show up for the interview. Results were specific to this institution and cannot be generalized without investigation at other institutions. To determine whether nontraditional students face similar obstacles to success at other institutions, future researchers in other locations should attempt to replicate this study with a larger sample size and additional interviewers. The population of this study only consisted of nontraditional students. Without comparisons to the traditional student population, it is difficult to determine whether the experiences of all students are similar or are exclusive to the nontraditional student population. It may be that many obstacles to academic success are shared among traditional and nontraditional students. For comparison purposes, future research should investigate traditional college students’ perceptions of their primary obstacles to academic success.

Despite many years of prior research indicating that students who are engaged are more likely to do well and to complete their degrees, the present study showed that little has changed for the nontraditional population of students (Brown, 2002). In contrast to previous research, the present study allowed for an up-close and personal perspective of nontraditional students’ experiences on a college campus, and provided a more intimate look at their perceptions of what obstacles stand in their way of achieving academic success. The results of the personal interviews corroborated previous research findings (Taylor & House, 2010; Wyatt, 2011) in addition to giving voice to specific concerns experienced by this small group of nontraditional students. Past research has offered suggestions to creating an engaging campus environment for nontraditional students, yet college officials are still grasping for ways to make this happen (Brown, 2002; Wyatt, 2011). Rather than exploring what nontraditional student needs are, future research might measure whether implementing special programs for nontraditional students and...
other groups with particular needs does increase student engagement, retention, and success and to what extent.

According to the National Center for Education Statistics, the nontraditional student population has increased in past decades and accounts for a large portion of the student body across campuses. Future research may investigate reasons for institutional resistance toward programs promoting enrollment and retention of this population. Financial resources may be a limiting factor at higher learning institutions that would impede this type of endeavor. However, according to the Advisory Committee on Student Financial Assistance (Pathways to success, 2012), nontraditional students represent the new majority, thereby making the benefit worth the cost of making institutional changes. Benshoff and Lewis (1992) concluded that institutions that revise their programs to help serve the nontraditional population will benefit from this adjustment. These institutions will be better able to attract, serve, and satisfy the needs of this particular population. In conjunction with previous research, the present study clearly identified problem areas for nontraditional students. The question should not be what should be done, but rather how do we implement these changes? A first step could be as simple as a function for incoming and current nontraditional students and their families so that students could immediately begin to network with each other, as well as faculty and administrators. Higher learning institutions need to be creative and restructure some of their priorities in ways that would help attract and further expand this growing population.

References

Author Note. Sally Ann Goncalves and Dunja Trunk, Social and Behavioral Sciences Department, Bloomfield College, NJ.
Correspondence concerning this article should be addressed to Sally Ann Goncalves, Social and Behavioral Sciences Department, Bloomfield College, 59 Freemont Street, Bloomfield, NJ 07003. E-mail: sgoncalves@cse.edu
APPENDIX

1. What is your sex and age?
2. Approximately how far do you travel to get to school from either home or work?
3. Are you a part-time or full-time student?
4. Have you been enrolled in or graduated from any other higher learning institutions including vocational school?
5. Aside of your obligations as a college student, do you have other obligations such as family and employment?
6. What motivated you to return to school?
7. What are your goals as a result of your higher learning experience?
8. How would you describe your interactions with other nontraditional students?
9. How would you describe your interactions with traditional and resident students?
10. How would you describe your interactions with your professors/instructors?
11. How would you describe your interactions with other college staff such as administrators, advisors, tutors, etc.?
12. Do you feel that the financial aid office has been efficient in providing information that is useful in funding your education?
13. Do you think you would be inclined to join a club or organization specifically geared toward the needs to nontraditional students? Why or why not?
14. Based on your experience, do you think you would have benefited from an advising team specifically geared toward the needs of nontraditional students? If yes, how so?
15. Have you participated in any extracurricular activities on campus that are outside of the classroom environment?
16. What have the obstacles been on campus that detract from your experience?
17. What experiences have you had on campus that enhance your experience?
18. Do you attribute any of these experiences (positive or negative) to your status as a nontraditional student?
19. What can be done to enhance your experience as a nontraditional student?
20. Are your needs as a nontraditional student being met by the college?
21. Do you have any additional comments about your life as a nontraditional college student?
Sex crimes occur at a particularly high rate each year. Specifically, about 3.7 million women face unwanted sexual incidents annually and about 300,000 are raped (Bonnar-Kidd, 2010). Additionally, a recent international meta-analysis found that about 7.9% of men and 19.7% of women experienced some form of childhood sexual abuse (Pereda, Guílera, Forns, & Gómez-Benito, 2009). Since the early 1990s, the U.S. government has recognized sex crimes as distinctly problematic and worthy of significant legislative attention. Consequently, initiatives such as the Wetterling Act, Megan’s Law, and the Adam Walsh Protection and Safety Act have established requirements for convicted sex offenders such as registration, community notification, and postsentence civil commitment to protect society from “a group of dangerous individuals who pose a high risk for reoffense” (Bonnar-Kidd, 2010, p. 413). Researchers play a key role in decreasing the rate of sexual offenses by identifying risk factors for sexual offending, which may identify populations that may benefit from early intervention programs. This study aimed to explore such risk factors by examining the possible relationship between childhood family environment and adult sexual offending behaviors.

Over the years, psychologists have identified a variety of factors that are understood to influence future criminal behaviors such as a history of criminal behavior, lack of education, unemployment, difficult financial situations, family and marital problems, illegal recreational activities, negative social groups, drug and alcohol abuse, and emotional problems (Mills, Kroner, & Hemmati, 2003). Furthermore, criminals with less education, limited

**ABSTRACT.** Although much is understood about the connection between childhood abuse and adult sex offending, less is known about the possible relationship between childhood family environments and adult sexual offending. Using archival data collected from the files of 2,771 convicted sexual offenders, this study examined the relationship between family composition, abuse-related removal from the home, the number and type of sexual offenses, and recidivism risk scores. Results suggested that individual family structure factors uniquely relate to sexual offending behaviors. Whether offenders were raised in two-parent homes significantly predicted differences in index offense natures, use of violence, offenders’ relationships to their victims, total previous sexual offense convictions, and actuarial risk assessment scores including Static-99 risk levels, and Static-99 and MnSOST-R total scores \( p < .05 \). Other childhood family factors including who the offender was raised by, the total number of biological siblings, and whether the offender was removed from his home due to abuse or neglect were also significantly related to adult sexual offending behaviors \( p < .05 \). Findings from this study were discussed as they pertain to early detection of at-risk populations and potential ways to support law-abiding behaviors among them.
previous employment, greater substance abuse problems, and more extensive criminal histories are at especially high risk for recidivism (Mills et al., 2003).

Recidivism is commonly believed to be particularly high among sexual offenders compared to other nonsexual criminal offenders, but research has suggested otherwise (Fortney, Levenson, Brannon, & Baker, 2007). A meta-analysis by Hanson and Bussière (1998) found an average sexual recidivism rate of 13.4% among 23,393 sex offenders over an average of five years. According to the Bureau of Justice Statistics (2014), 5-year recidivism rates for property, drug, and public order offenders are all much higher, ranging between 70 and 80%. In order to assess risk for recidivism, actuarial risk assessment tools such as the Minnesota Sex Offender Screening Tool-Revised (MnSOST-R) and the Static-99 were developed (Epperson, Kaul, Huot, Hesselton, & Alexander, 2000; Hanson & Thorton, 2000). To determine a sexual offender’s risk for reoffense, these tools examine factors such as number of previous victims, the use of violence, and relationship with victims.

A great deal of research into the etiology of sexual offending behavior has focused on the sex offenders’ own history of childhood sexual abuse (see Jespersen, Lalumière, & Seto, 2009; Graham, Kimonis, Wasserman, & Kline, 2012; McMackin, Leisen, Cusack, LaFratta, & Litwin, 2002). The cycle of violence theory, for example, suggests that individuals who are abused or exposed to violence as children are at an increased risk of internalizing and repeating this pattern as adults (Widom, 1989). More specifically, a meta-analysis by Jespersen and colleagues (2009) aimed to examine a sexually abused-sexual offender hypothesis and found that sexual offenders experienced a higher rate of childhood sexual abuse than nonoffenders, but that rates of physical abuse did not vary between the two populations.

Support for this theory was also found in a study by Graham and colleagues (2012), who surveyed 223 adult men evaluated for civil commitment as Sexually Violent Predators in Florida and found that, the more types of abuse experienced during childhood (i.e., physical, emotional, sexual, neglect), the higher the offender scored in tests for antisocial personality disorder. High scores on such tests demonstrate an increased risk for sexual reoffense and make an individual more likely to be assigned civil commitment. Additionally, McMackin and colleagues (2002) interviewed the clinicians of 40 juvenile male sex offenders and found that having undergone previous traumatic experiences (e.g., abuse, violence, threats of danger, or injury) related to offense triggered in 85% of their sample. Furthermore, these researchers specifically identified three offense triggers: (a) feelings of intense fear, (b) helplessness, and (c) horror, all of which were associated with childhood abuse or serious life threats. Whether through initiating social learning, antisocial personality disorder, or posttraumatic stress disorder, research has suggested that child abuse has lifelong effects that may include susceptibility to committing sexual offenses.

Limited research has also aimed to explore the role of a child’s relationship to his or her abuser with that child’s future sexual offending patterns. For example, Briggs and Hawkins (1996) examined differences in childhood sexual abuse details between 84 incarcerated child molesters and 95 nonoffending civilians. The researchers found that incarcerated child molesters reported higher rates of female-perpetrated childhood sexual abuse and experienced sexual abuse from more perpetrators than the nonoffending civilian group. Another small study examined distinctions in self-reports of childhood sexual abuse among 24 incarcerated male child molesters and found trends but no significant relationships between the type of offense experienced or relationship to perpetrator and adult sexual offending patterns (Romano & De Luca, 1997). In examining differences in types of childhood sexual abuse among child molesters and rapists, however, Seghorn, Prentky, and Boucher (1987) found more notable distinctions. More specifically, the rate of childhood sexual abuse was twice as high in child molesters compared to rapists, and rapists experienced childhood sexual abuse perpetrated by a family member three times more often than child molesters. Despite this progress, researchers have not yet examined how the type of abuse experienced by a child (e.g., one perpetrated by a stranger, family member) relates to comprehensive adult offending patterns (i.e., type of offense, use of violence, and recidivism risk scores) in a large group of convicted sexual offenders.

Attachment theory has also been used to explain risk for sexual abuse (e.g., Ward, Hudson, Marshall, & Siegert, 1995). Initially, psychologists believed that attachment style was primarily influenced by mother-infant relationships. However, later studies showed that father-infant relationships could also be highly relevant to the formation of
secure attachments (Steele, 2002). Steele (2002) also suggested that children uniquely benefit from their relationships with both parents such that youth primarily learn to understand complex emotions from their mothers and social behaviors from their fathers. Parental divorce or separation at a young age can leave children with feelings of loss and longing if either of these relationships is disturbed. Divorce-arranged visitations can also lead to insecure or disorganized attachment styles, especially when surrounded by parental arguments and limited support. Specific to risks for childhood sexual abuse, one retrospective study of 17,337 adult health plan members found significantly higher rates of parental divorce among survey respondents who reported childhood sexual abuse (Dong, Anda, Dube, Giles, & Felitti, 2003). Relatedly, another study of 170 male juvenile sex offenders found that those with divorced parents were significantly more likely to reoffend within 5 years than those with married parents (Rasmussen, 1999). Furthermore, the formation of secure attachments may be hindered by removal from one’s childhood home or placement in the foster care system. Tarren-Sweeney (2008) found that early sexual behavior problems in adolescents were predicted by foster care placement instability, sexual abuse, and older age upon foster care entry. Yet another study found that sex offenders with histories in foster care had higher recidivism rates than their counterparts (Dietrich, Smiley, & Fredrick, 2007). However, most children are resilient and will not display criminal behaviors or insecure attachment styles as a consequence of parental divorce or separation alone (Steele, 2002).

Research has suggested that sexual offenders display insecure attachment styles, which are thought to be a reflection of undependable relationships with caregivers during infancy and early childhood. In a study of 147 sex offenders in a New Zealand medium-security prison, Ward, Hudson, and Marshall (1996) found that most sex offenders did, in fact, display insecure attachment styles. Specifically, child molesters were more likely to display fearful or preoccupied attachments, rapists were more likely to display dismissive attachments, and criminals who were neither violent nor sexual offenders were the most likely to display secure attachments. Additionally, by analyzing autobiographies of incarcerated sexual offenders, Smallbone and McCabe (2003) found that intrafamilial child molesters reported insecure parental attachments more frequently than extrafamilial child molesters. These findings suggested that some part of sex offenders’ childhood family environments might not have been conducive to the establishment of healthy relationship patterns, thus potentially placing them at increased risk for engaging in sexual offending behavior.

Another family environment factor that has been assessed in relation to adult sexual offending is family size. To date, a few studies have begun to explore specific effects of family size on adult sex offending. By examining a forensic mental hospital database, Langevin, Langevin, and Curnoe (2007) found that the families of sexual offenders were larger than the average family. Among these records, sexual offenders had even larger families than nonsex offending criminals. Possibly due to the difficulty of obtaining such retrospective data, beyond these studies, there are still many gaps in the literature relating childhood family structure to adult sexual offending.

Although it has been recognized that some childhood experiences affect the likelihood of adult criminality and sex offending, research relating childhood family environments to type and number of sexual offenses and recidivism risk scores is particularly limited. The present study aimed to explore differences in adult sexual offending patterns based on family structure characteristics. To do so, retrospective data collected as part of a larger study examining factors predicting sex offender placement in the criminal justice system (Mercado, Jeglic, Markus, Hanson, & Levenson, 2011) were analyzed to examine sexual offenders’ criminal patterns in relation to type and number of legal guardians, number of siblings, and history of childhood abuse. Based upon previous research, it was hypothesized that the family characteristics of having been raised by single or nonbiological parents, having many siblings, and having histories of childhood abuse (especially sexual abuse or abuse resulting in removal from childhood homes) would be strongly correlated with more previous convictions, violent offenses, and higher recidivism risk scores. It was also expected that offenders who experienced childhood sexual abuse would form victim-offender relationships that mimic their own (i.e., if their childhood perpetrator was a direct family member, it was expected that they would offend against a family member as well).

**Methods**

**Participants and Procedure**

Archival records of 2,771 male sexual offenders...
who were released from a state prison system between 1996 and 2007, and gathered as part of a larger study looking at sexual offender placement (Mercado et al., 2013) were examined. This original study received institutional review board approval by both John Jay College of Criminal Justice and the New Jersey Department of Corrections. Of these offenders, 824 were placed at a treatment facility and 1,947 were placed in the general population of the state prison. All treatment facility records on file were included in the sample and those from the general population prison were randomly selected, representing approximately 45% of the sexual offenders in the general population. Data gathered from these records included offender demographics, offense histories, prison behaviors, treatment completions, victim characteristics, recidivism risk factors, and total incidents of recidivism.

Offenders ranged in age from 19.0 to 91.3 years old ($M = 39.19, SD = 11.5$). The overall sample consisted of 39.8% White offenders, 35.8% Black offenders, 21.2% Hispanic offenders, and 1.8% offenders of another race/ethnic origin. Most of the reported index offenses were molestation of a minor (75.4%) and adult sexual assault (18.8%), with all other types of sexual offenses summing only 5.7%.

**Measures**

**Offender family characteristics.** Demographic characteristics of interest in the current study included (a) whether the offender grew up in a two-parent home until age 13, (b) who the offender was raised by (e.g., biological parents, nonbiological parents, some combination of biological parents and step-parents), (c) whether the offender was ever placed out of the home due to child abuse or neglect, (d) the offender’s total number of biological siblings, and (e) if the offender was sexually abused as a child and who perpetrated the offense (e.g., family member, stranger). These factors were considered predictor variables in data analysis.

**Criminal characteristics.** Factors addressing the offenders’ criminal histories were considered criterion variables. These included (a) nature of index offense, (b) whether the offense involved violence, (c) number of previous sex offenses, (d) offender-victim relationships, and (e) actuarial risk assessment scores as assessed by the Static-99 and MnSOST-R as delineated below.

**Static-99.** The Static-99 is an actuarial risk assessment tool thought to be a moderately accurate predictor of violent and sexual recidivism (Hanson & Thorton, 2000). The measure is comprised of static factors shown to be predictive of recidivism including prior sex offenses and sentencing dates, noncontact sex offenses, use of violence, presence of unrelated, stranger, or male victims, and offender age and relationship status. The Static-99 results produce total scores ranging from 0 to 12, which are interpreted as recidivism risk levels where 0 to 1 is low, 2 to 3 is medium-low, 4 to 5 is medium-high, and 6 or more is high.

**MnSOST-R.** Another assessment used to measure actuarial risk for sexual recidivism in the present study was the MnSOST-R (Epperson et al., 2000). Static and dynamic (those which are subject to change over time) factors were incorporated in this measure. Scores were dependent on specific factors including total sexual offense convictions, length of offending history, supervision, total offenses committed in public, violence, variety of offenses, victim age groups, stranger victims, antisocial behavior during youth, substance abuse, employment history, prison disciplinary history, prison treatment group involvement, and age at prison release. Sexual offenders received total scores of -14 to 30, which translated to one of six risk levels that increase in severity and are predictive of sexual and general recidivism. This assessment is a moderately accurate predictor of sexual and general recidivism (Langton et al., 2007).

**Results**

**Two-Parent Home**

In order to test the hypothesis that sexual offenders raised in a two-parent home would possess the lowest recidivism risk scores and have committed the fewest and least violent crimes, a series of chi-squared tests of independence and $t$ tests were performed (see Table 1). In this sample of sexual offenders, 58.2% ($n = 1,712$) grew up in two-parent homes and 41.8% ($n = 1,229$) did not. Sexual offenders raised in two-parent homes committed a significantly smaller percent ($p = .02$) of violent offenses than those who were not (17.5% vs. 21.6%). No significant difference was found for index sexual offenses against minors or adults between those raised and not raised in a two-parent home.

Further, offenders raised in two-parent homes received significantly lower risk scores on the MnSOST-R ($M = 0.66, SD = 5.76$ vs. $M = 2.05, SD = 5.86, p < .001$) and Static-99 ($M = 2.80, SD = 2.07$ vs. $M = 3.14, SD = 1.95, p = .01$) than offenders who
were not raised in two-parent homes. Additionally, significant differences \((p < .001)\) were found in overall Static-99 risk levels as well, with most offenders raised in two-parent homes (68.4%) scoring low or medium-low-risk levels and most of those not raised in two-parent homes (66.5%) scoring medium-low or medium-high. However, offenders raised in two-parent homes were convicted of significantly more previous sexual offenses than their counterparts \((M = 1.86, SD = 1.20\) vs. \(M = 1.66, SD = 1.20)\).

### Table 1

[Chi Square Comparison of Childhood Family Factors to Sexual Offending Behaviors](#)

<table>
<thead>
<tr>
<th>Childhood Family Factor and Adult Sexual Offending Factor</th>
<th>(n)</th>
<th>(df)</th>
<th>(\chi^2)</th>
<th>(p)</th>
<th>(\phi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two-parent home (until age 13)?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nature of index offense</td>
<td>2642</td>
<td>1</td>
<td>2.91</td>
<td>.09</td>
<td>.03</td>
</tr>
<tr>
<td>Violent versus nonviolent offense</td>
<td>1938</td>
<td>1</td>
<td>5.23</td>
<td>.02</td>
<td>.05</td>
</tr>
<tr>
<td>Offender-victim relationship</td>
<td>2672</td>
<td>6</td>
<td>19.91</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>Static-99 risk level</td>
<td>2172</td>
<td>3</td>
<td>29.64</td>
<td>.00</td>
<td>.12</td>
</tr>
<tr>
<td>Raised by whom?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nature of index offense</td>
<td>1773</td>
<td>3</td>
<td>0.86</td>
<td>.84</td>
<td>.02</td>
</tr>
<tr>
<td>Violent versus nonviolent offense</td>
<td>1955</td>
<td>3</td>
<td>10.85</td>
<td>.01</td>
<td>.07</td>
</tr>
<tr>
<td>Offender-victim relationship</td>
<td>1818</td>
<td>8</td>
<td>3.69</td>
<td>.88</td>
<td>.05</td>
</tr>
<tr>
<td>Static-99 risk level</td>
<td>1935</td>
<td>6</td>
<td>21.19</td>
<td>.00</td>
<td>.10</td>
</tr>
<tr>
<td>Total biological siblings?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nature of index offense</td>
<td>1747</td>
<td>4</td>
<td>2.63</td>
<td>.62</td>
<td>.04</td>
</tr>
<tr>
<td>Violent versus nonviolent offense</td>
<td>1252</td>
<td>4</td>
<td>1.40</td>
<td>.85</td>
<td>.03</td>
</tr>
<tr>
<td>Offender-victim relationship</td>
<td>1760</td>
<td>16</td>
<td>33.17</td>
<td>.01</td>
<td>.14</td>
</tr>
<tr>
<td>Static-99 risk level</td>
<td>1420</td>
<td>12</td>
<td>20.19</td>
<td>.06</td>
<td>.12</td>
</tr>
<tr>
<td>Removed from home?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nature of index offense</td>
<td>1646</td>
<td>1</td>
<td>0.21</td>
<td>.65</td>
<td>.01</td>
</tr>
<tr>
<td>Violent versus nonviolent offense</td>
<td>1806</td>
<td>1</td>
<td>0.37</td>
<td>.54</td>
<td>.01</td>
</tr>
<tr>
<td>Offender-victim relationship</td>
<td>1692</td>
<td>4</td>
<td>0.28</td>
<td>.99</td>
<td>.01</td>
</tr>
<tr>
<td>Static-99 risk level</td>
<td>1813</td>
<td>3</td>
<td>17.07</td>
<td>.00</td>
<td>.10</td>
</tr>
<tr>
<td>Type of childhood abuse (if any)?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nature of index offense</td>
<td>517</td>
<td>1</td>
<td>11.47</td>
<td>.00</td>
<td>.15</td>
</tr>
<tr>
<td>Violent versus nonviolent offense</td>
<td>334</td>
<td>1</td>
<td>0.35</td>
<td>.56</td>
<td>.03</td>
</tr>
<tr>
<td>Offender-victim relationship</td>
<td>513</td>
<td>4</td>
<td>7.24</td>
<td>.12</td>
<td>.12</td>
</tr>
<tr>
<td>Static-99 risk level</td>
<td>389</td>
<td>3</td>
<td>2.00</td>
<td>.57</td>
<td>.07</td>
</tr>
<tr>
<td>Relationship to childhood sexual abuser?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nature of index offense</td>
<td>269</td>
<td>2</td>
<td>0.45</td>
<td>.80</td>
<td>.04</td>
</tr>
<tr>
<td>Violent versus nonviolent offense</td>
<td>313</td>
<td>2</td>
<td>3.26</td>
<td>.35</td>
<td>.10</td>
</tr>
<tr>
<td>Offender-victim relationship</td>
<td>284</td>
<td>8</td>
<td>10.23</td>
<td>.24</td>
<td>.19</td>
</tr>
<tr>
<td>Static-99 risk level</td>
<td>300</td>
<td>6</td>
<td>3.91</td>
<td>.08</td>
<td>.11</td>
</tr>
</tbody>
</table>

The most common offender-victim relationship was acquaintance (46.8%). However, significant differences were found in that offenders raised in two-parent homes had a second highest percent of stranger-victim relationships (16.0%) followed by stepfamily-victim relationships (13.7%), whereas offenders not raised in two-parent households had a second highest percent of extended-family-victim relationships (14.9\%, \(n = 25\)) followed by stranger-victim relationships (13.7\%). \(\chi^2(6, N = 2,672) = 19.91, p < .001\).

### Type of Parent-Child Relationship

To test whether having been raised by nonbiological parents related to more previous convictions, more violent crimes, and higher recidivism risk scores, Analysis of Variance and chi-squared tests of independence were conducted (see Tables 1 and 2). Of the 1,998 offender records for which the type of parent-child relationship data was available, 77.6\% \((n = 1,550)\) were raised by biological parents, 8.5\% \((n = 170)\) were raised by nonbiological parents, 12.6\% \((n = 252)\) were raised by some combination of biological and stepparents, and 1.3\% \((n = 26)\) were raised by biological and nonbiological parents (e.g., a foster or adoptive parent). Significant differences were found between the type of parent-child relationship and the use of violence in index offenses, Static-99 risk levels, total scores, and MnSOST-R total scores (see Tables 1 and 2). Specifically, offenders raised by biological parents committed a smaller percent of violent offenses (18.1\%) than those raised by nonbiological parents (21.8\%), some combination of biological and stepparents (20\%), and biological and nonbiological parents (43.5\%), \(\chi^2(3, N = 1,955) = 10.85, p = .01\).

Offenders raised by biological parents were most often determined to pose a low to medium-low risk level by Static-99 for recidivism (66.6\%), whereas offenders raised by nonbiological parents (68.3\%) or some combination of biological and stepparents (68.4\%) were most commonly determined to be at medium-low to medium-high risk, \(\chi^2(6, N = 1,935) = 21.19, p < .001\). Further, Static-99 risk levels determined that offenders raised by biological parents posed a high risk less frequently (12.0\%) than those raised by nonbiological parents (15.2\%) or some combination of biological and stepparents (12.3\%), \(\chi^2(3, N = 1,955) = 10.85, p = .01\).

In both the Static-99 and MnSOST-R assessments, offenders raised by biological parents
had significantly lower average scores \((M = 2.93, SD = 2.02\) and \(M = 1.52, SD = 6.03\), respectively). The type of individual who sexually abused the offender had no significant effect on index offense nature, \((p = .84)\) victim-offender relationships \((p = .88)\), or total number of previous sex offense convictions, \((p = .50)\).

**Total Number of Biological Siblings**

Of the 1,961 records in which offenders indicated that they had between zero and four biological siblings, 7.3% \((n = 143)\) had no siblings, 23.3% \((n = 457)\) had one, 28.8% \((n = 565)\) had two, 22.1% \((n = 433)\) had three, and 18.5% \((n = 363)\) had four. A significant relationship was found between total number of biological siblings and offender-victim relationships (see Table 1). Specifically, offenders with one sibling committed a smaller percent of sexual offenses against immediate family (6.2%), extended family (10.1%), and stepfamily (8.9%) than offenders with two to four siblings (57.7%) and strangers (17.1%). Offenders with zero siblings committed the highest percent of sexual offenses against acquaintances (57.7%) and strangers (17.1%). Offenders with four siblings targeted extended family members (13.6%) more frequently than their counterparts, and those with three siblings committed the highest percent (11.3%) of sexual offenses against immediate family members. No significant differences were found between number of biological siblings and index offense nature \((p = .62)\), offense violence \((p = .85)\), Static-99 risk level \((p = .06)\) or total score \((p = .28)\), number of previous sexual offense convictions \((p = .26)\), and MnSOST-R total score \((p = .38)\; \text{see Table 3}\).

**Removal from Home**

Chi-squared tests of independence and \(t\) tests were used to test the hypothesis that sexual offenders, who were not removed from their childhood homes due to neglect or abuse, would again possess lower recidivism risk scores and have committed fewer and less violent crimes than their counterparts (see Table 1). Of the 1,842 records examined, 6.2% \((n = 114)\) were removed from their childhood homes, and 93.8% \((n = 1,728)\) were not. A significantly larger percentage of offenders who were removed from their childhood homes were classified by the Static-99 as being at a high-risk of recidivism (19.3% vs. 11.7%), and a smaller percent were classified as low-risk (10.5% vs. 26.6%), \(\chi^2(3, N = 1,813) = 17.07, p < .01\).

Static-99 and MnSOST-R total scores were significantly lower among offenders not removed from childhood homes \((M = 2.95, SD = 1.99\) vs. \(M = 3.83, SD = 2.00\) and \(M = 1.60, SD = 6.04\) vs. \(M = 4.42, SD = 5.85, \text{respectively})\), \(t(1,818) = -4.60, p < .001, d = -.22\), and \(t(1,612) = -4.55, p < .001, d = -.23\). Removal from childhood home did not significantly impact index offense nature \((p = .65)\), offense violence \((p = .54)\), offender-victim relationships \((p = .99)\), or number of previous sexual offense convictions \((p = .73)\).

**Physical Versus Sexual Abuse**

Chi-squared tests of independence and \(t\) tests were further used to test the hypothesis that sexual rather than physical abuse would correlate with high recidivism risk scores, more previous sexual convictions, and unique index offense natures and offender-victim relationships. Of the 517 offender records that included information regarding childhood sexual or physical abuse, 39.1% included reports of physical abuse \((n = 202)\) and 60.9% included reports of sexual abuse \((n = 315)\). Child molestation convictions were significantly more common among offenders who were sexually abused (63.9%) than those who were physically abused (36.1%), and adult sexual assault convictions were slightly more prevalent among offenders.
who were physically abused (56.6%) than those who were sexually abused (43.4%). \(\chi^2(1, N = 517) = 11.47, p < .01\). No significant differences were found between the type of childhood abuse experienced and offender violence \((p = .56)\), type of offender-victim relationship \((p = .12)\), number of previous sexual convictions \((p = .99)\), Static-99 risk level \((p = .57)\) or total score \((p = .24)\), or MnSOST-R total scores \((p = .81)\).

### Childhood Sexual Abuse and Relation to Perpetrator

Of the 320 records that included information about offender relationships to childhood sexual abuse perpetrators, 21.3% of their perpetrators were direct family members (i.e., siblings or parents), 64.1% were extended family members (e.g., aunts, uncles) or acquaintances, 10.3% were nonacquaintances, and 4.4% were family members of acquaintances. No significant differences were found between childhood sexual abuse perpetrators and any of the adult sexual offending behaviors observed in this study (see Tables 1 and 2).

### Discussion

The present study aimed to examine the relationship between childhood family environments and criminal behaviors in a sample of convicted sexual offenders. Results from this study suggested that childhood family environment factors might have been related to subsequent offending behavior among convicted sex offenders. Offenders raised by nonbiological or single parents appeared to be convicted of violent sexual offenses more often than those raised by two biological parents. Furthermore, sexual offenders who were raised by nonbiological parents, were removed from their childhood homes due to abuse and neglect, or were not raised in two-parent households all appeared to pose significantly higher risk for recidivism than their counterparts, as assessed by the Static-99 and the MnSOST-R.

Although the Static-99 and MnSOST-R assessment tools do not evaluate offenders’ childhood experiences beyond abuse, children raised in traditional families (i.e., with two biological parents) and in nonneglectful family environments may benefit from stable examples of adult behavior and relationships, which may then explain why, according to this study, these populations offend less habitually. Although coming from a two-parent home does not guarantee exposure to relationship stability, it does offer one interpretation of these results that falls in line with several studies that suggest this form of familial consistency is associated with fewer behavioral and cognitive problems throughout childhood (Magnuson & Berger, 2009; Osborne & McLanahan, 2007). The presence of two parental figures may also decrease a child’s likelihood of abuse by increasing the frequency of adult supervision. Furthermore, the observed relationship between childhood family environment and Static-99 and MnSOST-R scores suggested that type of parent-child relationship may also correlate with several of the items examined within the actuarial risk assessments (e.g., offender relationship status, presence of male victims, number of offenses committed in public).

Findings from this study suggested that, although sexual offenders raised in two-parent households have more previous convictions on average, they score lower on actuarial risk assessments and are less violent than their counterparts. This corresponded with literature on attachment theory, which has suggested that bonds with both parents during early development are related to adequate behavioral and emotional development (Steele, 2002). The formation of these initial attachments to both parents may instill a general understanding of functional relationships and play a role in reducing the likelihood of chronic sexual offending among this population.

Results further suggested that sexual offenders raised by nonbiological parents are more likely to be convicted for violent offenses and receive higher actuarial recidivism risk scores than those raised by biological parents. Sexual offenders raised by biological parents may benefit from having consistent parental attachments since birth, which may, in effect, aid the development of emotional and behavioral understandings necessary to function properly in society (Steele, 2002). Findings suggested no significant relationships between the type of parent-child relationship and adult crime index natures, number of previous sexual convictions, or offender-victim relationships.

### TABLE 3

| Correlations Between Total Number of Biological Siblings and Sexual Offending Behaviors |
|--------------------------------------|------------|------------|------------|------------|
| Adult Sexual Offending Factor | \(n\) | \(df\) | \(M (SD)\) | \(r\) | \(p\) |
| Total previous sex offense convictions | 789 | 787 | 1.78 (1.26) | -0.40 | 0.26 |
| Static-99 total score | 2037 | 2035 | 2.96 (2.03) | -0.02 | 0.28 |
| MnSOST-R total score | 2202 | 2200 | 1.29 (0.76) | 0.62 | 0.38 |
findings may suggest that the presence of two constant parental figures with whom to form healthy attachments is more relevant to adult sexual offending patterns than the type of parents (e.g., biological vs. nonbiological) with whom the child can attach.

Additionally, actuarial assessments suggested that sexual offenders removed from their childhood homes due to neglect or abuse are found to be at higher risk for recidivism than those who were not removed from their home. Because children removed from their homes are likely to be placed in the foster care system, this finding corresponds to Dietrich and colleagues’ (2007) conclusion that foster care placement is indicative of increased risk for sexual recidivism among offenders. However, results from this study showed no significant differences between childhood home removal and the nature of the index crimes, number of previous offenses, the use of violence, or offender-victim relationships. Details such as whether the offender was returned promptly to a home, who that offender is housed with, and the degree of abuse inflicted may have accounted for the lack of differences in these variables.

Furthermore, although Langevin and colleagues (2007) found that sex offenders in general have large families, the present study showed no significant differences between sexual offenders’ total number of biological siblings and specific criminal behaviors such as nature of the index offense, offense violence, recidivism risk scores, and number of previous convictions. Results suggested that sex offenders’ total number of biological siblings only significantly correlates with the frequency with which they target certain types of victims. Perhaps if the range of total siblings were larger, more significant differences would be identified. Future studies should aim to include both biological and stepsiblings, as well as birth order, in these analyses.

Findings from this study do not demonstrate many significant differences in adult criminal behaviors based on the type of childhood abuse experienced or the individual’s relationship to the abuse perpetrator. The cycle of abuse theory was supported by this study’s finding that offenders who were sexually abused as children committed sexual offenses against minors more often than those who were physically, but not sexually, abused (Jespersen et al., 2008). Perhaps the insignificance of who perpetrated that abuse is due to the fact that, in a variety of contexts, children are largely dependent on adults to keep them safe and healthy. Therefore, any type of sexual abuse may be detrimental to healthy development, regardless of the child’s relationship to the abuser. In this case, overall abuse severity, as suggested by Graham and colleagues (2012), may be more closely correlated with future acts of criminality and sexual offending than the specific perpetrator of that abuse.

The present study was limited by the missing data and the lack of a control group. Because this study was conducted as a review of offender criminal records, results were limited by what was included in the files. Although over 2,500 participant records were included, some variables were left unaddressed within several records. Consequently, some variables lacked enough data to make adequate comparisons and, therefore, were excluded from analysis. Furthermore, although the factors considered in Mercado and colleague’s (2013) larger study provided a solid foundation for the beginning stages of studying the relationship between childhood family structure factors and adult sexual offending behaviors, future studies may gain more in-depth insight by probing with more detailed questions, especially if gathered through an interview process. To address the limitation of different sampling techniques used among treatment and general population sexual offenders, future studies should aim to sample the

| TABLE 4  
Childhood Family Factors to Adult Sexual Offending Behaviors t-Test Comparisons |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood Family Factor and Adult Sexual Offending Factor</td>
<td>Group</td>
<td>t</td>
<td>p</td>
<td>d</td>
</tr>
<tr>
<td>Two-parent home (until age 13)?</td>
<td>Yes</td>
<td>800</td>
<td>1.86 (1.28)</td>
<td>1.66 (1.20)</td>
</tr>
<tr>
<td>Total previous sex offense convictions</td>
<td>Yes</td>
<td>502</td>
<td>1.89 (1.37)</td>
<td>1.83 (1.24)</td>
</tr>
<tr>
<td>Static-99 total score</td>
<td>Yes</td>
<td>2075</td>
<td>2.80 (2.07)</td>
<td>3.14 (1.95)</td>
</tr>
<tr>
<td>MnSOST-R total score</td>
<td>Yes</td>
<td>1459</td>
<td>0.66 (5.76)</td>
<td>2.05 (5.86)</td>
</tr>
<tr>
<td>Removed from home?</td>
<td>Yes</td>
<td>1614</td>
<td>2.80 (2.00)</td>
<td>2.95 (1.99)</td>
</tr>
<tr>
<td>Total previous sex offense convictions</td>
<td>Yes</td>
<td>391</td>
<td>2.97 (2.00)</td>
<td>3.22 (2.18)</td>
</tr>
<tr>
<td>Static-99 total score</td>
<td>Yes</td>
<td>458</td>
<td>1.77 (5.94)</td>
<td>1.92 (6.25)</td>
</tr>
</tbody>
</table>
entire population, or random sampling from both groups. Additionally, including a control group of law-abiding citizens with similar childhood family structures may help to better understand the role of these variables in the development of criminality in general.

Of equal importance, a great deal of research has suggested that one’s family environment heavily varies in accordance with large-scale, social factors (e.g., race, socioeconomic class, neighborhood, public health, and education) that also tend to influence adult criminal behaviors and convictions (see Emery & Forehand, 1996 and Barak, Leighton, & Flavin, 2014 for summaries). For example, Matsueda and Heimer (1987) found that broken homes have a larger impact on delinquency in Black youths compared to White youths—a finding that is likely due, in part, to the variance in supportive resources available to each population. Therefore, it is likely that these family environment factors do not impact adult sexual offending behaviors in isolation, but rather in the context of the opportunities available to an individual throughout development and adulthood.

By identifying differences in criminal behaviors of known sexual offenders based upon their childhood family environments, this study began the process of recognizing populations at potential risk for recidivism. With continued research, psychologists may be able to identify children who could benefit from additional supportive services and/or sexual offense prevention programs (should additional predictive factors be present) based on characteristics of their family units. It may also be possible to counteract the effects of problematic home environments by providing at-risk youths with supportive services. In addition to the current government policies meant to decrease sex offender recidivism, such early or primary prevention and intervention techniques may also prove beneficial in decreasing the overall rate of sex offenses.

References
O’Toole and Jeglic Retrieved from https://www.ncjrs.gov/pdffiles1/nij/grants/243551.pdf
Childhood Family Environment and Sex Offending | O’Toole and Jeglic


Author Note. This project was supported by Award No. 2007-IJ-CX-0037 awarded by the National Institute of Justice, Office of Justice Programs, U.S. Department of Justice. The opinions, findings, and conclusions or recommendations expressed in this publication are those of the authors and do not necessarily reflect those of the Department of Justice.

The authors wish to thank the New Jersey Department of Corrections and the New Jersey Department of Human Services for their support in providing access to offender records and the National Institute of Justice for their support of this work.
Today’s students multitask more than any other generation (Carrier, Cheever, Rosen, Benitez, & Chang, 2009). Often referred to as digital natives (Bennet, Maton, & Kervin, 2008), the high prevalence of multitasking with technology among members of today’s youth culture has been attributed to the fact that they have grown up immersed in technology. However, some researchers (Carrier et al., 2009) and technology advocates (Prensky, 2005) have suggested that it is the cell phone, not the computer, that is the most important piece of technology for young multitaskers. In fact, many young adults often express that they cannot imagine life without their cell phones, and researchers have argued that the cell phone has become an integral part of who people are as a human race, fostering “a blurring of human and machine” (Thompson & Cupples, 2008, p. 104). Jenaro, Flores, Gómez-Vela, González-Gil, and Caballo (2007) argued that there appears to be a sense of emotional dependence reflected in the thoughts of heavy cell phone users, a factor that may motivate students to use their cell phone while engaged in another task including while they are in the classroom.

The number of young adults who own a cell phone has become a preferred form of communication. Texting behavior has become so ubiquitous that it has carried over into the classroom, which has become a major concern among both students and instructors. Although some research has suggested that cell phones can be incorporated into lesson plans and therefore promote learning in the classroom, most cell phone use during class is unrelated to the class content and serves as a potential disruption to learning. The present study sought to explore the use of cell phones in the classroom among a large sample of undergraduate students to (a) describe general patterns of text messaging among college students, (b) compare texting behavior in different contexts, and (c) examine behavioral and psychological predictors of texting during class. The vast majority of participants reported having sent or read text messages in class (97.5%), and students reported doing so more frequently than texting while driving, but less frequently than texting while studying. A multiple regression analysis indicated that several factors uniquely predicted texting in class including the size of one’s social network (β = .18), one’s frequency of texting in other contexts such as while studying (β = .24) or driving (β = .14), and the experience of intrusive thoughts when cell phone access is limited (β = .25). The findings suggested that regulating texting behavior, as well as intrusive thoughts about accessing one’s phone, may be important for improving the quality of the classroom experience for college students who text regularly.
Texting in the Classroom

Olmsted and Terry

Phone is exceptionally high and no doubt on the rise. A recent national study found that 95% of 18- to 34-year-olds own a cell phone (Zickuhr, 2011). Studies have also found that young adults more commonly use their phones to text rather than talk (Lenhart, Ling, Campbell, & Purcell, 2010). Not only is texting sometimes viewed as being more efficient, largely because of the common 160 character limit, but some researchers have argued that students prefer to use text messaging because it gives them a sense of control over their interactions and it allows them to easily maintain their friendships (Madell & Muncer, 2007; Wei, Wang, & Klausner, 2012). An ongoing national survey of over 60,000 cell phone bills by Nielsen (2011) found that, in the beginning of 2007, teenagers were sending and receiving, on average, 435 text messages per month. By 2010, this number had soared to 3,075 text messages per month (Nielsen, 2011). This dramatic increase in monthly texting rates has clearly illustrated the heavy use of texting among today’s adolescents and has also indicated how quickly technology can alter the communication landscape.

Although current texting rates have indicated the pervasive nature of texting, Hanson, Drumheller, Mallard, McKee, and Schlegel (2011) have claimed that today’s students also seek to be more connected to their social interactions at a cost to their time spent on academics. By examining student time diaries, Hanson and colleagues found that students spent much less time on their academic-related work in comparison to time spent using technology for leisure or social purposes, averaging 14.35 hr per week on texting. Therefore, it comes as no surprise that many students carry their texting behavior over into the classroom.

In a survey conducted by Tindell and Bohlander (2012), students reported on their own, as well as other students’ use of cell phones in the classroom. They found that 95% of students bring their cell phones to class every day and a majority set their phone to vibrate while in class (91%) rather than turning it off (9%). Of those 95%, 92% have used their phone to text message at least once or twice during a class period with 30% admitting to doing this every day. Ten percent of students also admitted to having texted during an exam at least once (Tindell & Bohlander, 2012).

One reason these percentages are so high may be because a majority of the students surveyed in Tindell and Bohlander’s (2012) study believed that their instructors were mostly unaware of the degree to which students engage in texting while in the classroom and other cell phone activities (e.g., browsing the Internet, perusing social networking sites). The students believed their instructors would be shocked to learn how much cell phone use goes on in their classes. Nearly half of the students surveyed stated that they thought it was easy to text in class without the instructor noticing, and another third said that it really depends on the class and the particular instructor. As expected, students consistently reported that it was easier to send a text message than to receive one during class. Tindell and Bohlander (2012) found that one of the biggest factors contributing to the ease of sending and receiving text messages during class was the size of the classroom. The bigger the classroom, students reported, the easier it is to text without the instructor noticing. Although the degree to which instructors noticed cell phone use in their classes is unclear, it is apparent that 97% of the students have noticed the texting behavior of their peers in class at least once or twice (Tindell & Bohlander, 2012).

The results of a study by Wei and Wang (2010) suggested that, even if an instructor does notice texting or engages in more immediacy behaviors including verbal and nonverbal techniques for increasing perceived closeness to the instructor, students are still likely to text in class. Their research has shown that a student’s level of daily cell phone use is a better predictor of texting in class than factors such as teacher immediacy (Wei & Wang, 2010). These findings suggested that texting becomes an automatic habitual behavior, which then carries over into the classroom. By contrast, research into the notion of mindfulness has suggested that individuals who are more practiced at focusing their awareness on the present moment in a nonjudgmental manner may be less likely to engage in habitual behaviors or ruminate on past experiences by more capably activating executive control resources (Teper, Segal, & Inzlicht, 2013). However, the relation of mindfulness to specific behaviors such as texting during class has not yet been examined.

Of course, not everyone feels that the heavy use of cell phones and text messaging in the classroom is a negative thing. In fact, many proponents of cell phone use in the classroom are instructors. Some proponents think incorporating text messaging into the classroom could be used as a tool to encourage interactivity (Markett, Sánchez, Weber, & Tangney, 2006). Bradley, Weiss, Davies,
and Holley (2010) found that using a blended learning model, which incorporated texting in the classroom, received very positive responses from students and engaged more students in the lectures. Cheung (2008) found that cell phones could be used as a way to collect data for demonstrations and experiments during class. Although these are certainly benefits of incorporating cell phones into the classroom in a structured way, important questions inevitably remain. In particular, what are the consequences of unmonitored cell phone use in the classroom, and how is learning impacted?

One of the biggest and arguably most important concerns related to texting in the classroom involves the level of distraction it may cause. Naturally, one would assume that, if students are texting during class, they are not listening to the lecture and in turn are missing crucial information because they are constantly switching their attention. As the illusion of attention suggests, our ability to attend to multiple stimuli is not as good as people may think it is (Chabris & Simons, 2010). Research on switch costs between tasks has suggested that one’s cognitive readiness and processing ability may be negatively affected (Butler, Arrington, & Weywadt, 2011). Similarly, the cost of switching between texting, listening to a lecture, and taking notes may adversely affect a students’ ability to actively engage in all of the necessary classroom tasks that promote learning.

To study the relationship between learning and texting during class, Wei et al. (2012) looked at students’ levels of self-regulation. Zimmerman (2001) defined self-regulation as “the self-directive process through which learners transform their mental abilities into task-related academic skills” (p. 1). Self-regulation is important in the classroom because it supports sustained attention, better enabling students to focus on learning. Wei et al. (2012) found that students who were better at self-regulation were less likely to text in class because they were able to actively engage themselves in the learning environment and avoid potential distractions such as their cell phone. They also found that frequent texting in class not only reduced students’ ability to sustain their attention, but also decreased their perceived cognitive learning. Ultimately, students who are able to sustain their attention in class due to having high self-regulation are more likely to believe that they have learned more during class (Wei et al., 2012).

Some of the most interesting findings surrounding cell phone use in the classroom relate to students’ perception of the distraction caused by text messaging. Opinions are inconsistent, but surprisingly, many students admit that they find it distracting even if they engage in the behavior themselves. In their sample, Rosen, Lim, Carrier, and Cheever (2011) found that 75% of students felt texting during class was disruptive, but 40% thought it was acceptable. Sixty-two percent of the participants in Tindell and Bohlander’s (2012) study felt that there was nothing wrong with texting in class if it did not disturb anyone. Despite having a relatively limited sample of business majors, Braguglia (2008) found that the vast majority of students did not feel that using a cell phone during class interfered with learning. After surveying faculty and students in the health sciences, Burns and Lohenry (2010) found that roughly 40% of students admitted to using their phones during class and that this was distracting for approximately 85% of students. Over 70% of students in Williams et al.’s (2011) study found any form of texting while in class to not only interfere with learning, but to also be unprofessional and rude to both the teacher and the other students in the class, yet many of them still engaged in the behavior.

In the present study, we sought to add to the current literature on cell phone use in the classroom, specifically with regard to texting behavior. There were three aims to this study: (a) to describe general patterns of text messaging among college students, (b) to compare texting behavior in different contexts, and (c) to examine behavioral and psychological predictors of texting during class. We focused on several unique factors that might help explain why students are likely to text in class including their texting behavior in other contexts, their general preference for multitasking, the experience of intrusive thoughts related to one’s cell phone, and students’ self-reported levels of mindfulness, a trait often characterized by the ability to focus one’s attention on the present moment in a nonjudgmental way (Brown & Ryan, 2003). We hypothesized that more frequent texting in other contexts, a penchant for multitasking, and the experience of intrusive thoughts would be related to more texting in class, but that those scoring higher on a measure of mindfulness—a disposition sometimes associated with self-regulated behavior—would be less likely to text in class.

Method

Participants
Participants were 470 students, 18 years or older

Participants were 470 students, 18 years or older
Texting in the Classroom | Olmsted and Terry

(\(M_{age} = 19.0, \ SD = 1.2\)). Sixty-eight percent of the participants were first-year college students; 21.1% were sophomores; 7.2% were juniors; and 3.4% were seniors. Fifty-one percent of the participants were men. Sixty-two percent of the participants were European American; 11.5% were Asian American; 11.1% were African American; 7.9% were Latino/a or Hispanic; and 7.4% of participants indicated another race or ethnicity.

Materials

Multitasking Preference Inventory (MPI). As part of the survey, participants completed the MPI (Poposki & Oswald, 2010). The MPI is a 14-item measure that assesses respondents’ general preference for multitasking, often referred to as polychronicity. Items are rated on a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). Scores range from 14 to 70, with a higher score indicating a greater degree of polychronicity. The MPI has been shown to have good internal consistency as a unidimensional measure, and evidence has been published supporting the convergent, discriminant, and criterion-related validity of the measure as an assessment of one’s preference for multitasking (Poposki & Oswald, 2010). A reliability analysis indicated good internal consistency for the MPI with the present sample (\(\alpha = .90\)).

Five Facet Mindfulness Questionnaire (FFMQ). Participants also completed the FFMQ (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). The FFMQ is a 39-item multidimensional measure that assesses five distinct but related facets of mindfulness, labeled Observing, Describing, Acting With Awareness, Nonjudging of Inner Experience, and Nonreactivity to Inner Experience. Items are rated on a 5-point Likert-type scale ranging from 1 (never or very rarely true) to 5 (very often or always true) with higher scores indicating a greater degree of mindfulness within each domain. The FFMQ was created by pooling items from five previously published measures of mindfulness to create a reliable multidimensional measure with good concurrent and discriminant validity (Baer et al., 2006). Subsequent research has also supported the construct validity of the measure and its underlying facets (Baer et al., 2008). A reliability analysis with the present sample indicated adequate to good internal consistency for all five subscales of the FFMQ (\(\alpha = .71 – .87\)).

Cell Phone Intrusive Thoughts Scale (CPITS). In addition, participants responded to four statements designed to assess their experience of intrusive thoughts related to accessing their cell phone. These included (a) “When I receive a new text message or phone call, I feel the need to interrupt what I’m doing in order to read the message or take the call;” (b) “When I’m busy doing other things, it bothers me if I’m unable to access my cell phone;” (c) “When I can’t access my phone, I find myself thinking about whether I’ve missed any text messages or phone calls;” and (d) “I would find it extremely difficult to spend a weekend without my cell phone.” All items were rated on a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). Responses to these items were moderately correlated (\(r = .35 – .59\)) and they demonstrated adequate internal consistency (\(\alpha = .77\)). Therefore, responses to these four items were combined into a single measure with scores ranging from 4 to 20. Higher scores were regarded to indicate more intrusive thoughts about one’s cell phone when access to one’s phone might be limited or restricted.

Cell phone use. Participants also answered a series of questions about their typical daily cell phone use. Participants were first asked whether they generally used their cell phone more for texting or talking. Then, participants were asked to estimate the total number of text messages sent and received, and the total number of phone calls made and received, during a typical day in the past week. Participants were also asked to estimate the number of different individuals with whom they corresponded in the course of a week via text messaging and phone calls. These reports were used to estimate the size of one’s texting and calling networks, respectively. Furthermore, participants were asked to estimate their frequency of texting in various contexts including while studying, while attending class, and while driving a car. These frequency estimates were based on a 5-point Likert-type scale ranging from 1 (never) to 5 (very often).

Procedure

All students were recruited from the introductory psychology subject pool at a large Northeastern university during the second semester of the academic year. The study involved completing an online survey previously approved by the institutional review board that asked various questions about multitasking preferences and behaviors including the use of a cell phone while engaged in other tasks. The survey took approximately 30 min to complete, and all participants received extra credit for their participation in the study.
Results

General Cell Phone Use
The first aim of this study was to examine general cell phone use among college students. Nearly all students surveyed (98.9%) indicated that they had a cell phone that they used at least occasionally; only five students noted that they did not own a cell phone. Of those who had their own cell phone (n = 465), the majority (68.2%) reported that they used it more for texting than talking, and a quarter (24.7%) indicated that they used their phone about equally for talking and texting. Only 4.3% and 1.5% of participants, respectively, reported using their phone mostly or exclusively for talking (1.3% reported to only text).

Participants were asked to estimate their frequency of texting and talking on their cell phone during a typical day in the past week, as well as the number of different individuals with whom they communicated in the past week via texting or talking on the phone. For each of these four questions, the distribution of responses was positively skewed and visual inspection of the data for each question led to the elimination of 21 outliers. Participants who indicated sending and receiving more than 1,000 text messages in a day, or who texted with more than 60 people in the course of a week, were eliminated from further analyses. Similarly, participants who reported making and receiving more than 50 phone calls in a day, or calling more than 50 different individuals in a week, were also eliminated from the data set. Altogether, this led to the elimination of less than 5% of cases from the data set. All subsequent analyses were conducted with the reduced sample of 444 participants.

Despite the elimination of outliers, reports regarding frequency of cell phone use and social network size remained positively skewed. The median number of text messages sent and received in a day was 70 (M = 137.53, SD = 194.21, skewness = 2.86, SE skew = .12); the median number of phone calls made and received in a day was five (M = 7.38, SD = 8.20, skewness = 2.85, SE skew = .12). With regard to social contacts, the median size of one’s texting network was 12 individuals (M = 13.88, SD = 8.39, skewness = 1.03, SE skew = .12); the median size of one’s calling network was five individuals (M = 6.92, SD = 5.43, skewness = 2.05, SE skew = .12).

Texting in Context
The second aim of the study was to compare texting behavior in different contexts (see Figure 1). The vast majority of students reported that they have read or sent text messages in two common academic contexts: while studying (99.1%) and during class (97.5%). However, participants’ ratings of their frequency of texting within each of these contexts indicated that they were more likely to text while studying (M = 3.87, SD = 0.91) than while attending class (M = 3.42, SD = 1.03), t(443) = 9.30, p < .001. Furthermore, among students who reported having a driver’s license (n = 368), 82.1% of them admitted to having read or sent text messages while driving. Among this reduced sample of licensed drivers, students were significantly less likely to text while driving (M = 2.53, SD = 1.04) than while studying (M = 3.90, SD = 0.86), t(348) = -22.53, p < .001, or while attending class (M = 3.44, SD = 1.00), t(348) = -14.53, p < .001.

Predictors of Texting in Class
The third aim of the study was to examine behavioral and psychological predictors of texting in class (see Table 1). Students’ reports of the frequency with which they text in class were positively correlated with several other self-reported behaviors including texting while studying, r(444) = .45, p < .001, texting while driving, r(444) = .27, p < .001, and total text messages sent and received during a typical day, r(444) = .15, p = .002. Next to texting while studying, the strongest predictor of texting in class was the size of one’s texting network, r(444) = .30, p < .001. Age was negatively correlated with texting in class, r(444) = -.11, p = .024, such that younger students claimed to text in class more often. However, there were no sex differences with regard to how often students reported texting in class, r(442) = -1.08, p = .282.

Several psychological variables were also correlated with texting in class. Participants’ total scores on the MPI (M = 38.56, SD = 8.92), FFMQ (M = 123.76, SD = 14.15), and CPITS (M = 13.72, SD = 3.50) were all within the expected ranges and appeared normally distributed. The strongest association with texting during class was with students’ scores on the CPITS, r(444) = .40, p < .001, which was an exploratory measure designed to assess cell phone related intrusive thoughts for the purposes of this study. Participants’ general preference for multitasking, as indicated by scores on the MPI, was not associated with texting in class, r(444) = -.01, p = .839. The correlation between texting during class and total score on the FFMQ was not

The correlation between texting in class and texting while driving increased marginally when nondrivers were excluded from the sample, r(368) = .31, p < .001.
significant, \( r(444) = -0.09, p = 0.052 \). However, two subscales of the FFMQ were negatively correlated with texting in class: observing, \( r(444) = -0.10, p = 0.034 \), and nonreactivity to inner experience, \( r(444) = -0.12, p = 0.015 \). These associations suggested that students who were less observant of their surroundings or more reactive to their own thoughts were more likely to text in class. The other three facets of mindfulness (i.e., describing, acting with awareness, and nonjudging of inner experience) were not associated with texting during class (in all cases \( p > 0.05 \)).

After exploring these bivariate correlations, multiple regression was used to identify factors that accounted for unique variance in predicting frequency of texting during class (see Table 2). The following predictor variables were included in a simultaneous multiple regression analysis: sex, age, texts per day, size of texting network, frequency of texting while studying, frequency of texting while driving, cell phone related intrusive thoughts (CPITS scores), polychronicity (MPI scores), and the five facets of mindfulness as classified by the FFMQ².

The multiple regression analysis produced a significant model that accounted for approximately 33% of the variance in self-reported frequency of texting in the classroom, \( R^2 = 0.33, R^2_{adj} = 0.30, F(13, 427) = 15.78, p < 0.001 \). Four variables contributed significantly to the regression model including the size of one’s texting network, \( \beta = 0.18, t = 4.05, p < 0.001 \), the frequency with which one texts while studying, \( \beta = 0.24, t = 5.17, p < 0.001 \), the frequency with which one texts while driving, \( \beta = 0.14, t = 3.24, p < 0.001 \), and the degree to which one experiences intrusive thoughts related to cell phone (as measured by the CPITS), \( \beta = 0.25, t = 5.50, p < 0.001 \). All other predictor variables included in the model were not significant (\( p > 0.05 \)).

**Discussion**

Our findings further support the claim that texting has become a highly pervasive behavior that has carried over into the classroom. Similar to other research findings (Braguglia, 2008), we found that the vast majority of participants (97.5%) reported at least occasional use of a cell phone to text while in class. Texting was also commonly reported in other contexts including while studying (99.1%) and while driving (82.1% of licensed drivers). Perhaps due to a desire to always be connected to one’s social network, we found that four factors accounted for unique variance in predicting frequency of texting during class: size of texting network, frequency of texting while studying, frequency of texting while driving, and the experience of cell phone-related intrusive thoughts when access to one’s phone was limited or prohibited.

We found that participants’ scores on a measure of cell phone-related intrusive thoughts accounted for the largest amount of variance in classroom texting behavior even after controlling for age, texting frequency, size of texting network, and texting in other contexts. This finding was in line with claims made by Jenaro et al. (2007) that there appears to be an emotional dependence to one’s phone that can result in negative affect when the phone is inaccessible. The experience of negative affect may prompt intrusive or worrisome thoughts about wanting to access one’s phone even if such access would pose an interruption to a primary task such as listening to a lecture, taking notes, studying for an exam, or driving a car.

Previous research showing that self-regulation is related to texting in class (Wei et al., 2012) has

---

\(^{2}\)Prior to running the regression analysis, two variables (i.e., texts per day and size of texting network) were log transformed in order to reduce the influence of positive skew. The log transformation reduced the skewness value to -0.20 for texts per day and -0.56 for size of texting network. Also, results were comparable when the same regression analysis was conducted using only those participants who reported having a driver’s license \( (n = 368) \). Therefore, only results from the regression analysis conducted with the full sample are reported.

---

**FIGURE 1**

![Student Texting Behavior](image)

**Note:** Mean frequency estimates for texting under three contexts: while studying, while attending class, and while driving. Estimates were made on a 5-point Likert-type scale from 1 (never) to 5 (very often). Error bars represent one standard error of the mean.
also supported the present finding that thoughts about one’s phone may prompt students to access their phone in class. It may be the case that those who are less effective at regulating their thoughts and feelings are more susceptible to intrusive thoughts about staying connected with their social contacts while otherwise trying to stay focused in class. Interestingly, Wijekumar and Medinger (2005) found that students with better metacognitive skills were less likely to let themselves be interrupted by an incoming message. We might also expect that those students with better metacognitive skills would be less susceptible to intrusive thoughts about texting during class.

In further support of this link, we found that two facets of mindfulness (i.e., observing and nonreactivity to inner experience) were negatively correlated with texting in class. However, these factors did not uniquely predict texting in class when scores from the CPITS, which measured more specific thoughts related to accessing one’s cell phone, were included in a regression model. Future research examining each of these psychological constructs would be beneficial for developing a stronger theoretical model to account for the apparent relationship between certain aspects of cognitive control and one’s penchant for engaging in distracting behaviors such as texting during class.

Surprisingly, general preference for multitasking (as measured by the MPI) did not correlate with texting in class. This result suggests that texting behavior in a specific setting such as during class may be better predicted by habitual texting behaviors in other contexts than by students’ general preference for being engaged in multiple overlapping tasks. Consequently, texting during class may reflect a desire to stay constantly connected to one’s social network, rather than a desire to constantly multitask. This interpretation is in line with other studies that have identified habitual texting as a predictor of texting during class (Wei & Wang, 2010).

This notion is further supported by the fact that the size of one’s texting network was the next strongest predictor of texting during class (next to cell phone-related thoughts), and emerged as a unique predictor beyond one’s general frequency of texting, and one’s frequency of texting while studying or driving. It may be that the sheer number of individuals with whom one regularly corresponds via texting contributes strongly to the desire to stay connected with others. In fact, the very nature of text messaging, which emphasizes the ability to converse asynchronously with multiple people through the exchange of brief typed messages, may support a greater expectation of social connectedness. We found that the majority of students (68.2%) primarily used their phone for texting rather than talking, and that students’ texting networks (Mdn = 12) were substantially larger than their calling networks (Mdn = 5).

Although we did not find a relationship between texting in class and general preference for multitasking—a trait often referred to as polychronicity—Williams et al. (2011) found that students who believed they were good at multitasking thought that they would not be distracted from learning while texting in class. Of course, the perception that one is multitasking effectively may not be in line with actual performance. As some research has shown using standard laboratory tests of task switching and attentional filtering, those who multitask more regularly may actually be less efficient at switching tasks and more susceptible to distractions during situations demanding selective attention (Ophir, Nass, & Wagner, 2009).

In this case, the distraction of texting during class may not only be a self-distraction, but a distraction to others. Williams et al. (2011) found that students reported that they were often distracted by other students texting during class and not simply their own texting behavior. Despite students’ awareness of the possible distraction that texting poses to themselves and others, Williams et al. (2011) offered several reasons for students’ texting behavior including the fact that (a) it may be difficult for students to separate themselves from their phone, (b) the class may not be engaging
Texting in the Classroom | Olmsted and Terry

enough for students and so they turn to texting to relieve their boredom, and (c) the instructor does not enforce or perhaps does not have a cell phone policy.

By identifying both behavioral and psychological predictors of texting during class, the present study may be of use to psychologists and educators interested in developing effective strategies for helping students gain better control of their texting habits. For example, a study by Wijekumar and Medinger (2005) suggested that metacognitive control may play an important part in determining how students manage potential distractions in the classroom. In their study, students were allowed to use instant messaging (IM) on their desktop computers while doing work. They found that students who had more metacognitive skills typically turned off the IM alert sounds and only responded to the IMs when they took a break. Conversely, those students with lower metacognitive skills welcomed the interruptions of the IMs. Future studies should look more into the role that metacognition may play in regard to texting in the classroom with particular focus on the strategies that students may use to decide when and how often to access their phone in class and manage intrusive thoughts about accessing one’s phone.

Limitations
Several limitations of the present study are worth noting. For instance, although the sample was equally representative of men and women (51% of participants were men), most of the participants were European American (62%) and the sample was disproportionately representative of first-year college students (68%). Although the sample was largely representative of the university at which students were recruited, the high rate of participation among first-year college students was likely a result of recruiting from the university’s subject pool, which is associated with enrollment in introductory psychology. However, the survey was completed during the second semester of the academic year, which ensured that the vast majority of first-year students enrolled in the study had completed at least a full semester of college-level work. Among our sample, there was a significant negative correlation between age and frequency of texting in class, but this relationship was not significant when included in a multiple regression analysis that controlled for other predictors of texting in class. Further research with a more evenly distributed sample of students across academic years and tracking students’ behavior over time through a longitudinal design might better determine whether texting behavior actually changes throughout one’s time in college.

Several other limitations pertained to the measurement of certain behaviors and psychological constructs. First, some questions regarding texting frequency and size of texting network asked participants to estimate their behavior during the immediately preceding week. The use of this question format was based on previous research on self-report methodology, which suggests that retrospective frequency estimates can be highly influenced both by response anchors and episodic memory distortions (Schwarz, 1999). Therefore, for these particular questions, participants were only asked to provide short-term retrospective frequency estimates (i.e., during the past week or a typical day in the past week) and were not constrained by a response scale with frequency anchors (e.g., 1–25, 26–50). As a result, some participants provided extreme responses to these open-ended questions, resulting in their elimination from the data set as outliers (less than 5% of the complete sample). In this case, it may be that many students who are using their cell phones very frequently for texting and/or talking do not have

![Table 2: Summary of Multiple Regression Analysis Predicting Texting During Class](image)

Note: The regression model was significant, $R^2 = .33$, $R^2_{adj} = .30$, $F(13,427) = 15.78$, $p < .001$. CPITS = Cell Phone Intrusive Thoughts Scale; MPI = Multitasking Preference Inventory; FFMQ = Five Facet Mindfulness Questionnaire. Log indicates that a variable was log-transformed prior to the regression analysis in order to meet the assumption of normality.
feel toward their cell phone and the experience of separation anxiety that may result from being unable to access one’s phone. Future research that further differentiates the cognitive and emotional aspects of cell phone ownership is certainly needed.

Conclusion
The present study was consistent with prior research showing that texting during class is a common and widespread behavior across college campuses, and added to the literature by identifying several behavioral and psychological variables that uniquely contributed to students’ propensity for texting during class. In particular, texting while studying and while driving were both related to in-class text messaging, suggesting that texting in the context of doing some other primary task may be a habitual behavior that carries over across multiple situations. However, general preference for multitasking did not predict texting in any of these contexts, but the size of one’s texting network did. This, combined with the finding that the best predictor of texting during class was the experience of cell phone-related intrusive thoughts, suggests that a desire to stay socially connected, but not a penchant for multitasking, may be a primary factor supporting the distracting behavior of texting in the college classroom.

References
Texting in the Classroom | Olmsted and Terry


Author Note. Nicole M. Olmsted and Christopher P. Terry, Department of Psychology, Elmira College, NY. Nicole M. Olmsted is now pursuing a Master of Science degree in Human Cognitive Neuropsychology at the University of Edinburgh, United Kingdom. Nicole M. Olmsted completed this research as part of an internship in psychology while an undergraduate student at Elmira College. Christopher P. Terry served as the faculty mentor on this project and collaborated on the final manuscript.

Correspondence concerning this article should be addressed to Nicole M. Olmsted, School of Philosophy, Psychology and Language Sciences, The University of Edinburgh, Dugald Stewart Building, 3 Charles Street, Edinburgh, U.K., EH8 9AD. E-mail: nolmsted13@elmira.edu
Activating Different Attributional Patterns in Chinese Bicultural Individuals With Language Cues

Sijia Li and Carrie M. Brown*
Agnes Scott College

ABSTRACT. It has been well-documented that individuals from collectivistic cultures make more situational attributions than those from individualistic cultures when explaining the causes of events. Recently, researchers have paid attention to the attributional patterns of bicultural individuals and how they vary in response to different cultural primes. The current study aimed to investigate the role of language on activating cultural mindsets and influencing attributional patterns as a result among Chinese-Western bicultural individuals. The sample included 85 participants (21 men, 64 women) recruited via snowball sampling. Each participant was asked to divide up 100% responsibility between a dispositional cause and a situational cause for a series of events in an online survey in either English or Chinese. Results showed that Chinese-primed bicultural individuals made less situational attributions for positive events than English-primed bicultural individuals ($d = .51$) and that there was no difference in the amount of situational attributions for negative events made by participants in the two conditions. The total length of stay in Western countries did not correlate with the amount of situational attributions a bicultural individual made. The automatic thinking associated with the native language (Chinese) might have cancelled out the effect of cultural priming on the attributional patterns.

Imagine a student seated in a classroom when a fellow student rushes five min late. What will be the first thought that enters the first student’s mind? He or she will probably think that the second student is not very reliable or conscientious. Lewin (1935) first noted that people have a tendency to make causal attributions of social behaviors biased toward internal causes. Heider (1958) and Jones and Harris (1967) subsequently made similar observations. Because of the pervasiveness of this phenomenon, Ross (1977) coined the term *fundamental attribution error* to describe “the tendency for attributers to underestimate the impact of situational factors and to overestimate the role of dispositional factors in controlling behavior” (p. 183). In the present study, *dispositional factors* refer to personal traits, thoughts, and other factors that reside within the person; *situational factors* refer to environmental factors not directly related to the person. The student in our example might be well-organized and responsible but his or her alarm did not go off that day. The impact of situational factors is likely to be underestimated as we commit the fundamental attribution error.

Psychologists have traditionally considered the fundamental attribution error as a universal phenomenon that existed cross-culturally (Morris & Peng, 1994). However, Bond (1983a) suggested the possibility that the fundamental attribution error may vary across cultures and proposed that research should be conducted to understand the role of culture in attribution. He pointed out that the individualistic worldview was pivotal to all attribution theories. It was likely that people from collectivistic
Attributional Patterns in Biculturals | Li and Brown

cultures who did not see an individual as a discrete agent would have a different attribution pattern. To support his argument, Bond (1983a) highlighted research findings that Chinese students made more attribution to social circumstances and social relationships in explaining interpersonal events than did American students.

Responding to Bond’s (1983a) call, Miller (1984) sought to investigate the mechanism behind cultural differences in attribution patterns. She interviewed American and Hindu participants ages 8, 11, 15, 18, and older. Participants were asked to describe two prosocial behaviors and two negative behaviors of their acquaintances, and to explain the cause of these behaviors. Miller noticed that young children from American and Hindu cultures did not differ in their attribution pattern. However, American adults made significantly more dispositional attribution and less situational attribution than Hindu adults; the difference was larger in the case of deviant behaviors than prosocial behaviors. Miller proposed that the fundamental attribution error was the result of cultural socialization and was more prevalent in Western individualistic cultures than in collectivistic cultures. Miller also acknowledged that an alternative explanation of the results was that there were underlining differences in the cause of behaviors in two cultures.

To rule out Miller’s (1984) alternative explanation, Morris and Peng (1994) carried out a series of studies. In Study 1, Chinese and American high school students viewed videotapes of a school of fish swimming and answered in their native language to what extent the movements of the fish were influenced by internal or external factors. In Study 2, the researchers coded reports in a Chinese newspaper and an American newspaper on two recent murders for dispositional and situational attributions. In Study 3, Chinese and American graduate students read about two murders and evaluated the importance of possible causes. Morris and Peng found that (a) Americans attributed the fish’s movements more to internal factors than did the Chinese, (b) American reporters spontaneously made more dispositional attribution than did the Chinese reporters, and (c) Americans regarded personal dispositions as more important factors in leading to the murders than did the Chinese. The researchers thus endorsed Miller’s (1984) conclusion and stated that there were profound cultural differences in the fundamental attribution error in adults.

Later research continued to provide support for cultural differences in attribution patterns. For example, one study revealed that U.S. salespeople attributed their past successful performance to internal factors, whereas Indian salespeople attributed their past successful performance to both internal and external factors (DeCarlo, Agarwal, & Vyas, 2007). In another study, Chinese teachers were found to place more emphasis on family factors when evaluating potential causes of students’ misbehaviors, whereas Australian teachers placed more emphasis on ability (Ho, 2004). Tyson and Hubert (2002) found that Australian adolescents of British (individualistic) cultural backgrounds rated personal explanations as more important regarding juvenile delinquency than did Australian adolescents of Nigerian (collectivistic) background. Upon reviewing numerous studies, Choi, Nisbett, and Norenzayan (1999) reasoned that this cultural difference mainly originated from a stronger preference of situational attribution in Eastern Asian cultures rather than a lack of “dispositionism.”

Research on Bicultural Individuals

To date, most research on cultural differences has involved comparing variables of interest in people from different cultural groups with the assumption that people internalize their culture and view the world based on relevant cultural constructs across situations (Hong, Benet-Martinez, Chiu, & Morris, 2003). An alternative approach to studying cultural differences is the dynamic constructivist approach. The dynamic constructivist approach proposes that an individual can internalize more than one culture and that one activated cultural meaning system guides subsequent actions (Higgins, 1996; Wyer & Srull, 1986). The activation of cultural knowledge, according to Higgins (1996), is based on accessibility of the knowledge and its applicability to the current stimulus.

Researchers recently took the dynamic constructivist approach to study cultural differences in attribution patterns. Hong, Morris, Chiu, and Benet-Martinez (2000) defined bicultural individuals as “people who have internalized two cultures to the extent that both cultures are alive inside of them” (p. 2). They randomly assigned Hong Kong bicultural participants into either the Chinese condition, American condition, or control condition. They found that bicultural individuals primed with Chinese cultural icons were more confident about external explanations of events and more likely to generate external attribution than were bicultural individuals primed with American cultural icons.
and those in the control group; participants in the three conditions did not differ in their internal attribution. Hong and her colleagues (2003) refined their previous experiment by manipulating the salience level of the concept of group. They noted that priming only had a significant impact when in high-saliency conditions and proposed that cultural priming worked when the activated constructs were applicable to the test stimuli.

Although research on attributional patterns in bicultural individuals is scarce, studies on other psychological constructs among bicultural individuals are more abundant, providing empirical evidence for the dynamic constructivist approach. Chen, Ng, and Rao (2005) observed that Singapore consumers whose Western values were activated through cultural priming were more impatient than those whose Eastern values were activated. Wong and Hong (2005) revealed that, when facing the prisoner's dilemma (see Tucker, 1950), Chinese-primed Hong Kong students displayed more cooperation toward friends than American-primed Hong Kong students. It has also been documented that bicultural individuals showed more social connectedness in self-concept and made more interdependent self-statements in self-descriptions when Chinese-primed than when American-primed or in a control condition (Ng & Lai, 2009; Sui, Zhu, & Chiu, 2007).

Language as a Prime

Language is an effective cue used in cultural priming (Krauss & Chiu, 1998). Like cultural icons, language has frequently been employed to activate corresponding cultural constructs in prior research concerning bicultural individuals. Hong Kong students have been found to be more dogmatic, better able to access their collective selves, endorse different values, and display different personalities when tested in Chinese than in English (Bond, 1983b; Chen & Bond, 2010; Earle, 1969; Trafimow, Silverman, Fan, & Law, 1997). Chinese bilinguals have been observed to be more self-enhancing, refer less to interdependent values in self-descriptions, and refer to interpersonal difficulties less often in projecting depressive emotions when responding in English than responding in Chinese (Dixon, 2007; Lee, Oyserman, & Bond, 2010; Ting, 2006). In addition, Matsumoto, Anguas-Wong, and Martinez (2008) noted that Spanish-English bilinguals made more accurate judgments about universal facial expressions when tested in English but reported more intense subjective experiences in Spanish. Lechuga and Wiebe (2011) found that Mexican American bilinguals were more overconfident when primed in Spanish than in English.

To our knowledge, no previous research has looked at language's effect as a prime in attribution patterns. The current study sought to fill this gap by investigating how the use of language as a prime would influence attributional patterns in Chinese-Western bicultural individuals (i.e., individuals who have a Chinese cultural background but currently live in Western countries). We proposed that language would activate corresponding cultural mindsets and induce bicultural individuals to respond within that mindset. We hypothesized that: (a) the longer the time that a bicultural individual had lived in a Western individualistic country, the less situational attribution he or she would make; (b) Chinese-primed individuals would make more situational attribution for positive events than English-primed individuals; and (c) Chinese-primed individuals would make more situational attribution for negative events than English-primed individuals. A distinction was made between positive (desirable) and negative (undesirable) events because cultural differences in attributional patterns were revealed to be larger concerning negative behaviors (Miller, 1984). The results of this study were expected to provide evidence about the impact of activated cultural mindsets on the attributional responses of biculturals to verbal stimuli, contribute to cross-cultural research on bicultural individuals, and add support for the effectiveness of language as a cultural prime.

Method

Participants

Ninety-seven Chinese-Western bicultural individuals participated in the present study. Of those, 77.6% filled out at least three-fourths of the whole questionnaire. Twelve participants did not meet the criteria for bicultural individuals by not having a Chinese origin, not living in a Western country at the time of data collection, or failing to report current residence, and they were thus excluded from subsequent analyses, resulting in a final sample of 85 participants (21 men, 64 women).

The participants retained for analyses (N = 85) had an average age of 21.20 years (SD = 2.35; two participants did not report their ages). Seventy-five (88.24%) of the participants lived in the United States at the time of data collection, and 10 (11.76%) lived in Western countries other than the United States. All participants were...
born in China and indicated that Chinese was their native language. None of the participants reported that English was their native language, but all participants demonstrated satisfactory fluency in English based on reported scores on the Test of English as a Foreign Language, SAT, or GRE (scores did not determine eligibility of inclusion). Among all the participants, 35.29% had lived in Western countries for one year or less, 37.65% for two to three years, 24.71% for four to five years, and 2.35% for six years or longer.

Materials
An online Chinese version and an online English version of the survey was created for the present study. The two versions of the survey had exactly the same content, taking into consideration literary meanings and indications in cultural contexts to the best of our ability.

Both the Chinese version and the English version of the online survey started with an informed consent in Chinese and in English, respectively. The survey had a demographic section, a self-section where causal attributions of self’s behaviors were tested, and an other-section where causal attributions of other’s behaviors were tested. The inclusion of both a self-section and an other-section was to control for possible biases toward self or others. Scenarios in the self-section were grouped on one page, and scenarios in the other-section were grouped on another page. The sequence of the two pages was randomized.

Demographics. The demographic section included questions about sex, age, current student status (undergraduate student, graduate student, or no longer a student), current country of residence, country of birth, primary residence (where they spent most of their life), country of origin of parents, proficiency in Chinese and English, and the total length of time they had spent in Western countries.

Assessment of attribution. Fourteen scenarios involving an actor and a behavior used in the current study were adopted from Ham and Vonk’s (2003) Attributional Style Questionnaire (ASQ; Peterson et al., 1982) and Expanded Attributional Style Questionnaire-Short (EASQ-S; Whitley, 1991). Ham and Vonk (2003) selected 16 scenarios that best activated both situational and dispositional inferences. Each scenario was accompanied by a word indicating a trait of the actor implied by the behavior as well as a word indicating a situational condition, serving as two potential reasons. For the purpose of the present study, we eliminated six of the 16 scenarios because they related poorly to daily life in this decade, and we slightly altered the content and wording of the remaining 10 scenarios (such as changing cinema to movie theater) to enhance the understanding according to the feedback from participants in a pilot study. Scenarios were accompanied by sentences instead of words illustrating dispositions or situational conditions. ASQ and EASQ-S were developed to measure an individual’s attributional style and how it related to depression. The researchers adopted two scenarios from ASQ and two from EASQ-S, slightly altered their wording, and added one sentence to each scenario describing a related disposition and one sentence describing a situational condition. The self- and other-sections contained 12 same test scenarios and one different sample scenario. Eight of 12 test scenarios involved negative behaviors and four involved positive behaviors. Based on Miller’s (1984) observation that larger cultural differences were seen associated with negative behaviors, we included more negative scenarios so that we would be more likely to find a significant difference.

The other-section began with instructions asking participants to divide up 100% responsibility of the actor’s behavior described in a given scenario between two potential reasons indicated by two accompanying sentences. A sample scenario that “Paul helps an old lady cross the street” followed the instruction to facilitate the understanding of participants. The first test scenario was that “John gets an A for the test;” the other 11 scenarios appeared in random order. Barrett and Bliss-Moreau (2009) found that women were perceived as more emotional than men even when the same situational information was available. To avoid the sex of the actor becoming a confounding variable, each scenario started with a common male name. The self-section had the same format. The instruction started with “imagine yourself as the protagonist” and the rest was the same as in the other-section. The sample scenario was that “You become very rich.” The first test scenario was that “You leave the movie theatre smiling;” the other 11 scenarios appeared in random order. Each scenario started with “You.” The sequence of two reasons accompanying each scenario was randomized. Participants were allowed to skip any questions. However, an error message would appear if they put two numbers for two reasons that do not add up to 100 for a scenario. Adding up points of a certain event category yielded a total score for
that category. For example, a participant’s score of situational factors for positive events was calculated by adding up all points that he or she attributed to situational factors for positive events in self- and other-sections.

Procedure
Participants were recruited using a snowball sampling technique by e-mails, postings on social network websites (i.e., Facebook®, Renren®, Douban®), and instant messages. The recruitment statement asked for participants who were Chinese and currently living in Western countries. Among the survey links sent out, half contained the link to the English version and half to the Chinese version; participants were not randomly assigned to conditions. Participation in this study was completely voluntary. There was no compensation or direct benefit associated with participating. All information collected in this study was anonymous. The study was approved by the institutional review board of the authors’ institution before the recruitment started. Once participants were recruited, the qualifications for retaining them in the analyses was that they must be 18 years of age or older, live in a Western country at the time of participation, and have at least one parent from China.

Results
Table 1 summarizes the descriptive statistics of situational attribution made by participants in the English and in the Chinese conditions for the different types of events (descriptive statistics for dispositional factors were omitted because points attributed to the dispositional factor plus those to the situational factor of an event always equal 100). Initial analyses were conducted to compare the total amount of situational attribution made by participants in the two conditions. Results of paired-samples $t$ tests revealed that participants in the English condition made a comparable amount of situational attribution and dispositional attribution for negative events, $t(33) = -.28$, $p = .78$, but more dispositional attribution than situational attribution for positive events, $t(33) = 2.19$, $p = .04$, $d = .76$. Participants in the Chinese condition made more situational attribution for negative events, $t(39) = -2.60$, $p = .01$, $d = -.83$, but more dispositional attribution for positive events, $t(39) = 4.38$, $p < .001$, $d = 1.40$.

To explore whether the supposed actor in each scenario affected the participants’ attribution of responsibility, paired-samples $t$ tests were conducted to examine the difference between the amount of situational attribution made in the self- and the other-section. Participants in the English condition assigned more responsibility to situational factors when they were in the self-section than in the other-section for positive events, $t(33) = -3.16$, $p = .003$, $d = -1.10$, and for negative events, $t(33) = -3.79$, $p = .001$, $d = -1.32$. Attribution made by participants in the Chinese condition showed the same pattern for negative events, $t(39) = -4.61$, $p < .001$, $d = -1.48$, but not for positive events, $t(39) = -1.89$, $p = .07$, $d = -.61$.

The first hypothesis was that the longer participants have lived in Western countries, the less total situational attribution they would make in both the self- and other-sections. A Pearson correlation revealed a nonsignificant result, $r = -.05$, $p = .64$.

The other two hypotheses were that, for positive and negative events, Chinese-primed participants would make more situational attribution than English-primed participants. The results of the analyses did not support these hypotheses. An independent-samples $t$ test revealed that, for positive events, participants in the Chinese condition made less situational attributions than those in the English condition, $t(72) = 2.14$, $p = .03$, $d = .51$, which was the opposite of the hypothesis. A second independent-samples $t$ test revealed no significant difference between the two conditions concerning situational attribution for negative events, $t(72) = -1.75$, $p = .08$, $d = -.41$.

Follow-up analyses were conducted to investigate the effect of the supposed actor on participants in the English and in the Chinese condition. When self- and other-section were examined separately, a significant difference was found between situational attribution for positive events in the self-section by participants in the Chinese

| TABLE 1 |

<table>
<thead>
<tr>
<th>Descriptive Statistics of the Amount of Situational Attributions for Different Types of Events</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Variable</td>
</tr>
<tr>
<td>Negative events</td>
</tr>
<tr>
<td>Self-section</td>
</tr>
<tr>
<td>Negative events</td>
</tr>
<tr>
<td>Other-section</td>
</tr>
<tr>
<td>Positive events</td>
</tr>
<tr>
<td>Self-section</td>
</tr>
</tbody>
</table>
Attributional Patterns in Biculturals | Li and Brown

condition ($M = 177.00, SD = 50.14$) and participants in the English condition ($M = 203.92, SD = 45.34$), $t(81) = 2.54, p = .01, d = .56$. Participants who took the survey in English made more situational attributions than participants who took the survey in Chinese when they were answering positive events in the self-section. However, there was no difference between the amount of situational attributions made by participants in the Chinese and in the English condition for positive events in the other-section, $t(74) = 1.20, p = .233$, for negative events in the other-section, $t(74) = -1.22, p = .23$, or for negative events in the self-section, $t(81) = -1.59, p = .12$.

Discussion

The current study sought to investigate the role of language on the activation of cultural mindsets and on the attribution of responsibility among Chinese bicultural individuals. We found that participants in the English condition attributed a similar amount of responsibility to situational and dispositional factors for negative events, but more responsibility to dispositional than situational factors for positive events. Interestingly, participants in the Chinese condition attributed more responsibility to situational than dispositional factors for negative events, but more responsibility to dispositional than situational factors for positive events. Participants in the English condition made more situational attributions in the self-section than in the other-section, $t(74) = 1.20, p = .233$, for negative events in the other-section, $t(74) = -1.22, p = .23$, or for negative events in the self-section, $t(81) = -1.59, p = .12$.

None of our hypotheses were supported. The correlation between the total length of stay in Western countries and the amount of situational attributions made by participants was not significant. We did not observe a difference in the amount of situational attributions made by participants in the two conditions for negative events. Moreover, contrary to our hypothesis, participants in the Chinese condition made less situational attributions than participants in the English condition for positive events; the difference was mainly due to the smaller amount of situational attributions made by Chinese-primed participants in the self-section.

To explain our findings, we propose that there could be another mechanism other than cultural priming at work when participants were completing the questionnaires such as the rational and controlled thinking associated with the foreign language (English). Research has found that people exhibit less bias when making decisions in a foreign language than in their native language, which might be due to the increased psychological distance and the reduction of emotional reaction associated with a foreign language (Keysar, Hayakawa, & An, 2012). Also, the cultural difference in attributional patterns has been found to be wider when people engage in automatic thinking rather than controlled thinking (Lieberman, Jarcho, & Obayashi, 2005). Therefore, our results might have been produced by two simultaneous processes; when participants were answering the survey in English, (a) their individualistic cultural mindset was activated, leading them to make more dispositional attribution, and (b) English, as a foreign language, facilitated critical thinking and deliberation, leading them to correct for the fundamental attribution error. The opposite processes occurred with participants in the Chinese condition because their collectivistic cultural mindset led them to make more situational attribution and their automatic thinking associated with their native language prevented them from examining the testing scenarios more carefully. Consequently, the effects of the two processes cancelled out, resulting in similar amounts of situational attribution in the two conditions. Because the cultural difference in the attributional pattern has been revealed to be smaller with positive events (Morris & Peng, 1994), the effect of native language might have surpassed the effect of cultural priming, producing one of the most surprising findings that Chinese-primed participants made less situational attributions than English-primed participants for positive events.

This explanation would not contradict previous findings where language was used successfully as a prime. Rational thinking and reasoning was not examined in the studies with Chinese bilinguals (Bond, 1983b; Chen & Bond, 2010; Dixon, 2007; Earle, 1969; Lee, Oyserman, & Bond, 2010; Ting, 2006; Trafimow et al., 1997), so the proposed process above would not have affected their findings. Meanwhile, Spanish bilinguals were found to be more accurate in judging facial expressions and less overconfident when tested in English (Lechuga & Wiebe, 2011; Matsumoto et al., 2008), which was confirmatory concerning our explanation.

Aside from the possibility that language might have acted as a double-edged sword, there are other potential reasons why our findings contradicted those of Hong et al. (2000). The different populations from which the samples were drawn
might be one of the reasons responsible for the disparity. In Hong et al. (2000), participants were Hong Kong students who had been exposed to the individualistic culture extensively since childhood and communicated in English in various settings. Although no information was obtained about whether the participants identified English as their native language, it is reasonable to speculate that a large proportion of the sample would do so. In comparison, none of the participants in the current study indicated that English was their native language and the current societal environment in China allows much less interaction with Western ideologies than that in Hong Kong in the 1990s. Despite their stay in Western countries and their preparation before coming, the sample in the current study might not have internalized the individualistic culture to the extent that participants in Hong et al.’s (2000) study had. Therefore, the English language of the survey might have failed to activate their individualistic cultural mindset because it was not as accessible, or it had not been established.

The difference in the procedures used in the current study and Hong et al.’s (2000) study to activate cultural mindset is another possible reason for the difference between our findings and Hong et al.’s (2000). Hong and her colleagues (2000) showed their participants pictures of cultural icons and asked them to answer multiple questions about the pictures. These questions might have led the participants to think about the culture represented in the pictures. In our study, no such step was employed to enhance the priming effect of language. Answering demographic questions in a language prior to responding to the testing scenarios might not be sufficient to activate the corresponding cultural mindset.

Another difference between the current study and Hong et al.’s (2000) study was the way that attributional patterns were examined. In Hong et al.’s study, participants noted their attributional patterns by indicating whether internal or external factors explained events. However, in the current study, participants were required to divide up 100% responsibility between a situational factor and a dispositional factor for each scenario. We chose this design over Hong et al.’s because it would yield ratio level data and allow more rigorous analyses. However, it forced participants to evaluate the factors against each other and to make more careful and less spontaneous attributions. Therefore, the previously observed difference in attributional pattern was minimized.

The current study added to the limited amount of literature on the cultural difference in attributional patterns of Chinese bicultural individuals. The unexpected findings of the current study raised the question about the role of native language in cognition and called to attention that native language may function as a confounding variable in bicultural research using language as a prime. The automatic thinking process in native language may interact with other mental processes that researchers intend to investigate. Future studies may examine both emotional facets and reasoning (or controlled thinking) when using language as a prime to see if the effect would be different. Besides, previous research on this topic mainly recruited Hong Kong students (Hong et al., 2000, 2003). Although Hong Kong students provide an ideal representation of bicultural individuals, another group that is worth more research attention is Chinese individuals in Western countries. The present study focused on this underrepresented population in research and shed light on the possible differences in cultural frame internalization between this group and Hong Kong students.

Meanwhile, there were limitations to this study. Due to the nature of the online survey, participants were not randomly assigned to each condition. In the process of the distribution of two versions of online surveys, we systematically avoided characteristic differences between those who received the invitation to the Chinese survey and those to the English survey. However, without random assignment to conditions, we were not certain whether a participant variable became the confounding variable. Another problem associated with our online survey was the low completion rate. Among participants who were retained for analyses, 11 completed only one section of the testing scenarios (either the self- or other-section), resulting in a smaller sample size in relevant statistical analysis. The difference in the amount of situational attribution made by participants in two conditions was approaching significance ($p = .08, d = .41$). If we had a larger sample, we might have been better able to detect differences in attributional patterns. In addition, the sample in this study was a convenient sample of the population. Those who self-selected to participate might differ in important aspects from those who did not.

There are several directions that future research can pursue. Researchers may utilize...
Attributional Patterns in Biculturals

additional procedures to enhance the priming effect of language. For example, they may ask participants to first read or write a passage in the language that they are primed with (but the passage should be on some irrelevant topic to either culture or attribution) before they start to answer questions on attribution. Also, it would be interesting to conduct research with Western individuals who currently live in East Asian countries to observe how their attributional patterns are affected by the language prime. Moreover, a measure of attributional patterns should be developed. There is no existing questionnaire on attributional patterns that is standardized and employed in multiple studies. Such a standard measure is in urgent need to facilitate the comparison of findings in different studies.

In conclusion, the current study examined attributional patterns in Chinese bicultural individuals who lived in Western countries using language as a prime. We found that the length of time an individual had lived in a Western country did not affect the amount of situational attribution that he or she made and that, compared to English-primed bicultural individuals, Chinese-primed bicultural individuals made comparable amounts of situational attribution for negative events and less for positive events. We suggest that future researchers take into consideration the role of native language in automatic thinking when using language as a prime.

References


Li and Brown | Attributional Patterns in Biculturals


Author Note. Sijia Li and Carrie M. Brown, Agnes Scott College, GA. Sijia Li is now at University of West Florida.

Correspondence regarding this paper should be directed to Sijia Li at sh44@students.uwf.edu or at 141 E. College Ave., Decatur, GA, 30030.
People vary in the way they approach others in times of need and in their motivations for embracing others warmly or rejecting them when the opportunity to intervene arises. If the vulnerable party is aided successfully, the consoler may gain a new friend. Evolutionarily, forming these sorts of relationships, or social resources, has been highly adaptive. Taylor et al. (2000) suggested that forming social resources through affiliating with others increases fitness, specifically for women because women played a greater role as caregivers to offspring than men in the environment of evolutionary adaptedness, and fighting or fleeing in response to stress would leave offspring vulnerable. Instead, women engage in a tend-and-befriend response through nurturing and attending to their children and affiliating with others to gain protective social resources. Thus, in response to an increase in sympathetic nervous system (SNS) activity during stress response, tend-and-befriend may be the dominant way of coping for women rather than fight-or-flight.

Women who experience stress from the recent loss of a social resource may be particularly motivated to develop new relationships. Taylor’s (2006) model suggested that gaps in positive social relationships (decreased interactions) are associated with increases in plasma oxytocin levels and that this neuropeptide may increase women’s desires to form new positive social resources. Taylor (2006) found increased oxytocin levels in women who recently decreased contact with mothers, best friends, pets, or social groups. Reports of feeling misunderstood and unsupported, as well as gaps in romantic relationships, also correlated with increased oxytocin levels. Taylor (2006) suggested

Predicting Empathy and Prosocial Behavior: Who Cares and When?

Kate A. Barford, J. Brian Pope*, Thomas F. Harlow, and Emily P. Hudson
Tusculum College

ABSTRACT. Mechanisms motivating prosocialness were investigated across two studies. Study 1 considered individual differences associated with empathy. Empathy was investigated within tend-and-befriend theory context (Taylor, 2006) in 90 undergraduate women. Prosocialness, situational-anger, behavioral approach system reward-responsiveness (BAS-RR), and reward-drive jointly predicted 70.3% of empathy variance. Empathic women are more reward-responsive and may associate prosocialness with reward, but are less driven to pursue rewards and have less situational anger. Study 2 investigated how individual empathy differences, BAS-RR, and sex influenced prosocialness. Undergraduate men and women were randomly assigned to an exclusion condition, potentially arousing desire for a new social contact, then responded to a story of a crying or not crying woman. Participants responded with more anger after exclusion, regardless of the woman’s crying, $F(1, 102) = 7.45, p = .007$. Regression analyses on helping response suggested that empathy, $\beta = .43, p = .02$, and BAS-RR, $\beta = .45, p = .05$, significantly moderated exclusion’s effect. High empathy and reward-responsive individuals desired to help more after exclusion and, thus, may respond to exclusion stress by befriending, and others may respond with withdrawal or anger.
that increases in oxytocin lead to a facilitation of affiliative behavior in order to counter stress from relationship gaps. If a woman’s approach is met positively by a potential friend, the woman’s stress should decrease as indicated by lowered SNS and hypothalamic-pituitary-adrenocortical axis activity. If the women’s approach is met negatively, the stress response should increase.

Although tend-and-befriend research is grounded in the theory that women have evolutionarily had a stronger need for this mechanism than men, oxytocin has been shown to have similar antistress effects when administered to men. Whether oxytocin is released naturally in response to stress for men is unknown (Taylor, 2006). Additional research surrounding sex differences in oxytocin mechanisms is limited. There is some evidence that oxytocin plays a similar role in attachment formation for men and women. Gordon, Zagoory-Sharon, Leckman, and Feldman (2010) demonstrated that mothers and fathers showed similar oxytocin levels across the first 6 months of parenthood. Oxytocin may increase as parent-child bonds form or may increase due to the stress parents face in the first months of parenthood. Gordon et al. (2010) suggested that oxytocin rewards parenting behavior through stimulation of dopaminergic pathways involving the nucleus accumbens. In addition to attachment research, oxytocin levels have been shown to increase in both men and women for up to 5 min postorgasm, and the strong initial attraction between two people can be explained in terms of increased dopamine and norepinephrine levels, which enhance the release of oxytocin (Hiller, 2004).

Some studies present evidence that oxytocin may have a similar effect on desire to engage in prosocial behavior across both sexes. In a study of oxytocin’s relationship to prosocial behavior, participants were randomly assigned to receive intranasal oxytocin or a placebo and were subsequently assigned to inclusion or exclusion conditions in a game of Cyberball® (Alvares, Hickie, & Guastella, 2010). In Cyberball, two virtual players, matched with pictures of real people to increase the believability of social contact, throw a ball back and forth to each other and to the participant. Those in the inclusion group received one third of the throws, whereas those in the exclusion group received the ball only once. Those in the exclusion group had an overall negative experience defined by decreased belongingness and sense of meaningful existence, and increased negative mood, regardless of whether they received oxytocin. However, the participants in the inclusion group who received oxytocin had more desire to play Cyberball again. This result suggested that oxytocin increases prosocial behavior only in response to positive prior social encounters (Alvares et al., 2010).

These results contradicted the theory that the increase in plasma oxytocin levels that follows a decrease of interactions in valued social relationships would lead to desire for new social contacts (Taylor, 2006). This element of the tend-and-befriend theory suggests that those in the exclusion group would have a greater desire to play again in order to reconcile a relationship with a potential social contact or fill the gap with a new contact. However, Alvares et al.’s (2010) Cyberball study did not specify that the opportunity to play again would be with different players, or provide a different situational context for the participants to make a new social connection. Either of these situational factors might have influenced results. Furthermore, Alvares et al. (2010) did not discuss all sex differences in the study. The authors reported that there was no difference in findings when excluding women taking oral contraceptives or when excluding women in menstrual phases with increased estrogen. Estrogen typically increases the effects of oxytocin, but the study suggested that oxytocin might have similar rewarding effects for social interaction in men as in women when administered exogenously. However, it was not addressed whether women in the exclusion group had more desire to play again than men in the exclusion group.

**Attachment Theory of Crying**

In addition to approaching others, crying may also be an evolutionary strategy used to build social resources in times of stress through the solicitation of help from others when in a vulnerable state. In order to facilitate the attachment between infant and mother, oxytocin is released in the mother, activating brain areas responsible for empathy and decreasing activity in anxiety and aversion related areas of the brain when the infant cries (Riem et al., 2011). This help-soliciting function of crying may be present throughout adulthood. Physiological changes occur both in the crier and those who witness them crying (Hendriks, Nelson, Cornelius, & Vingerhoets, 2008). These changes facilitate a bond between the crier and potential comforter.

Hendriks, Croon, and Vingerhoets (2008) studied adult social reactions to crying to see if crying
had a help-soliciting function. Participants, both men and women, read vignettes where the character cried or did not cry, was a man or a woman, and was a friend or a stranger. The researchers also manipulated whether the character cried in a positive (joy) or negative (sadness) situation. More participants reported that they would give more emotional support to a crier than a noncrier, suggesting that even adult crying does serve to solicit help. Furthermore, negative affect toward the character decreased if the character was crying, suggesting crying may suppress an attack or anger response and possibly defuse an argument (Hendriks, Croon, et al., 2008). Crying may be a cue that a conflict has gone too far (Lane, 2006). Finally, characters crying in response to distress, as opposed to in response to a positive situation, elicited more positive reactions from the participants. These findings generalized to both men and women, with sex of the participant and sex of the crier having insignificant moderating effects on social reactions to crying.

Hendriks, Croon, et al.’s (2008) study supported the theory that crying might have evolved as a method of soliciting social support in times of distress. During these encounters, adaptive relationships may be formed. Crying might have an indirect effect on the well-being of an individual by signaling distress to others and soliciting a social response, which may lead to a positive social resource (Hendriks, Nelson, et al., 2008). This social support directly benefits health.

**Empathy**

Like crying, empathy might have been selected to help individuals gain positive social resources. Empathic responding is “the ability to understand and respond adaptively to others’ emotions, succeed in emotional communication, and promote prosocial behavior” (Spreng, McKinnon, Mar, & Levine, 2009, p. 62) and is perhaps one essential skill needed to develop a new positive social connection. Batson, Fultz, and Schoenrade (1987) experimentally demonstrated that arousal of emotional empathy often leads to helping behavior. Engagement in helping behavior, specifically in the context of consoling a crier, can lead to the development of new relationships (Hendriks, Nelson, et al., 2008). Arousal of emotional empathy has been experimentally demonstrated to lead to helping behavior (Batson et al., 1987). Thus, self-reported ratings of prosocialness should be associated with emotional empathy.

Depending on their motivational systems, some individuals may have developed a stronger emotional aspect of empathic responding and engage in more prosocial behaviors than others. Nikitin and Freund (2010) found a positive association between social approach motivation, behavioral approach motivational systems (BAS), and extraversion, as well as a positive association among social avoidance motivation, behavioral inhibition motivational systems (BIS), and neuroticism. These motivational systems may play a role in whether someone is likely to approach and empathically respond to a person in need. BAS has been associated with dopaminergic pathways and thus there may be a reward system in place for social approach motivation. These systems may also provide insight into motivations for engaging in prosocial behavior.

Personality factors have also been found to partially determine empathic responding. Extraversion, as it relates to BAS and social approach motivation, may predict one’s capacity for empathic responding (Nikitin & Freund, 2010). Agreeableness has been positively associated with prosocial motivation (Graziano, Hbashi, Sheese, & Tobin, 2007). Based on Taylor et al.’s (2000) tend-and-befriend theory, women are more likely to engage in affiliative rather than aggressive behaviors during times of stress. This should suggest that individual anger and aggressiveness measures should negatively correlate with empathic responding in women.

Biological sex and socialized gender differences may be associated with empathy. Within the context of tend-and-befriend theory (Taylor et al., 2000), femininity should be associated with measures of empathy and prosocialness because women should have evolved characteristics that make them more adept at affiliating with others to facilitate the development of adaptive social connections. Previous research has not always supported this trend. Eagly and Crowley (1986) suggested that men engage in more helping behavior than women, except when interactions are long-term. The authors also posited that men engage in behavior that is heroic and chivalrous, whereas women engage in helping behavior that is more nurturing and caring. Socialization factors may be responsible for the differences in empathic responding between men and women, but these differences may also have biological origins. A higher second digit (index finger; 2D:4D) ratio, indicating a lower amount of exposure to testosterone prenatally,
has been associated with empathizing in men, but has not yet been shown to predict empathizing in a female sample (von Horn, Bäckman, Davidsson, & Hansen, 2010). However, research in this area is contradictory. Blanchard and Lyons (2010) suggested that a higher finger-length ratio is associated with psychopathy in women and callous affect in men, thus contradicting that more feminine finger-length ratios are associated with empathy. Further research is needed to determine the exact relationship between these variables.

The Present Research
Study 1 aimed to determine some individual differences that predict empathy in a sample of women. Specifically, variables with clear biological foundations, namely finger-length ratio and BIS/BAS, were compared with personality factors that may be more influenced by socialization such as femininity, agreeableness, and prosocialness in a sample of women. The emotional aspect of empathic responding is an important variable because it has been shown to lead to helping behavior, which can in turn lead to gaining social support (Batson et al., 1987; Hendriks, Nelson, et al., 2008). The social support directly benefits health as a stress coping mechanism. This study investigated which of these variables accounted for the most variance in empathy differences among women. Measures were selected based on previous indicators of empathy and expanded upon in relation to the context of tend-and-befriend theory.

Study 2 considered how sex differences and individual empathy differences influenced desire to intervene in a particularly salient social situation. Feelings of exclusion were manipulated in order to arouse desire to form a new social contact (Taylor, 2006). Based on the findings from Study 1, individual difference measures were analyzed to consider how they may influence reactions to exclusion. A situation was then presented to participants involving a crying woman in order to facilitate the desire to help, and their inclination to approach or avoid her was measured (Hendriks, Croon, et al., 2008).

Study 1
Study 1 expanded the list of known correlates of empathy in the previously summarized research within a specifically female population. This study considered factors related to a woman’s emotional aspect of empathic responding and thereby her ability to make social connections useful for stress coping. The study was limited to a sample of women in order to examine the individual differences that may allow some women to respond more empathically than others. Within the context of Taylor et al.’s (2000) tend-and-befriend theory, empathy would be a particularly useful mechanism for women who, from an evolutionary perspective, were more likely to cope with stress by developing social resources than men. Furthermore, finger-length ratio has been associated with empathy only in men (von Horn et al., 2010). The present study considered this variable in a sample of women in order to compare an indicator of feminine brain organization with femininity as a personality trait (Spence & Helmreich, 1978). The relationship between Toronto Empathy Questionnaire (TEQ; Spreng et al., 2009) scores and measures hypothesized to be related to empathy were investigated. These measures included behavioral inhibition and behavioral approach, prosocialness, the Big Five personality factors (Buchanan, Johnson, & Goldberg, 2005), measures of anger elicitation, verbal aggressiveness, masculinity and femininity, and 2D:4D finger-length ratios. The TEQ was chosen because it emphasizes the affective aspect of empathic responding, which has been suggested to associate with emotional contagion, emotion comprehension, sympathetic physiological arousal, and conspecific altruism (Spreng et al., 2009).

Based on the survey of the research, the hypotheses for Study 1 were as follows: prosocialness, behavioral approach tendencies, agreeableness, and extraversion would be positively and significantly correlated with empathy; anger and aggressiveness measures would be negatively and significantly correlated with empathy; and femininity as well as finger-length ratio indicating a more female-typical pattern of brain organization would be positively and significantly correlated with empathy.

Method
Participants. Ninety female first- and second-year students from introductory psychology courses at a traditional American 4-year undergraduate institution responded to all questionnaires. Students received course credit for research participation with the option to complete an alternative assignment if they did not wish to participate. The mean age of the participants was 22.89, with a standard deviation of 8.83. Participants were also asked their race (86.9% White, 10.3% Black, 0.28% other).
Measures.

Empathy. Spreng et al.’s (2009) TEQ measures the emotional component of empathy defined as one’s emotional reaction to another’s emotional response. The scale includes items such as “I can tell when others are sad even when they do not say anything” and reverse-coded items such as, “I am not really interested in how other people feel.” The scale was internally consistent, Cronbach’s alpha = .87 (Spreng et al., 2009). The scale was positively associated with other measures of empathy, r = .80, p < .001, and negatively associated with measures of autism, r = -.33, p < .01 (Spreng et al., 2009). For the present sample, the Cronbach’s alpha of the 16 items was .86. Ability to accurately identify others’ emotions and respond effectively to them is an essential skill needed to form new relationships. Thus, scores on the TEQ were used as the criterion variable.

Prosocialness. Caprara, Steca, Zelli, and Capanna (2005) defined prosocialness as “a set of voluntary actions one may adopt to help, take care of, assist, or comfort others” (p. 77). Caprara et al.’s (2005) Prosocialness Scale for Adults (PSA) measures prosocialness as a trait. The scale includes items such as “I help immediately those who are in need” and “I am willing to make my knowledge and abilities available to others.” In a study by Caprara et al. (2005), the scale was internally consistent, α = .91, with a mean corrected item-total correlation of .59. For the present study, the Cronbach’s alpha for the 16 items was .89.

Motivational systems. The BIS and BAS motivational systems regulate aversive and appetitive motivation respectively (Carver & White, 1994). Carver and White’s (1994) BIS/BAS scales measure individual sensitivity to these systems. BAS is associated with dopaminergic pathways and is divided into three factors: BAS-RR (positive response to reward; e.g., “When I get something I want, I feel excited and energized”), BAS-drive (reward pursuit; e.g., “When I go after something, I use a ‘no holds barred’ approach”), and BAS fun seeking (impulsivity; e.g., “I crave excitement and new sensations”). The scale demonstrated test-retest reliability with correlations of .66 for BIS, .66 for BAS-drive, .59 for BAS-RR, and .69 for fun seeking in a sample of 113 participants retested after 8 weeks (Carver & White, 1994). BIS was correlated with measures of anxiety proneness (r = .72) and measures of harm avoidance (r = .74), and positive emotional reactions to the potential for reward were predicted by BAS sensitivity (Carver & White, 1994). For the present study, the scales also demonstrated reliable alphas. For the 4-item BAS-drive scale, Cronbach’s alpha = .80. The 5-item BAS-RR scale had a Cronbach’s alpha = .78, and the 4-item BAS-fun scale had a Cronbach’s alpha = .72. The 7-item BIS scale had a Cronbach’s alpha = .83.

Personality. The Five Factor Model (FFM) for the Internet measures openness, conscientiousness, agreeableness, extraversion, and neuroticism. The FFM is a shortened version of Goldberg’s International Personality Item Pool, and factors continued to show internal consistency in Buchanan et al.’s (2005) study, α = .89, .83, .84, .74, and .71 for extraversion, neuroticism, conscientiousness, agreeableness, and openness respectively (Buchanan et al., 2005). For the present sample, the Cronbach’s alphas were also reliable for extraversion (α = .86), neuroticism (α = .85), conscientiousness (α = .81), agreeableness (α = .74), and openness (α = .67).

Anger and aggression. The Multidimensional Anger Inventory (MAI; Siegel, 1986) measures hostile outlook, anger-arousal, and range of anger eliciting situations (RAES). According to Siegel (1986), the MAI demonstrated test-retest reliability (r = .75) and internal consistency with Cronbach’s alpha equaling .84 and .89 across two samples. The measure was also shown to associate with other anger inventories (Siegel, 1986). In the present sample, the Crobach’s alphas were .82, .87, and .74 for RAES, anger-arousal, and hostile outlook respectively.

Verbal aggressiveness was measured using Infante and Vigley’s (1986) Verbal Aggressiveness Scale (VAS). This scale demonstrated predictive validity through positive association with six verbal aggressiveness measures across three situations, r = .60, p < .001, and test-retest reliability in 40 students over 4 weeks, r = .82, p < .001 (Dewine, Nicotera, & Parry, 1991). For the present sample, the Cronbach’s alpha of the 20 items was .88.

Masculinity/femininity. The Personal Attributes Questionnaire (PAQ: Spence & Helmreich, 1978) measures masculinity and femininity as likely determined by socialization factors. The scale consists of 24 items divided into three subscales: Masculine Adjective (M), Feminine Adjectives (F), and Androgyne (M-F). Participants rated on a 6-point scale how strongly they identified with the masculine, feminine, and androgynous characteristics. For example, on one item of the F scale, participants rated themselves on a scale from 1 (not emotional at all) to 6 (very emotional). Helmreich, Spence, and Wilhelm (1981) reported
Cronbach’s alphas of .85, .82, and .78 for the M, F, and M-F scales respectively. The PAQ was scored in accordance with Spence and Helmreich (1978). For the present sample, the Cronbach’s alphas for the M, F, and M-F scales were .67, .76, and .48 respectively. The F scale was used for analyses in the present study to determine the relationship between femininity and empathy.

**(2D:4D) finger-length ratio.** Finger-length ratio (Manning, 2002) was used as biomarker for masculinization and feminization of sexually dimorphic brain areas as determined by prenatal testosterone exposure. Higher 2D:4D finger-length ratios indicate more feminine brain organization in sexually dimorphic brain areas. This measure was included to contrast masculinity and femininity as likely determined by social factors with an indicator of biological masculine and feminine brain differentiation in a sample of women.

**Procedure.** Participants voluntarily gave their informed consent to participate in a study reviewed and approved by the institutional review board. Ventral surface scans of the participants’ hands were obtained weeks prior to the completion of the questionnaires and measured using a digital caliper in order to determine 2D:4D finger-length ratio according to standard procedure (Manning, 2002). Participants subsequently responded to a set series of survey items using the online QuestionPro survey tool. Participants first responded to demographics questions, followed by questionnaires measuring the Big Five personality traits (Buchanan et al., 2005), BIS/BAS, empathy, prosocialness, anger, verbal aggressiveness, and masculinity and/or femininity respectively. The expected time to complete the survey was approximately 30 min, and participants responded to the survey at independent times. The title of the survey was “Personality and Social Behavior,” and instructions indicated that participants’ personalities and social reaction styles were being measured. All items were scored on a 6-point Likert-type scale from 1 (very inaccurate) to 6 (very accurate) except the Personal Attributes Questionnaire, which was scored in accordance with Spence and Helmreich (1978). Participants were not made aware of the study’s hypotheses.

**Results**

As predicted, TEQ scores significantly correlated with agreeableness, \( r = .48, p < .001 \), BAS-RR, \( r = .55, p < .001 \), prosocialness, \( r = .70, p < .001 \), anger arousal, \( r = -.34, p < .001 \), hostile-outlook, \( r = -.31, p = .003 \), verbal aggressiveness, \( r = -.46, p < .001 \), and femininity, \( r = .44, p < .001 \). TEQ scores were also correlated with conscientiousness, \( r = .33, p < .001 \). No significant correlations were found between BIS, finger-length ratio, or extraversion with empathy scores.

A regression model was developed to predict TEQ empathy scores, \( F(4, 85) = 50.36, R^2 = .70, p < .001 \). BAS-RR, \( \beta = .59, p < .001 \), prosocialness, \( \beta = .48, p < .001 \), BAS-Drive, \( \beta = -.20, p < .001 \), and RAES, \( \beta = -.135, p = .002 \), scores were significant independent contributors to the prediction of empathy scores as measured by the TEQ.

**Discussion**

This study identified factors associated with increased empathy among women that may influence their ability to make social connections useful for stress coping (Taylor et al., 2000). Women who were more agreeable and prosocial were more emotionally empathic. Women who were verbally aggressive, easy to anger, and hostile were less emotionally empathic. Trait feminism as measured by Spence and Helmreich (1978), but not finger-length ratio, was associated with emotional empathy. Socialization of women may play a greater role in the experience of empathy than brain differentiation of sexually dimorphic areas as influenced by prenatal testosterone exposure. Women who respond most strongly to BAS-RR motivational systems were found to be more empathic, but women with BIS motivational systems were not found to be less empathic. Surprisingly, though extraversion is associated with prosocialness (Nikitin & Freund, 2010), women’s extraversion scores were not found to be related to empathy scores.

BAS-RR and prosocialness were significant predictors of empathy in the positive direction, suggesting that empathic women’s motivation to act prosocially may be related to their valuation of these social interactions as highly rewarding. These women might have developed an internal reward system for empathic responding based on the adaptive value of forming social resources (Taylor et al., 2000). This is consistent with Nikitin and Freund’s finding (2010) that BAS was positively related to social approach motivation. However, more specifically, BAS reward was positively related to empathy whereas BAS drive was negatively associated with empathy. BAS drive and RAES significantly predicted empathy in the negative direction, suggesting that empathic women were not as driven to pursue personal rewards and
respond to others with less anger from situation to situation.

**Study 2**

Whereas Study 1 identified factors associated with increased empathy and thereby potentially more interest in developing social resources, Study 2 tested the subsequent influence of these factors when the opportunity to engage prosocially arises. Study 2 considered whether individual differences in empathy and one of its major correlates (BAS-RR) found in Study 1 influenced desire to intervene prosocially in a particularly salient social situation. This study manipulated the situational factors of exclusion and crying, and expanded upon Alvares et al.’s (2010) study by considering additional variables such as empathy and the option to hypothetically engage with someone in a new social context after exclusion. This study also elaborated on sex differences in helping behavior. These additional variables were investigated in order to better evaluate Taylor’s (2006) predictions about the effects of exclusion on desire to make new social contacts. The experiment followed a 2(participant sex) x 2(exclusion) x 2(crying) factorial design, with random assignment to Cyberball exclusion (experimental group) or word search (control) and women crying or not crying vignettes. Men and women were randomly assigned separately in order to have approximately even numbers of men (8–9) and women (18–20) in each condition. Participants first played Cyberball in order to create a feeling of exclusion (Alvares et al., 2010), which should arouse desire to form a new social resource (Taylor, 2006). Participants then read a vignette in which a woman they encountered either cried or did not cry to which they reported their desire to help, withdraw, or become angry with her.

Based on the summarized research, the hypotheses were as follows: participants would show more desire to approach and comfort the woman in the vignette when she cried than when she did not cry; women who read about the woman in the vignette crying would feel closer to the woman and have more desire to approach and comfort her than men in the same condition; women in both the exclusion (Cyberball) condition and in the crying woman condition would have the most desire to approach and comfort her; and men in the exclusion (Cyberball) condition would be more likely to avoid or become aggressive toward the woman in the vignette than women. Additionally, empathy and BAS-RR scores were hypothesized to predict how much a participant desired to engage in helping behavior across conditions.

**Method**

**Participants.** Participants were first- and second-year students (33 men and 77 women) from introductory psychology courses at a traditional American 4-year undergraduate institution. Students received course credit for research participation with the option to complete an alternative assignment if they did not wish to participate. Participants were a mean age of 20.19 with a standard deviation of 4.75.

**Measures.** Immediately following the conditions, participants responded to a feeling thermometer of how favorable and warm they felt toward the woman (American National Election Studies: Feeling Thermometers, 2007), and an adapted version of the Anticipated Behavioral Response Scale used in Hendriks, Groon, et al.’s (2008) study of social reactions to adult crying. Participants responded to 10 of the 11 items in the initial scale on a 6-point Likert-type scale from 1 (strongly disagree) to 6 (strongly agree). The item “I am happy for her” was omitted because it was not applicable to the scenario. Three items were reversed: (a) “I would get angry with her,” (b) “I would do nothing,” and (c) “I would ignore her.” A composite score, helping behavior, was developed from the 10 items. A scale reliability test was then performed on the 10 items resulting in a standardized Cronbach’s alpha of .88. The item “I would get angry with her” had a low correlation with the item total \( r = .19 \) and did not contribute to the overall reliability of the scale. This might suggest that withdrawal or avoidance items are the reverse of helping behavior, but becoming angry is indeed a separate and unrelated behavior. The item was removed and analyzed separately. The standardized Cronbach’s alpha for the 9-item scale was .89.

**Procedure.** Participants voluntarily gave their informed consent to participate in a study reviewed and approved by the institutional review board. TEQ scores and BAS-RR scores were obtained from online questionnaires, which participants responded to at least two weeks prior to engaging in experimental conditions. Participants were told that they were going to engage in two unrelated studies, one directly following the other. Two to four participants were run at a time. Participants wore headphones and were separated by dividers so that they would not be influenced by others. In the first study, participants were randomly assigned.
to either the exclusion (Cyberball) or control (word search) condition. In the exclusion condition, participants engaged in a game of Cyberball (Williams, 2006), in which they were initially thrown a ball three times, and then ignored by three other virtual players that they believed were real online participants. Participants were asked to visualize the other players and the environment in which they were playing, and were told that the researchers were interested in the effects of practicing mental visualization on task performance. Those in the control condition were instead asked to look for words in a word search and hold them in memory as part of a cognitive study. The word search was about computer parts and was intended to be a neutral stimulus that did not elicit thoughts about social encounters.

Participants were told that the second study was to gauge college students’ reactions to social scenarios in the college’s database and were ensured of their anonymity. Participants were randomly assigned to read a vignette, adapted from Hendriks, Croon, et al. (2008), in which they encountered a woman at a party who knocked over an expensive vase and hors d’oeuvres, and either proceeded to cry or did not cry. The vignette stated, “You are at a close friend's party. When you are in the kitchen pouring yourself a drink, an unfamiliar girl drops a dish with snacks. Furthermore, she breaks an expensive vase.” The vignette was then either followed or not followed by the statement “She starts to cry.” A woman was used in the vignette based on the evidence that women are more likely than men to be helped when crying (Hendriks, Nelson, et al., 2008). Participants then responded to how favorable they felt toward the woman in the vignette and how much they desired to help, withdraw, or become angry with her.

**Results**

**Feeling Thermometer.** A 2(exclusion) x 2(crying girl) x 2(participant sex) Analysis of Variance (ANOVA) was performed on the feeling thermometer item. There were no significant effects of sex or experimental manipulation on the feeling thermometer responses. Exclusion, $F(1, 96) = 0.71$, $p = .41$, cried, $F(1, 96) = 0.06$, $p = .81$, and sex, $F(1, 96) = 0.91$, $p = .34$, did not have significant main effects on the feeling thermometer item. The effects of interactions between exclusion and crying, $F(1, 96) = 0.14$, $p = .71$; exclusion and sex, $F(1, 96) = 0.20$, $p = .66$; crying and sex, $F(1, 96) = 0.31$, $p = .80$; and exclusion, crying, and sex, $F(1, 96) = 0.21$, $p = .65$, were also nonsignificant for the feeling thermometer variable.

**Helping Behavior.** A 2(exclusion) x 2(crying girl) x 2(participant sex) ANOVA was performed on the helping behavior data. There were no significant effects on the measure of helping behavior. Exclusion, crying, and sex did not have significant main effects on helping, $F(1, 102) = 0.05$, $p = .82$; $F(1, 102) = 0.02$, $p = .89$; and $F(1, 102) = 0.74$, $p = .39$, respectively. The interactions of sex and crying, exclusion and sex, crying and sex, and exclusion, crying, and sex, also did not have significant effects on helping behavior, $F(1, 102) = 0.02$, $p = .90$; $F(1, 102) = 1.85$, $p = .18$; $F(1, 102) = 0.27$, $p = .60$; and $F(1, 102) = 0.10$, $p = .75$, respectively.

**Anger.** A 2(exclusion) x 2(crying girl) x 2(participant sex) ANOVA was performed on the 1-item measure of anger elicitation. There was no significant effect of crying, $F(1, 102) = 0.10$, $p = .69$, nor sex, $F(1, 102) = 0.02$, $p = .90$, on anger. Interactions between exclusion and crying, exclusion and sex, crying and sex, and exclusion, crying, and sex, also had no significant effects on anger, $F(1, 102) = 2.99$, $p = .087$; $F(1, 102) = 0.72$, $p = .40$; $F(1, 102) = 0.82$, $p = .37$; $F(1, 102) = 0.93$, $p = .34$, respectively.

However, there was a significant main effect of exclusion on anger, $F(1, 102) = 7.45$, $p = .007$. Those who were in the exclusion (Cyberball) condition were more likely to respond with anger ($M = 2.04$, $SD = 1.20$) than those in the control (word search) condition ($M = 1.52$, $SD = 0.87$). The Cyberball condition might have manipulated frustration instead of exclusion for some participants.

**Empathy.** Based on the hypothesis that Cyberball might have manipulated different emotional states in different participants, subsequent exploratory analyses were used to test whether continuous variables interacted with the exclusion variable. Data from participants who completed both the empathy and BIS/BAS questionnaires in Study 1, and the experimental conditions in Study 2 were used ($n = 97$). A multiple regression analysis predicting helping behavior was conducted using Interaction Software (Soper, 2011) including the empathy x exclusion interaction term, adjusted $R^2 = .16$, $F(3, 97) = 7.23$, $p < .001$. All continuous variables were centered using z-score conversions. In support of the hypothesis that empathy scores would predict how likely a participant is to engage in helping behavior across conditions, there was a significant interaction between empathy and exclusion, $\beta = .43$, $p = .02$, such that empathy moderated...
Empathy and Prosocial Behavior | Barford, Pope, Harlow, and Hudson

the effects of exclusion on helping behavior (Figure 1). After experiencing exclusion, participants with higher empathy scores on the TEQ were significantly more likely to engage in helping behavior than participants with low empathy scores.

**BAS-RR.** As predicted by Study 1, BAS-RR moderated helping behavior in a similar way as empathy \((n = 100)\). A multiple regression analysis predicting helping behavior was conducted using Interaction Software (Soper, 2011) including the BAS-RR x exclusion interaction term, adjusted \(R^2 = .05, F(3, 97) = 2.59, p = .06\). All continuous variables were centered using z-score conversions. In support of the hypothesis that BAS-RR scores would predict how likely a participant is to engage in helping behavior across conditions, there was a significant interaction between BAS-RR and exclusion, \(\beta = .45, p = .05\), such that BAS-RR moderated the effects of exclusion on helping behavior (Figure 2). Participants with high BAS-RR scores were significantly more likely to engage in helping behavior after exclusion than participants with low BAS-RR.

**Discussion**

The hypothesis that helping behavior would vary across the sexes and experimental manipulations (exclusion/crying) was not supported. There was no main effect for crying on helping behavior or anger response. This was likely due to the vignette being a low impact manipulation. Reading about a woman crying in a vignette may not be generalizable to witnessing crying in real life. The manipulation of exclusion using the Cyberball game might have affected some participants differently than others. The main effect of the exclusion condition on anger response suggested that Cyberball might have frustrated some participants, leading them to become angry with the woman in the vignette.

However, Cyberball may produce the experience of exclusion for those with high empathic responding. Those with higher empathy scores may be more aware of the potential certain circumstances provide for building social resources. After being excluded in the Cyberball condition, those with higher TEQ scores may be more motivated to look for the opportunity to form a social resource through helping behavior when asked about the woman in the vignette in order to counter the stress from exclusion (Taylor, 2006). Individuals with low TEQ scores may not be concerned with the potential these circumstances provide for building social connections, and may instead become frustrated or disengaged with the Cyberball game, leading to an avoidant or anger response when responding to the woman in the subsequent vignette.

Additionally, as predicted by Study 1, participants with high BAS-RR scores were significantly more likely to engage in helping behavior after exclusion than participants with low BAS-RR. This suggested that participants with high BAS-RR scores found engaging in helping behavior rewarding, particularly after exclusion, whereas participants with low BAS-RR scores did not. Individuals with high BAS-RR scores may engage in helping behavior because it is a rewarding method of gaining adaptive social resources. In conclusion, individuals high in BAS-RR and empathy may have more desire to engage in prosocial behavior (Batson et al., 1987; Nikitin & Freund, 2010). This difference might have developed in some individuals because engaging in prosocial behavior is a useful method of building adaptive social relationships (Hendriks, Nelson, et al., 2008; Taylor et al., 2000).

**General Discussion**

The purpose of the present studies was to identify factors associated with an individual’s empathy and interest in developing social resources and to test the subsequent influence of these factors on desire to engage in helping behavior. In a sample of women in Study 1, individual differences...
hypothesized to relate with empathy were investigated. BAS-RR and prosocialness were the most significant positive predictors of empathy, suggesting that empathic and prosocial women are motivated by reward. This reward motivation system may be an underlying mechanism of prosocialness if empathic women are valuing prosocial behavior as highly rewarding. The BAS-RR motivation system is associated with dopaminergic pathways. If empathic women are motivated by the activation of these pathways, it is possible that they frequently engage in prosocial behavior because it is rewarded by dopamine release, and this should be investigated in future research. A reward system for prosocial behavior might have evolved in women due to the adaptiveness of the social resources developed through engaging in prosocial behavior. Study 1 was limited because it did not investigate the influence of individual differences on empathy, and only associations were measured. Neurophysiological studies should further investigate the reward system for engaging in prosocial behavior, which may include the dopaminergic pathways associated with BAS. In accordance with Taylor’s (2006) model of affiliative responses to stress, the release of oxytocin should also be investigated as part of this system because oxytocin has been shown to increase the activity of dopaminergic pathways (Gordon et al., 2010), activate brain areas responsible for empathy (Riem et al., 2011), and increase desire to engage prosocially (Alvares et al., 2010; Taylor, 2006).

BAS-drive and RAES were the most significant negative predictors of empathy, suggesting that empathic women are less motivated to achieve personal goals and are unlikely to respond to many situations with anger. These women may instead be more likely to engage in a tend-and-befriend response (Taylor et al., 2000). Empathic women may be less likely to disregard others on the way to personal reward and are less likely to become angry across situations. However, the results of this study cannot be generalized beyond the sample of American undergraduate women, and future research should expand the breadth of the sample to include both sexes and more cultural variables.

In Study 2, the hypotheses that sex would interact with the conditions of exclusion created by Cyberball and the manipulation of whether the woman in the vignette was crying were not supported. This might be due to unsuccessful manipulations of crying and an underrepresentation of male participants. Although the vignette offered a great degree of control, it lacked experimental impact. The exclusion manipulation might have affected some participants differently than others. Participant responses to the experimental conditions indicated that some participants felt excluded after playing Cyberball, but many instead felt frustrated. Additionally, these results could suggest that individuals attempt to counter exclusion stress through several responses: an anger or fight response, a withdrawal or flight response, or a prosocial tend-and-befriend response (Taylor, 2006). Future research should consider other ethical manipulations of exclusion that may have more experimental impact than Cyberball and increase external validity.

Further analyses suggested that both empathy and BAS-RR scores significantly moderated the effects of exclusion on helping behavior such that higher scores of empathy and reward responsiveness indicated more likelihood of approaching and comforting the woman in the vignette. This effect was much more pronounced following the Cyberball condition. Cyberball might have induced a feeling of exclusion in highly empathic participants who were inclined to look for opportunities for social contact, and it might have induced feelings of frustration instead in those who scored low in empathy and were not engaged in the social context of the game. After playing Cyberball, empathic participants might have been motivated to make new social resources in order to reduce the

![FIGURE 2](image)

**FIGURE 2**

Helping Behavior as a Function of BAS Reward and Exclusion

<table>
<thead>
<tr>
<th>Helping Behavior z Scores</th>
<th>Not Excluded</th>
<th>Excluded</th>
</tr>
</thead>
<tbody>
<tr>
<td>+1 SD BAS Reward</td>
<td>0.07</td>
<td>0.50</td>
</tr>
<tr>
<td>-1 SD BAS Reward</td>
<td>-0.08</td>
<td>-0.60</td>
</tr>
</tbody>
</table>

Note. BAS = Behavioral Approach System.
Empathy and Prosocial Behavior

Barford, Pope, Harlow, and Hudson

stress response caused by the exclusion condition. These participants were more likely to engage in helping behavior in order to take advantage of the opportunity to make a new social resource through the woman in the vignette. Moreover, as predicted by Study 1, BAS-RR had the same (though smaller) effect as empathy. Participants scoring high in BAS-RR were more likely to engage in helping behavior after being excluded. These participants might have found the idea of engaging in prosocial behavior more rewarding after the exclusion condition because of the potential to reduce the stress response from the exclusion by filling the gap with a new contact (Taylor, 2006).

Individuals scoring high rather than low in empathy may experience different emotional responses in reaction to the crying woman. Batson et al. (1987) suggested that individuals respond to someone in distress in two distinct ways: They feel personal distress (defined as becoming alarmed, upset, worried, disturbed, distressed, troubled, etc.) or they feel empathy (defined as becoming sympathetic, moved, compassionate, tender, warm, soft-hearted, etc.). Individuals who experience the distress response are motivated to reduce the arousal they feel for egoistic reasons, whereas individuals who experience the empathy response may be motivated by altruistic reasons. Although Batson et al. (1987) suggested that both responses may lead to helping behavior, the present research suggested that some individuals may instead engage in an anger response in order to deter the crying woman or reduce their unpleasant feelings of arousal. According to the present research, those who experience the empathy response may be more likely to engage in helping behavior. Those whose emotional response is instead one of personal distress may be more likely to engage in an anger response. Because both helping and reacting angrily are approach and not withdrawal behaviors, these responses may be related to BAS motivation with helping behavior related to BAS-RR and anger response associated with BAS-drive. BAS-drive is a personal goal-driven motivational system, which Study 1 demonstrated as a negative predictor of empathy, suggesting that anger response may relate to the egoistic motivation response suggested by Batson et al. These hypotheses strongly lent themselves to further experimental investigation. Future research should experimentally manipulate empathy (Batson et al., 1987) and investigate its effects on helping behavior in those with BAS-RR or BAS-drive motivational systems. Additionally, future research should consider a sample with a greater age and cultural range than the present study to increase generalizability, and use more salient manipulations to increase external validity.

References

Barford, Pope, Harlow, and Hudson | Empathy and Prosocial Behavior

Pitscataway, NJ: Rutgers University.


Author Note. Kate A. Barford conducted this research under the supervision of and in collaboration with J. Brian Pope and Thomas F. Harlow, and with the assistance of Emily P. Hudson in affiliation with the Department of Psychology, Tusculum College, TN.

Correspondence concerning this article should be addressed to J. Brian Pope at bpope@tusculum.edu.
Cognitive dissonance theory has evolved since Leon Festinger’s original proposal in 1957. Festinger believed cognitive dissonance was the result of an innate drive present in all individuals to maintain cognitive consistency. However, Cialdini, Trost, and Newson (1995) demonstrated that only individuals with a high preference for consistency (PFC) act as dissonance theory predicts. PFC can be conceptualized as an internalized need to act or seem consistent with one’s previous actions. Many studies have examined and supported the relationship between PFC and cognitive dissonance, yet the underlying reasons behind high-PFC individuals’ need for consistency have gone largely unexamined.

Festinger’s (1957) theory of cognitive dissonance assumed that all individuals prefer cognitions consistent with their belief system, a phenomenon labeled the principle of cognitive consistency. When an individual’s belief system is challenged by conflicting cognitions, that individual experiences an aversive intrapersonal state known as cognitive dissonance. Dissonance is motivational in nature, and individuals may employ three dissonance-reduction techniques to restore cognitive consistency: (a) changing beliefs, (b) changing actions, or (c) changing perception of the action. More recently, Koppers and Cato (2008) demonstrated that trivializing the source of dissonance has also been proven effective in restoring cognitive consistency. For example, Nail et al. (2001) demonstrated that individuals experienced cognitive dissonance after imagining being stood up by a friend. Being stood up by a friend clashed with the individual’s belief of how a friend should behave, thus violating the principle of cognitive consistency and causing cognitive dissonance. Festinger believed this internalized need to act or seem consistent was an innate drive applicable to everyone. However, research by Cialdini et al. (1995) revealed that not everyone was subject to Festinger’s principle of cognitive consistency.

ABSTRACT. Dissonance affect and behavioral intention measures were added to a dissonance-inducing, role-playing paradigm to examine the tendency of individuals with a high preference for consistency (PFC) to experience dissonance more intensely. In the present study, high- and low-PFC individuals imagined being stood up by a friend, Chris, with either sufficient justification (Chris missed dinner because of a car accident) or insufficient justification (Chris went out with another friend). Dissonance was measured by subsequent ratings of Chris as a friend. As expected, high-PFC individuals were more susceptible to dissonance effects than low-PFC individuals on the friend, $F(1, 71) = 132.52, p < .001$, $\eta^2 = .65$, and behavioral intention measures, $F(1, 71) = 6.68, p < .02$, $\eta^2 = .09$, $F(1, 71) = 3.03, p < .09$, $\eta^2 = .04$, but not on the dissonance affect measures. Responses to the behavioral intention measures indicated that dissonance is practically rather than emotionally motivated. Overall, these findings strengthened the growing consensus that cognitive dissonance theory applies more strongly to high-than low-PFC individuals.
Cialdini et al. (1995) revised cognitive dissonance theory by demonstrating that an individual with a high-PFC experiences cognitive dissonance more intensely than a low-PFC individual. Cialdini et al. developed the PFC scale to measure an individual’s preference for consistency. Participants were given this scale and classified as either having a low- or high-PFC based on a either a median or tercile split. By comparing high- and low-PFC individuals’ responses to three traditional dissonance-inducing paradigms, Cialdini et al. concluded that high-PFC individuals respond to incoming information by examining its relationship with previously established information and factors, and low-PFC individuals appear relatively unconstrained by past experience, and are more likely to be responsive and receptive to new information for its own sake. These personality differences often lead to differences in behavior. For example, Council, Grant, Smith, and Matz (1997) demonstrated that high-PFC individuals were more likely than low-PFC individuals to follow through on their commitments to attend scheduled experiments as part of their introductory psychology requirements. By aligning their present behavior with past commitments, high-PFC individuals avoided the cognitive dissonance of not acting consistently.

Nail and colleagues (2001) conceptually replicated the Cialdini et al. (1995) findings using a role-playing paradigm. To induce dissonance, high and low-PFC participants were asked to vividly imagine being stood up by a friend, Chris, for either sufficient justification (Chris went out with another friend) or insufficient justification (Chris went out with another friend). The researchers predicted that insufficient participants would experience more dissonance because, as stated earlier, being stood up for no good reason violates Festinger’s (1957) principle of cognitive consistency. Dissonance was measured by post-scenario ratings of Chris as a friend on an 11-point Likert-type scale. By derogating Chris as a friend, participants employed the dissonance reduction technique of changing their belief, thus restoring cognitive consistency between Chris’s actions and Chris’s status as a friend. Lower friend ratings indicated a greater violation of the cognitive consistency principle and higher cognitive dissonance. No derogation of Chris was necessary for sufficient participants because Chris’s good reason justified the stand-up. In accordance with Festinger’s theory, insufficient participants gave significantly lower friend ratings to Chris than sufficient participants. Furthermore, the study successfully replicated Cialdini et al.’s findings in principle because high-PFC/insufficient participants gave Chris significantly lower friend ratings ($M = 3.75$, $SD = 2.01$) than the low-PFC/insufficient participants ($M = 5.15$, $SD = 2.01$).

The results from both Nail et al. (2001) and Cialdini et al. (1995) were groundbreaking because they provided an explanation for the lack of consistent effects that had plagued cognitive dissonance researchers prior to the development of the PFC scale. All of the mentioned cognitive dissonance studies have demonstrated that there is a definite relationship between PFC and dissonance, but there has previously been no investigation of exactly why high-PFC individuals experience dissonance more intensely than low-PFC individuals. Are high-PFC individuals emotionally upset when their experiences are not consistent with their belief system, or are they practically structuring their reality to be as consistent with their belief system as possible? By examining the motives behind high-PFC participants’ derogation of Chris in the role-playing paradigm, the current study attempted to understand why a high-PFC individual experiences dissonance more intensely than a low-PFC individual.

The current study was an attempt to replicate the extant justification/PFC results in the Nail et al. (2001) role-playing paradigm, and to extend the analysis to include measures of participants’ dissonance affect and behavioral intentions. These variables were used as an attempt to gain insight into high-PFC participants’ tendency to derogate Chris as a friend. Dissonance affect was conceived as the degree to which participants were upset or offended by being stood up. The behavioral intentions measures examined the likelihood that participants would accept or be the first to invite Chris to dinner in the future. Behavioral intention measures are generally regarded as stronger dependent measures than the mere self-reported attitude change used in previous studies (Aronson, Ellsworth, Carlsmith, & Gonzales, 1990).

In accordance with the Cialdini et al. (1995) and Nail et al. (2001) findings, we predicted that high-PFC/insufficient participants would give Chris significantly lower friend ratings than low-PFC insufficient participants. Furthermore, if high-PFC participants’ cognitive dissonance was emotionally motivated, their scores on the upset and offended measures of dissonance affect would be higher.
than low-PFC individuals. Alternatively, if high-PFC participants’ dissonance was practically motivated to avoid future dissonance, their scores on the accept and first measures of behavioral intentions would be lower than low-PFC individuals. If these measures yielded significant results with respect to PFC and justification, Cialdini and colleagues’ theory of PFC’s effect on susceptibility to dissonance would be further supported. Furthermore, the dissonance affect and behavioral intentions measures determined if high-PFC individuals experienced dissonance as the result of emotional and/or practical reasons.

Method

Participants
Participants included 81 volunteers (43 men and 38 women) enrolled in either general psychology or research methods courses at a southern central state university. Approximately 95% of participants fell in the average age range of traditional college students (18–22 years). No ethnicity information was gathered. Students received bonus credit toward their final grade in exchange for their participation. Students who did not want to participate in the study had the option of writing a one-page summary of a psychological article of their choosing for the same bonus points.

Procedure
Students interested in volunteering for research took the short form of the Cialdini et al. (1995) PFC scale in a mass testing session near the start of the spring semester. The short form PFC scale has nine questions rated on a 9-point Likert-type scale from 1 (strongly agree) to 9 (strongly disagree). Questions included “I typically prefer to do things the same way” and “I want my close friends to be predictable.” Approximately one month later, students were told about the current project. Data collection took place during a regular class session.

All students acceded to the instructor’s invitation to participate. During the research session itself, the students were informed that they would be simply reading and responding to a brief scenario that might happen to anyone.

Two scenarios to complete a 2 (Justification: sufficient vs. insufficient) x 2 (PFC: low vs. high) factorial design were placed every other one in a stack before class so that high- and low-PFC participants were unaware of the two experimental conditions. After describing the procedure and establishing informed consent, the instructor handed the student on the first seat in each row a stack of scenarios that corresponded to the number of students in that row. Thus, the course instructor was blind as to participants’ experimental conditions. Participants were also blind because they were not informed that the scenarios were different until after the data had been collected. In the sufficient justification condition, the instructions read:

Please try to vividly imagine the following happening to you. A friend of yours, Chris, calls and asks you to go out for dinner (You see Chris as just a friend and not a potential romantic partner). The two of you agree to meet at a restaurant at a certain time. You arrive at the agreed upon time, but Chris does not. After waiting 15 minutes or so, you give Chris a call but get no answer. Later that evening, however, Chris calls you. When you ask what happened, you learn that Chris was involved in a minor traffic accident on the way to the restaurant. Although not seriously injured, Chris had to go to the police station to help fill out a lengthy accident report.

The instructions were identical in the insufficient justification condition except for the reason Chris gave for not showing up for dinner:

Later that evening, however, Chris calls you. When you ask what happened, Chris tells you that the dinner “just didn’t work out.” After inviting you, Chris had received an invitation from a different friend to go out. Chris had not seen this friend in a long time, so Chris decided to go out with him/her instead.

The scenario was followed by a questionnaire comprised of five items all measured on 11-point Likert-type scales. The first primary dependent variable, friend, measured cognitive dissonance with the question, “After hearing Chris’s explanation, to what degree would you still consider Chris a friend?” (1 = not a very good friend to 11 = a good friend). Items 2 through 5 included the dissonance affect and behavioral intention measures. The second item, offend, measured dissonance affect with “After hearing Chris’s explanation, how offended would you be for Chris missing your dinner date?” (1 = not offended at all to 11 = very offended). The third item, accept, measured behavioral intentions with “If Chris were to now ask you out again, how likely would you be to accept the invitation?” (1 = very unlikely to 11 = very likely). The fourth
item, first, also measured behavioral intentions with “How likely is it that you would be the first to invite Chris to do something?” (1 = very unlikely to 11 = very likely). The fifth item, upset, further measured dissonance affect with “After hearing Chris’s explanation, how upset with Chris would you be for missing your dinner date?” (1 = not upset at all to 11 = very upset). Finally, age and sex data were collected.

After completing the questionnaire, participants passed in their responses. Participants remained anonymous by having each identified only by a research number (the last 4 numbers of their ID numbers). A complete debriefing occurred near the middle of the semester during a regular class meeting. Participants were fully informed of the theoretical constructs, hypotheses, and results. The study was conducted with institutional review board approval (IRB) and adhered to IRB ethical standards.

Results

We computed a PFC score for each participant by taking the average of the nine items. In line with Cialdini et al. (1995) and Nail et al. (2001), participants were divided into low- and high-PFC based on a median split of the PFC scores. Four additional participants were eliminated (two men and two women) because their PFC score fell on the median, leaving 75 participants for the analyses (41 high-PFC, 34 low-PFC).

Mean post-scenario ratings for Chris as a friend as a function of justification and PFC are presented in Figure 1. A 2 x 2 Analysis of Variance (ANOVA) of these data yielded a significant main effect for justification, $F(1, 71) = 132.52$, $p < .001$, $\eta^2 = .65$. After being stood up, sufficient participants overall rated Chris as a much better friend ($M = 9.64$, $SD = 1.46$) than insufficient participants ($M = 4.89$, $SD = 2.039$). The analysis also produced a significant main effect for PFC. High-PFC participants overall rated Chris as less of a friend ($M = 6.68$, $SD = 2.97$) than did low-PFC participants ($M = 7.93$, $SD = 2.88$), $F(1, 71) = 4.16$, $p = .05$, $\eta^2 = .06$.

To explore for other potential differences, we submitted the friend, offend, accept, first, and upset ratings to a 2 (Justification: sufficient vs. insufficient) x 2 (PFC: low vs. high) multivariate analysis of variance (MANOVA). All of these variables yielded significant effects with regard to the justification main effect, with $F$s ranging from 132.52, $p < .001$, for friend to 30.35, $p < .001$, for first. More to the point, however, was the significant multivariate main effect for PFC regarding accept (see Figure 2). The results effectively replicated Cialdini et al.’s (1995) findings that high-PFC individuals are more susceptible to dissonance effects. As expected, Chris’s unfriendly actions in the insufficient justification scenario clashed with high-PFC participants’ internalized need for friends to act consistently friendly, because high-PFC sufficient participants derogated Chris more than low-PFC/insufficient participants. Moreover, high-PFC sufficient participants derogated Chris more than low-PFC sufficient participants regardless of the fact that Chris’s reason for missing dinner was justified (i.e., the car accident). High-PFC participants experienced more cognitive
dissonance even when justification for the stand-up was adequate. Taken with the previous findings of Cialdini et al. (1995) and Nail et al. (2001), it is clear that high-PFC participants are more susceptible to cognitive dissonance than low-PFC participants.

As for the added behavioral intentions and dissonance affect measures, only the behavioral intentions measures produced significant results (see Figures 2 and 3). High-PFC participants reported that they would be much less likely to accept a future invitation from Chris on an 11-point Likert-type scale ($M = 3.73, SD = 3.00$) than did low-PFC participants ($M = 5.76, SD = 3.18$). High-PFC participants also reported that they would be somewhat less likely to be first to invite Chris to do something in the future ($M = 5.15, SD = 2.78$) than did low-PFCs ($M = 6.38, SD = 2.79$). Participant responses to the measures of dissonance affect, upset and offended, were not significantly different. High-PFC participants concerned themselves more with planning and avoiding future interactions with Chris than emotionally responding to being stood up. Just as high-PFC participants in Council et al. (1997) followed through on their commitments more than low-PFC participants, high-PFC participants in the current study were less likely to make plans with an individual who did not follow through with a commitment. Thus, these findings, in accordance with Council et al., indicated that the dissonance experienced by high-PFC individuals resulted from a motivation to avoid future inconsistencies and subsequent dissonance. Furthermore, the responses on the behavioral intention measures were particularly significant because many of the existing dissonance studies have been limited to self-reported attitude change as dependent measures of dissonance (Nail, Bedell, & Little, 2003; Nail, McGregor, Drinkwater, Still, & Thompson, 2009). One limitation of the present research was that, although the effect sizes, $\eta^2$, for the justification main effects were in a range usually regarded as large (.30 to .65; Cohen, 1987), the effect sizes for the PFC main effects were in a range usually regarded as small (.06 to .09). To this limitation, we point out that these small effect sizes were obtained in the context of a role-playing paradigm. Perhaps the PFC effect sizes would be somewhat larger in a context where high- and low-PFC individuals were actually stood up rather than just imagining being stood up. However, deception would have to be used in a real life scenario, which is counter-productive to the role-playing paradigm’s original intent to measure dissonance without deception. Moreover, though the experiment did not deal with participant behavior directly, it did measure behavioral intentions, thus surpassing past studies’ limitations that solely measured...
self-reported attitude change.

The insignificant results on the dissonance affect measures were a surprising finding that could prompt further research concerning why high-PFC individuals’ dissonance was practically rather than emotionally motivated. An interesting interpretation of these results could come from the work of evolutionary psychologist David Buss. Buss (2008) proposed that communicating one’s dissatisfaction with a friend’s actions may be an evolved psychological mechanism that protects the individual from future disappointment. Thus, high-PFC individuals’ cognitive dissonance and subsequent responses to the behavioral intention measures could be interpreted as the result of an evolutionary past in which making plans with unreliable individuals resulted in lower fitness. To test this evolutionary interpretation, a future study could be run in which one group of high-PFC/insufficient participants are told Chris is a family member and another group is told he is a friend. According to Hamilton’s (1964) theory of inclusive fitness, individuals are more apt to act altruistically if the benefactor shares genes because unconditional helping of kin increases genetic fitness. Therefore, high-PFC/insufficient participants in the family condition would be more likely to accept or be the first to invite Chris out in the future than high-PFC/insufficient participants in the friend condition.

Each study building upon the one before, dissonance research has evolved as it continues to expand upon a state of mind that one experiences when expectations come at odds with reality. In 1957, Festinger first theorized and demonstrated the existence of cognitive dissonance as a state of mind. Cialdini et al. (1995) then expounded upon the theory’s basic assumptions to demonstrate that one’s experience of cognitive dissonance is relative to PFC. The current study expanded dissonance research by using behavioral intention measures to successfully demonstrate high-PFC participants’ heightened susceptibility to dissonance with a novel approach that gained insight into the underlying cause of high-PFC individuals’ dissonance. Whereas previous studies have relied upon self-reported attitude change to demonstrate dissonance, the behavioral intention measures used in the current study are generally regarded as more reliable dependent measures, and further strengthened the link between PFC and cognitive dissonance (Aronson et al., 1990). Furthermore, responses to the behavioral intentions and dissonance affect measures revealed that dissonance was practically rather than emotionally motivated. Dissonance resulting from a practical need to avoid future inconsistencies and possibly avoid hazardous relationships is an interesting interpretation of the results that could easily translate to research in evolutionary psychology. The knowledge gained in the current study supports and strengthens years of dissonance research and raises interesting questions that may broaden dissonance research into new areas. Thus, cognitive dissonance theory continues to evolve.

References


Author Note. Jon Nolan and Paul Nail, Department of Psychology, University of Central Arkansas.

Special thanks to Dr. Nail for his guidance throughout the publication process as well as his contributions to the paper.

Correspondence concerning this article should be addressed to Jon Nolan, Department of Psychology, University of Central Arkansas, Conway, AR 72032. E-mail: jnnolan313@gmail.com
INVITED EDITORIAL: A Model for a Research Program That Encourages Undergraduate Students to Present and Publish Original Research

Jennifer L. Hughes
Agnes Scott College

Most undergraduate psychology programs require their students to engage in research in a research design and methods course, but few of these projects are presented outside of the classroom or published (Perlman & McCann, 2005). Much of this research involves papers that would not be accepted for publication because the students are still learning how to conduct research. Once students have taken their introductory statistics and research design and methods courses, they are ready for additional research experiences. Faculty at undergraduate institutions without graduate students often struggle with how to make a research laboratory work for them. For this editorial, I present a model for a research program using a topic-based research laboratory course and a supporting team of undergraduate student and alum researchers at an undergraduate college.

First, I describe how I recruit research assistants and provide opportunities for them to participate in the research process. Next, I share the benefits of joining my research laboratory, which I discuss with my research assistants. I also explain the expectations for my research assistants during the research process. Then I describe how I encourage my research assistants to present and publish their research. Finally, I discuss the possible benefits of this model for faculty members who want to conduct research with undergraduate students.

Recruiting Research Assistants and Providing Opportunities to Participate in the Research Process

Every spring, our department distributes applications for students who want to enroll in a topic-based research laboratory or conduct independent research projects. Gramblet Alvarez (2013) suggested looking for reliable, engaged, and trustworthy students. I often encourage Psi Chi members or students who have done well in my courses to apply. I speak with the applicants about their academic goals and their future goals. I try to gauge their interest in the research process and why they think conducting research is important for them. I usually accept 6 to 10 students to be members of my topic-based research laboratory course, which I teach every fall semester. Students are allowed to take several topic-based research laboratory courses, and I often have at least one student a year take my course a second time to conduct additional research. I also usually sponsor two to five students conducting independent research projects during each year.

I ask all of these students to join my summer lab as volunteer research assistants because I want their help with collecting the data they will use during the school year. They do not receive academic credit for volunteering, but they get to put the experience on their resume. I rarely have students turn down this opportunity. The reasons they cite for wanting to volunteer include taking part in the data collection, getting a recommendation letter from me in the future, adding additional research experience to their resume, and increasing their chances of getting into graduate programs or obtaining jobs.

I also keep a running list of other potential research assistants. These students might be first- or second-year students who have not completed their statistics and research design and methods courses but want some research experience. I tell these students that they are strictly volunteers and will not receive academic credit. Their work is completed during the summer and mostly involves editing the survey and recruiting participants. After they work with me for a summer, I strongly encourage them...
to join my topic-based research laboratory course when they are eligible to do so. Other potential research assistants include alums that have already taken my topic-based research laboratory course and want to continue to conduct research after they have graduated. I like to work with students that range from first-year students to alums so that I have a consistent group of repeat students that can help to mentor less experienced students. The alums cannot receive academic credit because they have graduated, so they join the laboratory as volunteers. I usually add 5 to 10 additional students and alums as volunteers. After combining all of these groups of students and alums, I typically have a total of 10 to 20 students working with me as my research team, to help each other learn about the research process and conduct research starting in the summer. All of my research assistants, except the ones who have not had statistics and research design and methods, continue through the spring when they present their work at conferences.

During the academic year, I sometimes will have one or two of the alum volunteers drop out of my research laboratory, and their reasons typically have to do with time constraints. I rarely have students who are receiving credit for the topic-based research laboratory or independent research quit my laboratory. The three that have dropped out in the past 16 years have quit within the first week, and they quit because of schedule conflicts, change of career plans, and workload issues.

Every spring, I determine a theme for my research for the coming academic year. I have several major areas of research that I am interested in and often conduct research on one of these topics. They include working couples, work-related commuting, and positive psychology. However, if a student wants to conduct independent research, I am willing to consider many other topics. I start my research near the end of every spring semester so that students who plan to be away from the college during the summer can begin the process and still continue to participate remotely.

Explaining the Benefits of Joining My Research Laboratory
At the beginning of the research process in the spring semester, I have a discussion with my research assistants about the value of volunteering as a research assistant. I let them know that, by helping me to know them better, I will be able to write them stronger letters of recommendation for graduate school or employment. I cite research such as Collins’ (2001) and Page, Abramson, and Jacobs-Lawson’s (2004), which emphasizes higher acceptance rates to graduate schools for candidates who have strong research credentials. I let them know that, by working with them, I am better able to speak about these specific skills when I recommend them for graduate school or employment. I share with them that this experience will help them to better understand the research process as well as develop their skills for conducting research (Landrum & Nelsen, 2002). I also tell them that this type of experience helps them to develop better reading, writing, and presenting skills, which are useful for both graduate programs and employers (Cramblet Alvarez, 2013; Sleigh & Ritzer, 2007). Also, becoming involved in research allows them to develop their own specific areas of interest that they would like to focus on with future research (Crowe, 2006). Finally, I stress that it is important for them to know if they like to conduct research because conducting research is often a major part of many graduate programs and some research-based jobs.

Developmental Progression
I find that clear expectations are essential for the effective development of research capabilities, and I carefully cover my expectations with students before they agree to participate. The role I give the students depends on their skill set.

Research assistant volunteers. The students who have not had the statistics and research design and methods courses primarily help with data collection and editing the research survey used to collect data during the summer. I want these students to be involved, but I do not feel they are ready for the responsibility of designing a project and writing a paper as first author. Palladino, Carsrud, Hulicka, and Benjamin (1982) found that many undergraduate students do not have the expertise to develop research projects that are presentable or publishable unless they have learned basic research skills.

Students in my topic-based research laboratory course. These students who are mostly juniors use the survey questions that I developed based on the topic I have selected for the course. I develop a rather extensive survey covering many aspects of the selected topic. The students read the literature I provide, design a project using a selection of the provided questions/questionnaires, analyze the data collected from the summer that fits with their hypotheses, and write a paper as first author. I am second author. I find that, by having the
students be first author, they take more ownership of their projects.

**Students working on independent research projects.** I expect for these students to have already taken my research laboratory course. I feel that, after completing that course, they are prepared to select a topic they are interested in and to complete a project. For the students completing an independent study, I help with narrowing the topic and the design of the project to ensure that they can effectively use the survey data that we will be collecting. They are expected to develop research hypotheses, collect and read literature on their topic, develop survey questions or find questionnaires to add to my survey, seek institutional review board (IRB) approval, analyze their data that we collect in the summer, and write a paper as first author. I am second author on their papers.

Each year, I ask two of these independent study students to be teaching assistants for my topic-based research laboratory course. Because they have taken the course, they are able to serve as peer mentors. They attend the course and help students with tasks we complete in class. I also ask them to lecture about the process of creating a presentation or poster and their conference experiences. I ask the teaching assistants who are going through the publishing process to discuss that process as well. Finally, if the teaching assistants are applying to graduate programs, I have them discuss that process.

**Returning research assistant alums.** The alum volunteers who have taken my topic-based research laboratory research course can design their own project using either the topic from my survey or their own topic. Most create their own topic. Then they are expected to develop research hypotheses, collect and read literature on their topic, develop survey questions or find questionnaires to add to my survey, seek IRB approval, analyze the data collected in the summer, and write a paper as first author. If they decide to use the topic from my current laboratory course instead of creating their own, they then follow the steps that the students in the course follow. I am second author on their papers as well.

I also expect that the returning research assistant alums will serve as mentors for the rest of the research assistants. During our lab meetings at the end of the spring semester just before summer starts, I have them explain what it was like to work in my lab and how they benefitted from it. I also have them describe their participation with conferences and the preparation that happened before attending. If they are published alums, I ask them to discuss the publication process.

**Making the Research Process Manageable**

All of the research assistants listed above except for the research assistant volunteers that are not completing research projects and end their work in the summer, are given deadlines for each part of their papers during the fall semester. Because the survey was already developed, IRB approval was received, and the data were collected and cleaned during the summer, we are ready to jump into the projects at the beginning of the fall semester.

I find that giving students very specific tasks makes the research process proceed more smoothly. It is difficult for beginning researchers to manage the multiple steps required in writing an entire research paper well. I advise them to complete each task with focus and to turn in their best possible work. The tasks include (a) hypotheses and proposed statistical tests to be used; (b) articles and book selection and a justification of why they chose those articles and books; (c) summaries of the articles and books they read; (d) a title for the paper; (e) an introductory paragraph; (f) an outline of their literature review; (g) a literature review; (h) a method section; (i) statistical analyses and their interpretation of their analyses; (j) a results section; (k) a discussion section including a summary of their findings, how their findings compare with other research literature, strengths of their study, weaknesses of their study, and future research ideas; (l) references; and (m) an abstract. I intentionally lecture about and give them this detailed list of tasks to guide them in their development. I have found that the specificity helps them do quality research. For example, by asking them to justify the articles and books that they selected to read for their paper, I am emphasizing the importance of selecting quality articles and books to use. I read the article and book summaries to see if students are selecting relevant material to write about and citing that material properly. I ask for an outline for their literature review because I know that having initial structure helps students to write more organized literature reviews. I also ask for their statistical analyses and interpretations to see if they know what their analyses mean. My syllabus for this course explains each step in greater detail, and it is available by request.

I give students detailed feedback on each task and verify they are completing the tasks correctly.
Encouraging Presentations and Publications

I encourage each of my research assistants who complete a project to submit their work to conferences. I tell students that their conference presentations are a way for them to receive credit for writing their research paper. Their attendance allows for valuable feedback from conference attendees and they can gain valuable experience in making presentations to large audiences. Our college has an internal conference, and I expect students to present their papers. In the past 16 years, my students have given 138 presentations at this conference. I also expect my students to submit their work to an external conference. Every year, I attend the Southeastern Psychological Association meeting, and I have students present their work. I have had 28 students and alums give professional talks or present professional posters and 72 students present undergraduate posters at these meetings. The other students often present their work at local conferences in Atlanta, where our college is located. I have had 19 students give talks or present posters at local conferences. Our department works to secure funding to help students attend these conferences. We celebrate their attendance by photos posted in the department, and I personally display pictures of each presentation in my research lab. My walls are filled with photographs.

After students have presented on and off campus, I contact the students and ask them if they would like to try to publish their work. Only about half of my students express interest in publishing, and I am fine with that. I know that publishing takes additional work, and I only want to work with students who will be strongly committed to the process. If the authors are interested, I ask them to edit their papers again because it usually has been four to six months since the completion of the papers. I encourage them to consider feedback they received from their conference attendance. Then I reread their papers and suggest possible journals based on the strength of their findings and writing. I suggest journals that have been known to publish papers written by undergraduate students because they judge students' work based on their current developmental level (Cramblet Alvarez, 2013). The Psi Chi Journal of Psychological Research is a journal that I often recommend to students with strong papers because of its quality and how encouraging the editors are for student authors. My students and I have published 13 papers with this journal and three more are in press. I also have worked with my research assistants to publish six additional papers in other professional journals and seven papers in undergraduate journals.

I should note that around 50% of my students' papers have been rejected from journals. Because publishing is competitive, I prepare students for possible disappointment. I develop a backup plan in case they do not receive favorable feedback and encourage them to use the feedback to continue to improve their paper. I then suggest that they submit the paper elsewhere. Most of my students submit their papers to other journals, and I make sure to write about their persistence in letters of recommendation that I write for them.

Benefiting Faculty Members

One of the biggest rewards of working with students on research involves being able to help students become scholars (Cramblet Alvarez, 2013). However, the process can be time-consuming and interfere with faculty's personal scholarship, so faculty should make the process work for them as well (Cramblet Alvarez, 2013). One way to do this is to have the students help the faculty member collect data that he or she will use for his or her own research manuscripts. If a professor wants to run participants through experiments or have participants take surveys, having 10 to 20 research assistants who can help do this is very valuable. Before I collect data every summer, I develop specific research hypotheses that I will test and write about for my personal research manuscripts.

If a faculty member does not have a topic-based research laboratory course as part of his or her teaching load, he or she should strongly
pursue getting one. It allows the professor to get teaching credit for helping students conduct their research and can increase his or her own research productivity. Professors who teach these courses should encourage students to consider presenting and publishing their work because the work has already been completed during the course. These presentations and publications not only will help the professor for promotional purposes, but the constant development of new data sets will also support the professor’s own research interests.

References


Author Note. Jennifer L. Hughes, Department of Psychology, Agnes Scott College, GA. Correspondence regarding this article should be addressed to Jennifer L. Hughes, Charles Loridans Professor of Psychology, 141 E. College Ave., Agnes Scott College, Decatur, GA 30030. E-mail: jlhughes@agnesscott.edu
EDITORIAL: Another Year of Great Strides
Melanie M. Domenech Rodríguez
Editor, Psi Chi Journal of Psychological Research

Four more issues of the Psi Chi Journal of Psychological Research have been printed. I have exciting updates to share and new developments to report, but above all, I want to take a moment to thank the authors for submitting their fine work to our Journal. They provide the content that is critical to the advancement of science. I also want to thank reviewers for their tireless work on behalf of Psi Chi Journal. Their excellent peer reviews provide the feedback necessary for us to meet the journal’s mission “to foster and reward the scholarly efforts of psychology students as well as to provide them with a valuable learning experience” (Psi Chi, 2014). Our publication standards are high. In the fiscal 2013–2014 year, 54 editorial decisions were made. Only eight manuscripts were conditionally accepted at the first submission. This represents an acceptance rate of 14.8%, which is comparable to rates for American Psychological Association (APA) journals (APA, 2013). However, a majority of first submissions were invited to return major revisions (n = 31, 57.4%) providing ample evidence of our efforts to support burgeoning authors in strengthening their publication skills.

The Journal is growing in multiple ways. Our manuscript submissions are up. In 2013, we received 64 original manuscripts. As of September 15, 2014, we have received 69 manuscripts. At this printing, 75% of the manuscripts processed in 2014 were submitted by undergraduate students, 18% by graduate students, and 7% by faculty. The numbers are similar to 2013 when the proportions were 79%, 13%, and 8% respectively. Psi Chi Journal is also literally growing in size. For the past two years, we have published five manuscripts per issue. This was a deliberate decision intended to provide our members with a high-quality, consistent product. Due to the increase in submissions and improved manuscript management system, we have increased the number of original empirical articles to seven per issue, starting with the 19.3 issue. Finally, our journal team has grown. Last year, we had three excellent Associate Editors, Drs. Debi Brannan, Carlos Escoto, and Shelia Kennison. This summer we added a fourth Associate Editor to our team, Dr. Steven Rouse. Dr. Rouse is a Professor of Psychology at Pepperdine University (CA) whose work focuses on personality assessment, positive psychology, and spirituality-based conceptions of self-worth. He brings strong quantitative skills to the position. Dr. Rouse teaches Introductory Psychology, Psychological Testing and Measurement, Personality, and Psychology and Religion. We also have a new editorial assistant at Utah State University (USU) to support new projects for the Journal. Jeisianne Rosario Colón is a first-year doctoral student in the Clinical, Counseling, and School Psychology program at USU. Her scholarship is focused on Latino mental health with a special interest in families and parenting.

We have made some notable changes to journal processing, most notably APA style and plagiarism checks. We have a talented in-house APA style editor who now systematically reviews all submissions for adherence to APA style. All authors, regardless of the editorial decision, receive substantive feedback on APA style. This also frees our reviewers to focus more deeply on the scientific content of the manuscripts while resting assured that all publication style issues will be addressed. Our APA style editor carefully checks manuscripts at submission and every revision that follows. As of this fall, all manuscripts are also being submitted for plagiarism checks through TurnItIn® to confirm the originality of each contribution. I am happy to report every single manuscript checked has returned as original work!

A critical goal for the Journal is to disseminate the work of our authors to the benefit of psychological science. To better understand our impact, Psi Chi Journal now has a GoogleScholar™ account so we
can track the number of times each article has been cited. In the history of the *Journal*, 126 manuscripts have been cited at least once. We have a total of 339 citations. The most cited manuscript published in the *Journal* was authored by VanVoorhis and Morgan (2001) and has been cited 49 times. Authors and potential authors are encouraged to review the GoogleScholar database to check for impact. As of last year, the *Journal* is indexed in PsycINFO®, thus we expect a steady growth in citations over the coming years.

Finally, we have some exciting new projects underway. First, we are selecting our best reviewers to join *Psi Chi Journal*’s new Advisory Editorial Board. Advisory Editors will be 12 of our strongest reviewers who can make a commitment to review four to six manuscripts per year. Through the Advisory Editorial Board, the small group of committed reviewers will be acknowledged for their heavier review load. In addition to expanding our family, we are working hard to provide digital object identifiers for all of our articles to continue pushing for more visibility of our published manuscripts.

Overall, it has been another exciting year. The *Psi Chi Journal* editorial team is committed to continue supporting Psi Chi members to strengthen their research skills while we make substantive efforts to increase the visibility of our authors’ contributions. With higher visibility, there is an increased probability of higher impact.

**References**


Reviewers for Volume 19

We sincerely appreciate the hard work on the part of the following individuals who served as reviewers for articles processed in 2014. Without the assistance of such dedicated professionals, the Psi Chi Journal of Psychological Research would not be able to function. —Melanie M. Domenech Rodríguez, PhD

MaryBeth Ahlum
Nebaska Wesleyan University

Joanne D. Altman
High Point University

Kathryn B. Anderson
Our Lady of the Lake University

Glena L. Andrews
Northwest Nazarene University

Ruth L. Ault
Davidson College

Daniel W. Barrett
Western Connecticut State University

Carl A. Bartling
McNese State University

Mark E. Basham
Regis University

Jonathan F. Bassett
Lander University

Scott C. Bates
Utah State University

Danielle M. Beck
Simpson University

Susan E. Becker
Colorado Mesa University

Guillermo Bernal
University of Puerto Rico

Mukul Bhalla
Argy University

Stephanie S. Boswell
University of the Incarnate Word

Amy A. Bradshaw
Hopkock

Emery-Riddle Aeronautical University

Karen Bracke
Spellman College

Kosha D. Bramesfeld
Ryerson University

Scott R. Brandhorst
Southeast Missouri State University

Debi Brannan
Western Oregon University

Mary M. Brazier
Loyola University

Sheila Brownlow
Catawba College

Michelle A. Butler
United States Air Force Academy

Azenett Azara
Garza Caballero

Weber State University

Elizabeth L. Campbell
Whittworth University

Brittany Canfield
Fielding Graduate University

Bradley Cannon
APA Style--Psi Chi Central Office

Mary Jo Carnot
Chadron State College

Bettina J. Casad
University of Missouri--St. Louis

Bradley J. Caskey
University of Wisconsin--River Falls

Shawn Charlton
University of Central Arkansas

M. Cherie Clark
Queens University of Charlotte

Robert S. Cook
Private practice, Lubbock, Texas

Daniel Corts
Augustana College

Cristy Miller Cowan
Lincoln Memorial University

Leslie D. Crambiet
Alvarez

Adams State University

Grace Deason
University of Wisconsin--La Crosse

Teddi S. Deka
Missouri Western State University

Fabiana DesRosiers
Dominican College

Kristen A. Diliberto-Macaluso
Berry College

Martin J. Downing
National Development and Research Institutes

Jared F. Edwards
Southeastern Oklahoma State University

Jorie H. Edwards
Southeastern Oklahoma State University

Mindy J. Erchull
University of Mary Washington

Marianne Fallon
Central Connecticut State University

Devan A. Fara
Saint Vincent College

Ric Ferraro
University of North Dakota

Katherine L. Fiori
Adelphi University

Renee V. Galliker
Utah State University

Jenna G. Glover
University of Alaska

Jessica J. Good
Davidson College

Raymond J. Green
Texas A&M University--Commerce

Alexis Grosz
Beloit College

Cheryl-Ann Hardy
Columbia College

Thomas F. Harlow
Tusculum College

Joanna Harris-Young
Eastern Michigan University

Julia Q. Hartmann
Augusta State University

Elizabeth A. Harwood
River University

Jeffrey L. Helms
Kennesaw State University

Marie Helweg-Larsen
Dickinson College

Steven J. Hoekstra
Kansas Wesleyan University

Karen Y. Holmes
North Dakota State University

Mary T. Howell-Carter
Farmington State College

Jennifer L. Hughes
Agnes Scott College

Nancy J. Karlin
University of Northern Colorado

Jennifer Katz
SUNY College at Geneseo

Matthew R. Kelley
Lake Forest College

Allen H. Keniston
University of Wisconsin–Eau Claire

Shelia M. Kennison
Oklahoma State University

Marcel S. Kerr
Texas Wesleyan University

Camille Tessitore King
Stetson University

Jeral Kirwan
University of Tennessee

Steven J. Kohn
Valdosta State University

Penny Koontz
Marshall University

David S. Kreiner
University of Central Missouri

William J. Lammers
University of Central Arkansas

Marianne E. Lloyd
Sewanee University

Pam Marek
Kennesaw State University

Maureen A. McCarthy
University of Rhode Island

Betsy L. Morgan
University of Wisconsin--La Crosse

Keith Morgan
Centenary College

Wendy L. Morris
McDaniel College

David P. Nabbone
Purdue University–Calumet

Elizabeth M. Nelson
Christian Brothers University

Michiko Nohara-LeClair
Lincoln University

Susan L. O'Donnell
George Fox University

James D. Persinger
Emporia State University

Jennifer Peszka
Hendrix College

Catherine M. Pittman
Saint Mary's College

Aaron S. Richardson
Metropolitan State University of Denver

Raylene Ross
University of South Carolina

Steven V. Rouse
Pepperdine University

Lauren F. VanSickle
Scharff

United States Air Force Academy

Brian W. Schrader
Emporia State University

Pamela Schuetze
Buffalo State College

Beverly E. Seebach
Saint Mary's University of Minnesota

Ayeshah Shaikh
Whitman College

Leigh A. Shaw
Wesleyan University

Christina S. Sinisi
Charleston Southern University

Merry J. Sleigh
Winston University

Paul C. Smith
Alverno College

Claudia J. Stanley
University of West Florida

Debra C. Stecker
University of Mary Washington

Rebecca M. Stoddard
Saint Mary's College

Roxanne L. Sullivan
Beloit University

Maggie L. Syme
San Diego State University

Kimberli R. H. Treadwell
University of Connecticut

Mary Uley
Drury University

Scott VanderStoep
Hope College

Bart VanVoornis
University of Wisconsin–La Crosse

James Vaughn
University of Science and Arts of Oklahoma

Karen L. Vittengl
Truman State University

Kathleen West
University of North Carolina–Charlotte

Kathleen Willett
Winston University

William D. Woody
University of Northern Colorado

Bill Wozniak
University of Nebraska–Kearney

Michelle E. Wright
Masaryk University

Tammy Zacchilli
Saint Leo University

Evan L. Zucker
Loyola University
Four items are required for all submissions:

1) **Cover Letter**
   - Include primary author’s education status, manuscript originality statement, IRB approval

2) **Sponsoring Statement**
   - Undergraduate first authors only

3) **Cover Page**
   - Author names, school affiliation, and any author note

4) **Masked Manuscript**
   - MS Word with all personal information removed

Simply register an account, then click Submit Manuscript:

1) **Upload Files**
   - Files can be removed, replaced, or reorganized

2) **Enter Manuscript Information**
   - E.g., title, abstract, authors, keywords, etc.

3) **Review Manuscript Material**
   - Summary of all information/files submitted

4) **Submit Manuscript**
   - Receive email confirmation

New software benefits:

- Allows users to track their manuscripts’ progress
- Inserts multiple files including cover letters, manuscripts, and figures
- Permits users to prioritize files and coauthors
- Checks for mistakes in the submission process and points out any errors
- Streamlines the process for authors and reviewers

* Psi Chi member ID number required

Online Journal Submission Process

All Psi Chi undergraduates, graduates, and faculty* are invited to submit their research to the *Psi Chi Journal of Psychological Research* through the new web based manuscript submission, tracking, and peer review software solution. Better than email submissions used in the past, this software allows users to create personal accounts to make the submission process more efficient.

Register an account: http://pcj.msubmit.net/cgi-bin/main.plex

Tutorial videos: http://www.ejpress.com/demos

* Psi Chi member ID number required