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Published quarterly by Psi Chi, The National Honor Society in Psychology
Ps i Chi
Journal of Undergraduate Research

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Psi Chi Journal of Undergraduate Research
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The Psi Chi Journal of Undergraduate Research (ISSN 1089-4136) is published quarterly in one volume per year by Psi Chi, Inc., The National Honor Society in Psychology, P.O. Box 709, Chattanooga, TN 37401-0709.

Subscriptions are available on a calendar-year basis only (Spring–Winter). U.S. rates are as follows (four issues): Individual $20; Institution $40. For international rates or other information contact: Psi Chi National Office, P.O. Box 709, Chattanooga, TN 37401-0709; telephone (423) 756-2044; fax (toll-free) 1-877-774-2443; e-mail journal@psichi.org. Printed in the USA. Periodicals postage paid at Chattanooga, TN, and additional mailing offices.

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Winter 2006
Volume 11, Number 4
Published quarterly by
Psi Chi, The National Honor Society in Psychology

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Since the inception of the current deduction paradigm (Henle, 1962), researchers have been challenged to construct problems that accurately measure an individual’s reasoning ability and to illuminate the mental processes associated with reasoning. Much of the research conducted within the deduction paradigm has utilized abstract material; however, some researchers question the ecological validity of using abstract material, stating that real world reasoning problems always incorporate some kind of concrete or thematic content (Hertwig, Ortmann, Gigerenzer, 1997). As a result, several lines of research have arisen to investigate the various effects of thematic material. However, few studies have directly compared individuals’ performances using abstract and thematic material. Moreover, research regarding this topic has not produced a coherent theory or data set of the effects of thematic material. Thus, the purpose of the present study is to directly compare abstract and pragmatic performances on a immediate inference reasoning task within the framework of the mental model theory.

In the field of human reasoning, one of the most influential and studied theories is that people create mental models when solving problems. First proposed by Johnson-Laird (1983), the mental model theory attempts to reveal the cognitive processes associated with deduction, a fundamental aspect of human intelligence. Deduction is the application of reasoning specific mental processes to produce logically valid inferences from a series of information (Polk & Newall, 1995). The model theory explains deduction as a process of three components: (a) model formation, encoding a problem into a mental representation in the form of a model; (b) conclusion formation, searching for a putative conclusion consistent with, but not the same as the premise; and (c) conclusion validation, searching for counterexamples, or alternative models, to validate or falsify the conclusion (Evans, Handley, Harper & Johnson-Laird, 1999). Conclusion validation is the most critical component of the model theory, because it is the only stage where deductive specific mechanisms are utilized – the model formation and conclusion formation stages are simply processes of comprehension. The model theory states that conclusions are deemed valid if there are no counterexamples that contradict it.

The Effects of Pragmatic Content on Syllogistic Reasoning

Performances on reasoning tasks have been known to be affected by the type of material presented to the participants. In this study, we examined performance differences between pragmatic and abstract material when solving immediate inference problems using necessity instructions. Participants were given 16 immediate inferences with abstract material and 16 immediate inferences with pragmatic material. An overall significant facilitation effect was found for pragmatic material (p<.01). However, the pragmatic facilitation effects were found for specific problems, not for the entire problem set. Thus, the effects of the study’s specific pragmatic material cannot be determined at this time.

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The Effectsof Pragmatic Content on Syllogistic Reasoning

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The origins of the mental model theory and the current deduction paradigm have been largely shaped by Peter Wason, specifically by the Wason selection task (Wason, 1966). This task uses logic as the normative standard to measure human reasoning. The task employs the logical structure of an “if, then” conditional inference problem (Wason & Shapiro, 1971). As a result of this benchmark, the majority of the research on human reasoning uses logic as the means to assess reasoning competency. Specifically, there has been an extensive amount of work conducted using the four conditional inferences (De Neys, Schaeken & D’Ydewalle, 2003):

1. The logically valid, modus ponens (MP), e.g., “if p then q, therefore p.”
2. The logically invalid, denial of the consequent (AC), e.g., “if p then q, q therefore p.”
3. The logically invalid, denial of the antecedent (DA), e.g., “if p then q, not p, therefore not q.”
4. The logically valid, modus tollens (MT), e.g., “if p then q, not q, therefore not p.”

The rules of logic are based upon mathematical principles that were created to demonstrate a method of fabricating axioms that are absent of contradictions (Evans, 2002). The premise (if p then q) of the four arguments is assumed to be true; thus, the arguments’ logicality is based solely on its syntactic form (Thompson, 1994). As a result, when solving a logic problem, a correct evaluation is one in which the form of the conclusion logically follows the premise (i.e., MP is logically valid because the form of “p therefore q” is consistent with the premise). Abstract material (i.e., arbitrary letters of the alphabet, numbers, and shapes) has provided the best method of measuring an individual’s ability to apply logic, or to think logically. The purpose of using abstract material was to determine if reasoning logically was an innate, domain-general cognitive process (Evans, 2002). Introducing real-world material was believed to confound the logicality of participants’ responses by eliciting biases due to differences of knowledge bases and differences in contextual understanding. Thus, because logic has been the normative standard within the modern reasoning paradigm, the majority of the reasoning research has used abstract material to assess human reasoning (Newstead, Ellis, Evans & Dennis, 1997).

However, many researchers question the ecological validity of laboratory reasoning tasks that use abstract material (George, 1999; Henle 1962; Hertwig et al., 1997; Mankalow & Over, 1991; Newstead et al., 1997; Oaksford & Charter, 1998). Specifically, Hertwig and colleagues (1997) argued that, because real world problems always incorporated some kind of content and context, abstract conditional inference problems did not map well onto everyday reasoning processes. Moreover, they stated that problems like the Wason’s selection task failed to measure any kind of social rationality because standard logic was not the appropriate tool to use when measuring the social structure of an environment.

In response to the argument for greater ecological validity, a host of researchers have incorporated, and extrapolated numerous effects from content and contextually-rich materials. Within the framework of the mental model theory of reasoning, Cummins, Lubart, Alksnis, and Rist (1991) found that conclusion validation is affected by the number of alternative causes and disabling conditions that are readily retrievable from the semantic memory system. Within a conditional inference, an alternative cause is a cause other than the one stated in the premise that can lead to the putative conclusion. For example, given the logically invalid AC form conditional:

When it is cloudy you, cannot see the sun.
You can not see the sun, therefore it is cloudy.

For this problem, an alternative cause for not being able to see the sun would be that it is night time. Likewise, a disabling condition is a conclusion other than the one stated that can result from the given premise. Cummins and colleagues (1991) found that the more alternative causes and disabling conditions that were available in an individual’s semantic memory system, the less likely they were to endorse the logically invalid AC and DA form conditionals. This led to the development of the semantic memory framework of conditional reasoning, which states that possible alternative causes and disabling conditions are stored in the semantic memory system and retrieved when assessing a conditional inference problem (De Neys, Schaeken, & D’Ydewalle, 2002, 2003).

Markovits and Quinn (2002) also cited memory retrieval as a key process for reasoning and generating alternative models, stating that the speed of retrieval correlated with a greater number of accurate responses to conditional inference problems. They conducted a study that was designed to measure the ability of participants to retrieve pertinent information from their semantic memory. Participants were asked to generate two causes that would produce a given conclusion as quickly as they could. For example, participants were asked to list two causes for the conclusion: “a dog scratches a lot.” For each conclusion given, there was an alternative cause with a strong association (in this case “the dog has fleas”) and several alternative causes with weak associations (i.e., the dog’s skin is dirty, or the dog has a skin disease). They found that gener-
ally people quickly generated the strong association alternative and that the speed of retrieval of a weak association alternative was clearly correlated with the ability to correctly evaluate AC and DA form conditional inferences.

Despite the abundant evidence that content-based material, in various ways, affects the ability of participants to generate logically appropriate responses to conditional inference problems, few studies have been conducted under the framework of the mental model theory that directly analyze the differences between abstract and thematic reasoning tasks. Research that has examined the differences between abstract and thematic content has produced discordant results (Evans, 2002; Griggs & Cox, 1983; Mankelow & Evans, 1979; Wason & Shapiro 1971, experiment 2). Several studies have found that thematic material, compared to abstract material, significantly improved performance on the Wason selection task (Bracewell & Hidi, 1974; Johnson-Laird, Legrenzi, & Sonino Legrenzi, 1972; Wason & Shapiro, 1971, experiment 2). These findings, however, have been challenged by numerous studies that have found significant facilitation effects for thematic material (Brown, Keats, Keats & Seggie, 1980; Griggs & Cox, 1983; Mankelow & Evans, 1979; Yachanin & Tweney, 1982).

The discrepancies between the two findings may be due, at least in part, to differences in the familiarity with the thematic material used, and in the types of thematic material used. For example, Johnson-Laird and colleagues (1972), who found a significant thematic facilitation effect, instructed British participants, who were familiar with a specific rule in the British postal system that was pertinent to the study, to pretend that they were postal workers and verify a rule such as “If a letter is sealed, then it has a 50 lire stamp on it.” In their attempt to replicate Johnson-Laird et al.’s (1972) findings, Griggs & Cox (1983), who used American participants who were unfamiliar with the British postal rule, completely failed to find a significant facilitation effect of thematic content. Taking the participants’ unfamiliarity of the postal rule into consideration, Griggs and Cox suggest that thematic material can facilitate performance on the Wason selection task by a process of memory-cueing that allows for the retrieval of pertinent alternative or falsifying causes (i.e., alternative models).

Overall, research on this topic has not produced a coherent theory or data set about the effects of thematic material. Moreover, the majority of this research has used the Wason selection task as the means to compare abstract and thematic content. The present study differs in that it utilizes immediate inference problems (similar to syllogisms) as a means to compare abstract and pragmatic content. The present study also differs from previous abstract and thematic comparison research in that the material utilized for the present study was pragmatic; it was designed to incorporate situations that are representative of the real world. Often the thematic material used in previous research was fabricated from arbitrary content that was not necessarily representative of real world contexts. The present study’s goal was to present pragmatic material that would be familiar to participants. Thus, because conditional inference problems require the participant to assume that the premise is true, each pragmatic premise was constructed to actually represent a situation that could occur in the real world. The purpose of designing pragmatic premises consistent with the real world was to facilitate any potential memory-cueing that could lead to the retrieval of pertinent alternative models (thus the goal was to avoid arbitrary pragmatic content that would not involve any memory retrieval processes).

**Immediate Inference Problems**

Syllogisms are conditional inference problems that combine two premises and a conclusion, for example, All A are B (premise 1); All B are C (premise 2); Therefore, All A are C (conclusion). A syllogism’s conclusion and premises must contain four quantified forms, which are described as “moods,” and classified by the abbreviations A, E, I, and O (Evans et al., 1999). These are the following: A, universal affirmative (All P are Q); E, universal negative (No P are Q); I, particular affirmative (Some P are Q); O, particular negative (Some P are not Q).

Immediate inferences are problems that use one mood as a premise, and another mood as a conclusion, for example, All P are Q; Therefore, some Q are P. The order of the terms (P and Q) can also be exchanged; thus there are seven possible conclusions that follow each of the four premise forms (excluding the repetition of the premise). Immediate inferences, like syllogisms, have conclusions that can be classified into three types: Necessary (the conclusion must be true given that the premise is true); Possible (the conclusion could be true, but it is not necessarily true given that the premise is true); Impossible (the conclusion cannot be true given that the premise is true).

Recent attention has been devoted to peoples’ ability to differentiate necessary, possible, and impossible conclusions. To determine if a conclusion to a syllogism or immediate inference problem is necessary, all possible models must be exhaustively searched (to rule out any models that could possibly falsify the putative conclusion). But to determine if a conclu-
sion is possible, an individual only has to search for one model that leads to a correct conclusion.

Evans and colleagues (1999, experiment 1) examined the effects of Necessity instructions and Possibility instructions for an immediate inference task. Consistent with their predictions, they found that people were more likely to accept conclusions as possible than as necessary.

The present study is an adaption of Evans et al.’s (1999) experiment 1. The present study uses only Necessity instructions, because the focus of the research was to examine performance differences between abstract and pragmatic content. For each immediate inference problem using abstract content, there was a corresponding immediate inference problem of the same form that used pragmatic content. Based on the burgeoning research that has shown that memory retrieval and model generation are substantial components to the reasoning process (Cummins, 1995; Cummins et al., 1991; De Neys et al., 2002, 2003; Markovits & Quinn, 2002) we predict that pragmatic content would facilitate better performance than abstract content on an immediate inference reasoning task.

Method

Participants

Eighty-seven undergraduate students (67 women, 20 men; M = 22.4 years) with a major or minor in psychology at a Midwestern comprehensive university participated in this study. Participants were mostly white students from middle to upper class backgrounds. Participants were selected from four upper level psychology courses and were asked to voluntarily complete the study as part of a classroom activity.

Materials

Each participant received a packet with the consent form, instructions, and the immediate inference problems, all printed on white computer paper. Participants completed the immediate inference problems using a paper and pencil format. The instructions were printed on an individual sheet and read as follows:

The following packet contains 32 syllogisms. Answer each syllogism to the best of your knowledge. Each syllogism contains a premise (GIVEN THAT) and a conclusion (IT IS NECESSARY THAT). You are asked to mark “Yes” or “No” based on if the conclusion is absolutely necessary. Answer “Yes” to a conclusion only if it is necessarily true given that the premise is true. There is no time limit.

Sixteen immediate inference problems were selected: four with necessary conclusions, eight with possible conclusions, and four with impossible conclusions. For each immediate inference problem there was an abstract form and a pragmatic form, such as:

Abstract:

GIVEN THAT
All M are X
IT IS NECESSARY THAT
Some X are M
☐ Yes ☐ No

Pragmatic:

GIVEN THAT
All squirrels are mammals
IT IS NECESSARY THAT
Some mammals are squirrels
☐ Yes ☐ No

Refer to Appendix for a complete list of the pragmatic problems. Each sheet of paper contained four immediate inference problems. Two classes (45 participants) received 16 consecutive, arbitrarily-ordered pragmatic problems, followed by 16 consecutive, arbitrarily-ordered abstract problems. The other two classes (42 participants) received the consecutive, arbitrarily-ordered abstract problems first and the consecutive, arbitrarily-ordered pragmatic problems second. Letters were randomly selected for the content of the abstract problems. The pragmatic problems were constructed such that the content of the problems were designed to represent a situation, or instance, that could occur in real life. The content selected was designed to be familiar to the participants. The content included topics of basic scientific knowledge, such as the temperature when water freezes, as well as many day-to-day activities, such as recycling paper. The content of the pragmatic problems also had to adhere to the logical structure of the immediate inference. Thus, even if a participant was not familiar with the content of the pragmatic problem, he or she could still correctly solve the problem by means of assessing its logical structure. The goal, however, was to utilize content that was familiar to participants in a way that involved potential model generation and information retrieval from the participants’ memory systems.

Design and Procedure

The study utilized a 2 x 2 within-subjects repeated measures design. The independent variables were the immediate inference type (abstract and pragmatic) and the order in which the participants received the immediate inference problems (abstract first or prag-
matic first). Each participant completed both the abstract problems and the pragmatic problems.

Participants were divided into four groups and completed the immediate inference problems in a classroom setting with individual desks. Each participant worked independently at his or her own pace. Participants were briefly instructed about the content and purpose of the study, and instructed that they could discontinue the study at anytime without penalty. Participants were asked to mark their age, gender, and whether they had had a formal course in logic. Two participants were excluded for having a formal course in logic because they would have had prior exposure to the rules of conditional inferences. Participants were instructed to read each question carefully. The problems were distributed approximately 25 min before the class period officially ended, so although there was no artificial time constraint, realistically participants had about 25 min to complete the problems. Upon completion, participants handed in the survey and were free to leave the classroom.

Results

A significant facilitation effect was found for the problem type. Participants had significantly fewer incorrect responses for the pragmatic problems ($M = 5.48, SD = 2.02$) than for the abstract problems ($M = 6.22, SD = 1.98$), $F(1,85) = 14.3, p < .01$; figure 1). Although the results were significant, $\eta^2 = .143$ indicated a relatively small effect size. There was no order effect for the problem type, $F(1,85) = 2.19, p > .05$ indicating that participants were not significantly affected by the order (abstract first or pragmatic first) of the problems.

There was a large range (2-92%) of percentage endorsements of incorrect responses for problem forms is consistent with results of Evans and colleague’s (1999) previous research. These data support the hypothesis that some forms of immediate inference problems lead to an initial model that supports the conclusion (Evans et al., 1999). These data support this hypothesis even when pragmatic material is introduced (see Table 1).

Given that there was not a consistent facilitation effect of pragmatic material, the reason for the specific facilitations cannot be determined. It cannot be determined if the specific pragmatic material of each question was the cause of the specific facilitation effects, or if any type of pragmatic material would have produced similar facilitating effects. Table 1 indicates that some problem forms resulted in a pragmatic facilitation effect, while other problem forms resulted in an abstract facilitation effect. The reasons for the specific facilitation effects cannot be determined at this time due to the preliminary nature of the content utilized for this study. Further research is needed to validate the effects of our specific pragmatic material and its interaction with the problem forms.

Although the pragmatic problems were designed to represent general knowledge-type situations that could occur in the real world, one reason for the inconsistent facilitation effects could have been that participants may have had different levels of knowledge of percentage endorsements of incorrect responses for problem forms is consistent with results of Evans and colleague’s (1999) previous research. These data support the hypothesis that some forms of immediate inference problems lead to an initial model that supports the conclusion (Evans et al., 1999). These data support this hypothesis even when pragmatic material is introduced (see Table 1).

Discussion

Overall, our results indicate that there was a significant facilitation effect of pragmatic material; however, the facilitation only occurred with certain items and not others (see Table 1). The large range (2-92%)
Our results, however, support the hypothesis that thematic facilitation effects are highly dependent on the specific content and context. In a manipulation of the Wason selection task where participants were given different instructions and perspectives, Manktelow and Over (1991) demonstrated that the effects of thematic content varied depending on the instructions and the participant’s perspective. Our data also support Grigg’s (1983) hypothesis that thematic content does not simply improve the logicality of people’s responses.

The theoretical implications of our study indicate that pragmatic material is capable of inducing facilitation effects on immediate inference problems. However, pragmatic content does not produce a generalized facilitating effect on immediate inference problems. Our data indicate that the specific pragmatic material used, as well as the problem form may interact to create a localized facilitation effect. Further research is needed to untangle the many sources of

about the specific material used for the pragmatic problems. Also, differences in interpretation of the pragmatic material may have contributed to the inconsistent facilitation effect. Thus, our results may indicate a form or content specific, but not a generalized facilitating effect of pragmatic material when solving immediate inference problems.

In addition, the number of alternative causes and disabling conditions was unknown for the pragmatic problems. Cummins and colleagues (1991), demonstrated that the number of possible alternative causes and disabling conditions can affect an individual’s ability to correctly evaluate logic problems. Thus, because of the lack of information about the number of models for each problem, the present study cannot determine if the specific pragmatic material used facilitated any memory-cueing or retrieval of pertinent models. Future studies could be conducted to validate the number of alternative models and disabling conditions present for each pragmatic problem.
variance associate with the specific pragmatic content. Future research should continue to strive for greater ecological validity by incorporating reasoning problems and tasks that are designed to represent real world reasoning situations. Models of reasoning processes should account for an individual’s knowledge of material about which he or she is reasoning, as well as the specific demands the reasoning task makes. Exploring interactions among content, context, and participant’s knowledge will contribute to an understanding of reasoning processes.

References
APPENDIX

Pragmatic Inference Problems

1. GIVEN THAT
   All squirrels are mammals
   IT IS NECESSARY THAT
   Some mammals are squirrels
   □ Yes □ No

2. GIVEN THAT
   Some 9th graders are freshmen
   IT IS NECESSARY THAT
   Some freshmen are 9th graders
   □ Yes □ No

3. GIVEN THAT
   No pure water will remain liquid at 32˚F
   IT IS NECESSARY THAT
   Some pure water does not remain liquid at 32˚F
   □ Yes □ No

4. GIVEN THAT
   At a company, no managers are college graduates
   IT IS NECESSARY THAT
   At a company, no college graduates are managers
   □ Yes □ No

5. GIVEN THAT
   Some students who study hard do not perform well on the test
   IT IS NECESSARY THAT
   Some students who study hard do perform well on the test
   □ Yes □ No

6. GIVEN THAT
   When a road is covered with ice, some cars do not slow down when the break is depressed
   IT IS NECESSARY THAT
   When a road is covered with ice, no cars slow down when the break is depressed
   □ Yes □ No

7. GIVEN THAT
   In an apartment building, some things that make people feel cool are not air conditioners
   IT IS NECESSARY THAT
   In an apartment building, some air conditioners are things that make people feel cool
   □ Yes □ No

8. GIVEN THAT
   In a high school, some basketball players are not tall people
   IT IS NECESSARY THAT
   In a high school, some tall people are not basketball players
   □ Yes □ No

9. GIVEN THAT
   In a box of matches, some matches that were struck are matches that were lit
   IT IS NECESSARY THAT
   In a box of matches, some matches that were lit are not matches that were struck
   □ Yes □ No

10. GIVEN THAT
    Some cars in a parking ramp are Hondas
    IT IS NECESSARY THAT
    Some cars in a parking ramp are not Hondas
    □ Yes □ No

11. GIVEN THAT
    All 12oz drinks are soda cans
    IT IS NECESSARY THAT
    Some soda cans are not 12oz drinks
    □ Yes □ No

12. GIVEN THAT
    All glasses of pure water will freeze in a room with a temperature of 32˚F
    IT IS NECESSARY THAT
    All rooms with a temperature of 32˚F will freeze a glass of pure water.
    □ Yes □ No

13. GIVEN THAT
    All ocean water is salt water
    IT IS NECESSARY THAT
    No salt water is ocean water
    □ Yes □ No

14. GIVEN THAT
    At a police station, some dogs are cop dogs
    IT IS NECESSARY THAT
    At a police station, no dogs are cop dogs
    □ Yes □ No

15. GIVEN THAT
    No engineers are employed at the company
    IT IS NECESSARY THAT
    Some engineers are employed at the company
    □ Yes □ No

16. GIVEN THAT
    At a household, no paper is recycled
    IT IS NECESSARY THAT
    At the household, some recycled material is paper
    □ Yes □ No
Influence of Voting Convenience, Poll-Point Spread, and Age on Reported Voting Behavior

We investigated the influence of voting convenience, the point spread of polls and age group on likelihood to vote. Unlike previous studies, we created 2 subgroups for those less than 30 years old. Using scenarios, East Texas participants (N = 158, aged 18-79 years) were surveyed prior to the November 2004 presidential election. The smallest point spread and greater ease of convenience significantly increased reported likelihood to vote. Participants aged 18-22 years were as likely to vote as older participants, while those aged 23-29 years were least likely to vote. Our results should be used to caution the media about polling and broadcasting early results. Voting advocacy efforts should begin to target 23-29 years old rather than primarily focusing on those aged 18-22 years.

People often assume convenience influences voting behavior, but few studies are available to confirm such assumptions. Bergman (2002) noted that 20% of registered voters who did not vote said they were too busy. According to States Get Creative (2002), it was reported that the convenience of voting booth locations and time frames have a significant impact on whether registered voters will actually vote. However, neither article cites any supportive data. The government has invested millions of dollars to increase the convenience of voting by establishing absentee ballots, overseas ballots, early voting, etc. The government is currently debating the use of Internet ballots to improve the voting process by making it more convenient. Although these efforts and the fact that some publications suggest convenience influences voting behavior, we believe more directly-related empirical data should be available to support the claim before our
government invests additional time, effort, and money to increase the convenience of voting.

The media is another factor that is assumed to influence voting behavior. During presidential elections, several media outlets survey and/or poll viewers about their election opinions. Many pollsters address questions such as "Who will you vote for?", "What is your political party?", and "Who do you expect to win?" Once the questions are answered, the information is compiled and means are calculated. Based on the mean scores, pollsters broadcast which candidate is leading the race. Often pollsters neglect to conduct studies using the appropriate methodology, which leads to inaccurate and biased polls being broadcasted across the nation (e.g., Analysis, 1996; Traugott & Lavarkas, 1996; "A Meaningless Poll," 2005). We believe it is important to use random samples, unbiased questions, and to inform viewers of the methods involved. Random samples (or those using stratified random sampling) are more likely to provide researchers with opinions representing all perspectives, including moderate ones. Call-in samples (and other types of self-selection samples) often result in disproportionate numbers of extreme perspectives, because people with more extreme viewpoints are more likely to respond than moderates. For example, on February 18, 1993, a television station in Sacramento, California asked viewers to respond to the question: "Do you support the President’s economic plan?" ("A Meaningless Poll," 2005). The next day, a study using better sampling techniques asked the same question and published the results in a newspaper. The television call-in poll reported that 42% of the respondents said yes and 58% said no. The second survey reported that 75% said yes, 18% said no, and 7% were not sure. Respondents to the television poll were less likely to be satisfied with the President’s plan than respondents in the second study. Such a pattern of results suggests that dissatisfied respondents were more likely to make the effort to call-in, and, thus, skewed the poll results. Although surveys and polls lead to several problems when conducted inappropriately, well-conducted polls do have the potential to provide accurate and useful information.

The possibility of inaccurate polls encouraged several researchers to investigate the influence of poll results on voting behavior. Rosenstone and Hansen (1993) examined whether media poll results influenced voting behavior and found that when the polls showed a close race, the likelihood to vote increased. Aldrich (1993), Riker and Ordeshook (1968), and Hansen (2001) came to the same conclusion, and Hansen suggested the reasoning for such an increase in voting behavior is due to people believing their vote will help make the deciding factor in the political race. Tuchman and Coffin (1971) propose that media and exit polls can create a bandwagon effect or underdog effect among viewers. If a particular poll shows one candidate significantly leading the race over the other, it has the potential to create a bandwagon effect, where viewers vote for the "winning" candidate in order to feel as if they are part of the winning team. The opposite effect can also occur, where viewers vote for the candidate projected to lose the election. This creates the underdog effect—viewers vote in hopes of creating a Cinderella story election—where the underdog makes a miraculous comeback and surpasses his opponent. These theories propose that citizens do not vote based on the political campaigns, but largely due to what the majority of society is reported to be doing.

The biased polls present a problem because voters are not voting according to the political issues at hand. Biased polls are a threatening phenomenon because they suggest citizens are strongly influenced by the behavior of the majority. Such a phenomenon can severely hurt minority groups. Tavris (2000) stated that U.S. citizens do not like to be out of step and feel that it is somehow un-American to be different from everyone else. Her chapter suggests that this phenomenon is upsetting for democracy because some minorities respond by trying to persuade everyone and themselves that they are the majority. Others may respond with depression because they believe there is no point in voting because they cannot make a difference. Therefore, biased polls may create a silencing effect among minority groups and limit their potential to make a difference in elections. Among minority groups, the college-aged generation can also be negatively affected by media attention and polls.

The college generation receives a large amount of attention from the media because of their reported lack of voting. Several media outlets portray college students as the least-likely group to vote, and the older, wiser generation as the most-likely group to vote. The claim is supported by Rosenstone and Hansen’s (1993) study, which found that persons aged 45-64 years were most likely to vote and that persons in their 20s were the least likely to vote. Other research (Bergman, 2002; Watson, 2004) supports this conclusion, but interestingly, all these studies put first-time voters (18-22 years old) and the mid-to-late 20s age group (23-29 years old) into one category. Therefore, it may not necessarily be the first-time voters and the traditional college-aged students who are not participating in the voting process. In the current study, this large age group was divided into the two subgroups. The goal behind separating the groups was to determine if the
two subgroups show different voting tendencies. As mentioned above, universities have encouraged student registration and voting, and campaigns have been designed to specifically target the younger generation of first-time voters. In contrast, few attempts have been made to target the mid-to-late 20s age group. Thus we believe that the 23-29 age group may be less likely to vote than the younger, first-time voters.

Because previous assumptions regarding the influence of convenience do not seem to have available empirical support, another purpose of the current research was to manipulate convenience and measure reported likelihood to vote. Further, we manipulated the specific point spread of polls to investigate how that might interact with convenience. Previous research (Rosenstone & Hansen, 1993) only used terminology such as “close race,” so it is not possible to know how specific point-spread amounts influence voting. Based on previous assumptions regarding convenience and point-spread research, we hypothesized that smaller point spreads between candidates and the greater ease of convenience would significantly increase the reported likelihood to vote. The possibility of an interaction was exploratory. We also recorded participant age so that we could investigate how age influences likelihood to vote and how the above factors might interact with age. Because voting advocacy efforts for individuals in their twenties focus on college students more so than individuals not in college, we believe that these two subgroups may show different voting tendencies. Therefore, we separated the 20s age group into two subgroups, resulting in the following ages groups: 18-22, 23-29, 30-39, 40-49, 50+ years. Based on previous research, we hypothesized that the older participants would be more likely to vote. We also hypothesized that the college-aged group would be more likely to vote than the mid-to-late 20s group.

Method

Participants

A total of 158 participants aged 18-79, from the East Texas area (i.e., Stephen F. Austin State University, local mall shoppers, and surrounding businessmen and women) volunteered to participate in the survey. Of these participants, 60 were aged 18-22 years, 28 were aged 23-29 years, 12 were aged 30-39 years, 28 were aged 40-49 years, and 30 were aged 50+ years. Participants were not given a stipend for volunteering.

Design

A mixed design with three independent variables (i.e., convenience, poll-point spread, and age group) was used. There were two within-participant manipulated variables (i.e., convenience and poll-point spread) and one quasi-independent variable (i.e., age group). Convenience had two levels (i.e., easy, hard). Poll-point spreads had three levels (i.e., 2 points, 15 points, 30 points), and age group had five levels (i.e., 18-22, 23-29, 30-39, 40-49, 50+ years). The dependent variable was the reported likelihood to vote, using a 4-point Likert scale indicating strongly unlikely (1), somewhat unlikely, somewhat likely, and strongly likely (4).

Materials

Four student researchers constructed a survey. Participants were first asked their age, and then were presented with six scenarios that included all combinations of the two levels of convenience (i.e., easy, hard) and three levels of poll-point spreads (i.e., 2, 15, 30). Ease of convenience was manipulated by having voting booths extremely far or close to one’s workplace, home, or shopping center; having either a cooperative boss or not; and by juggling children or not. For example, one scenario (e.g., easy, 2-point spread) was as follows: "On voting day, your boss has agreed to allow all employees to vote at the booth that is 5 min away. Recent political polls show that it is a tight race and there is a 2-point spread between candidates. For each scenario participants answered, "What is the likelihood that you will vote?"

Procedure

Four student researchers approached men and women of all ages on the campus of Stephen F. Austin State University, at local malls, and at businesses within a 60-mile radius of Nacogdoches, Texas. Approximately half the participants were contacted on campus. The survey took 5-10 min to complete. An information sheet was attached to the survey explaining that all data would be anonymous and that no identifying information would be collected. Contact information also was given so that participants could contact the research advisor for any further questions.

Results

For each participant, scenario Likert scores (max = 4, min = 1) were recorded for each experimental condition. A 2 (convenience) X 3 (point spread of polls) X 5 (age group) mixed ANOVA was used to determine the influence of voting convenience, early poll results, and age group on reported voting behavior for the different age groups. All of the post hoc tests used the Tukey HSD test.

The analysis of reported voting behavior led to three significant main effects but no significant interactions. Table 1 shows means and standard deviations.
Voting convenience significantly affected the reported likelihood to vote, $F(1,153) = 52.02, p < .01$, with greater ease of voting convenience ($M = 3.58$) leading to an increase in reported voting behavior as compared to less convenience ($M = 3.25$). Poll-point spread also significantly affected the reported likelihood to vote, $F(2,306) = 10.16, p < .01$; a 2 point spread on poll results ($M = 3.52$) significantly increased the likelihood of voting as compared to both the 15 and 30 point spreads ($M = 3.37$ and 3.36, respectively). Finally, age group of participants significantly affected the reported likelihood to vote, $F(4,153) = 2.75, p < .05$; the 23-29 age group was less likely to vote than the 40-49 age group ($p < .05$), and the 50+ age group ($p = .05$), with the latter two groups showing the highest likelihood to vote. None of the other age group differences were significant. Figure 1 shows the means for each of the age groups.

Discussion

The main purpose of the current experiment was to investigate the combined effects of convenience, the point spread of polls, and age group on the reported likelihood to vote. Our findings supported our hypotheses regarding the effects of poll-point spread and convenience, and they extend understanding of the influence of age group. Most importantly, by separating the 20s age group into two categories (i.e., 18-22 and 23-29 years old), we showed that these two subgroups were different in their reported likelihood to vote, unlike what had been assumed by previous studies. Only the 23-29 year-old participants were less likely to vote than those participants older than 40 years.

Also of importance, the current study supports the assumption that convenience influences likelihood to vote. We found the easier it was for individuals to vote, the more likely they would possibly participate in the voting process. As mentioned above, the government has made several attempts to increase the convenience of voting by establishing absentee ballots, overseas ballots, and early voting. Although these efforts have increased the convenience of voting, the busy schedules of American citizens under-

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Easy Convenience</th>
<th>Hard Convenience</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Point Spread</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td>Undergraduate</td>
<td>2</td>
<td>3.75 (0.71)</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>3.43 (0.87)</td>
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<tr>
<td></td>
<td>30</td>
<td>3.48 (0.89)</td>
</tr>
<tr>
<td>Mid to late 20s</td>
<td>2</td>
<td>3.40 (0.83)</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>3.18 (0.86)</td>
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<tr>
<td></td>
<td>30</td>
<td>3.21 (0.83)</td>
</tr>
<tr>
<td>30s</td>
<td>f 2</td>
<td>3.50 (0.90)</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>3.75 (0.45)</td>
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<tr>
<td></td>
<td>30</td>
<td>3.58 (0.90)</td>
</tr>
<tr>
<td>40s</td>
<td>2</td>
<td>3.93 (0.26)</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>3.71 (0.53)</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>3.64 (0.68)</td>
</tr>
<tr>
<td>Greater than 50</td>
<td>2</td>
<td>3.83 (0.59)</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>3.73 (0.64)</td>
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<tr>
<td></td>
<td>30</td>
<td>3.57 (0.68)</td>
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score the need for more efforts to increase voting convenience. One option being considered is Internet voting systems. In December of 1999, the White House directed the National Science Foundation, the Internet Policy Institute, and the University of Maryland to conduct a study on Internet voting (“Internet Voting,” 2001). According to the study, Internet voting systems fall into three categories: poll-site voting (i.e., Internet terminals would be placed at traditional polling locations), kiosk voting (i.e., Internet terminals would be placed in nontraditional locations such as malls), and remote voting (i.e., citizens could vote in the privacy of their own home or at work). All three offer the promise of convenience and universal access, but pose serious security threats. Poll-site voting and kiosk voting are of lower risk and could be easily managed by technicians. However, remote voting poses tremendous security risks (i.e., Internet hackers changing votes, persons voting under fraudulent names, etc.) that should not be sacrificed for convenience (“Internet Voting,” 2001). Although ease of convenience does seem to increase voting behavior, at this point in time the government is not ready to fully release Internet voting for public elections.

A factor to consider in future research is that personal motives could influence the perception of convenience. Motives orient and select behaviors that make one actively pursue a goal. For example, research by Sheldon and colleagues (Sheldon & Elliot, 1998, 1999; Sheldon & Kasser, 1998) showed that individuals were more likely to attain a goal when the motivation for the goal was personally important to them. Similarly, Britt (2003) concluded that when a goal takes on a personal value, the individual becomes more focused on the completion of a goal. More directly related to the current study, Burgess, Haney, Snyder, Sullivan, and Transue (2000) found that individuals were more likely to vote when they completed a pledge card indicating a reason for voting. This research (Burgess, et al., 2000) demonstrated that individuals may be more likely to vote when they publicly commit to voting, and/or when the motivation for voting has taken on a personal meaning. Thus, it is possible that by educating the public on the importance of voting and making the process more personal, registered voters will be more likely to follow through and cast their votes even when convenience is not high.

Another factor that significantly influenced our participants’ reported likelihood to vote was the point spread of media polls. We found that only when point spreads were very close (i.e., 2 points rather than 15 or 30 points) was there a significant increase in the reported likelihood of voting and that there was no interaction with convenience. The fact that small point spreads were more likely to promote voting supports previous research (Rosenstone & Hansen, 1993). However, by investigating three specific point-spread levels, we were able to show that the increase in voting is not a simple, linear relationship with decreasing point spread. Although there was no interaction with our two levels of convenience (i.e., easy versus hard), it is possible that a more moderate level of convenience would interact with point spread, especially if additional smaller point-spread values were investigated. For example, what would happen to likelihood to vote if poll point spread was 5 or 10 points and convenience was easy, moderate, or hard? Our current results showed that, compared to a 2-point poll spread, a 15-point poll spread led to a significant decrease in voting likelihood regardless of convenience, but the rate at which it decreases might vary across the different convenience groups. Future research should further investigate possible interactions using additional levels of point spread and convenience.

Regardless of our levels of convenience, when poll-point spreads were further apart, participants reported they would be less likely to vote. This finding does not support the bandwagon effect suggested by Tuchman and Coffin (1971). In order for the bandwagon theory to be supported, the likelihood to vote would increase as point spread increased, and people could be surer that they would be part of the winning campaign. In contrast, the current results support the theory that voting behavior increases in a tight race because citizens believe they have an opportunity to make a difference in the race (Hansen, 2001).
times voters do not believe their one vote can make the difference out of millions of votes, and therefore they do not see the point in voting.

An additional factor that might interact with poll-point spread is the intensity of a voter’s feelings about campaign topics. Research (e.g., Atkinson & Birch, 1978; Biernat, 1989; Reykowski, 1982) showed that when individuals have a vested interest in an event or topic, they will be more likely to make an effort to participate. Voters who care strongly about campaign topics might be more likely to vote even if the point spreads are larger. It is important that one does not underestimate the power of emotion to motivate individuals during elections, and the power of motivation to influence voting behavior.

One way to manipulate awareness of the election and emotions about the election is through the media. When a race is close, there is often more media attention. The excitement generated by the media could potentially draw in more voters by encouraging them to make a difference and let their voice be heard (Martin, 2004). However, while the media can promote voting activity in general, if their polling methodologies are not appropriate, they may inadvertently influence the public through misinformation (e.g., the California polls described in the introduction). Whether or not media outlets misconstrue information on purpose, many citizens are not educated enough to protect themselves from poorly conducted and non-representative poll results. Often citizens rely solely on reports by the media; therefore, the media has a responsibility to accurately measure and report poll results and information regarding public elections.

Data collection for research has sampling challenges similar to those faced by pollsters. Because our data were collected using a convenience sample, the number of participants in each age group was not equal. The age group 18-22 was overrepresented with 60 participants, and the age group 30-39, with 12 participants, was underrepresented. However, because convenience and poll-point spread did not interact with age group, the unequal sample sizes across age groups should not influence interpretation of those main effects. Because data were collected near a four-year university, it is possible that our results reflect a disproportionate number of participants with a higher education. A higher education could potentially influence the results by providing participants with the knowledge and ability to understand the importance of the voting process (Nie, Junn, & Stehlik-Barry, 1996).

Despite some generalization limitations with respect to age group and possibly education, we are the first to investigate differences in the reported likelihood to vote between the two groups of participants younger than 30 years of age. Watson (2004, p.1) stated "the lack of voter participation among youth is particularly disturbing, especially in light of the number of iconic figures who encouraged youth voting in this year’s election. But at the end of the day, none of these efforts made much of a dent in pushing young folks to the polls." The age-group finding of the current experiment suggests that first-time voters/traditional college students (aged 18-22) may not be the least-likely group to vote, and campaigns targeting this age group are working, at least for individuals enrolled in college. The 23-29 age group will include recent college graduates or professionals just establishing their careers, as well as many individuals starting a family. Such individuals may be less motivated to vote because they are coping with more adjustment pressures than the younger group, and further, they have not been of voting age long enough to establish a strong voting tendency. Because the vast majority of the participants in our 18-22 age group were college students, we cannot determine the voting tendency of noncollege students in the same age group. Younger, noncollege students may be facing adjustment issues more similar to the 23-29 age group. Future researchers should further investigate voting behavior differences within these younger voting age groups using a larger and more diverse sample.

In summary, empirical evidence from the current study suggests that age group, voting convenience, and the point spread of polls each have a significant effect on reported likelihood to vote. Increasing voting behavior depends on understanding, educating and encouraging voters. There are many avenues for future research and voter advocacy programs, many of which may encourage American citizens to be more actively involved in their government and our country’s future.

References

Burgess, D., Haney, B., Snyder, M., Sullivan, J. L., & Transue, J. E. (2000). Rocking the vote: Using personalized messages to moti-
Domestic violence is oftentimes synonymous with spousal abuse and more specifically, battered women, but a broader definition also includes violence between parents and children, intimate partners, and siblings (Dutton & McGregor, 1992). Even when limited to violence between intimate partners, domestic violence continues to be an important social problem, with solutions offered by the mental health system, the criminal justice system, policymakers, and women’s advocates. Cross-culturally, wife-assault is the most common type of family violence (Reichert, 1991). In 1998, 72% of intimate violence murder victims were female and domestic violence murders accounted for 11% of murders nationwide (Rennison & Welchans, 2000).

Many people have their own perceptions about the circumstances within which domestic violence occurs, undoubtedly influenced by the news, movies, television, and even personal experience. Smith and Studebaker (1996) found that memory intrusions, which may be relevant during jury deliberation, are susceptible to prior knowledge (erroneous or deliberate) of crime categories and possibly stereotypical or misleading information. For example, a man may be more likely to be convicted of domestic assault than a woman simply because jurors have a preexisting conception of a domestic violence perpetrator, which is generally a male. Assessing individual attitudes about interpersonal violence is notoriously difficult, especially because of the complex, private, and value-laden nature of domestic violence (Rybarik, Dosch, Gilmore, & Krajewski, 1995). This study examined college students’ perceptions of domestic violence as moderated by perpetrator gender (man or woman), weapon type (traditional or nontraditional) and socioeconomic status (affluent or impoverished). Further examination of whether attitudes about domestic violence reflect common myths about battered women and a discussion of how these assumptions might affect juror decision-making will follow.

Can Gender, Weapons, and Wealth Influence Our Views About Domestic Violence?

Attitudes about domestic violence are complex and difficult to assess. The present study attempted to assess societal attitudes by asking participants to read domestic violence case summaries and respond to examine the influence of perpetrator gender, weapon type, and socioeconomic status. Results indicated that participants generally responded to differences between cases rather than to manipulated variables. Therefore, analyses were conducted using case difference as a fixed factor. Implications for domestically violent situations and limitations on external validity also are discussed.
Perpetrator Gender

There are a number of studies in the domestic violence literature that indicate the prevalence rate of husband-to-wife aggression is equal to that of wife-to-husband aggression (see George, 2003 for review). Although some might argue that the rates are unequal (Yllo, 1993), there is at least adequate evidence to suggest that female-perpetrated violence is a frequent occurrence. However, some research suggests that resultant injury is usually more severe for female victims than for male victims (Feldbau-Kohn, O’Leary, & Schumacher, 2000; Jacobson & Gottman, 1998), whereas other reports claim women are more likely to use weapons rather than their fists, when assaulting men (George, 2003). In addition, gender is thought to be extremely relevant in public perceptions of domestic violence. For instance, Langhinrichsen-Rohling, Shlien, Huss, and Kramer (2004) showed a videotaped, male-perpetrated domestic violence incident and found that not only did the preexisting perpetrator-victim relationship (i.e., married vs. acquaintance) matter towards attributions of perpetrators, but the gender of the perceiver also mattered. They found that female participants viewed the male victim in the video as more responsible for his actions and the female victim in the video less at fault, whereas male participants seemed less critical of the portrayed violence. Feather (1996) found that domestic violence perpetrated by men was seen as more serious and the perpetrators more responsible and deserving of greater penalty. Furthermore, Hester and Smith (as cited in Bornstein & Nemeth, 1999) found a defendant’s actions were described as being motivated by perverse joy when the victim was a young woman, but motivated by revenge when the victim was an adult man. Consequently, a female perpetrator may be viewed as being a “battered woman” and thus motivated by revenge from being continuously beaten, whereas a male perpetrator is seen to derive personal pleasure and exhibit self-satisfying domination by killing a female partner (Jacobson & Gottman, 1998). Thus, there may be a widely held belief that women are the only victims of domestic violence and that men may be desensitized to some interpersonal violence.

Weapon Type

Dienstbier, Roesch, Mizumoto, Hemenover, Lott, and Carlo (1998) found that exposure to weapons (guns) led to harsher criminal sentencing in a mock jury study. They also found a weapon-saliency effect in the criminal verdict and sentencing. Literature has revealed that a male defendant’s actions are perceived to be more unusual (for instance, with unusual weapons or involving unusual situations; Melton & Belknap, 2003), whereas women might be more likely to actually use weapons rather than body parts to cause injury (George, 2003). Therefore, familiar objects taken out of context and used as weapons may potentially lead to greater culpability. Although there is little empirical research on the type of weapons used in domestic violence, traditional weapons were operationalized as weapons commonly used in domestic violence disputes, including guns, knives, boiling water, bricks, fireplace pok ers, and baseball bats (Sacks, 2003). Nontraditional weapons were defined as fairly innocuous, everyday objects used inappropriately as assault weapons, for example: space heaters, work boots, glass bottles, skillets, and drugs (prescribed or psychoactive). Because nontraditional weapons are objects used outside of their ordinarily innocuous state, they may convey a certain amount of premeditation or a degree of the heinousness. Bornstein and Nemeth (1999) argue that the heinousness of the crime and the introduction of graphic evidence may affect juror decisions, both of which can be strongly affected by the type of weapon used. For example, the type of weapon used (e.g., gun, bat, words) may logically affect the type of injury incurred (e.g., blood wound, internal injury, psychological abuse) and thus perceptions of heinousness and sensationalism. Sentencing based on heinousness may be differentially applied to, among other things, perpetrator gender (Bornstein & Nemeth, 1999). If criminal heinousness really is an influential factor, it is expected that differences in the type of weapon used will affect perceptions of violence and assignments of sentence length.

Socioeconomic Status

Research has shown that a low socioeconomic status (SES) is a significant predictor of violence (Swanson, 1994), and an important factor in the continuation of violence (Johnson, 2003). Cunradi, Caetano, and Schafer (2002) found that income level is a better predictor of domestic violence than race, because income level transcends racial categories and is ultimately a better indicator of the availability of resources. With confirming findings, especially for female victims, Rennison and Planty (2003) argued that SES (as represented by income level) is a better predictor of domestic violence than race, and Reichert (1991) found that cross-culturally, wife beating is generally perceived to be more prevalent in low-income families. For several reasons, such as a deficiency of resources, money, education, and occupational opportunities, the lower echelon may often resort to violence, perpetuating the stereotype that the lower class use violence more than the upper class (Smith, 2002). In reality, a low SES may be a risk factor for violent behav-
ior, however the affluent are not immune from violence. Research has shown that domestic violence occurs among high socioeconomic families, and that upper SES families are underrepresented in violence reports due to the population samples used (e.g.,
women in shelters) and the stigma that might result (McKendy, 1997). People in the United States (i.e.,
potential jurors) should recognize that domestic violence is not just a low SES activity, but a social epidemic affecting families of any income level.

The previously identified variables are relevant to incidents of domestic violence because of their interrelationship to one another. Weapon type may be a reflection of the motivation of the violence and the resources/access (i.e., SES) available to the particular perpetrator (i.e., gender). To assess attitudes about domestic violence, measures were taken in the form of a juror response survey (based on hypothetical cases) on perceptions of violence, guilt, and sentencing length to the above-mentioned independent variables. In general, it is hypothesized that cases with male perpetrators (men as innately aggressive), nontraditional weapons (as they are taken out of their original, innocuous context), and low SES perpetrators (violence as the weapon of the lower class) will be perceived as more violent, found guilty more often, and sentenced to longer periods of incarceration than female perpetrators, traditional weapons, and high SES perpetrators. These findings are expected to have some implications for jury decision-making, domestic violence education, and the efficiency of social institutions in addressing the issue of domestic violence.

Method

Participants
Participants were 53 psychology students from a small Midwestern university who received scholastic credit for their participation. Participants were predominantly women (79%), White (77%), freshman (72%), and studying in the arts and sciences (62%) or nursing (25%). Participants ranged in age from 17 to 40, with a modal (47%) age of 18. Fifteen percent reported they had personally experienced some form of domestic violence, 34% reported knowing somebody who had experienced domestic violence, 45% reported studying about domestic violence, and one person (2%) was not familiar with the term domestic violence.

Materials
Materials included a demographic questionnaire covering the following: age, year in school, race, average family income, hometown size, and previous domestic violence experience. Three different half-page scenarios (Case 1, 2, or 3) depicting domestic violence situations resulting in victim death were used, each of which had eight versions, altered by the variables of gender (man or woman), weapon type (traditional or nontraditional), and SES (affluent or impoverished—as indicated by size of residence and financial worries). In addition, changing names and pronouns in reference to perpetrator and victim gender, weapon name, and living conditions and/or occupations, the vignettes of the particular case were designed to be identical in all other ways. Each vignette was accompanied by a juror response survey to measure guilt or innocence, sentencing length, and overall ratings of violence. Response sets were designed on a 7-point Likert scale, with the exception of verdict (guilty or not), and sentence length (response format in years and months).

Design and Procedure
Participants were briefed in accordance with Institutional Review Board protocol. Once consent was obtained, participants were administered a demographic questionnaire and three vignettes, randomly selected from each of the three scenarios (i.e., Case 1, 2, and 3). After reading each vignette, participants were asked to complete a juror response survey for each vignette. Participants were given 45 min to read the vignettes and complete the accompanying surveys. Data were analyzed by grouping responses by case and independent variable manipulation (e.g., all surveys from Case 1 with a male perpetrator from a higher SES who used a traditional weapon were analyzed together).

Results
In order to determine the effects of gender, weapon choice, and SES on violence perception, several different statistical analyses were performed. Case number also was included as an independent variable, giving us a total of four independent variables.

First, a logistical regression was run to determine whether an effect was present between gender, weapon type, SES, and case number on guilt verdict (guilty or not guilty); \( \chi^2(5, 152) = 47.85, p < .01 \). Results of this analysis indicated that both gender effects, odds ratio = 4.365, \( p = .015 \); and case effects, odds ratio = 18.191, \( p < .01 \) were present. Of 157 verdicts, participants responded with a guilty verdict 87% of the time. Female perpetrators, however, were found not guilty significantly more than male perpetrators (67% versus 33%), even though both genders were represented as perpetrators in an equal number of vignettes. The effects of case on guilty verdicts were significant only for Case 1. Of the 21 not guilty verdicts given, 19 were in Case
Case 2 yielded zero not guilty verdicts and Case 3 yielded two. A factorial analysis of variance was conducted in order to establish any effects of gender, SES, weapon type, and case number on sentencing length. The results of this ANOVA revealed a significant main effect on case number, $F(2, 155) = 5.66, p < .01$ (see Figure 1). Upon further examination, it was revealed that participants gave perpetrators in Case 2 a significantly longer sentencing (in years; $M = 34.39, SD = 32.88$) than Case 3 ($M = 17.84, SD = 21.26$) and Case 1 ($M = 19.00, SD = 26.27$). No significant differences were found between Case 1 and Case 3.

A second ANOVA also was used to examine the effects of the four independent variables (gender, SES, weapon type, and case number) upon overall violence ratings. Results of the factorial ANOVA indicated main effects for both gender, $F(1, 159) = 5.35, p < .05$, and case number, $F(2, 159) = 12.61, p < .01$. Descriptive statistics indicated that domestic violence situations involving male perpetrators ($M = 5.90, SD = .89$) were rated as significantly more violent than those with female perpetrators ($M = 5.56, SD = 1.20$) (see Figure 2). A main effect with case also was found, suggesting that participants rated Case 3 ($M = 5.23, SD = 1.15$) as significantly less violent than both Case 2 ($M = 5.87, SD = .92$) and Case 1 ($M = 6.11, SD = .91$).

In addition to the main effects yielded by the ANOVA regarding violence ratings, an interaction between case, weapon type, and SES also proved to be significant, $F(2, 159) = 3.16, p < .05$. LSD post hoc tests were conducted and it was found that affluent perpetrators in Case 1 using traditional weapons were rated as significantly more violent ($M = 6.54, SD = .66$) than perpetrators in Case 2 ($M = 5.87, SD = .92$) and perpetrators in Case 3 ($M = 5.23, SD = 1.15$). In addition, perpetrators in Case 3 were viewed as significantly less violent than others, regardless of weapon choice or SES.

In addition, utilizing demographic data provided by participants in a questionnaire, two moderational analyses were conducted according to the Baron-Kenny (1986) criterion model. Participant gender was not a significant moderator between perpetrator gender and violence ratings, $F(1, 155) = 1.67, p > .20$. Furthermore, participant family income did not prove to be a significant moderator between perpetrator SES and violence ratings, $F(1, 143) = 1.31, p > .26$. Participants also were asked about their experience with domestic violence in a demographic questionnaire. An ANOVA revealed that the amount of domestic violence experience reflected in participant responses had a significant effect on overall violence ratings, $F(4, 154) = 3.00, p < .05$. Participants who reported personally experiencing domestic violence gave significantly higher violence ratings to vignettes ($M = 6.25, SD = .99$) than those who had read about or studied domestic violence ($M = 5.56, SD = .94$), and those participants who knew someone who experienced domestic violence ($M = 5.51, SD = 1.19$). No other significant differences were found.

**Discussion**

Many different factors contribute to the degree of culpability people perceive in domestic violence situations. In this study, gender, weapon type, and SES were hypothesized to affect people’s overall perceptions of domestic violence situations. Overall violence...
ratings, perpetrator guilt, and sentence length were all dependent variables used to establish participants’ perceptions. Specifically, it was predicted that poor, male perpetrators using a nontraditional weapon would be rated as more violent than women, affluent perpetrators, or those using traditional weapons in domestic abuse due to the common perceptions that men are the more aggressive gender and that violence is cyclical and rooted in poverty. We also assumed that those factors contributing to a greater perception of violence would warrant harsher punishment in terms of longer sentence length from participants. Although no significant main effects were found with SES or weapon type, perpetrator gender differences were present, and differences among the three domestic violence cases used in the vignettes were significant as well.

Guilt Verdict

According to verdicts reported by participants, nearly all perpetrators were found guilty of committing a serious crime. Of 157 total participant ratings of guilt, 136 were found guilty and only 21 were found not guilty. These results may not seem surprising giving the gravity of domestic violence; however, female perpetrators received an uneven proportion (67%) of the not guilty verdicts. This effect may potentially reflect the common thought that women are victims of domestic violence, not perpetrators. Similarly, participants may have thought that the women who were perpetrators were pushed to do so, possibly after putting up with previous domestic abuse (i.e., battered woman’s syndrome; Jacobson & Gottman, 1998). Male perpetrators were viewed as guilty more often than women across all cases in one study (Langhinrichsen-Rohling, et al., 2004), and conversely women were seen as not guilty more often in this study, potentially indicating that participants may have focused on perpetrator gender while overlooking other specific case factors when determining a verdict.

However, effects involving case specifics were discovered as well, demonstrating the importance of aggregate case facts in determining violence ratings and other variables. In Case 1, participants responded with 19 not guilty verdicts and 33 guilty verdicts. There were two not guilty verdicts in Case 3 and zero in Case 2. Because Case 1 explicitly defines the perpetrator as being intoxicated, the participants may have attributed some of the blame and violence to the influence of alcohol, thus making the perpetrator less personally culpable. Also in Case 1, the perpetrator returns to the crime scene and calls the police to confess his/her story. This case difference may have suggested remorse, causing participants to rate the perpetrator based on sympathy or compassion. Thus, alcohol saliency and immediate action taken by the perpetrator may affect participant guilt verdicts, aside from any known criminal intent.

Sentence Length

Sentencing length was a variable of interest that participants responded to in the juror response survey. Surprisingly, case number was the only variable that had a significant effect on sentencing length; however, weapon type may be among the factors that contributed to the extra sentencing lengths. Although weapon type was originally separated into traditional and nontraditional weapons used in the cases, people may actually distinguish between weapons based on the severity of (potential) injuries. Perpetrators in Case 2 received a significantly longer sentence than perpetrators in the other cases. Case 2 differs on the basis that both the traditional and nontraditional weapons referred to in the vignette (a space heater vs. boiling water) inflicted fatal burns on the victim. On the other hand, weapons in Case 3 (a baseball bat vs. desk lamp) caused death by bludgeoning, and Case 1 weapons (a knife vs. broken glass) were used to stab a victim to death. Perhaps the amount of time that the victim suffered before dying also added to greater sentencing length because victims in Case 2 died after four days due to burn complications, while the other victims died shortly after the incident. In addition, the type of injury inflicted may reveal differences in the cruelty or heinousness of the perpetrator/crime, thus causing participants to assign longer sentencing lengths.

Overall Violence

The effects of case number and gender on the overall violence rating for each case also were of prime interest in this study. Both variables had significant main effects on the violence ratings that participants gave to each case. The LSD Post hoc analysis suggests that Case 3 was viewed as significantly less violent than the other two cases. A variety of factors may have contributed to this effect. First, the mention that the couple had legal custody of their eleven-year-old nephew may have indicated to respondents that their household is (or should be) generally less violent. Also, following the incident, the perpetrator asks the boy to dial 911. In both other cases, the perpetrator leaves the victim immediately after the incident.

A main effect of gender on violence rating also was found. Results indicated that male perpetrators were seen as more violent than women across all three cases presented. This effect may be understood in the common perception that men are naturally more aggressive and violent than women (Feather, 1996).
Another reason participants rated men as more violent may be a limitation of the study sample, which consisted of mostly women, although gender did not prove to be a significant moderator between gender and a guilty verdict. Also, participants may not be familiar with crime statistics and current research on domestic violence that questions the original notion that men are the more violent sex (George, 2003; Jacobson & Gottman, 1998).

Gender, weapon type, SES, and case number interactions also were examined on overall violence ratings. The interaction between case number, SES, and weapon type was significant. Interaction effects on violence ratings showed that affluent perpetrators in Case 1 using traditional weapons were perceived as the most violent. This effect may be due to a reference in Case 1 stating that the perpetrator was intoxicated at the time of the killing. Also, an explicit shouting match ensued between the couple in Case 1 which may have caused participants to view the whole scene as more violent (interestingly, Case 1 perpetrators also received the most not guilty verdicts).

**Domestic Violence Experience**

Study participant characteristics, such as gender and family income, were not significant moderators between perpetrator gender and perpetrator SES on violence ratings in this study. This finding may demonstrate that participants did not make biased ratings based on their own individual characteristics as was found in previous research (Feather, 1996). In addition, although demographic questionnaire responses represented a wide income range, most participants were women, limiting the possibility of participant gender as a moderator. Domestic violence experience, however, did affect overall violence ratings. Participants who had personally experienced domestic violence rated vignettes as more violent than those participants who had only read about or studied domestic violence, and those who knew someone who had experienced it, potentially inflating violence ratings. These findings may suggest that people who view domestic violence as a personal topic may have responded with greater emotional drive to events from a particularly salient situation as opposed to the case facts presented in the vignettes. Participants’ responses also may reflect the amount of violence they felt had been committed towards them. In addition, the few participants with little or no experience with domestic violence may not grasp the full intensity of the issue and the extreme gravity of the violence described in the vignettes, therefore lowering the average violence ratings. Although domestic violence experience was not originally an independent variable of interest, the implications of experience in jury deliberations on domestic violence issues should be studied in future research.

**Limitations and Conclusions**

Research by Yllo (1993) on domestic violence has primarily focused on the feminist perspective that women are the victims and never the instigators of domestic abuse. Results from this study seem to indicate that most participants’ views are consistent with the feminist model, as more female perpetrators received not guilty verdicts, and men were viewed as significantly more violent. In addition, the phenomenon that women received more not guilty verdicts than men even when the outcome was the same (i.e., death), may be consistent with views held by Bornstein and Nemeth (1998) that a woman who has been convicted of murdering her husband has likely endured a long history of abuse.

Furthermore, the results of this study demonstrate that participants’ perceptions of violence do not depend upon the SES of the perpetrator. Because some research supports the belief that women from low SES backgrounds are much more likely to be victims of domestic violence (McKendy, 1997), it would not have been surprising for participants to rate the counterpart perpetrators (i.e., male perpetrators from low SES backgrounds) as more violent or guilty more often. This finding was not supported, however, indicating that the stereotypical association between poverty and violence may not be as generalized or widespread as is commonly thought. In fact, participants may be more attuned to research comments on the fact that women from higher SES households may endure domestic violence without reporting it due to negative stigmas (McKendy, 1997).

Finally, this study may have yielded significant results because of external factors or problems with internal validity. First, the differences in the design of the three cases were more significant than the three originally manipulated independent variables of gender, SES, and weapon type, though these differences actually increase external validity. Because factors reflecting the independent variables were in written form, they may not have been salient enough to render the participants’ attention. Furthermore, the vignettes utilized in this study were fictionalized cases—also a limitation on validity. The practice effect may have influenced some participants, because after reading each of three vignettes the participants had to complete an identical juror response survey. They may have been prone to answer the same way for all questions regardless of actual case differences. Question wording ambiguity on the juror response survey also could have caused error in the results. In addition to
these threats of internal validity, another major problem is that this study lacks the ability to be generalized to different populations, as the sample consisted of mostly White women below the age of 22. In addition to gender biases that may have been caused by the sample based on age, the participants may lack the life experience necessary to answer some of the survey questions accurately and honestly.

Results of this study have numerous implications for society regarding people’s perceptions of domestic violence scenarios. The common result that men are perceived as more violent or rather guiltier of violence than women is important to note, especially in criminal law, where a man and woman may receive different sentencing lengths for the same crime. Also, the fact that women received a not guilty verdict more often than men may reflect a common perception that women who do commit such extreme acts of violence against their partners unless driven by a history of abuse. This thought, however, is only a speculation, and further research is necessary to determine the real cause of verdict discrepancies between sexes.

The main conclusion of this study is when people give overall ratings of violence, judgment, and punishment, they look at each case individually, with perpetrator gender apparently being the most salient factor. Aside from gender, participants did not make dispositional inferences about perpetrators as often as situational ones, which demonstrate that people may be able to filter out certain stereotypes when asked to make important decisions on violent cases. Although significance was not attained with respect to socioeconomic status or weapon type, people may still hold inaccurate views regarding these factors and their relationships to domestic violence. Educating the public, especially at-risk individuals, about domestic violence should continue to be a societal goal. Further research should be conducted to establish whether respondent gender serves as a moderator between perpetrator gender and violence ratings. Also, the effect of weapon type on perceptions of domestic violence is still a question of interest, but should be defined in terms of the injuries the weapons inflict, rather than traditional versus nontraditional weapons as operationalized in this study.

**References**


With the emergence of new fad diets and the seemingly constant market for exercise equipment, it would seem that there is an obvious preoccupation with weight control in the United States. However, fat consumption occurs at consistently high levels in America, even with the national concern over weight and the various suggestions available for how to achieve a healthier diet (O’Brien, Fries, & Bowen, 2000). For this reason, it appears that more Americans are turning towards diets to counteract the growing problem of obesity. Many factors may contribute to the success of these diets, and one possibly related factor is hope. The present study will consider the various aspects of dieting and how they are related to the variable hope.

There are many definitions of what exactly constitutes a diet. The present study focuses on the behaviors associated with weight loss, defining dieting as consistently restrained eating and/or exercise. Controlling weight, eating a balanced nutritional diet, and engaging in physical activity are all ways that people can obtain and maintain fitness and health (Renner, Knoll, & Schwarzer, 2000). People may diet, in this broad sense of the term, not only to restrain eating and gain fitness, but also as an attempt to think more positively about themselves. In fact, body dissatisfaction, not health or fitness, is the reason many dieters begin attempts to lose weight (Mills, McCabe, & Polivy, 1999). Body dissatisfaction is prevalent in dieters as they consistently strive to be thinner and look better. In many cases, such discontent can lead to a decrease in satisfaction with life in general (Roncolato & Huon, 1998).

However, the negative feelings experienced by dieters often serve as barriers to their goals. Dieters may experience frustration from their dietary restraints, which can cause distress if they begin to feel that they are inadequate (Mills et al., 1999). Heatherton, Striepe, & Wittenberg (1998) have shown that distress often causes dieters to break their diets and succumb to food temptations. Unfortunately, these researchers also found that even general states of sadness or negativity may be translated into body dissatisfaction. Such negativity can make dietary goals seem unattainable, making the diet seem unrewarding and a waste of time.

One possible way to counteract the detrimental effects of general negativity is through hope. Hope for the future strongly influences present actions positively about themselves. In fact, body dissatisfaction, not health or fitness, is the reason many dieters begin attempts to lose weight (Mills, McCabe, & Polivy, 1999). Body dissatisfaction is prevalent in dieters as they consistently strive to be thinner and look better. In many cases, such discontent can lead to a decrease in satisfaction with life in general (Roncolato & Huon, 1998).

The purpose of this study was to investigate the relationship between hope and dieting, including physical activity and eating behavior. It was hypothesized that those with higher levels of hope would have healthier dieting behaviors. A sample of 47 university students were given a survey packet including Snyder’s Adult Dispositional Hope Scale, the Restraint Scale, a nutritional behavior scale, and various physical activity measurements. Results indicated partial support for the hypothesis. Hope was significantly related to physical activity, including exercise status, activity level, and intensity level. Hope was not significantly related to nutritional behavior or restrained eating. The findings are consistent with previous research showing that optimists are more likely to engage in physical activity, and therefore these findings have practical implications in exercise regimens.
HOPE AND DIETING  □  Cornell, Ordogne, Seidman, Sneed, and Hammer

(Nowotny, 1991). Therefore, hope for the future, especially in terms of reaching dieting goals, may relate to how well people work towards these goals in the present. Snyder (1995) defines his cognitive theory of hope as made up of three ideas. The first is the idea of a goal; the outcome a person would like to reach. The second aspect of hope is pathway thinking; the idea that one can create plans of actions to achieve the goal. The third aspect of hope is agency thinking; the idea that one can use these pathways effectively by beginning and maintaining movement toward the goal. According to Snyder, a person has hope when exhibiting these three constructs.

A related construct is that of optimism. Nowotny (1991) refers to optimism as “inner readiness,” the lack of which can result in pessimism and decreased inspiration to keep trying. Because low levels of optimism can impede pathways toward a goal, the constructs of hope and optimism can be related. Concluding that the presence of a positive state, such as hope, would counteract the various negative feelings previously connected with dieting, is reasonable. Scheier and Carver (as cited in Kavussanu & McAuley, 1995) found that optimists with seemingly reachable goals were more willing than pessimists to cope with obstacles or pain in order to achieve these goals.

Backman, Haddad, Lee, Johnston, and Hodgkin (2002) show that positive people are better able to overcome dieting obstacles. They found that when participants thought more positively about a healthy diet, they were more open to the idea of good nutritional behavior, more confident in themselves and their weight loss goals, and less inhibited by a nutritional diet. Therefore, optimism, and perhaps the related construct of hope, can make the dieting process seem more bearable. In fact, women had more weight loss success depending on how optimistic they were about their success (Oettingen & Wadden, 1991). In terms of exercise, optimistic people may have more of a tendency to participate in healthy lifestyles, increasing the chances that they will engage in more physical activity (Kavussanu & McAuley, 1995).

Just as hope may affect dieting and its success, it seems also that dieting behaviors may affect levels of hope. For example, physical activity seems to result in generally positive feelings by decreasing the amount of sadness exercisers feel, and by giving them a sense of confidence (Kavussanu & McAuley, 1995). Kavussanu and McAuley also found that exercisers were more likely to feel confident in their ability to perform and complete physical tasks, coinciding with Snyder’s agency thinking. Perhaps this also applies to dieting in that hope levels will fluctuate according to how successful the diet attempts seem to be. Kavussanu and McAuley also indirectly refer to Snyder’s pathway thinking. They found that when a person’s course of action led to goal attainment, that person was more likely to be optimistic about future goals.

However, when one of Snyder’s three aspects of hope is not fulfilled, dieting attempts may become severely hindered. Heatherton et al. (1998) found that when dieters were made to fail at a certain task, they began to ignore their nutritional restraints and eat more freely. Such task-failure can be connected to failing in Snyder’s concept of agency thinking. When dieters continually experience failure, their hope in success decreases and it stalls their ability to move along the pathways to the goal of weight loss (Mills et al., 1999). A negative outlook is also produced when people think that they do not have control over factors affecting them (Kavussanu & McAuley, 1995). Therefore, dieters who feel they have no control over the pathways or agency to attain the dietary goal will lose hope in that goal.

The present study will explore the relationship between outlook and dieting behaviors. Specifically the study will examine the relationship between hope and exercise and eating habits. Much of the previous research looks at either exercise or eating restraints, but this study will look at both nutritional behavior and physical activity. This study goes beyond research regarding optimism, and instead examines Snyder’s construct of hope. Based on previous research, we hypothesize that people with higher levels of hope will have healthier and more consistent dieting behaviors. Those with lower hope scores are expected to have more negative dieting behaviors.

Method

Participants

In this study, university students were recruited from the psychology department’s participant pool board. Forty-seven students (36 women, nine men, and two unspecified) volunteered to participate. They ranged in age from 18 to 23 (M = 19 years).

Materials

Snyder’s Adult Dispositional Hope Scale (Snyder, 1995) was administered to measure the variable hope. This scale contained 12 items. Four of these items related to Snyder’s pathway thinking, four related to his agency thinking, and four were filler questions that were not scored. Non-filler items were scored on a 4-point scale ranging from 1 (strongly disagree) to 4 (strongly agree). Higher scores on this scale meant that the participant displayed higher levels of hope. This scale has good internal consistency, with alphas ranging from .74 to .84.
To measure dieting, first participants were classified as either dieters or nondieters based on their answers on The Restraint Scale. The Restraint Scale has been used in previous research to measure persistent dieting status in participants (Heatherton et al., 1998). This scale consists of 10 questions that measure a participant’s concern with dieting and his or her weight fluctuation. These items were scored on a 4 to 5-point scale depending on the question. Participants scoring 15 and above on this scale were classified as dieters and those scoring below 15 were considered nondieters. Ruderman and Christensen (1983) have found The Restraint Scale to have a reliability coefficient as high as .86 (as cited in Klesges, Isbell, & Klesges, 1992).

The Nutritional Behavior Scale used by Renner et al. (2000) was included to measure the nutritional habits portion of this study’s dieting definition. This scale contained four items relating to the participant’s eating habits and fat intake. The items were scored on the same 4-point scale used for Snyder’s hope scale. One of the items was reverse scored. On this scale, a higher score meant that the participant exhibited healthier nutritional behavior. This scale had good internal consistency as well, with a Chronbach’s alpha of .74.

To measure the exercise of the participant, physical activity measurements used by Kavussanu and McAuley (1995) were taken. Participants were asked whether they were currently exercising, how often they exercised in a week, the average duration of their exercise, and the average intensity of their exercise. They were classified into an inactive/low, moderate, or high activity level based on their exercise frequency.

**Design and Procedure**

This study used a correlational design. Participants were presented with a cover story that our study dealt with goals and health. Participants were tested in university classrooms. After arriving, the participants completed written informed consent and completed a survey packet of materials. Finally, the participants were debriefed.

**Results**

Table 1 presents the frequencies of categorical variables. Table 2 provides the descriptive statistics for continuous variables. When comparing means, we conducted t tests. When testing for associations between interval data, we used Pearson’s Correlation Coefficient. When using rank-order data, we conducted Spearman’s Rho.

A t test showed no significant difference in hope based on the participants’ classification as either dieter or non-dieter, t(45) = .60, p = .55. A Pearson Correlation found no significant relationship between hope and the participants’ nutritional behavior, r(45) = .09, p = .54. Finally, Spearman’s Rho analyses found a marginally significant relationship between hope and the participants’ average duration of exercise, r(45) = .22, p = .07.

A t test revealed significant differences in participants’ hope depending on their current exercise status, with participants who currently exercise showing significantly higher levels of hope, t(45) = 2.84, p < .01. Spearman’s Rho also showed a significant relationship between hope and participants’ activity level, r(45) = .41, p < .01, and hope and participants’ intensity of exercise, r(45) = .41, p < .01. Interestingly, Spearman’s Rho analyses also found significant posi-

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tive correlations between nutritional behavior and intensity of exercise, $r(45) = .27, p = .03$, and nutritional behavior and average duration of exercise, $r(45) = .41, p < .01$.

**Discussion**

As hypothesized, individuals with higher hope did indeed show healthier dieting behaviors in terms of exercise. The positive relationships between hope and the exercise components of dieting offer partial support for our hypothesis. However, our hypothesis that participants with higher hope levels would have better nutritional behavior was not supported.

The lack of associations between hope, nutritional behavior, dieting status, and exercise duration suggest that these variables are unrelated. However, the significant relationships in regard to hope suggest that as hope levels increase, so will physical activity in terms of level and intensity of exercise. Individuals with higher levels of hope are more likely to engage in exercise more frequently and take part in more difficult workouts.

Because the design of this study did not allow for cause and effect conclusions, the relationship between hope and physical activity may be explained in a few ways. Higher hope could yield increased physical activity, but increased physical activity may also lead to higher levels of hope. This last conclusion is consistent with Kavussanu and McAuley’s (1995) findings that long-term workout regimens can influence mood and optimism. In addition, the relationship could be explained by a third variable that simultaneously increases physical activity and hope, such as the presence of caffeine, or sleep habits.

The contradictory presence of a relationship between hope and physical activity, and the lack of one between hope and nutritional behavior was the most surprising finding in this study. This result may be due to the fact that eating is a necessary process that must be performed daily for survival, whereas extra physical activity may require an additional amount of motivation. Because eating healthily certainly requires dedication, perhaps the extra encouragement required to initiate strenuous activity can be found in hope. Higher hope may allow individuals to set more time and energy-consuming goals and to reach them by fueling their motivation. Perhaps hope has more of a relationship with active behaviors, such as exercise, than with more passive or habitual ones, such as eating.

The additional findings that healthier nutritional behavior is related to more intense and longer workouts may also have multiple explanations. This relationship could result because those who are more conscious of how hard they workout will be more likely to watch what they eat as well. In contrast, those who are more nutritionally conscious may also be more concerned with exercise. These findings are interesting because they cross the two portions of our dieting definition. Our definition included all behaviors related to weight loss, including eating behavior and physical activity. These additional findings show that these two aspects are indeed related.

Our findings are important because they support past theoretical research while integrating the concept of hope. Our results agree with Kavussanu and McAuley (1995), who found that highly active individuals were more optimistic than those with a lower activity level. They also found that engagement in physical activity may boost positive thinking related to confidence in the ability to exercise regularly. Likewise, we found that individuals who are able to conceptualize their goals and develop the agencies and pathways needed to achieve these goals are more likely to participate in longer, more intense exercise sessions.

Although we found similar results, our study focused on positive thinking in terms of hope rather than optimism. In doing so, we found that physical activity is related specifically to the construct of hope and its agency and pathway thinking. Because increased physical activity may imply dieting success, this study also has important practical implications. Exercise regimens could integrate positive cognitive thinking or hope training into their programs to promote successful weight loss.

It is important to note that in this study we only measured how participants perceived their dieting behaviors; we did not directly measure these behaviors. We also did not directly measure dieting success. Physical activity, nutritional behavior, and restrained eating are separate components of our dieting definition that were combined to imply a measure of healthy dieting behaviors. Therefore, this classification can only be inferred from the results. A final limitation is that the cover story presented may have resulted in participant avoidance. Because the study was labeled as one of health and goals, less healthy individuals or those who did not have any specific goals in terms of their health, may have avoided the study.

Because of these limitations, future research can greatly expand on this study. In the future, healthy eating habits can be directly measured, perhaps through observation or self-report journals, so that more accurate conclusions about hope and dieting can be reached. Also, a more extensive measure of nutritional behavior, such as one that contains questions regarding organic and natural food diets, can be used to fur-
ther investigate eating behavior and hope. The survey packet as a whole could be expanded to include more open-ended questions. A less standardized and more in-depth questionnaire may result in stronger correlations.

Further investigation is needed into the relationship between nutritional behavior and duration of exercise. Although this relationship was not part of this study’s hypothesis, these two variables had the strongest relationship and greatest significance. Further investigation may result in specifically defining why these two issues are related, which may in turn define new ways to improve dieting success.

References
Sleep is an essential part of one’s life and sleep deprivation or poor sleep can have negative effects on one’s overall mental health. Pilcher, Ginter, and Sadowsky (1997) posited that health and well-being measures were better related to sleep quality than sleep quantity, and that poor sleep quality was associated with increased mood states of tension, depression, anxiety, fatigue, and confusion. Similarly, Meijer, Habekothé, and Van Den Wittenboer (2001) reported a strong relationship between sleep quality and mental health characteristics, such as emotional stability. Sleep quantity is still an important factor, however, as Roberts, Roberts, and Chen (2002) found that insomnia constitutes a significant risk factor for future somatic dysfunction including perceived health, somatic health problems, and reported impact of illness on family life.

In addition to sleep quality and quantity being risk factors for mood fluctuations, sleep variables have also been associated with psychiatric disorders. The direction of the relationship between sleep and psychiatric disorders seems to be unclear. Perhaps sleep abnormalities are an expression of psychiatric problems or opposingly sleep disturbances may be a causal factor of psychiatric problems. Andrews and Oei (2004) found that insomnia is one of the most common early signs of major depression. But it is unclear whether insomnia is secondary to depression, or whether depression is secondary to insomnia. In either case, sleep disturbances may act as a warning sign for the risk of psychiatric disorders. For example, Hidalgo and Caumo (2002) found that daytime sleepiness, insomnia, and less than seven hours of sleep per night have been related to minor psychiatric disorders in medical students. Paavonen, Solantaus, Almqvist, and Aronen (2003) found correlations between psychiatric symptoms and sleep disturbances, and concluded that children with sleep disturbances demonstrated a greater risk for psychiatric problems than nonsleep disturbed children. Ford and Kamerow (1989) noted the prevalence of psychiatric disorders, specifically depression and anxiety, was much higher in those who complained of sleep disturbances. In fact, depression and anxiety are two of the most common symptoms associated with sleep complaints (Andrews & Oei, 2004; Ford & Kamerow, 1989). Morin, Rodrigue, and Ivers (2003) found that people with insomnia reported more intense symptoms of depression and anxiety than did indi-

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**The Role of Sleep, Stress, and Coping Styles on Anxiety and Depression**

Previous research has examined the relation between sleep and mental health in adolescent and elderly populations. The goal of this study was to examine the relation between college students’ sleep habits and their mental health, particularly anxiety and depression. It was found that individuals with sleep disturbances may be at risk for depression and anxiety. Another goal of this study was to do an exploratory analysis of stress, coping strategies, gender, and sleep to discover which variables would best predict depression and anxiety. Avoidant coping was the best predictor followed by sleep disturbances for both depression and anxiety. The gender of an individual was also found to have a negative effect on one’s sleep, specifically for a woman.

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*Faculty supervisor*
viduals without insomnia. Taylor, Lichstein, and Durrence (2003) concluded that insomnia is a predictor of depression, anxiety disorders, and other psychological disorders (see also Ford & Kamerow, 1989). Finally, Hasler et al. (2005) concurred by recognizing the existence of strong associations between excessive daytime sleepiness and both depression and anxiety disorders.

Studies indicate that there is a direct relationship between sleep complaints, sleep abnormalities, and depression (De Gennaro, Martina, Curcio, & Ferrara, 2004; Ford & Kamerow, 1989). Berger, van Calker, and Riemann (2003) noted that chronic insomnia may in an and of itself become a risk factor that triggered depression. Hatzinger, Hemmeter, Brand, Ising, and Holsboer-Trachsler (2004) found that people experiencing a long-term course of depression have increasingly abnormal sleep regulation, which may predict treatment response during their depression, as well as long-term recurrences of depression.

Gregory et al. (2005) found a link between persistent sleep problems in childhood and diagnosed anxiety in adulthood and suggested that both anxiety and sleeping problems have underlying risk factors. One underlying risk factor may be stress. Phillips, Hammen, Brennan, Najman, and Bor (2005) found that anxiety disorders may be related to early stress exposure. Their results implicate a possible developmental process in which early distress indicates early onset of anxiety disorders. Phillips et al. (2005) noted that some children may be more vulnerable to the development of depressive disorders either due to their negative family environments or due to severe levels of stress independent of familial conditions. They also noted that depressive disorders are more likely to be triggered by severe acute stressors. Joiner, Wingate, Gencoz and Gencoz (2005) raised the possibility that depressive symptoms may generate the perception but not the occurrence of stress. They also found that hopelessness is a key aspect of depression and that depression chronicity may be implicated in the generation of actual stress.

The way in which an individual handles a stressful situation, rather than the actual stress itself, may be important in predicting depression and anxiety. According to Lazarus (1990), once an individual has assessed a situation as stressful, coping strategies are used to maintain the individual’s stability. Coping strategies are referred to as efforts used to manage demands that are appraised as a strain on one’s resources (Lazarus & Folkman, 1984). Thus, coping strategies are efforts made to reduce or minimize stressful events. Researchers generally recognize two types of coping strategies: problem-focused coping and emotion-focused coping. Individuals employing problem-focused coping strategies directly focus on the stressor, where the terms of the relationship are changed, affecting the appraisal process. Individuals employing emotion-focused coping strategies address the consequences of the stressor, but not the stressor itself, and an individual may deny or distance themselves from the threat, thus affecting the appraisal process (Lazarus, 1990). In addition to problem-focused and emotion-focused coping, some researchers argue that there is a third type of coping, called avoidant coping. Individuals employing avoidant coping strategies attempt to avoid confronting the situation or try to reduce the emotional tension of a problem (Billings & Moos, 1981).

Morin et al. (2003) focused on coping strategies in relation to sleep and stress. These authors concluded that insomniacs, when facing stressful situations, rely more on emotion-focused coping strategies. This coping strategy indirectly influences their sleep efficiency by increasing the stress impact. Seiffge-Krenke and Klessinger’s (2000) research on problem-focused coping concluded that individuals who use this form of coping display lower levels of depression. Research has also found that individuals who rely on avoidant coping report more depression (Seiffge-Krenke & Klesslinger, 2000), and more anxiety (Liverant, Hofmann, & Litz, 2004).

Another factor impacting mental health in relation to coping and sleep is one’s gender. One study found that male college students were more inclined to use problem-focused coping strategies, whereas women were more inclined to use emotion-focused coping strategies (Ptacek, Dodge, & Smith, 1994). Blalock and Joiner (2000) found that the negative effects of avoidant coping on one’s mental health was only true for a woman. In addition, Breslau, Roth, Rosenthal, and Andreski (1996) found that women report higher rates of insomnia than do men. Ford and Kamerow (1989) posited the prevalence of insomnia is significantly higher for women, with small differences in the incidence rates between the genders. Excessive daytime sleepiness has also been linked to one’s gender. Hasler et al. (2005) reported that the prevalence of excessive daytime sleepiness increased with age for both men and women, and at any age, women had higher prevalence rates. Lavidor, Weller, and Babkoff (2002) posited women to have higher levels of fatigue. They also reported that depression levels were correlated with fatigue on six out of seven fatigue factors, indicating a possible effect of gender.

Most research has focused on adolescent and elderly populations when trying to understand the relationship between sleep and mental health. The goal
of the present study is to examine college students’ mental health, particularly anxiety and depression, in relation to their sleep-wake cycles. In addition, another purpose of this study is to examine coping strategies, sleep, and stress and its relation to mental health. Specifically, this study assessed that variables that are considered risk factors for the development of depressive and anxiety disorders. It is necessary to investigate these variables in relation to mental health facets in an attempt to prevent and better treat psychiatric disorders.

It was hypothesized that there would be a negative relationship between sleep disturbances in both quality and quantity and mental health, such that individuals with poor sleep will report greater instances of depression and anxiety. Exploratory analyses of stress, individual coping styles, gender, and sleep were conducted to discover which variables were the best predictors of depression and anxiety. Specifically, the questions asked where whether stress or sleep were predictors of depression and anxiety; whether problem-focused, emotion-focused, or avoidant coping strategies were better predictors of depression and anxiety; and whether gender was a predictor of depression and anxiety. Because these analyses were exploratory, no specific hypotheses were made.

**Method**

**Participants**

Data were collected from 378 Boise State University students from a General Psychology participant pool. All students received course credit for their participation. There were 228 (60.3%) women, and 150 (39.7%) men. There were 257 (68%) freshmen, 82 (21.7%) sophomores, 30 (7.9%) juniors, and 9 (2.4%) seniors. There were 290 (76.7%) participants who were of single status, 46 (12.2%) who were married, 12 (3.2%) who were divorced, 1 (.3%) who was widowed, and 27 (7.1%) who were cohabitating. There were 210 (55.6%) participants who worked part-time, 83 (22%) who worked full-time, 82 (21.7%) who were unemployed, 3 (.8%) who were retired. Three hundred twelve (82.5%) participants were White, 10 (2.6%) participants were African American, 29 (7.7%) participants were Hispanic, 14 (3.7%) participants were Asian, and 12 (3.2%) were classified as “other.”

**Materials**

The participants were asked questions that focus on depression, anxiety, sleep, and coping strategies in relation to stress as described below.

**Depression.** Depression was measured using the Center for Epidemiologic Studies Depression Scale (CES-D, Radloff, 1977). The CES-D is a Likert-type questionnaire that contains 20 questions examining self-reported feelings or behaviors during the past week. Students responded to the questions based on a 4-point scale ranging from 1 (rarely or none of the time to less than 1 day) to 4 (most of all the time to 5-7 days). Responses were summed and a scale score was created ($\alpha=.89$).

**Anxiety.** Anxiety was measured using the Mehrabian Trait Anxiety Scale (Mehrabian, 1994). The Mehrabian Trait Anxiety Scale is a Likert-type questionnaire containing 16 questions examining personal characteristics. Students responded to the questions based on a scale ranging from -4 (extremely inaccurate) to +4 (extremely accurate) with a score of 0 indicating neither accurate nor inaccurate. See Mehrabian (1994) for scoring instructions and information on reliability and validity.

**Sleep.** Sleep variables were measured using the Pittsburgh Sleep Quality Index (PSQI, Buysse, Reynolds, Monk, Berman, & Kupfer, 1989). The PSQI is a Likert-type questionnaire containing nine questions examining sleep habits during the past month. Students responded to the questions based on a 4-point scale ranging from 0 (not during the past month) to 3 (three or more times a week). See the Buysse et al. for scoring instructions ($\alpha=.83$).

**Stress.** Stress was measured using the Student Stress Scale (Insel & Roth, 1994). The Student Stress Scale is designed to examine 31 stressful life events experienced in the past 6 months or that are likely to be experienced in the next 6 months. Points are assigned based on their severity, ranging from 20 (minor traffic violations) to 100 (death of a close family member). Responses were summed. The scale demonstrated good internal consistency in our study ($\alpha=.95$).

**Coping.** Coping styles were measured using a Coping with Stress scale (Holahan & Moos, 1987). The Coping with Stress scale is a Likert-type questionnaire that contains 32 questions identifying problems faced in the last year and indicates how often students used each coping strategy to deal with their problems. Students responded to the questions based on a 4-point scale ranging from 0 (not at all) to 3 (fairly often). Coping styles were grouped into three categories: problem-focused, emotion-focused, and avoidant based on previous research (see Holahan & Moos; Wilson, Pritchard, & Revalee, 2005).

**Procedure**

The participants were in a large group and surveyed in a classroom setting. As the survey was anonymous, the introductory survey paragraph served as the informed consent. They were offered 50 min to complete the survey, with the average participant using
TABLE 1
Summary of Stepwise Regression Analysis for Variables Predicting Depression (N = 378)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
<th>Model F</th>
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<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
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<td>11.51</td>
<td>1.08</td>
<td>.52*</td>
<td>114.62*</td>
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<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avoidance coping</td>
<td>8.96</td>
<td>1.04</td>
<td>.41*</td>
<td>98.99*</td>
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<tr>
<td>Sleep</td>
<td>.50</td>
<td>.06</td>
<td>.37*</td>
<td></td>
</tr>
<tr>
<td>Step 3</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avoidance coping</td>
<td>9.10</td>
<td>1.03</td>
<td>.41*</td>
<td>68.50*</td>
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<tr>
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<td>.49</td>
<td>.06</td>
<td>.36*</td>
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<td>-.10</td>
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<td>Step 4</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avoidance coping</td>
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<td>1.03</td>
<td>.41*</td>
<td>53.25*</td>
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<tr>
<td>Sleep</td>
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<td>.06</td>
<td>.36*</td>
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<tr>
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<td>-.19</td>
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<tr>
<td>Problem-Focused coping</td>
<td>2.71</td>
<td>1.23</td>
<td>.14</td>
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</table>

Note: *p < .01

TABLE 2
Summary of Stepwise Regression Analysis for Variables Predicting Anxiety (N = 378)

<table>
<thead>
<tr>
<th>Variable</th>
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<th>SE B</th>
<th>β</th>
<th>Model F</th>
</tr>
</thead>
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<tr>
<td>Step 1</td>
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<td>61.90*</td>
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<td>Avoidance coping</td>
<td>14.61</td>
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<td>50.97*</td>
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<td>Sleep</td>
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<td>.31*</td>
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<td>Step 3</td>
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<td></td>
</tr>
<tr>
<td>Avoidance coping</td>
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</tr>
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<td>Sex</td>
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<td>- .26*</td>
<td></td>
</tr>
<tr>
<td>Step 4</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avoidance coping</td>
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<td>39.84*</td>
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<tr>
<td>Sleep</td>
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</tr>
<tr>
<td>Gender</td>
<td>-12.02</td>
<td>2.05</td>
<td>- .29*</td>
<td></td>
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<tr>
<td>Emotion-Focused coping</td>
<td>-7.72</td>
<td>2.07</td>
<td>- .18*</td>
<td></td>
</tr>
</tbody>
</table>

Note: *p < .01
The Role of Sleep Stress and Coping Styles

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30 min. The surveys were distributed anonymously and the participants were debriefed immediately following survey completion about their participation after the study.

Results

Sleep
Correlation coefficients showing the relationship between sleep and depression revealed a significant association. Poorer sleep, in both quality and quantity, as measured together by the PSQI, was positively associated with depression, $r(309) = .50$, $p < .01$, indicating that individuals with poorer sleep tended to have more incidences of depression.

Correlation coefficients showing the relationship between sleep and anxiety revealed a significant association, $r(291) = .42$, $p < .01$. This association indicates that individuals with poorer sleep quality and quantity also have higher levels of anxiety.

Predictors of Depression and Anxiety

To examine which of the six factors (stress, sleep, problem-focused coping, emotion-focused coping, avoidant coping, or gender) had the strongest relationship to depression and anxiety, a separate stepwise regression for each variable was conducted for both dependent variables. For depression, avoidant coping was the primary variable, followed by sleep, then emotion-focused coping, and finally problem-focused coping (see Table 1). For anxiety, avoidant coping was the primary variable, followed by sleep, then gender, and finally emotion-focused coping (see Table 2).

Discussion

The first goal of the present study was to identify the relationship between sleep disturbances and mental health. It was found that individuals who scored high on the PSQI also scored high on the CES-D. Similar to previous research (Berger et al., 2003; De Gennaro et al., 2004; Ford & Kamerow, 1989; Hatzinger et al., 2004), our results indicate that poorer sleepers, in both quality and quantity, showed more depressive symptomatology. It was also found that individuals who scored high on the PSQI scored high on the Mehrabian Trait Anxiety Scale, indicating that poor sleepers, in both quality and quantity, showed more anxious symptomatology. Our findings are in line with previous research indicating that anxiety is much more prevalent in individuals with sleep disturbances than those without sleep disturbances (Andrews & Oei, 2004; Ford & Kamerow, 1989; Morin et al., 2003; Taylor et al., 2003).

The second goal of the present study was to do an exploratory analysis of stress, coping styles, sleep, and gender to discover which variables were the best predictors of depression and anxiety. Given the evidence that individuals who rely on avoidant coping report more depression (Seiffge-Krenke & Klessinger, 2000), it was not surprising that avoidant coping was the best predictor of depression in the present study. The second strongest predictor of depression was sleep. However, as earlier research has suggested, it is unclear whether sleep disturbances are secondary to depression or whether depression is secondary to sleep disturbances (Andrews & Oei, 2004). The third strongest predictor of depression was emotion-focused coping. As previous research has indicated, individuals suffering from sleep disturbances rely more on emotion-focused coping (Morin et al., 2003). Thus, it is not surprising that emotion-focused coping is not as good of a predictor on depression as sleep. The last of the predictors was problem-focused coping. Our results are in line with previous findings, indicating that individuals employing problem-focused coping strategies display lower levels of depression (Seiffge-Krenke & Klessinger, 2000), hence it is not unexpected that problem-focused coping was the least predictive of depression. Neither stress, nor gender were predictors of depression.

Given the evidence that individuals who rely on avoidant coping report more anxiety (Liverant et al., 2004), it was not surprising that avoidant coping was the best predictor of anxiety. The second strongest predictor of anxiety was sleep. In congruence with previous research, sleep disturbances were much more prevalent in individuals suffering from anxiety (Andrew & Oei, 2004; Ford & Kamerow, 1989; Morin et al., 2003; Taylor et al., 2003), thus it was not unexpected that sleep disturbances were the second strongest predictors of anxiety. Given that evidence has also demonstrated women reporting higher rates of insomnia (Breslau et al., 1996; Ford & Kamerow, 1989) and being more inclined to use emotion-focused coping (Ptacek et al., 1994), it was not surprising to find that gender was the third strongest predictor of anxiety. The present results also indicated that emotion-focused coping is the fourth strongest predictor of anxiety. Neither problem-focused coping nor stress were predictors of anxiety.

Limitations

Despite our advances, several limitations of our study must be acknowledged. First, the majority of the students in this sample were White. This sample bias prevents us from exploring possible differences in ethnic groups as well as limiting the generalizability of...
our findings to other ethnic groups. Second, the students in our sample were selected from an introductory psychology course who participated on a voluntary basis. Although the course is required for many university students, it may not be representative of the entire university population. Finally, our study was simply a survey of college students, whose sleep habits of may not be representative of other populations. Our findings might have been different had we tried to predict the effects of long-term stressors, sleep complaints, gender, and coping styles on depression and anxiety as measured in middle-aged adults. Future studies should examine the associations between sleep and anxiety and depression in more diverse settings.

Conclusion

The results of the present study indicate that poorer sleepers report more depressive and anxious symptomatology, which has implications for understanding the etiology of depression and anxiety and for possible prevention and treatment interventions. Avoidant coping, sleep, emotion-focused coping, and problem-focused coping related to depressive symptomology. Avoidant coping, sleep, gender, and emotion-focused coping related to anxiety symptomology. Thus, these results suggest that focusing on avoidant coping styles, disrupted sleep, and emotion-focused coping can help to notice the early warning signs of depression and anxiety, as well as help us to prevent and to recognize an individual’s best treatment options when suffering from depression and/or anxiety. Psychologists need to realize the importance of coping styles and sleep when treating depression and anxiety, as both are predictors. It is also essential to realize that the risk factors are different for men and women, and different intervention strategies and treatment options should be considered.

References


The Role of Sleep Stress and Coping Styles

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Sincere appreciation is expressed for the hard work on the part of the following individuals who served as reviewers for articles processed April to June, 2006. Without the assistance of such dedicated professionals, the Psi Chi Journal would not be able to function.

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Psi Chi Research Awards and Grants

Psi Chi annually sponsors national undergraduate and graduate research award competitions, as well as research awards for members submitting the best research for the regional and national paper/poster sessions. In addition, Psi Chi also sponsors grant programs to fund student and faculty research. Psi Chi’s award and grant programs now provide up to $250,000 to members annually. Descriptions of the award/grant competitions follow. Further information and submission forms may be obtained from the Psi Chi website (www.psichi.org).

Guilford Awards

All Psi Chi undergraduate members are eligible to submit their research for the Psi Chi/J. P. Guilford Undergraduate Research Awards. Cash awards are $1,000 for first place, $650 for second place, and $350 for third place. In addition, all winners and their faculty research advisors receive award certificates. The abstracts of the winning papers, as well as photographs and brief biographies of the top three winners, are published in Eye on Psi Chi. The deadline for this award is May 1.

Allyn & Bacon Awards

The Psi Chi/Allyn & Bacon Psychology Awards, sponsored by Allyn & Bacon Publishers, are open to all undergraduate Psi Chi members and are awarded to those who submit the best overall empirical research papers. The awards are $1,000 for first place, $650 for second place, and $350 for third place. In addition, all winners and their faculty research advisors receive award certificates. The abstracts of the winning papers, as well as photographs and brief biographies of the top three winners, are published in Eye on Psi Chi. The deadline for this award is May 1.

Erlbaum Awards

The Psi Chi/Erlbaum Awards in Cognitive Science, sponsored by publisher Lawrence Erlbaum Associates, Inc., are open to all Psi Chi undergraduate and graduate Psi Chi members and are awarded to those who submit the best overall empirical studies in the area of cognitive science. The awards are $500 for the first-place graduate student and $500 for the first-place undergraduate student. In addition, the winners and their faculty research advisors receive award certificates. The abstracts of the winning papers, as well as photographs and brief biographies of the top two winners, are published in Eye on Psi Chi. The deadline for this award is May 1.

Newman Graduate Award

All psychology graduate students are eligible to submit their research for the Psi Chi/ APA Edwin B. Newman Graduate Research Award. The winner receives the following: (1) travel expenses to attend the APA/Psi Chi National Convention to receive the award, (2) a three-year subscription to an APA journal of the winner’s choice, and (3) two engraved plaques, one for the winner and one for the winner’s psychology department as a permanent honor to the winner. In addition, the abstract of the winning paper, as well as a photograph and brief biography of the winner, is published in Eye on Psi Chi. This award is presented during the prestigious APA/APF Awards ceremony at the APA/Psi Chi National Convention in August. The deadline for this award is February 1.

Bandura Graduate Award

All psychology graduate students who are Psi Chi members and graduate student affiliates of the American Psychological Society (APS) are eligible to submit their research for the Psi Chi/APS Albert Bandura Graduate Research Award. The winner receives the following: (1) travel expenses to attend the APS National Convention to receive the award, (2) a three-year membership in APS, including subscriptions to all APS journals, and (3) two engraved plaques, one for the winner and one for the winner’s psychology department as a permanent honor to the winner. This award is presented during the APS opening ceremony at the APS National Convention. The deadline for this award is February 1.

Regional Research Awards

All Psi Chi members (undergraduate and graduate) are eligible to submit their research for the Regional Research Awards. Cash awards of $300 each are presented to students submitting the best research papers to Psi Chi sessions at regional conventions. The number of awards in each region varies based on the size of the region; a total of 78 awards of $300 each are available for the academic year. Award monies are distributed at the conventions following the presentations. The Psi Chi regional vice-presidents each send a Call for Papers and a letter to the Psi Chi chapters in their respective regions during the fall. These letters include information about the Regional Research Awards, the regional conventions, and submission deadlines for Psi Chi programs. Deadlines for submissions vary according to region; check your fall regional mailing or the Psi Chi website (www.psichi.org) for details.
National Convention Research Awards
All Psi Chi members (undergraduate and graduate) are eligible to submit their research for the National Convention Research Awards. Cash awards of $300 for undergraduate and $500 for graduate are presented to students submitting the best research for Psi Chi sessions at the APA and APS national conventions. Up to 16 awards are given: eight for the APA Convention and eight for the APS Convention. Award monies are distributed at the conventions following the presentations. The deadline for submissions to the Psi Chi student sessions at both the APA and APS conventions is December 1.

Undergraduate Research Grants
All undergraduate Psi Chi members are eligible to apply for these undergraduate research grants. The purpose of this program is to provide funds for members to defray the cost of conducting a research project. Applicants may request up to $1,500 for each project. A total of $45,000 has been allotted for this student grant program. The deadline for this grant program is October 1.

Summer Research Grants
All undergraduate Psi Chi members are eligible to apply for these summer research grants (research must be conducted while still an undergraduate, not after graduation). The purpose of this program is to provide funds for members to conduct summer research at nationally recognized research institutions. During the academic year, Psi Chi will award 10 grants of $3,500 (a stipend of $2,500 to the Psi Chi student plus $1,000 to the sponsoring faculty member at the research institution). The deadline for this grant program is March 30.

NSF/REU Grants
All undergraduate Psi Chi members are eligible to apply for these summer research grants, which are offered by Psi Chi in conjunction with the Research Experiences for Undergraduates (REU) program sponsored by the National Science Foundation (NSF). The purpose of this program is to provide funds for members to conduct summer research at nationally recognized research institutions that have been identified by NSF as REU sites. This research must be conducted while still an undergraduate, not after graduation. Psi Chi will award a total of six grants to fund Psi Chi members who qualify for an NSF/REU grant during the academic year. A total of $30,000 has been allotted for this grant program. The deadline for this grant program is spring (check Psi Chi website for further details at www.psichi.org).

Faculty Advisor Research Grants
All current faculty advisors and coadvisors who have served an active Psi Chi chapter for at least one year are eligible to apply for these faculty advisor research grants. The purpose of this program is to provide funds for advisors to defray the direct costs of conducting a research project (no stipends included). Two grants will be awarded annually within each of Psi Chi’s six regions, for a total of 12 grants. The maximum amount of each grant will be $2,000. The deadline for this grant program is June 1.

Hunt Research Grants
All Psi Chi student and faculty members are eligible to apply for a Thelma Hunt Research Grant. Up to three grants of up to $3,000 each are presented annually to enable members to complete empirical research that addresses a question directly related to Psi Chi. Unlike other national Psi Chi award/grant programs, the Hunt Grants focus on research directly related to the mission of Psi Chi. The deadline for this grant program is October 1.

Undergraduate Psychology Research Conference Grants
The purpose of this program is to provide funds for local/regional undergraduate psychology research conferences. Funding is intended for conferences that will invite student research presenters from at least three schools in the area and will notify all Psi Chi chapters in the geographic area of the conference. Funding is not available for conferences intended for students from a single school. If a single school organizes the conference (and invites other schools), the school submitting an application must have a Psi Chi chapter. If a consortium of schools organizes the conference, at least one member of the consortium must have a Psi Chi chapter in order to be eligible to apply. The maximum grant for each conference is $1,000. The deadline for this grant program is October 1.

SuperLab Research Grants
All undergraduate and graduate Psi Chi members are eligible to apply for these research grants. The purpose of this program is to provide annual grants to aid one undergraduate and one graduate student in conducting computer-based research. Grant winners receive a copy of SuperLab experimental lab software and a response pad from Cedrus®. The deadline for this grant program is October 1.
The Psi Chi Journal of Undergraduate Research is a national, fully reviewed, quarterly journal dedicated to the publication of undergraduate student research. All active Psi Chi chapters receive one complimentary subscription to the journal. We encourage each chapter to see that an additional subscription is obtained for the school library and that other organizations and interested individuals are made aware of its availability. Every effort has been made to provide a high-quality publication and yet offer the journal at affordable subscription rates to ensure its availability to all interested students, faculty members, and institutions. Back issues and bulk orders for classroom use are also available.

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Position Announcement:
Editor, Psi Chi Journal of Undergraduate Research

The Psi Chi National Council seeks applications for the Editor of the Psi Chi Journal of Undergraduate Research. The editorial term is for three years, with the option to renew once. In its eleventh year, the Psi Chi Journal is a national quarterly journal publishing empirical articles from all areas of psychology. All articles must have an undergraduate Psi Chi member as the first author, though the journal also publishes invited articles on pedagogical topics authored by academic psychologists.

Psi Chi is a national honor society whose purpose is to encourage, stimulate, and maintain excellence in scholarship of the individual members in all fields, particularly in psychology; and to advance the science of psychology. The Psi Chi Journal of Undergraduate Research reflects this purpose. To that end, its purpose is to foster and reward the scholarly efforts of undergraduate psychology students as well as to provide them with a valuable learning experience.

The successful candidate should have extensive experience in working with undergraduate research. Prior editorial experience at the editor or associate editor level is preferred, and prior experience as a reviewer for undergraduate journals in psychology also will be a consideration. Psi Chi is committed to continuing to build its journal into the premier journal of undergraduate scholarship in psychology. Therefore, we seek an individual who is committed to expanding the journal’s scope and reputation for excellence. Interested applicants should send a letter of intent detailing their relevant experiences and qualifications for the position, a copy of their curriculum vitae, and a statement of their philosophy for the Psi Chi Journal to the Journal Editor Search Committee, Psi Chi National Office, P.O. Box 709, Chattanooga, TN 37401-0709. Review of applications will begin January 15, 2007. We anticipate that the successful candidate will begin his or her term August 1, 2007.

Other Journals of Student Research in Psychology

Journal of Psychology and the Behavioral Sciences
- Founded 1966
- One issue per year
- Authors may be undergraduate or graduate students with faculty mentor.
- Contact: Dr. Daniel J. Calcagnotti
  JPBS Faculty Editor
  Department of Psychology M-AB1-01
  Fairleigh Dickinson University
  285 Madison Avenue
  Madison, NJ 07940
  Telephone: (973) 443-8974
  E-mail: daniel@fdu.edu
  Web URL: view.fdu.edu/default.aspx?id=784

Modern Psychological Studies
- Founded 1992
- Two issues per year: September and March
- Primary author must be an undergraduate student.
- Preferred submission deadlines: April and October
- Publishes experimental research, but will also consider theoretical papers, literature reviews, and book reviews.
- Contact: Editor, JPBS
  Department of Psychology
  University of Tennessee at Chattanooga
  615 McCallie Avenue
  Chattanooga, TN 37403-2598
  Telephone: (423) 785-2238, 755-4262
  E-mail: mpsub@utc.edu

UCLA Undergraduate Psychology Journal
- Founded 2002
- Two issues per year: Spring, Fall
- Online, refereed journal dedicated to undergraduate research in psychology
- Publishes empirical studies and literature reviews concerning any topical area in the psychological sciences.
- Contact: Lisa Kakinami, Editor-in-Chief
  Journal e-mail: UPJ@ucla.edu
  Web URL: www.studentgroups.ucla.edu/upj/upj/index.htm

Journal of Psychological Inquiry
- Founded 1996 by the Great Plains Behavioral Research Association
- Authors must be undergraduate students.
- Publishes empirical studies, literature reviews, and historical articles concerning any topical area in the psychological sciences.
- Submissions must (a) come from students at institutions that sponsor the Great Plains Students’ Psychology Convention and the Journal of Psychological Inquiry or (b) have been accepted for or presented at the meeting of the Great Plains Students’ Psychology Convention, the Association for Psychological and Educational Research in Kansas, the Nebraska Psychological Society, or the Arkansas Symposium.
- Contact: Mark E. Ware, Managing Editor
  Department of Psychology
  Creighton University
  2500 California Plaza
  Omaha, NE 68178-0001
  Telephone: (402) 280-3193
  E-mail: meware@creighton.edu
  Web URL: puffin.creighton.edu/psy/journal/JPHome.html

Journal for Undergraduate Research in Psychology
- Founded 1997
- Published quarterly (March, June, September, December)
- Online journal dedicated to undergraduate research presented at local, regional, or national conferences.
- Abstracts accepted from any conference.
- Award winners may have full text of paper published online.
- Contact: Dr. Chris Koch
  Director, Undergraduate Studies in Psychology
  Department of Psychology
  George Fox University
  Newberg, OR 97132
  Web URL: www.georgefox.edu/academics/undergrad/departments/psychology/index.html

The journals listed above solicit and publish research in psychology conducted by and written by students. Journals published internally (i.e., which only accept submissions from students within one institution or department) are not listed. If you know of other journals that meet these criteria, please inform the Psi Chi National Office, P.O. Box 709, Chattanooga, TN 37401-0709; Telephone: (423) 756-2044; Fax (toll-free): 1-877-774-2443; E-mail: journal@pschi.org.