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Published quarterly by Psi Chi, The National Honor Society in Psychology
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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: Daniel P. Bockert, Director of Publishing, 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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Connecting Romantic Beliefs With Marital Communication and Conflict Resolution

David Lee Dalton
College of the Ozarks

This research sought to determine whether any relation exists between romantic beliefs and beliefs regarding communication and conflict resolution. Two questionnaires were administered to 133 college students. The first questionnaire, the Implicit Theories of Relationships Scale (Knee, 1998; Knee, Nanayakkara, Vietor, Neighbors, & Patrick, 2001), measured belief in romantic growth and belief in romantic destiny. The second questionnaire, the Communication and Conflict Resolution Beliefs Inventory (CCRBI; developed for this study), measured beliefs regarding communication and conflict resolution. As predicted, the participants who had a high level of belief in romantic growth in combination with a low level of belief in romantic destiny had the highest level of healthy communication and conflict resolution beliefs. Conversely, high belief in romantic destiny combined with low belief in romantic growth was associated with the poorest communication and conflict resolution beliefs.

Every year, there are approximately 8.4 marriages per every 1,000 people. Unfortunately, each year also yields approximately 4.2 divorces for every 1,000 people (National Center for Health Statistics, 1998). Statistics such as these have led many researchers to suggest that as many as half of all marriages end in dissolution (Cherlin, 1981; National Center for Health Statistics, 1987). Furthermore, about one third of marriages dissolve within the first 5 years (National Center for Health Statistics, 1991). In many cases, divorce tends to be accompanied not only by financial problems, but also by difficulties of great concern to mental health professionals. For example, adults and children from divorced families are more susceptible to psychological and emotional problems than people from intact families (Bloom, Asher, & White, 1978; Guidubaldi, Perry, & Cleminshaw, 1984).

Given the severity of the divorce problem, it is no wonder that many professionals have sought to identify those variables that have considerable impact on marital satisfaction (Boyd & Roach, 1977; Hansen & Schuldt, 1984; Markman, Floyd, Stanley, & Storaasli, 1988; Worthington et al., 1997).

Conflict and Marital Satisfaction

Some of the most widely researched factors that are related to marital satisfaction include communication issues such as active listening, self-disclosure, conflict management and resolution, and discussion of expectations. These factors play an important role in the degree of satisfaction felt by both partners in a marital relationship (Block, Block, & Morrison, 1981; Boyd & Roach, 1977; Gottman, 1993b; Gottman, Coan, Carrere, & Swanson, 1998; Gottman & Krokoff, 1989; Hansen & Schuldt, 1984; Kurdek, 1995; Lydon, Pierce, & O’Regan 1997; Markman et al., 1988; Worthington et al., 1997).

Perhaps the most researched of these variables is conflict resolution. People argue about a number of things, the most common arguments occurring with regard to money and children (Stanley and Markman, 1997). However, contrary to popular belief, conflict itself is not necessarily damaging to
a relationship. In fact, some experts have suggested that conflict is not only unavoidable, but is necessary to the long-term survival of a marriage (Gottman, 1999a; Gottman, 1999b; Gottman et al., 1998; Gottman & Krokoff, 1989). Gottman (1999b) suggested that a "relationship that is totally positive may thus be as undesirable and unstable as one that is all negative" (p. 14).

Research suggests that what is actually important is not the presence or absence of conflict but rather how the conflict is handled (Gottman, 1999a; Gottman, 1999b; Gottman et al., 1998; Gottman & Krokoff, 1989; Kurdek, 1995; Lydon et al., 1997; Markman et al., 1988). For example, Gottman et al. (1998) presented evidence that anger itself is not maladaptive, but the usage of belligerence, criticism, defensiveness, contempt, and stonewalling (listener withdrawal) as conflict resolution styles are reliable predictors of dissatisfaction and subsequent divorce. Gottman et al. also found that husbands in happy marriages frequently de-escalate low-intensity negative affect (sadness, anger, tension, whining, fear, and domineering), whereas wives in happy marriages tend to de-escalate high-intensity negative affect (defensiveness, contempt, and belligerence). In another study, Gottman (1999b) suggested that one of the most important variables in predicting how conflict will affect the longevity of a marriage is the ratio of positive to negative communication. According to his findings, Gottman stated that this positive to negative ratio is about 5 to 1. Thus, according to research, conflict itself is not problematic. In fact, as long as one handles it appropriately, conflict can be longitudinally functional and positive (Gottman & Krokoff, 1989). Poor conflict resolution styles, on the other hand, are predictive of marital dissatisfaction and, in many cases, divorce (Gottman, 1994; Kurdek, 1995; Markman et al., 1988; Markman & Hahlweg, 1993).

**Other Communication Factors**

A second factor that is related to marital satisfaction is self-disclosure. Hansen and Schuldt (1984) found evidence that self-disclosure is positively related to and predictive of the marital satisfaction of both partners. Couples who indicated that they had low levels of self-disclosure also reported being least satisfied. In a similar study, Komarovsky (1962) found that blue-collar husbands in happy marriages are self-disclosing, whereas husbands in unhappy marriages tend to be withdrawn.

The importance of communication cannot be overemphasized. Gottman (1979) suggested that, as a predictor of marital satisfaction, compatibility between partners is not as significant as the quality of the couple’s communication. Markman et al. (1988) used an intervention strategy that emphasized communication skills, problem-solving skills, clarifying and sharing of expectations, and sexual enhancement. Three years following the intervention, couples in the experimental group showed not only higher levels of satisfaction, but also lower levels of problem intensity. Perhaps even more interesting is the fact that at the time of the 3-year follow-up, all of the intervention couples were still together, whereas 19% of the control couples had dissolved their relationships.

Based on the accumulating data, researchers have identified a number of communication patterns that could be deemed as "healthy" or "unhealthy." However, there is perhaps one additional factor that deserves a great deal more attention. Do people actually realize what “healthy” and “unhealthy” patterns of communication are? How do couples feel about conflict, self-disclosure, and active listening?

**Romantic Destiny Versus Romantic Growth**

A number of studies have examined human perceptions and belief systems, but one particular study, related to beliefs about relationships, may be helpful in providing insight into the healthy and unhealthy beliefs that people have about communication and conflict resolution. Knee (1998) developed a questionnaire designed to measure people’s beliefs about romantic destiny and romantic growth. He defined *romantic destiny* as the belief that “potential relationship partners are either meant for each other or not” (Knee, 1998, p. 360). The romantic destiny perspective often holds that for every person there is only one compatible mate, and relationships that are initially poor are doomed to fail. Belief in *romantic growth*, on the other hand, is the belief that “successful relationships are cultivated and developed” (Knee, 1998, p. 360). Romantic growth believers are likely to view a relationship as a process of resolving conflicts and challenges that require work and time.

In his study of 265 undergraduate students, Knee (1998) administered an eight-item Likert-style questionnaire that measured the degree to which each student believed in romantic growth and romantic destiny. Knee found that belief in romantic destiny was associated with the tendency to end a relationship in response to a negative event. Furthermore, Knee found that a strong predictor of relationship longevity among those students who believed in destiny was initial satisfaction. If the relationship was not initially satisfying, the romantic destiny believer was likely to withdraw. On the other hand, belief in
romantic growth was associated with the utilization of relationship maintenance methods during times of conflict. Additionally, Knee found that those students who believed in romantic destiny had more “one-night stands” than those students who believed in romantic growth.

**Romantic Beliefs, Communication, and Conflict Resolution**

Research has shown that interpersonal communication variables can predict within 80% to 94% accuracy which couples will stay married and which couples will not (Carrere, Buehman, Gottman, Coan, & Ruckstuhl, 2000; Fowers, Montel, & Olson, 1996; Gottman, 1994; Karney & Bradbury, 1995; Kelly & Conley, 1987). The goal of the present research was to identify any links between romantic beliefs and unhealthy beliefs concerning communication and conflict resolution. Knowledge of such connections could be beneficial to future research and future premarital/marital intervention strategies. I hypothesized that strong belief in romantic destiny, in combination with low belief in romantic growth, would be associated with relatively low measures of healthy communication and conflict resolution beliefs. Conversely, I expected to find that strong belief in romantic growth, in combination with low belief in romantic destiny, would be associated with higher measures of healthy communication and conflict resolution beliefs. In addition, I expected to find that high destiny scores, in combination with low growth scores, would be associated with a larger number of dating relationships.

**Method**

**Participants**

One hundred and thirty-three students at College of the Ozarks participated in the study (83 freshmen, 24 sophomores, 10 juniors, and 8 seniors). The sample included 59 men and 74 women (mean age = 19.77 years, range = 17–45). Eighteen of the students participated during an Industrial/Organizational Psychology course. Ten of the students participated during a Behavioral Management course, and the remaining one hundred and five students participated during Introductory Psychology courses. At the time of the study, 58 of the students were single, 59 were dating, 8 were engaged, 5 were married, and 3 did not specify their relationship status. One hundred and two participants indicated that their parents had divorced. The parents were married, whereas only 27 participants indicated that their parents had married. The remaining 4 students did not specify the marital status of their parents.

**Testing Instruments**

The first phase of the present study was completed using C. Raymond Knee’s 22-item Implicit Theories of Relationships Scale (ITR; Knee, 1998; Knee, Nanayakkara, Vietor, Neighbors, & Patrick, 2001). The questionnaire’s even-numbered items rated belief in romantic growth, whereas odd-numbered items rated belief in romantic destiny. Because the questionnaire measured belief in romantic growth and belief in romantic destiny independently, the ITR gave each student two scores. The instrument utilized a Likert-type scale from 1 (indicating strong disagreement) to 7 (indicating strong agreement).

In order to rate the communication and conflict resolution beliefs of the present study’s participants, I developed a 20-item Likert-type questionnaire, called the Communication and Conflict Resolution Beliefs Inventory (CCRBI). Seventeen of the CCRBI items addressed four primary areas of interpersonal communication: reality-based communication (5 items), self-disclosure (4 items), conflict resolution (4 items), and active listening (4 items). For example, the reality-based communication items asked the participant to indicate his/her level of agreement or disagreement with statements such as, “A couple considering marriage should discuss their beliefs about child-raising practices prior to marriage.” The second area, which rated the participant’s beliefs regarding self-disclosure, included items such as, “Because my mate will learn about my personal preferences eventually, it is unnecessary to discuss them prior to marriage.” The third area, conflict resolution beliefs, included items such as, “No matter how you handle it, conflict is always negative.” The final area rated the participant’s beliefs regarding active listening. The active listening items included statements such as, “During a conversation, making eye contact is important to me.”

The remaining 3 items were considered neutral because they did not directly address participant beliefs and, therefore, were not included in the CCRBI composite score. For example, one of the neutral items asked the participant to indicate his/her level of agreement or disagreement with the following statement: “When I was young, my parents/guardians frequently argued.” Instead of being included in the CCRBI composite score, the 3 neutral items served merely as comparative variables for future data analysis.

All of the CCRBI items utilized a Likert-type scale. However, the items varied in their scoring procedures. First, of the 20 items in the questionnaire, 10 had reversed scores. Secondly, while 15 of the CCRBI
items corresponded to a Likert-type rating system of 1 (strong disagreement) to 7 (strong agreement), the remaining 5 items were weighted in that they utilized a scale from 0.5 to 7.5. These 5 items were weighted because they addressed specific variables and issues that, according to the accumulating body of research, are relatively strong predictors of relationship stability and satisfaction.

I designed the CCRBI as a relative measure of healthy and unhealthy communication and conflict resolution beliefs. The CCRBI items were developed based upon specific definitions of healthy and unhealthy communication. I defined healthy communication as those interactive styles that, according to the previously mentioned body of research, increase marital satisfaction and longevity. I defined unhealthy communication as those interactive styles that, according to research, have a negative impact on marital satisfaction and longevity.

In order to ensure that all of the CCRBI items were clear and understandable, a pilot study was conducted. A facilitator distributed copies of the CCRBI and the ITR Scale to 20 college students in a Research Methods class. It took approximately 5 min for the entire class to complete the questionnaires. Once they had finished, the facilitator asked the students whether or not they found any of the items confusing. Interestingly, the students indicated that they had not experienced any difficulties understanding the CCRBI or ITR Scale items. However, some of the students stated that they had difficulty understanding a few of the demographical questions presented in the lower portion of the CCRBI. Although these demographical items had no immediate impact on the scores of the CCRBI, I revised them in order to increase the accuracy of statistical interpretation later in the study.

Procedure

Once the students were seated, a facilitator read the following instructions from a prewritten instruction sheet:

The questionnaire you are about to receive regards beliefs about romantic relationships. Your participation will assist in the collection of data for psychological research. Your responses will have no impact on your grade, and will be used solely for research purposes. Please do not write your name on this questionnaire. This will ensure your confidentiality, so please answer each item openly and honestly. If you have already completed this questionnaire in another class, you are asked not to participate now. It is important that you work alone while completing this questionnaire. Once you have finished, you may bring it to the podium.

Once the facilitator finished reading these instructions, he proceeded to distribute the questionnaires to the students. When the students had each received a copy of the questionnaires, the facilitator continued with the following instructions:

The following items regard beliefs about romantic relationships. For each item, write the number (from 1 to 7) which best reflects your level of agreement or disagreement. Please notice that the number 1 indicates strong disagreement while the number 7 indicates strong agreement. Please complete the questionnaire which reads “Implicit Theories of Relationships” first. You may begin.

**Results**

Upon examination of the collected data, a number of relations became evident. Sixty-six percent of the students who scored above the mean romantic destiny score (M = 38, SD = 9.41) scored below the mean CCRBI composite score (M = 99, SD = 10.50), whereas only 49% of those students who scored below the mean destiny score rated below the mean CCRBI composite score. A two-way chi-square revealed that these differences were statistically significant, χ² = 4.215, df = 1, p < .05. In addition, 68% of the students who scored below the mean romantic growth score (M = 58, SD = 7.17) scored below the mean CCRBI composite score. Inversely, only 49% of those students who scored above the mean growth score rated below the mean CCRBI composite score. A two-way chi-square demonstrated that these differences were statistically significant, χ² = 4.915, df = 1, p < .05. Examination of the Pearson correlation coefficient between these variables revealed the following; for growth and CCRBI composite, r = 0.52, df = 131, p < .01, with 10.24% explained variance. For destiny and CCRBI composite, r = -0.34, df = 131, p < .01, with 11.56% explained variance.

**The Identification of Two Groups**

As predicted, a much stronger relation was evident when I simultaneously compared the growth and destiny scores against the CCRBI scores. This result led to the identification of two groups. The first group consisted of those respondents who scored above the mean destiny score and below the mean growth score (n = 32). For the purposes of the present study, this first group was referred to as the “high-destiny/low-growth group.” The second group consisted of those students who scored below the mean destiny score and above the mean growth score (n = 41). They were referred to as the “low-destiny/high-growth group.” Of the participants that constituted these two groups, 31 were men and 42 were women.
Comparison of the Two Groups
Seventy-two percent of the participants in the high-destiny/low-growth group rated below the mean CCRBI composite score. Conversely, 61% of the participants in the low-destiny/high-growth group rated above the mean CCRBI composite score (see Figure 1). A two-way chi-square revealed that these differences were statistically significant, $\chi^2 = 7.794$, $df = 1$, $p < .01$. When I examined the scores of the respondents from both groups ($n = 73$), the Pearson correlation coefficient was stronger than it had been during the examination of all 133 participants: for growth and CCRBI composite, $r = 0.41$, $df = 71$, $p < .001$, with 16.81% explained variance, and for destiny and CCRBI composite, $r = -0.50$, $df = 71$, $p < .001$, with 25% explained variance. Furthermore, using the CCRBI composite as the criterion variable and the growth and destiny scores as predictor variables, the multiple correlation coefficient was moderately strong, $R = 0.50$, $df = 71$, $p < .01$.

**FIGURE 1**
Percentages of the two groups with regard to CCRBI composite scores.
In addition to these findings, the data analysis revealed that approximately 31% of the students in the high-destiny/low-growth group had parents who were divorced, $\chi^2 = 4.500, df = 1, p < .05$, one-way. On the other side, only 20% of those students in the low-destiny/high-growth group indicated that their parents had divorced, $\chi^2 = 15.244, df = 1, p < .05$, one-way. In other words, there were approximately 11% more parental divorces in the group that had above-average destiny scores and below-average growth scores (see Figure 2).

One of the demographical items in the CCRBI asked participants to indicate the number of people they had dated within the past 4 years. I had predicted that students in the high-destiny/low-growth group would indicate that they had had a larger number of

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**FIGURE 2**

Percentages of the two groups with regard to parental marital status.
dating relationships than students from the low-destiny/high-growth group. Consistent with predictions, the mean number of relationships for students in the high-destiny/low-growth group was 6.65, whereas the mean number of relationships for those in the low-destiny/high-growth group was 3.88, \( t = 2.43, df = 71, p < .05 \), two-tailed test. This result suggested that the students who scored above the destiny mean and below the growth mean tended to engage in more relationships—in this case, almost twice as many—as those students who scored below the mean destiny score and above the mean growth score.

**The Relation Between Age and Romantic Beliefs**

In order to ascertain whether or not age had any effect on belief in romantic growth and belief in romantic destiny, the sample of 133 students was divided into two groups using the mean age (19.77 years) as the dividing line. Although the two age groups did not appear to differ in their beliefs regarding romantic destiny, 66% of those students who were ages 20 and older \( (n = 44) \) scored above the mean growth score, whereas only 52% of those students who were ages 19 and younger \( (n = 89) \) scored above the mean growth score. However, although belief in romantic growth appeared to be slightly stronger in those who were 20 and older, a two-way chi-square failed to demonstrate statistical significance, \( \chi^2 = 2.422, df = 1, p > .05 \). Thus, the null hypothesis could not be rejected, and the data did not suggest any significant differences between the age groups.

**Discussion**

In general, the results of this study suggest that there is a relation between romantic beliefs and beliefs regarding communication and conflict resolution. Essentially, these findings suggest that strong belief in romantic destiny is associated with relatively unhealthy beliefs about communication and conflict management. Furthermore, when an individual has both strong destiny beliefs and weak growth beliefs, he/she is likely to possess even poorer conceptions regarding marital communication and conflict resolution. Because previous research has suggested that poor communication and conflict management skills are predictive of marital dissatisfaction and divorce, people who hold to such beliefs may be more susceptible to marital distress and eventual dissolution.

In contrast, strong belief in romantic growth appears to be associated with healthier communication and conflict resolution beliefs. In fact, of the two primary groups in this study, the participants who had an above-average level of belief in romantic growth in combination with a below-average level of belief in romantic destiny had the highest level of healthy communication and conflict resolution beliefs. It is reasonable to speculate that such individuals will demonstrate greater success in their marriages than men and women from the high-destiny/low-growth group.

In addition to these findings, the present study suggests that individuals with a high level of belief in romantic destiny in combination with a low level of belief in romantic growth tend to have more dating relationships than individuals with low-destiny/high-growth beliefs. In the present sample, the students from the high-destiny/low growth group engaged in almost twice as many dating relationships. This result is consistent with Knee’s study (1998), which suggested that belief in romantic destiny is associated with a greater number of one-night stands.

**Limitations**

One should interpret the results of this research with some degree of caution. First, one must understand that the items on the CCRBI were based upon the findings and suggestions of previous research and psychological theory regarding “healthy” and “unhealthy” styles of marital communication and conflict resolution. The present study operates under the assumption that these research findings and theories are correct.

Another possible limitation of this study is the fact that I selected the respondents, students from a relatively small, 4-year, liberal arts college in southern Missouri, on the basis of convenience. Out of the 133 participants, only 27 indicated that their parents were divorced. The findings of previous research has suggested that as many as half of all marriages end in dissolution (Cherlin, 1981; National Center for Health Statistics, 1987). Thus, in light of the present study’s relatively low frequency of parental divorce, the present sample may have some difficulty generalizing to the population at large. However, the relatively low number of parental divorces may also serve a positive function. It is possible that this low number reduced the effects of parental divorce as an extraneous variable in the relation between the ITR and the CCRBI.

One other important factor is the inherent limitation of self-report measures. It is at least conceivable that some of the participants gave responses that were not necessarily consistent with their true-life behavior. For example, it is possible that although a participant may claim to agree with a particular item on the CCRBI, he/she might not demonstrate that belief with his/her actions. It is one thing to say that a couple should actively listen to each other with empathy and understanding; it is another thing to
actually live up to that statement. Fortunately, the present study does not attempt to directly address the behaviors of the participants, but rather their beliefs.

Implications

Research has suggested that, as a predictor of marital satisfaction, compatibility between partners is not as significant as the quality of the couple’s communication (Gottman, 1979). However, communication patterns do not simply materialize after a couple exchanges wedding vows. Furthermore, there is evidence that poor communication patterns prior to marriage are predictive of future marital distress (Markman, 1981), and, once developed, poor communication patterns are difficult to change (Raush, Barry, Hertel, & Swain, 1974). Some research has suggested that during premarital and newlywed interactions, couples are more open to change and adaptation in their methods of communicating (Carrere et al., 2000). In light of such evidence, the early stages of a relationship may be the optimum time to employ intervention strategies designed to improve satisfaction and marital longevity.

The present research may have practical applications in future premarital/marital intervention efforts. For example, low-destiny/high-growth believers might prove to be better candidates for relationship counseling than high-destiny/low-growth believers. I speculate that, more often than not, high-destiny/low-growth believers have an external locus of control, whereas low-destiny/high-growth believers are more likely to view relational outcomes from a standpoint of personal accountability, placing greater emphasis on relationship maintenance and healthy communication. This interpretation would certainly explain why the high-destiny/low-growth group tended to score low on the CCRBI. After all, if a person believes that the success of his/her relationship is dependent upon external forces (fate, destiny, etc.) and is beyond his/her control, why should communication and conflict resolution skills be of any great importance?

I believe that because of their greater sense of personal accountability, low-destiny/high-growth believers are likely to demonstrate greater improvement in relationship counseling settings than persons from the high-destiny/low-growth group. I surmise that low-destiny/high-growth believers, who tend to view relational outcomes as the product of personal behavior, will display greater motivation to internalize and apply various communication and conflict management skills taught in counseling sessions. Perhaps future research efforts will be able to test these hypotheses in an experimental fashion.

It is necessary to note that, despite the present study’s findings, I do not believe that it is rational to conclude that all “destiny believers” are doomed to fail in their relationships. The results of Knee’s study (1998) suggested that there was relative flexibility in the romantic beliefs of his undergraduate participants. Under those conditions, the implementation of premarital intervention strategies that address romantic beliefs may prove highly effective at increasing a person’s chance for a stable, satisfying relationship. Similarly, such intervention efforts should also attempt to counteract unhealthy communication and conflict resolution beliefs. In sum, the present study seems to support the idea that belief systems are worthy of being a primary focus in relationship counseling.

Future Research

Because the results of the present study suggest that students from the high-destiny/low-growth group are more likely to have divorced parents, I believe that this issue deserves additional attention. What is the relation between parental marital status and a participant’s romantic and communication/conflict resolution beliefs?

At the time of the present study, the CCRBI demographical item which asked the participant to indicate his/her parents’ marital status included only the following selections: married or divorced. In retrospect, these two options appear to be too limited. In the future, this item should be revised to include “never married, but living together,” “never married, and not living together,” and “separated.” Perhaps this adaptation will more accurately reflect the demographical profile of CCRBI participants, and future efforts can begin to focus on any possible connection between parental divorce and ITR/CCRBI scores. However, there is another option that might be even more beneficial. The ITR and CCRBI could be administered to the participants and their parents. Comparing a participant’s beliefs with that of his/her parents might be more revealing than a mere comparison between participant scores and parental marital status.

Future research should attempt to ascertain whether or not the responses given on the CCRBI coincide with the true-life behavior of the participants. Perhaps an observational study would best accomplish this goal. For example, a facilitator could administer the CCRBI to various couples, and then a trained professional could observe the couple’s interactions through a two-way mirror or video monitoring system. By recording the frequencies of specific behaviors and other observable variables (determined prior
to the onset of the study), the observer could monitor the couple’s interpersonal communication and discover whether or not their true-life behavior is consistent with their responses on the CCRBI.

References


Impact of Stress on Health and Coping Tactics in Relation to Sex

Few studies focus on stress in relation to numerous physical ailments. The purpose of the present research is to examine relations among stress, physical illness, coping, and sex. We surveyed 220 students at a midwestern university. Stress correlated with gastrointestinal ailments. Stress also correlated with various coping tactics (e.g., criticizing oneself). Men used alcohol and drugs to cope significantly more than women, whereas women used support systems. Identifying strategic coping tactics for each sex would help counselors deal with stress more effectively at colleges across the country.

Previous research (Aro, Hanninen, & Paronen, 1989; Glaser, Rabin, Chesney, Cohen, & Natelson, 1999; McCarthy, 2000; Rogers, 2000; Verbrugge, 1983) has shown that stress affects a person’s health in numerous ways. However, few studies have focused on stress in relation to numerous physical ailments (e.g., immunity-related, psychosomatic, gastrointestinal, and cardiopulmonary) all at once. Furthermore, certain coping tactics may serve to buffer the impact of stress on illness, and these tactics may vary by sex (Pearlin & Schooler, 1978). The present research examines relations among stress, physical illness, coping, and sex in college students.

Stress and Physical Illness

A healthy mind and body are essential components to a successful academic career. Because psychiatric illness is thought to account for at least one third of student attrition from British universities (Szulecka, Springett, & de Pauw, 1987), it is important to recognize factors that may interfere with the health of a college student. Numerous studies have shown compelling evidence that stress affects disease onset and progression (Cohen & Herbert, 1996; Seyle, 1950). For example, higher stress levels have been found to lower physical well-being (Diong & Bishop, 1999).

However, the effect of stress in relation to specific ailments, such as gastrointestinal problems, remains unclear (Wessner, 1996). In addition, reaction to stress can cause specific psychosomatic ailments such as headaches (Labbe, Murphy, & O’Brien, 1997) and can worsen hives (Stevenson, 1998). Stress also hastens the development and increases the occurrence of various cardiopulmonary diseases (Kaplan, 2000; Klinnert, 2000; O’Connor, O’Connor, White, & Bundred, 2000; Rogers, 2000; Sandberg et al., 2000; Sheps, 1998), and stress also has been found to affect upper respiratory tract illnesses (URTI; Cohen & Herbert, 1996; Evans, Doyle, Hucklebridge, & Clow, 1996). A positive relationship exists between “negative emotional states” (stress) and recurrence of the herpes virus (Cohen & Herbert, 1996). In addition, Senior (2001) reported that vaccinations were less effective in preventing pneumococcal pneumonia in chronically stressed people. Few studies have grouped numerous physical ailments together in order to observe the effects stress has on each of them in comparison to other ailments. Thus, this study sought to discover whether one type of physical ailment is more prone than other physical ailments to the effects of stress in college students.
Coping and Stress

Coping is a response to stress by which a person deals with stressors and the negative responses that accompany them. The increase of substance abuse and adolescent suicide indicates the growing stress and inability to cope (de Anda et al., 1997), and stress in adolescence can severely affect and predict the foundation for behavior patterns in adulthood (Sarmany-Schuller, 1994). Healthy coping tactics are not only necessary to deal effectively with current stress but also are pivotal for adolescents’ development into behaviorally secure adults.

Positive/adaptive coping tactics help deal with stress by reducing the negative reactions to stress (e.g., seeking emotional support from others and looking at the situation in a more positive light). They allow the person to deal effectively with stress (Pearlin & Schooler, 1978). For example, social support, mastery of beliefs, and internal locus of control all act as stress buffers (Felsten & Wilcox, 1992). Negative/maladaptive coping strategies are detrimental to the situation (e.g., using alcohol and drugs to feel better, and ignoring the situation). They include actions that make the reactions to stress worse.

Coping and Physical Ailments

Previous studies have suggested that certain coping tactics might have an adverse effect on physical illness (Creswell & Chalder, 2001). Individuals who utilize the negative strategy of avoidant coping (e.g., avoid dealing with the problem, and use drugs and alcohol) have poorer emotional and physical health than individuals who use other strategies (Davis, Zautra, & Reich, 2001; Pakenham, 2001; Penedo et al., 2001; Roesch & Weiner, 2001). In addition, individuals who utilize the positive strategy of problem-focused coping display lower levels of physical symptomatology (Pakenham, 2001; Penedo et al., 2001; Roesch & Weiner, 2001). However, some studies have found that use of emotion-focused strategies leads to better health (Roesch & Weiner, 2001), whereas other studies have reported that use of emotion-focused strategies leads to poorer health (Pakenham, 2001). Most previous studies of the relation between coping and illness have focused on physically ill populations. The present study sought to shed light on the relation between coping and illness in relatively healthy college students.

Coping and Sex

Research suggests that each individual has a certain coping style, regardless of environment (Carver, Scheier, & Weintraub, 1989), that is determined by many factors. One such contributing factor is sex (Felsten, 1998; Mullis & Chapman, 2000).

Sex differences in coping styles between men and women are the reason for the difference in the occurrence and frequency of certain psychological and physical disorders (Fraser, 1986; Hazzard, 1986; Jick & Mitc, 1985; Myers et al., 1984; Nolen-Hoeksema, 1987; Solomon & Rothblum, 1986). These differences also may explain why women suffer from more short-term illnesses than men, whereas men are plagued with more long-term health problems than women (Verbrugge, 1983). Women usually use more social support seeking (Felsten, 1998; Houtman, 1990; Mullis & Chapman, 2000; Porter et al., 2000) and more emotion-focused coping than men do, whereas men usually utilize problem-focused coping tactics more than women do (Ptacek, Smith, & Dodge, 1994). Men also utilize avoidant coping more than women (Kohlman, Weidner, & Messina, 1996).

Further research is needed to establish the specific coping strategies utilized by each sex.

The current study seeks to answer general questions related to stress, health, coping, and sex differences. Additional research is needed to examine whether college students suffer from the epidemic of stress in the same way as adults. This project could help doctors and psychologists deal with health issues more effectively. In addition, many previous studies focus on relating coping tactics to dealing with stress, but few studies focus on coping and illness in healthy populations. Our study sought to examine what coping tactics are most effective in college students. We hypothesized that the coping tactics utilized by college students to deal with stress would differ by sex. Specifically, we believed men would engage in active and avoidant coping strategies, whereas women would use more emotion-focused tactics.

Method

Participants

We distributed questionnaires to 218 full-time students in classes at the University of Evansville (108 freshmen, 39 sophomores, 36 juniors, and 35 seniors). Women accounted for 126 of the participants and men numbered 92. The mean age for the group was 19.67 years.

Procedures

The participants took 20–25 minutes to complete the surveys. The students were not chosen randomly, but were asked to participate based on whether their professors allowed for testing in their classes. Participants were informed of the purpose of the study before class. Once the students signed the consent forms, surveys were distributed.
Measures

Physical health. To assess their physical health, participants were asked how many days during the past month they had experienced any of 18 health symptoms (e.g., cold or flu, dizziness, and cramping). Participants rated whether they had experienced each symptom on a 5-point Likert scale (1 = never, 5 = 15+ days; McIntosh, Keywell, Reifman, & Ellsworth, 1994; Reifman, Biernat, & Lang, 1991). We grouped the physical ailments into four categories (i.e., cardiopulmonary, immunity related, gastrointestinal, and psychosomatic). Next, we obtained a score by summing all the responses to the health items in each category and then dividing the answer by the number of possible symptoms in that group (gastrointestinal, $\alpha = .73$; cardiopulmonary, $\alpha = .56$; immunity related ailments, $\alpha = .54$; and psychosomatic, $\alpha = .59$).

Stress. We assessed various stressful events specifically oriented to college students’ lives (e.g., “struggling to meet your own academic standards,” “finding courses too demanding”) using questions adopted from Kohn, Lafreniere, and Gurevich (1990). Participants were asked to rate how much the events have been a part of their lives in the past month on a scale from 1 (not at all part of my life) to 5 (very much part of my life).

Coping tactics. Participants responded to a subset of items from the Brief COPE scale (Carver, 1997), a list of questions on coping that contains 28 tactics (e.g., active coping, planning, positive reframing, acceptance, humor, religion, using emotional support, using instrumental support, self-distraction, denial, venting, substance use, behavioral disengagement, and self-blame), with two items per scale. We classified these 28 items as emotion-focused or problem-focused. We obtained a coping score by averaging the answers for each of the 28 questions.

Results

We used an alpha level of .01 to control for Type I error rate.

<table>
<thead>
<tr>
<th>TABLE 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Correlation Between Stress and Health</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Psychosomatic</td>
</tr>
<tr>
<td>Gastrointestinal</td>
</tr>
<tr>
<td>Immune system</td>
</tr>
<tr>
<td>Cardiopulmonary</td>
</tr>
</tbody>
</table>

**$p < .001$.**
Discussion

Few studies have examined the relation between stress and specific physical ailments. The present study attempted to examine the role of stress in the occurrence of certain health problems in college students. We grouped certain illnesses together to determine if one system of the body was more affected by stress than others. Another goal of this research was to discover whether certain coping tactics were successful in reducing the level of stress felt by undergraduate students. Finally, previous research has examined the different ways that men and women cope with stress. This study sought to reveal whether men and women college students utilized different coping tactics solely on the basis of sex. Stress proved to correlate strongly with one specific physical ailment (gastrointestinal). In addition, certain coping tactics reduced stress more successfully than

<table>
<thead>
<tr>
<th>Coping tactic</th>
<th>$r$</th>
<th>$r^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work and activities as distraction</td>
<td>0.33**</td>
<td>0.11</td>
</tr>
<tr>
<td>Concentrate efforts on situation</td>
<td>0.05</td>
<td>0.00</td>
</tr>
<tr>
<td>“This is not real”</td>
<td>0.27</td>
<td>0.07</td>
</tr>
<tr>
<td>Use of alcohol and drugs to feel better</td>
<td>0.28*</td>
<td>0.08</td>
</tr>
<tr>
<td>Seek emotional support</td>
<td>0.01</td>
<td>0.00</td>
</tr>
<tr>
<td>Give up trying to deal with it</td>
<td>0.18</td>
<td>0.03</td>
</tr>
<tr>
<td>Take action to make situation better</td>
<td>−0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Refuse to believe it</td>
<td>0.18</td>
<td>0.03</td>
</tr>
<tr>
<td>Let unpleasant feelings escape</td>
<td>0.27</td>
<td>0.07</td>
</tr>
<tr>
<td>Seek help and advice from others</td>
<td>0.03</td>
<td>0.00</td>
</tr>
<tr>
<td>Use of alcohol and drugs to get through it</td>
<td>0.31*</td>
<td>0.10</td>
</tr>
<tr>
<td>See it in a more positive light</td>
<td>0.06</td>
<td>0.00</td>
</tr>
<tr>
<td>Criticize oneself</td>
<td>0.48**</td>
<td>0.23</td>
</tr>
<tr>
<td>Try to devise a strategy to deal with it</td>
<td>0.17</td>
<td>0.03</td>
</tr>
<tr>
<td>Get comfort and understanding from someone</td>
<td>−0.06</td>
<td>0.00</td>
</tr>
<tr>
<td>Give up the attempt to cope</td>
<td>0.18</td>
<td>0.03</td>
</tr>
<tr>
<td>Look for something good in what has happened</td>
<td>−0.08</td>
<td>0.00</td>
</tr>
<tr>
<td>Make jokes about it</td>
<td>0.23</td>
<td>0.05</td>
</tr>
<tr>
<td>Do something to think about it less</td>
<td>0.22</td>
<td>0.04</td>
</tr>
<tr>
<td>Accept the reality of what has happened</td>
<td>−0.01</td>
<td>0.00</td>
</tr>
<tr>
<td>Express negative feelings</td>
<td>0.24</td>
<td>0.06</td>
</tr>
<tr>
<td>Find comfort in religion</td>
<td>−0.19</td>
<td>0.04</td>
</tr>
<tr>
<td>Get advice and help from others</td>
<td>0.03</td>
<td>0.00</td>
</tr>
<tr>
<td>Learn to live with it</td>
<td>0.21</td>
<td>0.04</td>
</tr>
<tr>
<td>Think hard about what steps to take</td>
<td>0.04</td>
<td>0.00</td>
</tr>
<tr>
<td>Blame oneself</td>
<td>0.42**</td>
<td>0.18</td>
</tr>
<tr>
<td>Prayer and meditation</td>
<td>−0.22</td>
<td>0.05</td>
</tr>
<tr>
<td>Make fun of the situation</td>
<td>0.26</td>
<td>0.07</td>
</tr>
</tbody>
</table>

*p < .01.  **p < .001.
others. Following previous research, men and women used different coping methods.

**Stress and Health**

In the present study stress significantly and positively correlated to one of the four health categories (gastrointestinal symptoms). These findings agree with previous research studies (Cohen & Herbert, 1996; O’Connor et al., 2000; Piccinelli & Simon, 1997; Szulecka et al., 1987), which all state that high levels of stress lead to increased occurrence and onset of physical illness. Contrary to recent research (Rogers, 2000), we found no significant connection between stress and cardiopulmonary illness. A possible explanation for this difference is that college students are too young to be experiencing any noticeable heart problems that would be worsened by stress. Finally, we noted no significant correlation between stress and decreased immunity. Our study did not reveal that colds, flu, herpes, and allergies seemed worse when

<table>
<thead>
<tr>
<th>Coping tactic</th>
<th>Immune system</th>
<th>Cardiopulmonary</th>
<th>Psychosomatic</th>
<th>Gastrointestinal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work and activities as distraction</td>
<td>-0.05</td>
<td>0.01</td>
<td>0.10</td>
<td>0.03</td>
</tr>
<tr>
<td>Concentrate efforts on situation</td>
<td>-0.01</td>
<td>-0.01</td>
<td>0.04</td>
<td>-0.03</td>
</tr>
<tr>
<td>“This is not real”</td>
<td>0.03</td>
<td>-0.00</td>
<td>0.05</td>
<td>0.14</td>
</tr>
<tr>
<td>Use of alcohol and drugs to feel better</td>
<td>0.00</td>
<td>0.05</td>
<td>0.05</td>
<td>0.10</td>
</tr>
<tr>
<td>Seek emotional support</td>
<td>0.07</td>
<td>0.03</td>
<td>0.02</td>
<td>0.03</td>
</tr>
<tr>
<td>Give up trying to deal with it</td>
<td>0.09</td>
<td>0.14</td>
<td>0.10</td>
<td>0.29*</td>
</tr>
<tr>
<td>Take action to make situation better</td>
<td>0.07</td>
<td>-0.07</td>
<td>-0.09</td>
<td>-0.12</td>
</tr>
<tr>
<td>Refuse to believe it</td>
<td>0.01</td>
<td>0.05</td>
<td>0.06</td>
<td>0.11</td>
</tr>
<tr>
<td>Let unpleasant feelings escape</td>
<td>0.02</td>
<td>0.04</td>
<td>0.04</td>
<td>0.15</td>
</tr>
<tr>
<td>Seek help and advice from others</td>
<td>0.01</td>
<td>-0.05</td>
<td>0.05</td>
<td>-0.02</td>
</tr>
<tr>
<td>Use of alcohol and drugs to get through it</td>
<td>-0.06</td>
<td>0.01</td>
<td>0.10</td>
<td>0.12</td>
</tr>
<tr>
<td>See it in a more positive light</td>
<td>0.11</td>
<td>-0.14</td>
<td>-0.10</td>
<td>-0.13</td>
</tr>
<tr>
<td>Criticize oneself</td>
<td>0.03</td>
<td>0.06</td>
<td>0.14</td>
<td>0.16</td>
</tr>
<tr>
<td>Try to devise a strategy to deal with it</td>
<td>-0.02</td>
<td>-0.04</td>
<td>-0.14</td>
<td>-0.17</td>
</tr>
<tr>
<td>Get comfort and understanding from someone</td>
<td>0.13</td>
<td>-0.03</td>
<td>0.02</td>
<td>0.01</td>
</tr>
<tr>
<td>Give up the attempt to cope</td>
<td>0.07</td>
<td>-0.00</td>
<td>0.17</td>
<td>0.29*</td>
</tr>
<tr>
<td>Look for something good in what has happened</td>
<td>0.04</td>
<td>-0.12</td>
<td>-0.04</td>
<td>-0.16</td>
</tr>
<tr>
<td>Make jokes about it</td>
<td>-0.03</td>
<td>0.05</td>
<td>0.09</td>
<td>0.00</td>
</tr>
<tr>
<td>Do something to think about it less</td>
<td>0.08</td>
<td>0.10</td>
<td>0.00</td>
<td>0.01</td>
</tr>
<tr>
<td>Accept the reality of what has happened</td>
<td>-0.06</td>
<td>-0.01</td>
<td>-0.05</td>
<td>-0.06</td>
</tr>
<tr>
<td>Express negative feelings</td>
<td>0.08</td>
<td>-0.04</td>
<td>0.06</td>
<td>0.04</td>
</tr>
<tr>
<td>Find comfort in religion</td>
<td>-0.01</td>
<td>-0.04</td>
<td>-0.02</td>
<td>-0.01</td>
</tr>
<tr>
<td>Get advice and help from others</td>
<td>0.06</td>
<td>-0.05</td>
<td>-0.07</td>
<td>-0.08</td>
</tr>
<tr>
<td>Learn to live with it</td>
<td>-0.05</td>
<td>0.06</td>
<td>-0.01</td>
<td>0.02</td>
</tr>
<tr>
<td>Think hard about what steps to take</td>
<td>-0.07</td>
<td>-0.11</td>
<td>-0.07</td>
<td>-0.21*</td>
</tr>
<tr>
<td>Blame oneself</td>
<td>0.07</td>
<td>0.01</td>
<td>0.19*</td>
<td>0.19*</td>
</tr>
<tr>
<td>Prayer and meditation</td>
<td>0.04</td>
<td>-0.08</td>
<td>-0.02</td>
<td>-0.07</td>
</tr>
<tr>
<td>Make fun of the situation</td>
<td>-0.01</td>
<td>0.02</td>
<td>0.10</td>
<td>0.02</td>
</tr>
</tbody>
</table>

*p < .01.  **p < .001.
stress is present. However, we surveyed students regarding their health in the fall before cold and flu season, which might account for the discrepancy with past research. If there were few illnesses to be contracted, we would have difficulty detecting weaknesses in immunity. In addition, collecting data in the beginning of the school year might not leave enough time for stress to have an effect on students’ bodies. We also found no correlation between psychosomatic illnesses and stress. For example, students did not report higher occurrences of headaches or dizziness due to stress. One reason that psychosomatic symptoms may not have appeared in relation to stress is because the stress had not yet affected them mentally. We surveyed students at the beginning of the semester, therefore their mental functioning might not have had enough time to cause illness in the body. Further research is needed in order to explore the complicated relation between stress, time, and individual physical ailments.

**Stress and Coping**

Coping is an effective way to reduce stress levels. Certain coping tactics are more helpful than others. Similar to Sarmany-Schuller (1994), we found that negative coping tactics (e.g., denial and distraction)
TABLE 5
Coping by Sex (Emotion-Focused)

<table>
<thead>
<tr>
<th>Coping tactic</th>
<th>Sex</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>F</th>
<th>$\eta^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seek emotional support</td>
<td>Male</td>
<td>2.49</td>
<td>0.86</td>
<td>0.00</td>
<td>16.78**</td>
<td>0.07</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>2.98</td>
<td>0.87</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Let unpleasant feelings escape</td>
<td>Male</td>
<td>2.05</td>
<td>0.83</td>
<td>0.03</td>
<td>4.79*</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>2.29</td>
<td>0.78</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>See it in a more positive light</td>
<td>Male</td>
<td>2.86</td>
<td>0.87</td>
<td>0.94</td>
<td>0.01</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>2.86</td>
<td>0.80</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Criticize oneself</td>
<td>Male</td>
<td>2.44</td>
<td>1.00</td>
<td>0.01</td>
<td>7.08*</td>
<td>0.03</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>2.11</td>
<td>0.77</td>
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<td></td>
</tr>
<tr>
<td>Get comfort and understanding from</td>
<td>Male</td>
<td>2.64</td>
<td>0.95</td>
<td>0.00</td>
<td>16.55**</td>
<td>0.07</td>
</tr>
<tr>
<td>someone</td>
<td>Female</td>
<td>3.14</td>
<td>0.84</td>
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<td></td>
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</tr>
<tr>
<td>Look for something good in what has</td>
<td>Male</td>
<td>2.89</td>
<td>0.82</td>
<td>0.89</td>
<td>0.02</td>
<td>0.00</td>
</tr>
<tr>
<td>happened</td>
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<td>0.90</td>
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<tr>
<td>Make fun of the situation</td>
<td>Male</td>
<td>2.89</td>
<td>0.90</td>
<td>0.00</td>
<td>13.95**</td>
<td>0.06</td>
</tr>
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<td></td>
<td>Female</td>
<td>2.42</td>
<td>0.89</td>
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<tr>
<td>Accept the reality of what has</td>
<td>Male</td>
<td>3.13</td>
<td>0.84</td>
<td>0.10</td>
<td>2.69</td>
<td>0.01</td>
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<td>happened</td>
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<td>2.94</td>
<td>0.76</td>
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<tr>
<td>Express negative feelings</td>
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<td>2.49</td>
<td>1.00</td>
<td>0.54</td>
<td>0.38</td>
<td>0.00</td>
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<td>2.57</td>
<td>0.79</td>
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<tr>
<td>Find comfort in religion</td>
<td>Male</td>
<td>2.28</td>
<td>1.04</td>
<td>0.08</td>
<td>3.13</td>
<td>0.02</td>
</tr>
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<td></td>
<td>Female</td>
<td>2.71</td>
<td>2.10</td>
<td></td>
<td></td>
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<tr>
<td>Learn to live with it</td>
<td>Male</td>
<td>2.80</td>
<td>0.92</td>
<td>0.60</td>
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<td>0.00</td>
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<td>0.78</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blame oneself</td>
<td>Male</td>
<td>2.06</td>
<td>0.90</td>
<td>0.90</td>
<td>0.02</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>2.05</td>
<td>0.77</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prayer and meditation</td>
<td>Male</td>
<td>2.18</td>
<td>1.10</td>
<td>0.02</td>
<td>5.74</td>
<td>0.03</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>2.54</td>
<td>1.06</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Make fun of the situation</td>
<td>Male</td>
<td>2.39</td>
<td>1.01</td>
<td>0.00</td>
<td>24.30**</td>
<td>0.10</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>1.76</td>
<td>0.84</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. 1 = I wouldn’t do this at all; 2 = I would do this a little bit; 3 = I would do this a medium amount; 4 = I would do this a lot.

*p < .01. **p < .001.

Impact of Stress

Schaffer and Pritchard

Coping and Physical Ailments

Previous research also states that individuals who utilize problem-focused coping display lower levels of physical symptomatology (Pakenham, 2001; Penedo et al., 2001; Roesch & Weiner, 2001). Our...
findings agree with this research; only 3 of the 14 problem-focused coping strategies were negatively correlated to physical ailments. “Give up trying to deal with it” and “give up the attempt to cope” both positively correlated to gastrointestinal ailments. In addition, “thinking hard about what steps to take” correlated to an increase in the occurrence of only gastrointestinal ailments. Previous studies have suggested that certain coping tactics might have an adverse effect on physical illness (Creswell & Chalder, 2001). These negative coping tactics have adverse effects on a person’s health. Our findings support this claim in that some negative coping tactics were correlated to a higher occurrence of gastrointestinal ailments (e.g., “giving up trying to deal with it,” “giving up the attempt to cope,” and “blaming oneself”). In addition, one negative coping tactic also positively correlated to psychosomatic ailments (i.e., “blaming oneself”). Finally, there have been conflicting findings on the use of emotion-focused strategies (i.e., dealing with the emotional response to stress) in relation to illness (Pakenham, 2001; Roesch & Weiner, 2001). We also reported mixed results. Emotion-focused coping (e.g., “blaming oneself”) positively correlated to gastrointestinal ailments as well as psychosomatic ailments. These results illustrate that negative emotion-focused coping positively correlates to the physical effects of stress.

Cop ing and Sex

Does sex influence what coping tactic a person will use? Research has indicated that men and women deal with stress differently (Felsten, 1998; Houtman, 1990; Kohlman et al., 1996; Mullis & Chapman, 2000; Porter et al., 2000; Ptacek et al., 1994). In the present study, men applied problem-focused coping tactics (e.g., “use of alcohol and drugs to feel better” and “use of alcohol and drugs to get through it”), a finding that illustrates that men use more problem-focused and avoidant strategies. On the other hand, women employed more emotion-focused coping tactics (e.g., “seeking emotional support,” “getting comfort and understanding from someone,” or saying things to “let unpleasant feelings escape”). Men also used emotion-focused coping tactics (e.g., criticizing oneself, making jokes about the situation, and making fun of the situation). These emotion-focused tactics are more active, which is why men might use them significantly more than women. These findings are important because they may help the sexes more adequately cope with stress and its effects by identifying which coping tactic they use more. When a person is sick, they are prescribed medicine that specifically meets their needs. This strategy should be extended to mental health as well. If a person feels stressed, he or she should utilize coping tactics that are most effective for his or her sex.

Our study effectively examined how stress affected college students’ health. We focused on a less studied population (college students), we looked at the correlation of numerous physical ailments to stress, and we examined how specific coping tactics impacted stress. Our study provided a broader look at the relation among stress, health, and coping. In conclusion, further research should focus on studying the differences between how the different sexes cope with stress. Stress management could become even more individualized and even more effective than it already is. Health centers at colleges around the country could use this information to help reduce stress in college students by helping them utilize coping tactics tailored for their sex.

References

IMPACT OF STRESS □ Schaffer and Pritchard


Psychologists have become increasingly interested in the perception and effects of organized aural stimuli since the pioneering work of Helmholtz in the mid-19th century. According to Kerr (1945), the first empirical study measuring music and productivity indicated that music increases employee output. Since then, related studies have focused on specific aspects of music (e.g., intensity, tempo) and productivity (e.g., simple or complex tasks). Uhrbrock (1961) combined the results of four studies by Kerr (1945) to show an average output increase of 3.39% when employees produced various types of radio and sound equipment while listening to music. Most studies agree that musically influenced productivity is a by-product of nonmusical effects such as reduced stress and anxiety (Smith & Morris, 1977), increased relaxation (Byrnes, 1996), increased job satisfaction (Jacoby, 1968), affect modification (Thaut, 1989), and changes in cortical activity (Taylor, 1997). Hence, it is important to understand how elements of music mediate human behavior.

It may be impossible to legitimately examine musical influences without isolating the element of temporality (Lipscomb & Hodges, 1996). Some researchers argue that listeners perceive and respond more quickly and accurately to tempo decreases than to tempo increases (Kuhn, 1974; Wang, 1984). Conversely, one study found that listeners respond more quickly to accelerating tempos than to decelerating tempos (Sheldon, 1994). This latter finding appears obvious in light of evidence that faster tempos cause physiological body changes including increases in heart rate (Standley, 1991) and muscular tension (Thaut, Schleiffers, & Davis, 1991).

Complexity and Degree of Tempo Modulation as Factors in Productivity

This experiment measured test-taking speed and accuracy as a function of background music tempo acceleration and test complexity. Across periods of 2 min, 3 groups of 11 participants took both a simple and complex math test while listening to background music with the tempo incrementally increased by either 0%, 25%, or 50%. Completion rates, but not accuracy, significantly decreased as the percentage rate of tempo increased. Furthermore, simple test scores decreased significantly more than complex test scores. This outcome suggests some effect of tempo on working memory capacity, necessitating further research using different tempo parameters.
Before confirming any conclusions regarding tempo effects, it is important to acknowledge the complexity of the concurrent task. Task complexity is operationally defined as the amount of material in working memory at a given time (Ashcraft, 1989). The working memory model, as founded by Baddeley and Hitch (1974), asserts that memory is affected by the presence of other mental operations. For example, it is much more difficult to remember seven plus or minus two items (Miller, 1956) while reciting nonsense syllables than to remember the same items with no distraction or interference. Proponents of this theory argue that memory consists of an executive control system that acts as a central processor; however, there are other components that connect to the executive control system, such as the articulatory rehearsal loop that recycles items for immediate recall and a visuospatial “scratch pad” that permits visual imagery. Mentally solving a simple addition problem such as 100 + 200 + 300 requires the executive control system to initiate the process and recall the method of solving the problem. The articulatory rehearsal loop must recycle the solution between the time when the problem is solved and the time when the answer is placed on paper; the visuospatial scratch pad may not even be used at all provided the problem is on paper for the solver to see. Solving a complex problem such as 189 + 279 + 362 requires an increased load on the executive control system because the solver must now recall how to solve problems when a row sums to more than nine. It then requires the visuospatial scratch pad to mentally carry digits into different rows. Finally, the articulatory rehearsal loop must increase the recycling rate so as not to forget parts of the solution while transferring other parts to the paper.

If people respond more readily to accelerating tempos, then this should result in decreased completion rates and decreased accuracy for complex math problems because the perception of the accelerating tempo will interfere with the already loaded working memory system. However, accelerating tempos will not necessarily distract from simple math completion and accuracy because the working memory system has the capacity to accept some external stimuli. In fact, due to the effects of accelerating tempos on physiological systems, completion rates and accuracy for simple problems may actually increase.

Several studies have used math tests as a productivity measure. Tucker & Bushman (1991) found that rock and roll music decreases math scores. Other studies have found no significant effect of music listening on math test scores (Bridgett & Cuevas, 2000; Moller, 1980). Only one study examined tempo in relation to test taking (Mayfield & Moss, n.d., as cited in Gunsch, 1991). In this study, different styles of music defined different tempos (e.g., rock music = fast; instrumental music = slow). The potential for confound is great considering that these styles vary in instrumentation, individual preferences, and melodic activity. A study that examined working memory in relation to background music also used different styles of music between conditions (e.g., vocal, instrumental; Salame & Baddeley, 1989), presenting the same potential confound.

One study examined task complexity: Employees listened to music on stereo headphones and showed increased productivity ranging between 5% and 14% depending on the type of task (e.g., data entry vs. account analysis; Oldham, Cummings, Mischel, Schmidtke, & Zhou, 1996). This study presents another potential confound because it used tasks such as data entry and account analysis to represent simple and complex tasks. It is possible that data entry and account analysis each use different mental processes; while one task may be different from the other, it is not necessarily more simple or complex. No studies have examined the interaction of different amounts of tempo change (e.g., acceleration) within the same piece of music and different complexity levels of the same type of task to measure test performance.

The present study examines the effects of different degrees of tempo acceleration on simple and complex task performance. The methodology achieves high levels of control often neglected or difficult to achieve when using music as a variable. A limitation to the study was the lack of a group listening to no music at all.

Participants took both a simple and complex math test for 2 min each while listening to background music increased by 0%, 25%, or 50%. The hypotheses were that there would be (a) a main effect for tempo such that completion rates and accuracy significantly decrease as the percentage of acceleration increases, (b) a main effect for test such that completion rates and accuracy are lower on the complex test than on the simple test, and (c) an interaction revealing that completion rates and accuracy increase for simple math problems and decrease for complex math problems as the tempo changes from a 0% increase to a 25% increase to a 50% increase.

**Method**

**Participants**

Participants included 25 female and 8 male undergraduate students ranging in ages from 18–25 years ($M = 20.6, SD = 1.9$), recruited from a comprehensive liberal arts university in the Midwest. Each
participant met at one of three possible times. They received extra-credit points in psychology courses and/or a chance to win a gift certificate for a local restaurant. Treatment of participants was in accord with APA standards (American Psychological Association, 2001).

Materials
The music selection was the first movement of Bach’s Brandenburg Concerto No. 3 in G Major (BWV 1048, circa 1711–1713/1994). Equipment included a Toshiba Satellite laptop computer used to play the music through a Pyramid Stereopower Amplifier and two JBL wall-mounted speakers. The experimental room, normally used for film classes, had a carpeted floor and bare walls. Slow Speed CD Transcriber 1.11 software (Roni Music, 1999) changed the tempo of the music by percentages without changing the pitch. The default tempo (i.e., 0% increase) of the music was 96 beats per min (bpm). A 25% increase in tempo resulted in 120 bpm at the end of 2 min. A 50% increase in tempo was 144 bpm at the end of 2 min.

The two types of math problems selected from a third-grade math textbook were (a) simple three-digit addition problems in three rows requiring no carrying (e.g., 300 + 401 + 290) and (b) complex three-digit addition problems in three rows requiring carrying in two columns (e.g., 399 + 481 + 252).1 One test was two pages with 20 simple problems per page; a separate test was two pages with 20 complex problems per page.

Design and Procedure
The experiment used a 3 × 2 mixed factorial design with a between-subjects variable of tempo increase (0%, 25%, 50%), a within-subjects variable of test complexity (simple or complex), and two dependent variables: math test-taking speed and accuracy. Participants took both a simple and complex math test for 2 min each while listening to background music increased by 0%, 25%, or 50%.

Participants met in groups during one of three possible session times. We informed them that the purpose of this research was to examine background music and test-taking skills. We obtained consent and then placed a two-page worksheet packet facedown on each participant’s desk. We alternated the packets to control for order effects such that if one participant received a simple test packet, then the next participant received a complex test packet.

We instructed the participants to turn over the packets and to begin solving the problems as quickly as possible when cued to begin. They were also instructed to solve the problems in their heads, to not write anything on the answer sheets except for the final answer to each problem, and to stop working when cued to stop, which was when the background music stopped playing. Participants also completed a second set of worksheet packets following the same instructions and procedure.

All three groups contained 11 participants. One group listened to the music that increased in tempo by 0% (i.e., 96 bpm) across 2 min. A second group listened to the music increased in tempo incrementally by 25% across 2 min (i.e., from 96 to 120 bpm). A third group listened to the music increased in tempo incrementally by 50% across 2 min (i.e., from 96 to 144 bpm).

Results
Math Problems Completed
Figure 1 illustrates the differences in test completion by tempo group and test complexity. Table 1 displays the means and standard deviations for the number of math problems completed as a function of tempo acceleration and test complexity. There was a significant main effect for tempo, \( F(2, 30) = 11.36, p < .01 \), partial \( \eta^2 = .43 \). A Tukey HSD post hoc comparison revealed that the group listening to no tempo increase significantly completed more problems than the group listening to music with a 50% increase in tempo, \( p = .001 \), and the group listening to music with a 25% increase in tempo significantly completed more problems than the group listening to music with a 50% increase in tempo, \( p < .02 \). However, the group listening to no tempo increase did not complete significantly more problems than the group listening to music with a 25% increase in tempo, \( p = .17 \).

There was also a significant main effect for test complexity, \( F(1, 30) = 415.93, p < .01 \), partial \( \eta^2 = .89 \). Participants completed more math problems on the simple test than on the complex test. The figure displays these effects as well as a significant interaction revealing that simple completion rates declined much more than complex completion rates as the tempo changed from no increase to a 25% increase to a 50% increase, \( F(2, 30) = 9.08, p < .01 \), partial \( \eta^2 = .44 \).

Math Problem Errors
Figure 2 displays differences in test errors by tempo group and test complexity. Table 2 displays

---

1Prior to the experiment, a convenience sample of 11 female and 5 male volunteers ranging in ages from 21 to 40 years (\( M = 24.75, SD = 5.9 \)) completed a brief survey that contained eight problems similar to the problems used in the experiment. The participants solved the problems and rated their complexity. Participants rated the complex problems as being significantly more complex (\( M = 10.19, SD = 1.94 \)) than the simple problems (\( M = 5.50, SD = 1.83 \)), \( t(15) = 8.59, p = .001 \).
FIGURE 1

Error bars (one standard deviation) illustrating math problem completion by percentage of tempo increase.

TABLE 1

Means and Standard Deviations for the Number of Math Problems Completed as a Function of Tempo Acceleration and Test Complexity

<table>
<thead>
<tr>
<th>Condition</th>
<th>Test</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tempo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0% increase</td>
<td>Simple</td>
<td>25.00</td>
<td>5.78</td>
</tr>
<tr>
<td></td>
<td>Complex</td>
<td>9.55</td>
<td>3.42</td>
</tr>
<tr>
<td></td>
<td>Both</td>
<td>34.36</td>
<td>8.27</td>
</tr>
<tr>
<td>25% increase</td>
<td>Simple</td>
<td>20.73</td>
<td>1.85</td>
</tr>
<tr>
<td></td>
<td>Complex</td>
<td>9.28</td>
<td>3.47</td>
</tr>
<tr>
<td></td>
<td>Both</td>
<td>29.91</td>
<td>4.35</td>
</tr>
<tr>
<td>50% increase</td>
<td>Simple</td>
<td>16.18</td>
<td>2.09</td>
</tr>
<tr>
<td></td>
<td>Complex</td>
<td>6.82</td>
<td>1.40</td>
</tr>
<tr>
<td></td>
<td>Both</td>
<td>22.52</td>
<td>2.60</td>
</tr>
<tr>
<td>Test</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simple</td>
<td></td>
<td>20.64</td>
<td>5.12</td>
</tr>
<tr>
<td>Complex</td>
<td></td>
<td>8.55</td>
<td>3.09</td>
</tr>
</tbody>
</table>
FIGURE 2

Error bars (one standard deviation) illustrating math test errors by percentage of tempo increase.

TABLE 2

Means and Standard Deviations for the Number of Math Errors as a Function of Tempo Acceleration and Test Complexity

<table>
<thead>
<tr>
<th>Condition</th>
<th>0% increase</th>
<th>25% increase</th>
<th>50% increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tempo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0% increase</td>
<td>Simple</td>
<td>0.55</td>
<td>0.73</td>
</tr>
<tr>
<td></td>
<td>Complex</td>
<td>2.00</td>
<td>1.18</td>
</tr>
<tr>
<td></td>
<td>Both</td>
<td>3.55</td>
<td>2.09</td>
</tr>
<tr>
<td>25% increase</td>
<td>Simple</td>
<td>2.00</td>
<td>0.73</td>
</tr>
<tr>
<td></td>
<td>Complex</td>
<td>1.18</td>
<td>1.18</td>
</tr>
<tr>
<td></td>
<td>Both</td>
<td>1.45</td>
<td>2.09</td>
</tr>
<tr>
<td>50% increase</td>
<td>Simple</td>
<td>0.82</td>
<td>0.82</td>
</tr>
<tr>
<td></td>
<td>Complex</td>
<td>1.43</td>
<td>1.43</td>
</tr>
<tr>
<td>Test</td>
<td>Simple</td>
<td>0.64</td>
<td>0.90</td>
</tr>
<tr>
<td></td>
<td>Complex</td>
<td>1.33</td>
<td>1.47</td>
</tr>
</tbody>
</table>

Copyright 2003 by Psi Chi, The National Honor Society in Psychology (Vol. 8, No. 1, 21–27 / ISSN 1089–4136).
the means and standard deviations for the number of math problem errors as a function of tempo acceleration and test complexity. There was no significant main effect for tempo, $F(2, 30) = 1.62, p = .38$, partial $\eta^2 = .06$. The group listening to music with no tempo increase committed almost as many errors as the group listening to music with a 25% increase in tempo and as the group listening to music with a 50% increase in tempo.

The main effect for test complexity was significant, $F(1, 30) = 8.03, p < .01$, partial $\eta^2 = .19$. Participants committed fewer errors on the simple test than on the complex test. There was no significant interaction between tempo and test complexity in terms of errors $F(2, 30) = 2.65, p = .09$, partial $\eta^2 = .12$.

**Discussion**

This study found some support for the hypothesis stating that math completion rates decline as the percentage rate of background music tempo increases. Indeed, completion rates decreased between all tempo conditions except between the group listening to no tempo increase and the group listening to a 25% tempo increase. We cannot conclude that this amount of increase (from 96 bpm to 120 bpm) was too minimal to invoke a significant decline in completion as there was a significant decline between similar percentages (i.e., 25% and 50%). Further research can explore the possibility that there is a bpm threshold (as opposed to a percentage increase threshold) at which performance begins to decline.

Accuracy scores were not significantly different among groups. This result is most likely due to a floor effect as participants made few errors on both tests during all tempo conditions. Future refinements and replications of this study should extend the test-taking period beyond 2 min.

The main effect for test complexity is not surprising. It is logical that more participants completed more simple problems than complex problems because they had equal amounts of time to complete each test. Furthermore, this supports findings in the pilot study of perceived differences between simple and complex math problems.

The interaction is interesting because it was not exactly as predicted. Completion rates declined steadily for simple problems, but the completion rates barely declined for complex problems. The prediction was that completion rates for simple problems would increase due to the physiological arousal associated with accelerating tempos. We also predicted that completion rates for complex problems would decline due to overload on the working memory system.

Before disconfirming this hypothesis, it is important that future research examine additional tempo rates. It is possible that the data from this study fits nicely at the beginning of the descent of the performance-arousal U-shaped curve (Yerkes & Dodson, 1908). It would be interesting to find a significant increase (instead of decrease) in scores for simple tests and a marginal increase (instead of decrease) in scores for complex tests using a base tempo 50% lower (i.e., 48 bpm) than the base tempo of this study.

The decline in completion rates for complex problems lends some support to the influence of strain on working memory. However, this holds true for simple problems, disconfirming the idea that physiological arousal associated with accelerating tempos is beneficial for simple tasks. Although exploring additional tempo parameters is most important for future research in this area, it may be beneficial to explore other tasks. For example, holding words in memory would place additional strain on the articulatory rehearsal loop, whereas a face recall and discrimination task would place additional strain on the visuospatial scratch pad. Background tempo acceleration may affect performance on both types of tasks.

Many of the limitations of previous studies were due to assumptions of treatment equivalence. It is imperative that determining differences between simple and complex tasks be objective. This is why the present study did not use addition problems as a simple task and division problems as a complex task. Although division is intuitively more complex than addition, these two types of problems may require different mental operations and processes. In the present study, a pilot study rated perceived simplicity and complexity of addition problems; the results confirmed that people judged problems involving no carrying to be simpler than problems involving carrying.

The present study used not only the same style of music, but also the exact same piece of music. The only difference between groups was the tempo. The relationship between other musical variables (e.g., accelerated intensity, increased orchestration) is a potential avenue for future extension of this research. In addition, future research should include a group listening to no music at all.

The findings of this study have implications for real-world applications. Some teachers believe that playing background music in the classroom is beneficial. This study suggests that these teachers need to be cognizant of the tempo of the background music. In the workplace, faster tempos of background music may cause declines in worker output, especially if the employee is engaged in a complex task.
This study has demonstrated that the presence of background music affects task performance and warrants further research. We have also emphasized the necessity of using objective and consistent measures in music psychology research. Future research in this area, using established theories in psychology, will diminish the conception of music as a mysterious force and establish it as organized aural stimuli capable of affecting mental life and human behavior.

References


“Please Don’t Call on Me”:
Correlates of Small Group Participation

This study explored the relationship between self-esteem, communication apprehension, extraversion, and small group participation. Fifty female undergraduate General Psychology students participated in groups of 5 to provide feedback regarding 2 children’s videos. They viewed two 5-min clips and responded to questions regarding the education and entertainment values for preschool-aged children (ages 5–7). The experimenter recorded the number and length of times each person spoke. Following the video, the participants completed a self-esteem scale, a communication apprehension scale, and an extraversion scale. Hierarchical regression determined that self-esteem was not a significant predictor of small group participation; however, communication apprehension was.

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In today’s world, education is one of the cornerstones for success. Education level helps determine a person’s job type, income level, and status in our society (Tsui, 1998; Witherspoon, Long, & Nickell, 1991). Therefore, success in the classroom may have a long-term impact on individuals. Educators use many methods to evaluate students, including assessing the amount of participation in the classroom. College instructors typically pose questions, permit students to ask questions or offer comments, and structure small group activities to increase classroom participation (Williams, 1971). Classroom participation includes hand-raising, head-nodding, sharing opinions, asking questions, and generating new ideas (Burnett, 1998). Indeed, research indicates classroom participation is directly related to educational success (Jaasma, 1997).

Several personal attribute variables are linked to participation. In particular, self-esteem is positively correlated with higher levels of classroom participation (Burnett, 1998; Morrison & Thomas, 1975). Self-esteem is defined as “the set of evaluative attitudes that a person has about himself or his accomplishments” (Morrison & Thomas, 1975, p. 374).

Research on self-esteem and classroom participation reveals several behavioral differences among children with varying levels of self-esteem across many age ranges (Burnett, 1998). For example, children with low self-esteem give limited responses in the classroom, whereas children with high self-esteem display strong communication skills and are interactive with others (Burnett, 1998). Students with low self-esteem say less in class and sit further back in the classroom than students with high self-esteem (Morrison & Thomas, 1975). The relation between self-esteem and participation appears to be reciprocal. That is, increased participation may increase self-esteem and increased self-esteem may increase participation. Research also finds that people who have high self-esteem are more confident in social situations than people who have low self-esteem (as reviewed by Baron, 1998). This study evaluated the impact of self-esteem on the level of participation in a new small group situation.

Other variables that may contribute to the level of classroom participation are communication apprehension, extraversion, and small group participation.
Participation, we expected self-esteem to contribute the other variables associated with communication apprehension. We expected to find a positive correlation with communication apprehension, extraversion, and introversion, and extraversion with small group participation. We expected to find participation positively relates to extraversion. Finally, because self-esteem may be an underlying factor behind the other variables associated with participation, we expected self-esteem to contribute independently to small group participation (after controlling for the other variables of interest).

Method

Participants

Fifty participants took part in this project. Due to the large amount of evidence that suggests complicated sex effects with regard to classroom interactions between students and faculty (e.g., Allen & Niss, 1990), we utilized only female students as well as a female experimenter. We solicited these students from the General Psychology human participants pool at a mid-sized midwestern public comprehensive university, and they received extra credit for their participation. The students represented a variety of declared majors across the five colleges of study within the university, and we selected for traditionally aged freshmen (mean age = 19.16, SD = 1.09). Respondents participated in groups of five. We overenrolled the groups and excused participants familiar with one another to ensure five strangers per group.

Materials

The participants watched two 5-min children’s video clips. The first was a Richard Scarry video that depicted a story involving a moral about not “judging a book by its cover.” The second was Blue’s Clues, a show about a man investigating clues to learn about his environment.

Following discussion of the videos, the participants completed measures of self-esteem, communication apprehension, extraversion, and additional measures to help disguise the purpose of the study. We measured self-esteem with Coopersmith’s (1967) Self-Esteem Inventory (SEI), a 50-item true–false scale that measures evaluative attitudes across four domains pertaining to the self (peers, parents, school, and personal interests). Sample items included “There are lots of things about myself I would change if I could” and “I can make up my mind without too much trouble.” Although the SEI has been criticized for having a negative skew, a high correlation with social desirability, and an unstable factor pattern (Robinson, Shaver, & Wrightsman, 1991), it has shown good reliability and validity indicators and has been a traditional measure of self-esteem in classroom research. For the current sample the scale yielded a Cronbach’s reliability alpha of .74. We measured communication apprehension with the 24-item, 5-point, Likert-based Personal Report of Communication Apprehension scale (PRCA; McCroskey, 1982). Sample items included “I like to get involved in group discussions” and “Engaging in group discussions with new people makes me tense and nervous.” The PRCA has been

The purpose of this study is to explore the relation of self-esteem, communication apprehension, introversion, and extraversion with small group participation. We expected to find a positive correlation between self-esteem and classroom participation. We expected participation to be negatively correlated with communication apprehension. We expected to find participation positively relates to extraversion. Finally, because self-esteem may be an underlying factor behind the other variables associated with participation, we expected self-esteem to contribute independently to small group participation (after controlling for the other variables of interest).
widely used and is reliable and valid (Robinson et al., 1991). We measured extraversion with Cheek and Buss’s (1981) single-item 10-point scale, with introversion and extroversion as the endpoints. We included questions regarding the participants’ familiarity with children’s videos and child development to ensure that familiarity with the topic was not a factor resulting in more or less participation.

**Procedures**

We set up the room prior to the arrival of the participants. We placed paper and pencils to indicate the placement of the participants in the room. Once everyone was seated, the experimenter told a cover story regarding the need for participants’ feedback on children’s movies. The experimenter told the participants that their input was important and that they would receive a candy bar at the end of “class” as an additional incentive for their cooperation. The experimenter asked them to think about what would be considered entertaining and educating for preschool-aged children (ages 5–7) and instructed them to utilize the paper and pencils to record any thoughts or feelings they had while attending to the movie clips. Following this brief introduction, the 5-min clip of a Richard Scarry video was shown, followed by the 5-min clip of Blue’s Clues.

Once the videos were finished, the experimenter sat down next to the participants and asked for feedback. The experimenter made no eye contact and gave little to no verbal or nonverbal feedback to the participants. The experimenter appeared to be concentrating on taking notes regarding the content of the conversation. We used a video camera to record the participants during the experiment and coded the tapes for classroom participation at a later date.

A single rater measured classroom participation in two ways: the number of times each person spoke and how long each person spoke (overall and per “turn”). Following the end of the discussion, the experimenter handed out a questionnaire containing the measures of self-esteem, communication apprehension, and extraversion. After completion of the questionnaires, the experimenter debriefed the participants and thanked them for their participation.

**Results**

Table 1 shows the correlations among the independent variables self-esteem, communication apprehension (PRCA), and extraversion. High self-esteem was related to lower communication apprehension. Extraversion was related to higher self-esteem and lower communication apprehension. Correlations ranged from −.43 to .36. The descriptive statistics on the independent and dependent variables are as follows: global self-esteem ($M = 42.38, SD = 8.90, range = 19.00–58.00$), extraversion ($M = 6.53, SD = 1.72, range = 3.00–9.00$), communication apprehension ($M = 59.32, SD = 16.42, range = 24.00–96.00$), the number of times each person spoke ($M = 2, SD = 1.56$) and the length of time each person spoke ($M = 12.8, SD = 17.54$). Table 2 shows the zero-order correlations between each of the independent variables and the dependent variable of classroom participation (an aggregation of the standardized measures of times spoken and overall number of seconds spoken, correlated with each other, $R[48] = .66, p < .01$). All three independent variables were significantly related to classroom participation in the expected direction.

For our primary analysis of exploring the unique relation between self-esteem and classroom participation, we used hierarchical regression to control for the effects of the other variables. We assessed the variance in participation that is accounted for by communication apprehension and extraversion in the first step of a regression, then we entered self-esteem. This procedure allowed us to look at the relation of global self-esteem to participation while controlling for the effects of the other variables. Self-
Estimate provided no independent explanation of group participation above and beyond communication apprehension and extraversion (see Table 3). Extraversion was not significantly related to group participation. Finally, familiarity with children’s videos and seating arrangement had no significant correlation with group participation.

**Discussion**

The hypothesis stating that self-esteem would contribute independently to small group participation was not supported. Self-esteem was not an independent predictor of small group participation; however, it was moderately correlated. Communication apprehension was strongly related to small group participation. Although it is possible that a more domain-specific measure of self-esteem would have yielded independent effects, the strong predictive power of communication apprehension suggests that future research would be best focused on more “communication-specific” predictors. The results suggest that even when students are motivated to contribute, familiar with the discussion topic, or interested in the topic, they may be inhibited due to fear of speaking.

As discussed earlier, educational success has long-term effects on individuals, including income levels and status in our society (Tsui, 1998; Witherspoon et al., 1991). Additionally, there is strong evidence that high communication apprehension is linked to several negative academic outcomes, including lower participation, lower grades, higher dropout rates, and decreased teacher–student interaction (Jaasma, 1997; McCroskey et al., 1989). Given these findings, it is important to reduce communication apprehension in the classroom in order to increase participation. There is evidence that early intervention with high communication apprehension can help students attain success in the classroom (Tollefson & Smith, 1998). Early intervention is necessary because communication apprehension seems to have its strongest impact during the first two years of college (McCroskey et al., 1989).

A survey conducted in 1997 revealed that only 13% of colleges and universities reported offering a special course or program for students with communication apprehension (Robinson, 1997). Instead, instructors are working on adding techniques into their speaking courses to help students overcome their apprehension (Robinson, 1997). These techniques include systematic desensitization, cognitive restructuring, visualization, and skills training (Dwyer, 2000). Additionally, instructors are creating a supportive and positive environment to help alleviate some apprehension (Robinson, 1997). “It is concluded the impact of communication apprehension on the probability of high communication apprehension students’ survival in college is substantial and this impact adds to the case favoring the provision of training programs to assist such students overcome their apprehension about communication” (McCroskey et al., 1989, p. 100).

Although we expected to find a relation between self-esteem and participation, the strength of communication apprehension as a correlate of participation may be a more heartening finding. Whereas research indicates reliable reductions in communication apprehension in response to interventions, there is no such consistent finding in terms of interventions for self-esteem. It is important for future research to evaluate interventions that promote speaking out in class and minimize communication apprehension among students for long-term effects. In order for future studies to be more successful, researchers could use a real classroom setting already established for educational purposes to provide more realistic responses or more intense motives for future respondents to participate.

There are several limitations to this study. Although small groups are used in classroom situations, one small group of five persons is not an accurate depiction of a real classroom. The small number of participants, with the experimenter taking notes alongside them, may have encouraged or inhibited participation in a way that may or may not have occurred naturally.

The video discussion took place prior to the completion of the questionnaire. We implemented this procedure to prevent the participants from
determining the purpose of the study prior to their actual participation. However, the participants may have filled out the questionnaires based on the amount of participation they had within the group instead of their more stable underlying dispositions. Overall, this study suggests that communication apprehension is a real barrier to future success. Students need to be given the tools they need to express their ideas among their teachers and peers.

References

The Influence of Beliefs on Sexual Assault Attributions and Perceptions

This study investigated the relation between fundamentalist religious beliefs, victim alcohol consumption, and victim–perpetrator relationship on blaming a sexual assault victim and perceptions of the assault. Male and female participants (N = 124) read vignettes that varied female victim alcohol consumption (she drank 3 drinks or she did not drink) and couple relationship (acquaintances on a first date, steady dating partners, or married). Contrary to prior research, participants did not blame the victim more or hold her more responsible for the attack if she was drinking at the time of the assault. Participants were more likely to perceive the assault as a crime and to label the assault a rape if it was a first date as opposed to a dating couple or married couple. Program ideas to decrease victim blame are discussed.

Rape is a serious crime that continues to be prevalent in modern society. Sexual assault is an important problem on college campuses, with estimates as high as 15–30% of college women experiencing rape (Abbey, 1991; Koss, Gidycz, & Wisniewski, 1987). Although the common conception of rape is a stranger attacking, rape usually occurs between acquaintances. According to Bureau of Justice Statistics (1999), 69% of rapes reported to police involved cases in which the victims knew their assailants. However, rape is an underreported crime, with only 41% of rape victims reporting the attack to police (Bureau of Justice Statistics, 1999). Abbey, Ross, McDuffie, and McAslan (1996a) reported that 95% of rapes among college students occurred between acquaintances. This number is higher than the Bureau statistics because it is based on an anonymous survey rather than police reports, and acquaintance-rape victims are less likely to report the crime to the police than are stranger-rape victims. In the majority of cases, sexual assault victims are women and the assailants are men (Abbey, 1991). For this reason, the current study dealt with sexual assault that occurs between female victims and male perpetrators.

A prevalent problem in society is the tendency to blame rape victims (Abbey, 1991; Whatley, 1996). Blaming the victim may arise from attributions of personal characteristics such as sexual promiscuity, personality dimensions, decisions such as those involving alcohol use, or the situation and circumstances surrounding an attack. This tendency to blame the victim may lead to the crime not being reported because the victim blames herself, and, consequently, the underreporting of rape perpetuates the belief that rape is not a serious crime. In addition, a victim who feels that others blame her for the attack may in turn blame herself, and this self-blame could cause psychological problems (Katz & Burt, 1988).

Religious beliefs, such as fundamentalism, may influence perceptions and attributions of sexual assault. Altemeyer and Hunsberger (1992) found that religious fundamentalism is related to prejudice and discrimination against minorities, homosexuals, and women. Altemeyer and Hunsberger define fundamentalism as believing in one set of teachings that include the essential and exact truth about God and humanity and the special relationship believers have with God. In addition, this truth “must be followed today according to the fundamental, unchangeable practices of the past” (Altemeyer & Hunsberger, 1992, p. 118). It is likely that the more conservative beliefs among fundamentalists may extend to more tradi-
Attributions and Perceptions □ Lynch and Ross

Religious fundamentalism may influence perceptions of sexual assault. Thus, women who defy the traditional norms for women, perhaps by drinking alcohol or having consensual sex outside of marriage, may be deserving of a sexual assault, according to fundamentalists. Because the woman was not conducting herself in a manner consistent with the traditional view of a “lady,” fundamentalists may believe that she deserves anything bad that happens to her. The present study postulated that religious fundamentalism would be linked to blaming a sexual assault victim more and less negative outcome perceptions of the assault.

A second factor that may influence perceptions and attributions of sexual assault pertains to whether alcohol use is involved. A disappointing statistic reported by Anderson and Cummings (1993) is that 19% of the men surveyed admitted to getting a woman drunk in order to force sex. Alcohol is a common feature of sexual assault. In a study that compared college women’s dates that did versus did not involve sexual aggression, Muehlenhard and Linton (1987) found that 55% of male assailants and 53% of female victims reported being intoxicated at the time an assault occurred. A national survey of college students by Ullman, Karabatsos, and Koss (1999) yielded similar data. Forty-two percent of women who were assaulted reported they were drinking prior to the assault; 53% of these women also reported that the assailant was drinking prior to the assault (Ullman, Karabatsos, and Koss, 1999). In a simulated acquaintance-rape trial, “jurors” acknowledged that drinking, by either the victim or the offender, was a contributing factor of the assault (Fischer, 1995). Both society and the assailant use drinking by the assailant as an excuse to justify deviant behavior (Abney, 1991). For example, the assault is not the assailant’s fault because he could not control his actions due to a drunken state. In addition, alcohol use increases the likelihood of misperception and decreases a woman’s ability to resist attack (Abney, 1991).

There is a tendency for female victims to be blamed if they were drinking at the time the assault occurred (Abney, 1991). If a rape occurs when a victim was under the influence of alcohol, she is more likely to feel responsible herself for the attack, which can lead to self-blame (Abney, 1991). Previous research (Abney, Ross, McDuffie, & McAuslan, 1996a, 1996b; Aramburu & Leigh, 1991) has speculated that societal beliefs about women who drink lead to blaming a victim who was drinking when an assault occurred. Attribution of responsibility falls on the assault victim who drinks due to her inebriated state. People say she should have known better, or she was asking for it. Abney (1991) found that participants view women who drink as loose and sexually available. This study examined the hypothesis that participants will blame a victim who drank alcohol prior to the attack more than a sober victim, and have less negative outcome perceptions if the assault involved the victim drinking.

As mentioned earlier, the majority of rapes occur between acquaintances. Bridges (1991) found that participants rated acquaintance rape as less serious than stranger rape. Participants stated that a woman who was raped by an acquaintance would suffer less psychological damage than would a woman who was raped by a stranger. In addition, male participants were less likely to label an assault as rape if it occurred between married partners (Bridges, 1991; Simonson & Subich, 1999). Cahoon and Edmonds (1992) also found that men were less likely to define a marital rape scenario as rape. These findings suggest the notion that sexual intercourse is viewed as the duty of a wife. The purpose of this study was to examine the perception of an assault based on victim–perpetrator relationship (married, dating, or acquaintances). Due to the previously documented tendency to view sexual assault between sexual partners as less serious, the present study postulated that participants would blame a victim more if she had engaged in previous consensual sex with the assailant. In addition, we hypothesized that participants would have less negative outcome perceptions if the victim and perpetrator had engaged in previous consensual sex.

The focus of this study was to examine the influence of fundamentalist religious beliefs, victim alcohol consumption, and victim–perpetrator relationship on attributions and perceptions of a sexual assault. The present study predicted that participants higher in religious fundamentalism would blame the victim more and would have less negative outcome perceptions than those participants lower in religious fundamentalism. The study explored the hypothesis that participants would blame the victim more and have less negative outcome perceptions if she consumed alcohol before the attack as opposed to being sober. Finally, we hypothesized that participants would attribute more blame to the victim and have less negative outcome perceptions if she had previously engaged in consensual sex with the assailant.

Method

Participants

One hundred and twenty-four (28 men, 96 women) college students from psychology classes completed the survey for extra credit. The age range was from 18 to 39 years of age (M = 20.5). The majority of the participants were Caucasian (90%). Seven percent of
the participants were African American, and three persons identified themselves as another ethnicity.

**Design and Materials**

The present study used a $2 \times 3$ factorial design. There were two levels of victim drinking (she drank three drinks or she did not drink) and three levels of relationship between the victim and assailant (first date, dating 6 months, married). Participants read a vignette that varied victim alcohol consumption and victim–perpetrator relationship. The couple who had been dating for 6 months and the married couple had engaged in previous consensual sexual intercourse. The male assailant consumed four drinks in every scenario. See Appendix A for the vignettes.

To ascertain participants’ perception of the victim, the assailant, and the assault, we included 20 perception questions. Questions asked to what extent the outcome was due to victim or assailant drinking, victim inability to control the situation, victim or assailant sexual behavior, victim–assailant relationship, societal expectations of men to be sexually aggressive, societal expectations of women to be flirtatious, victim’s personality, assailant’s personality, and victim or assailant misperception of the situation. In addition, questions asked to what extent the victim or assailant was to blame, to what extent the victim or assailant was responsible, and to what extent the victim got what she deserved. There were additional outcome perception questions that asked to what extent the assault was a violation of the victim’s rights, a rape, or a crime. The 6-point Likert scale for these items ranged from 1 = not at all to 6 = definitely. See Appendix B for a full list of the 20 perception questions.

The 6-item Religious Fundamentalism Scale (McFarland, 1989) measures religious fundamentalism. The 5-point Likert scale for these items ranged from 1 = strongly disagree to 5 = strongly agree. A higher score meant a stronger religious fundamentalist belief. This scale was highly reliable, with a Cronbach’s alpha of .88. A sample question from this scale is, “I am sure the Bible contains no errors.”

The survey ascertained demographic information, including age, sex, ethnicity, year in college, membership in a sorority or fraternity, and religious affiliation. In addition, questions about frequency of childhood and current church attendance were asked; the scale for these questions ranged from 1 = twice a week to 7 = never.

**Procedure**

Students completed the survey in groups ranging in size from 1 to 35 persons in classrooms at a college campus. Written consent was obtained before participation. Participation was anonymous. Participants read one of the six vignettes, and then answered survey questions in the following order: vignette perception questions, demographic questions, and religious fundamentalism questions. Participants took as much time as needed to complete the survey, usually 20 min. Upon completion of the survey, each participant placed her or his signed consent form in a large manila envelope, and then placed the completed survey in a large box with a hole cut out of the top. These procedures were implemented to enhance anonymity. At the end of each session, we debriefed the participants and answered any questions.

**Results**

A preliminary analysis of correlations between victim blame and outcome perception revealed some significant correlations (see Table 1). Overall, participants who blamed the victim were more likely to rate the assault as due to the victim’s sexual behavior, personality, and misperception of the situation. Attributions of blame also related to attributions of responsibility. Participants who perceived the victim as deserving of what she got were more likely to attribute the assault to her personality, less likely to label the assault as a rape or a crime, and less likely to state that it was a violation of her rights. If the participants perceived the victim as responsible for the assault, they were more likely to attribute the assault to something about her personality and her misperception of the situation. However, increased perception of victim responsibility decreased the likelihood of the assault being labeled a rape or crime, and of viewing it as a violation of the victim’s rights.

Religious fundamentalism did not correlate with the perceptions and attributions of the assault. Thus, the data did not support the first hypothesis.

Victim’s alcohol consumption was not a factor that influenced victim blame or responsibility (based on responses to Questions 5 and 12 in Appendix B), as the multivariate analysis of variance (MANOVA) was insignificant, $p > .10$. In addition, a MANOVA revealed that victim alcohol consumption was not related to outcome perception, $p > .10$ (based on Questions 16, 19, and 20 in Appendix B). Therefore, there was no direct evidence that alcohol consumption prior to an attack led to victim blame or less negative outcome perceptions, and thus the second hypothesis was not supported.

The couple’s relationship influenced outcome perceptions (Questions 16, 19, and 20 in Appendix B), multivariate, $F(6, 232) = 4.059, p < .01$. Follow-up univariate analyses of variance (ANOVAs) revealed
this effect was due to whether the assault was perceived as a rape, \( F(2) = 3.835, p < .05 \), or as a crime, \( F(2) = 10.54, p < .01 \). Table 2 shows the means and standard deviations for these findings. Participants were more likely to label the assault a rape and a crime if it was a first date, as opposed to a dating couple or a married couple. Thus, there was partial support for the third hypothesis. Although previous consensual sex did not lead to victim blame, it influenced the way the assault was perceived.

### Discussion

Religious fundamentalism did not relate to victim attributions or perceptions of the assault. Apparently, religious fundamentalism does not predict derogation of a rape victim in the same way it predicts ethnic or minority prejudice. Perhaps individuals with religious fundamentalist beliefs feel compassion toward rape victims.

Results show that participants did not blame a victim or hold her more responsible if she consumed alcohol prior to a sexual assault. This finding contradicts previous research that has found participants blame victims who drink alcohol prior to an attack (Abbey, 1991; Aramburu & Leigh, 1991). Researchers have speculated that female sexual assault victims who consume alcohol prior to the attack are blamed more due to societal beliefs about women who drink (Abbey, 1991; Abbey et al., 1996a, 1996b; Hammock & Richardson, 1993). However, because this finding was not replicated in the present study, it is possible that college students’ views on blaming the victim are changing.

Previous consensual sex did not yield more victim blame. However, the victim–assailant relationship influenced outcome perceptions. The data indicate that the assault was more likely to be labeled a rape or perceived as a crime if it involved acquaintances on a first date versus a dating couple or a married couple. In other words, participants viewed the assault as more serious if the couple never had sexual relations, whereas participants interpreted the assault as less serious if the couple was dating or married and had previously had consensual sexual intercourse. This finding reinforces the stereotype that sexual assaults typically occur among people who do not

### Table 1

<table>
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<tr>
<th></th>
<th>Fundamentalism</th>
<th>She drinks</th>
<th>She deserves</th>
<th>She to blame</th>
<th>Sexual behavior</th>
<th>Responsible</th>
<th>Personality</th>
<th>A crime</th>
<th>Misperception</th>
<th>Violation of rights</th>
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<td>—</td>
<td>—</td>
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<td>—</td>
</tr>
<tr>
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<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<td>—</td>
<td>—</td>
</tr>
<tr>
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<td>.22*</td>
<td>.13</td>
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<td>—</td>
<td>—</td>
<td>—</td>
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<td>—</td>
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<tr>
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<tr>
<td>Personality</td>
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<td>.08</td>
<td>.27**</td>
<td>.25**</td>
<td>.47**</td>
<td>.39**</td>
<td>—</td>
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<td>—</td>
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<tr>
<td>A crime</td>
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<td>−.14</td>
<td>−.20**</td>
<td>−.17</td>
<td>−.26**</td>
<td>−.39**</td>
<td>−.18</td>
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<td>.59**</td>
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*Note. Fundamentalism refers to the participants’ scores on the Religious Fundamentalism Scale. She drinks refers to the extent to which the assault is due to Melanie’s drinking. She deserves refers to the extent to which Melanie deserved to be assaulted. She to blame is the extent to which Melanie is to blame for the assault. Sexual behavior is the extent to which the assault was due to Melanie’s sexual behavior. Responsible is the extent to which Melanie is responsible for the assault. Personality refers to the extent that the assault is due to something about Melanie’s personality. A crime refers to the extent that the assault is a crime. Misperception is the extent to which the assault is due to Melanie’s misperception of the situation. Violation of rights is the extent to which the assault is a violation of Melanie’s rights. A rape is the extent to which the assault was a rape.*

*p > .05. **p > .01.
know each other well, whereas in reality stranger rapes are relatively rare (Abbey et al., 1996a). It appears that society has more difficulty accepting a sexual assault if it occurs between a couple who are sexually involved with one another. In addition, perceiving an assault as less serious might discourage women from reporting an assault if the perpetrator is her boyfriend or husband; this interpretation helps explain why police and criminal justice data overrepresent stranger rapes and underrepresent acquaintance rapes (Abbey et al., 1996b).

This study was limited in that the majority of participants were traditional college-age students. In addition, the majority of participants were women. This situation created an unbalanced representation of men and women, so analyses investigating sex difference could not be performed. Future research should examine possible sex differences for the results found in this study.

Young adults need educational programs and rape prevention programs to decrease victim blame and to convey the seriousness of sexual assault. Foubert (2000) succeeded in changing fraternity men’s attitudes about rape and likelihood of committing rape over a period of 7 months. He used identification with a male rape victim and extended the experience of the male victim to that of female victims. In addition to viewing a tape and hearing lectures about how sexual assault is a form of violence, the participants learned how to help a female rape victim. Lanier, Elliott, Martin, and Kapadia (1998) found that an educational rape awareness program that utilized a theatrical production had the most influence on college students with tolerant views about date rape. Men on several college campuses have established programs to encourage rape awareness and prevention (Stasio, 2001). Rape prevention programs can lead to empathizing with the victim. This empathy could then contribute to less derogation of the victim. It is hoped that awareness and action will lessen the derogation of rape victims and, ultimately, decrease the crime of rape.

### TABLE 2

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<tr>
<th></th>
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<td>.119</td>
<td>4.55</td>
<td>.113</td>
<td>4.20</td>
<td>.112</td>
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### References


Simonson, K., & Subich, L. M. (1999). Rape perceptions as a
Vignette 1

Keith and Melanie are fellow classmates at the state university. They have had a few classes together. They are both seniors. One night, they go out on their first date. Their first date consisted of dinner at a restaurant. Both Keith and Melanie consumed a few drinks (she consumed three, he consumed four) along with dinner. Both Melanie and Keith had a buzz, but they were not completely wasted. Following dinner, they went back to Melanie's apartment to watch a movie. While watching the movie, they engaged in kissing and sexual touching. When Keith suggested that they have sex, Melanie adamantly said “No.” Keith ignored her protests, forced himself on her, and completed the act of intercourse.

Vignette 2

Keith and Melanie are fellow classmates at the state university. One night, they go out on their first date. They have had a few classes together. They are both seniors. Their first date consisted of dinner at a restaurant. Keith consumed four drinks along with dinner. Keith was not wasted, but he had a buzz. Melanie did not consume any alcohol. Following dinner, they went back to Melanie's apartment to watch a movie. While watching the movie, they engaged in kissing and sexual touching. When Keith suggested that they have sex, Melanie adamantly said “No.” Keith ignored her protests, forced himself on her, and completed the act of intercourse.

Vignette 3

Keith and Melanie, fellow classmates at the state university, have been dating for close to six months. They are both seniors. They have engaged in sexual intercourse on several occasions. One night, they go out to dinner at a restaurant. Both Keith and Melanie consumed a few drinks (he consumed four, she consumed three) along with dinner. Both Keith and Melanie had a buzz, but they were not completely wasted. Following dinner, they went back to Melanie's apartment to watch a movie. While watching the movie, they engaged in kissing and sexual touching. When Keith suggested that they have sex, Melanie adamantly said “No.” Keith ignored her protests, forced himself on her, and completed the act of intercourse.

Vignette 4

Keith and Melanie, fellow classmates at the state university, have been dating for close to six months. They are both seniors. They have engaged in sexual intercourse on several occasions. One night, they go out to dinner at a restaurant. Keith consumed four drinks along with dinner. Melanie did not consume any alcohol. Keith had a buzz, but he was not completely wasted. Following dinner, they went back to Melanie's apartment to watch a movie. While watching the movie, they engaged in kissing and sexual touching. When Keith suggested that they have sex, Melanie adamantly said “No.” Keith ignored her protests, forced himself on her, and completed the act of intercourse.

Vignette 5

Keith and Melanie, fellow classmates at the state university, have been married for six months prior to which they dated for two years. They are both seniors. They regularly engage in sexual intercourse. One night, they go out to dinner at a restaurant. Keith and Melanie both consumed a few drinks (he consumed four, she consumed three) along with dinner. Both Melanie and Keith had a buzz, but they were not completely wasted. Following dinner, they went back to their apartment to watch a movie. While watching the movie, they engaged in kissing and sexual touching. When Keith suggested that they have sex, Melanie adamantly said “No.” Keith ignored her protests, forced himself on her, and completed the act of intercourse.

APPENDIX A

Vignettes


function of gender-role traditionality and victim–perpetrator association. Sex Roles, 40, 617–634.
Vignette 6

Keith and Melanie, fellow classmates at the state university, have been married for six months prior to which they dated for two years. They are both seniors. They regularly engage in sexual intercourse. One night, they go out to dinner at a restaurant. Keith consumed four drinks along with dinner. Melanie did not consume any alcohol. Keith had a buzz, but he was not completely wasted. Following dinner, they went back to their apartment to watch a movie. While watching the movie, they engaged in kissing and sexual touching. When Keith suggested that they have sex, Melanie adamantly said “No.” Keith ignored her protests, forced himself on her, and completed the act of intercourse.

APPENDIX B

Vignette Perception Questions

1. To what extent was the outcome due to Melanie's drinking?
2. To what extent was the outcome due to Keith's drinking?
3. To what extent was the outcome due to Melanie's inability to control the situation?
4. To what extent did Melanie get what she deserved?
5. To what extent is Melanie to blame?
6. To what extent is Keith to blame?
7. To what extent was the outcome due to Melanie's sexual behavior?
8. To what extent was the outcome due to Keith's sexual behavior?
9. To what extent was the outcome due to Keith and Melanie's relationship?
10. To what extent is the outcome due to societal expectations for men to be sexually aggressive?
11. To what extent is the outcome due to societal expectations for women to be flirtatious?
12. To what extent is Melanie responsible for the outcome?
13. To what extent is Keith responsible for the outcome?
14. To what extent is the outcome due to Melanie's personality?
15. To what extent is the outcome due to Keith's personality?
16. To what extent was the outcome a crime?
17. To what extent was the outcome due to Keith's misperception of the situation?
18. To what extent was the outcome due to Melanie's misperception of the situation?
19. To what extent was the outcome a violation of Melanie's rights?
20. To what extent was this rape?
Sincere appreciation is expressed for the hard work on the part of the following individuals who served as reviewers for this issue. Without the assistance of such dedicated professionals, the *Psi Chi Journal* simply would not be able to function!

—EDITOR

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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. Members are encouraged to begin research papers early to submit for presentation at local, state, regional, or national conventions. Chapters are encouraged to provide an opportunity for members to rehearse their papers before an audience prior to presenting them at a convention.

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 $225,000 to members annually. Descriptions of the award/grant competitions follow. Further information and submission forms may be obtained from Psi Chi’s national website (www.psichi.org) or from the Psi Chi National Office, P.O. Box 709, Chattanooga, TN 37401-0709; telephone: (423) 756-2044; e-mail: psichi@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 (postmark).

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 (postmark).

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 (postmark).

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 (postmark).

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 will vary with the size of the regions; a total of 78 awards of $300 each are available for the 2002–03 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 and sometimes from year to year; check your fall regional mailing or the Psi Chi national 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 each are presented to students submitting the best research for Psi Chi sessions at the APA and APS national conventions. Up to eight awards are given: four for the APA Convention and four for the APS Convention. Award monies are distributed at the conventions following the presentations. A Call for Proposals is mailed to all chapters in the fall and is also available from the Psi Chi National Office and website (www.psichi.org). The deadline for submissions to the Psi Chi student sessions at both the APA and APS conventions is December 1 (postmark).

**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 (postmark).

**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 2002–03 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 (postmark).

**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 2002–03 year. A total of $30,000 has been allotted for this grant program. The deadline for this grant program is spring 2003 (check Psi Chi website for further details—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 (postmark).

**Hunt Research Grants**

All Psi Chi student and faculty members are eligible to apply for a Thelma Hunt Research Grant. Up to three awards of $3,000 each are presented annually to enable members to complete empirical research that addresses a question directly related to Psi Chi, as posed by either (1) the Psi Chi National Council, or (2) the researcher submitting a proposal. 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 (postmark).

**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 December 1 (postmark).
Subscriptions and Back Issues

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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