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The Effects of Mood on Task Performance and Task Satisfaction

This study investigated the influence that mood states have on task performance and task satisfaction. Forty-four undergraduate students underwent either a positive or negative mood induction procedure and then worked on an anagram task. Mood, task satisfaction, and task performance were assessed. Results showed that mood influenced participants’ satisfaction with the task: participants in the positive mood condition reported more satisfaction with the task than participants in the negative mood condition. Mood did not influence performance on the anagram task. The results are discussed in relation to implications for the understanding of job satisfaction and for the measurement of job satisfaction in organizations.

Recent advances in research have focused on employee affective reactions to characteristics of the workplace and features of the work environment. For example, Porter’s (1962) need fulfillment model views job satisfaction as the result of needs being satisfied through the job. Locke’s value theory (Locke, 1969) views job satisfaction as the result of a judgment about whether or not the job provides the individual with what is valued, rather than what is needed. Adams’ (1965) equity theory views job satisfaction as the perceived balance between inputs and outcomes, whereas Ilgen’s (1971) outcome expectancy model proposes that job satisfaction results when an individual’s expectations are met. Hackman and Oldham’s (1976) job characteristics model predicts workers will be more satisfied when jobs provide high levels of certain core characteristics such as autonomy, skill variety, and feedback. This view of job satisfaction as a cognitive judgment or appraisal has defined much of the research to date and has resulted in several popular measures of job satisfaction including the Job Descriptive Index (Smith, Organ, & Hulin, 1969) and the Minnesota Satisfaction Questionnaire (Weiss, Dawis, England, & Lofquist, 1967). Although both of these satisfaction measures can be used to provide an index of general job satisfaction, their primary purpose is to measure satisfaction with certain job facets.

Recently, there has been a rise in research on the effects of mood on job satisfaction. For example, George (1992) examined the role of trait affectivity in work-related satisfaction reactions and concluded that trait positive and negative affect may form the basis for job satisfaction. Although George focused on how trait affect (i.e., personality) influences affective states (i.e., moods), she stressed that transient mood is the construct of concern to understanding behavior. Weiss and Cropanzano (1996) provide a useful framework for examining the impact of transitory mood and emotion on job satisfaction. This approach, which they call affective events theory, proposes that although job satisfaction is partly the result of cognitive evaluations about workplace characteristics, it is also partly the result of affective experience. Figure 1 shows the relationship between the major variables in affective events theory.

Affective reactions lie at the center of affective events theory. The two main influences on affective reactions are dispositions and work events. First, it is generally agreed that affect levels fluctuate over time in cyclical patterns. Larsen and Kasimatis (1990) describe strong weekly mood cycles in college students. It seems clear that people are predisposed to regular patterns of mood. The second influence on affective reactions is events. Various theories of emotion recognize the role of events in the experience of emo-
Mood, Performance, and Task Satisfaction

Cicchetti, Moyer, and Nicholas

Recent research testing the propositions of affective events theory has been supportive. For example, Weiss, Nicholas, and Daus (1993) demonstrated that average daily mood accounted for a significant proportion of variance in job satisfaction above and beyond that which was accounted for by the traditional cognitive model. These results suggest positive mood will raise satisfaction with a task and negative mood will tend to lower satisfaction with a task. Nicholas (1994) replicated the results of Weiss et al. (1993) in the laboratory, showing that mood has a causal effect on task satisfaction.

Other research suggests that mood can have a significant effect on a number of human behaviors and cognitive processes. For example, Isen, Means, Patrick, and Nowicki (1982) found that participants in a positive mood tended to invest less cognitive energy in problem-solving tasks. They suggest positive affect itself requires processing capacity, leading people in a positive mood to skimp elsewhere. Sinclair (1988) also found evidence of limited cognitive investment on the part of happy participants when he observed they were more likely to show a halo bias when making judgments about another person’s performance. Isen and Means (1983) found participants in a positive mood tended to use less information when making decisions, with those in a negative mood persisting, on average, 50% longer at information gathering and deliberations before arriving at a deci-
Mood, Performance, and Task Satisfaction

Mood Induction

Mood was induced using a variation of the procedure described by Velten (1968). The Velten mood induction procedure is a reliable method of inducing mild positive or negative mood in a laboratory setting (Clark, 1983). This technique utilizes 60 self-referent mood statements printed on cards. The relevant set of mood statements (positive or negative mood) is read silently and reflected upon by participants. Each statement is viewed by the participant for 20 s. At the end of each 20-s interval, the participant is prompted to move on to the next card. Examples of statements read in the positive mood condition include “This is great—I really do feel good. I’m elated about things” and “Life is so much fun; it seems to offer so many sources of fulfillment.” Negative mood statements include “I feel a little low today” and “I’m discouraged and unhappy about myself.” The entire mood induction procedure takes 20 min.

Experimental Task

The anagram task consisted of four Scrabble-type word puzzles. Each puzzle consisted of seven letters. A point value was associated with each letter. For example, the letter $a$ was associated with a point score of 1, whereas the letter $p$ received a point score of 3. Participants were instructed to rearrange each row of letters to form a two- to seven-letter word in order to achieve as high a score as possible. For example, the letters INE IPC L could be rearranged to form the words pin, pine, or pencil. Although it was not always possible to use all seven letters to solve the anagram, any word in which all seven letters were used received a 50-point bonus. Neither proper nouns nor foreign, slang, or hyphenated words were allowed.

Audiotape

An audiotape of mood induction and anagram task instructions was made prior to the experiment. The audiotape began with the instructions for the mood induction and then paced the students through the 60 mood statement cards. Participants were given 20 s to view each card. At the end of each 20-s interval, a tone sounded on the tape prompting the student to move to the next card. After the last card had been viewed, the tape instructed the participants to put the mood statement cards aside and to begin work on the anagram task. Instructions were given for the anagram task via the tape, and then participants were allowed 10 min to work on the task. At the end of the 10-min interval, participants were instructed to stop working on the task.

Measures

Mood. The effectiveness of the mood manipulation was assessed using the pleasantness and arousal scales of the Current Mood Report (CMR; Ketelaar, 1989). The CMR is a 24-item mood adjective rating...
scale designed to measure mood along four dimensions: positive affect, negative affect, pleasantness, and arousal. Participants are asked to indicate the extent to which they are feeling each adjective at the time the report is completed using a 5-point scale, with 1 indicating *not at all*, 3 indicating *a moderate amount*, and 5 indicating *very much of the feeling described by the adjective*. Self-descriptions of mood can be described in terms of two dimensions (Russell, 1980). Some researchers have used positive and negative affect as the underlying dimensions (Watson & Tellegen, 1985), whereas others have used pleasantness and activation (Larsen & Diener, 1987). In this study, we focused on the pleasantness and activation dimensions of mood because these dimensions best reflect the expected mood produced by the Velten procedure. The CMR has been found to show internal consistency reliability and construct validity (Ketelaar, 1989; Larsen & Kasimatis, 1990).

**Task satisfaction.** Task satisfaction was measured using a faces scale (Kunin, 1955). The faces scale presents participants with seven human faces reflecting various levels of smiling or frowning. The respondent is asked to choose the face that best represents how he or she feels about the task. The face exhibiting the *deepest frown* is scored as 1; the *biggest smile* is scored as 7. Brief and Roberson (1989) commented favorably on the construct validity of the faces scale, calling it the instrument of choice if job satisfaction is construed as an affective reaction.

**Task performance.** Task performance was measured by scoring the anagram task. Each letter was associated with a point score. For example, the letter *a* was associated with a point score of 1, whereas the letter *p* received a point score of 5. Only letters used by the participant contributed to the score. Any time all seven letters were used to form a word, a bonus of 50 points was granted. It was possible to use all seven letters in only two of the four anagram puzzles; the remaining two anagram puzzles had unusable letters. The highest score possible was 148 points. Neither proper nouns nor foreign, slang, or hyphenated words were counted.

**Procedure**

Participants were seated in separate cubicles. Prior to the experiment, a sealed envelope containing mood induction cards and a sealed envelope containing the anagram task were placed in each cubicle. The valence of the mood induction—positive or negative—for any individual participant was determined randomly. During any experimental session there was a random mix of participants undergoing either the positive or negative mood induction. This feature of the procedure is important, since it preserves the assumption of independence of treatments and avoids the problem of treatment being correlated with session-specific effects. This assumption is violated when participants are assigned to experimental conditions in groups, but data are analyzed at the individual level. A prerecorded audiotape was then used to provide participants with the mood induction instructions and to pace them through the mood induction procedure one card at a time. This feature of the procedure allowed the experimenter to remain blind to the condition of any individual participant until the end of the experiment, thereby eliminating experimenter effects and serving to standardize the procedure for all participants. Once the participants had completed the mood induction, they were instructed via the audiotape to put the mood statement cards aside and to begin the anagram task. Upon completion of the anagram task, respondents completed an experimental questionnaire which was provided by the experimenter and which contained the manipulation check and dependent measures.

**Results**

Means, standard deviations, and intercorrelations between all variables are shown in Table 1. Results are considered on a variable-by-variable basis.

**Manipulation Check**

Cronbach’s alpha internal consistency estimates of .77 and .65 were computed for the pleasantness and arousal scales of the CMR respectively. A *t* test was computed to determine if the mood induction procedure was successful in inducing mild positive or negative mood in participants. Responses to the CMR indicated that participants who underwent the positive mood induction (*M* = 15.43, *SD* = 3.45) reported more pleasant affect than those in the negative mood condition (*M* = 12.08, *SD* = 3.21), *t*(42) = 3.21, *p* < .001, suggesting the mood manipulation had its intended effect on participant mood. As expected, no significant difference between conditions was found on the activation dimension of the CMR, *t*(42) = 1.15, *ns*. This pattern of results is consistent with expectations for the Velten procedure, which is designed to induce positive or negative mood of mild intensity in participants.

**Task Satisfaction**

Results of a *t* test indicated that participants in the positive mood condition (*M* = 5.33, *SD* = .91) found the anagram task to be more satisfying than those in the negative mood condition (*M* = 3.91, *SD* = 1.65), *t*(42) = 3.49, *p* < .001. This result shows that
positive mood influenced task satisfaction and supports the first hypothesis of this study.

**Task Performance**

Results of a $t$ test showed no significant difference between mood conditions in performance on the anagram task ($t(42) = .32, n_s.$ This result suggests that mood had no effect on participants’ performance on the anagram task and fails to support the second hypotheses of this study.

**Discussion**

The main focus of this study was to test propositions of affective events theory. The theory proposes that mood is one influence on job and task satisfaction. Affective events theory also proposes that mood will influence certain behaviors. One class of these behaviors may be performance related. A considerable body of literature in social psychology suggests that mood can have a significant influence on human behavior. Combining the findings of that body of literature with the proposals of affective events theory generates some interesting hypotheses regarding performance. However, it is important to recognize that performance on a task is not the result of behavior alone. Rather, performance on a task is the result of a fit between the behavior and task demands. Performance will be facilitated when behavior fits the demands of the task and will be hindered when it does not.

The current study found clear support for the first hypothesis. Participants in a positive mood reported more satisfaction with the task than those in a negative mood. These results are a replication of the previous research by Weiss et al. (1993) who found mood levels accounted for variance in job satisfaction. The study by Weiss et al. was, however, correlational in nature. The current research provides a controlled experimental test of that hypothesis focusing on task satisfaction, which is one component of overall satisfaction. This study also attempted to extend the investigation of affective events theory by examining the influence of mood on the affect-driven behaviors proposed in the theory. Significant group differences in task performance were not observed. One possible reason for this failure to find an effect of mood on task performance may lie in the fact that variability in performance within each group was quite large. This within-groups variance overwhelmed any differences between the groups. On the one hand, this failure may signal the theory is wrong, i.e., affect does not have any effect on performance. On the other hand, these results might be an artifact of the nature of the chosen task. Using a task on which performance within groups would vary less may result in a different outcome. Given the copious literature in social psychology that supports the impact of mood on human behavior, the latter conclusion is probably the most accurate.

The main impact of this study is the support shown for the central tenet of affective events theory and the contribution it makes to our understanding of job satisfaction in general. Job satisfaction has been defined traditionally as “the pleasurable emotional state resulting from the appraisal of one’s job as achieving or facilitating the achievement of one’s job values” (Locke, 1969, p. 316). Affective events theory, supported by the results of this study, suggests job satisfaction itself should not be conceptualized as affect and is not an emotional reaction to a job; rather, affect seems to be one contributing factor in the development of job attitudes (Weiss & Cropanzano, 1996).

This study was designed primarily to test propositions of affective events theory in a laboratory, but there are some implications of this study that extend beyond that setting. For example, many organizations use attitude surveys to assess the thoughts and feelings of employees. Sometimes, decisions for organizational change result from these surveys. The results

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**TABLE I**

<table>
<thead>
<tr>
<th>Variable</th>
<th>$M$</th>
<th>$SD$</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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</thead>
<tbody>
<tr>
<td>1. Activation</td>
<td>13.14</td>
<td>2.66</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Pleasantness of mood</td>
<td>13.68</td>
<td>3.70</td>
<td>.06</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Task performance</td>
<td>44.45</td>
<td>35.20</td>
<td>.008</td>
<td>.38*</td>
<td></td>
<td>1.00</td>
</tr>
<tr>
<td>4. Task satisfaction</td>
<td>4.59</td>
<td>1.51</td>
<td>-.05</td>
<td>.62**</td>
<td>.51**</td>
<td>1.00</td>
</tr>
</tbody>
</table>

*p < .05  **p < .01

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**Means, Standard Deviations, and Intercorrelations of Study Variables**
of this study suggest that mood can have an impact on job satisfaction. Because moods fluctuate over time, it might be beneficial to consider how timing might affect the outcome of any attitude survey. A single questionnaire administration is not sufficient for obtaining an overall estimate of job satisfaction. Perhaps a better approach would be to use multiple measures of job satisfaction spread out across time to obtain a more dynamic portrait. Of course, as the name of the theory implies, casting an eye toward the impact of events might also be wise.

**References**


The Effects of Time-Incremented Running on Mood State of College Athletes

The hypothesis that time-incremented running is a factor affecting mood state was tested on 41 members of men’s and women’s college track teams. Mood Thermometers (Tuckman, 1988) measured the difference in tension, anger, depression, fatigue, and confusion immediately before and right after running sessions of 0, 15, 30, or 45 min. Completely randomized 2 × 4 (Sex × Length of Running Time) analyses of variance indicated a significant decrease in running groups as compared to the no-run group in women in terms of depression, tension, and confusion. Men did not show significant improvements in any of these areas and, in fact, showed significantly greater confusion following a running session of 45 min.

Research in the latter half of this century has provided increasing documentation regarding the beneficial effects of regular exercise on physical health. For example, Donoghue (1977) reviewed studies concerning exercise in relation to employment and noted a decrease in sickness, absenteeism, and errors on the job with an increase in regular exercise. More recent research attempted to identify potential psychological benefits that also may be related to regular exercise. As noted by Kirkcaldy and Shephard (1990) and Hinkle (1992), numerous problems arise in attempting to evaluate the effects of exercise on psychological mood ranging from the definition of exercise to selection of scales of measurement and potential impact of participant variables. Both reviews conclude, however, that despite the technical problems, sound evidence now exists indicating that regular physical activity is also beneficial to psychological health.

Many early studies used pathologically depressed or anxious participants and attempted to generalize the results to the normal population (Kirkcaldy & Shephard, 1990; McGowan, Pierce, & Jordan, 1991). Subsequent studies were expanded to assess the extent of improved psychological mood on various subgroups of the normal population. The accumulation of ongoing research should help fitness experts design and implement programs of exercise that will provide both physical and psychological benefits to participants with minimal risk. Hinkle (1992) provided a review of the current aerobic running research for both adult and child populations and noted the positive implications of exercise both as a treatment tool and as a contribution to psychological fitness.

Although there seems to be little doubt that exercise is beneficial for mental health, the mechanism by which this is accomplished remains unclear and may ultimately defy parsimonious solution. For example, Kirkcaldy and Shephard (1990) noted that exercise may be a factor contributing to increased levels of the mood-altering neurotransmitters, enkephalin and beta-endorphins. These neurotransmitters may be responsible to some extent for a decrease in pain sensation and autonomic reaction to stress as well as an increase in a sense of self-efficacy. In contrast, Estivill (1995) hypothesized that “participants achieved a pleasantly altered state of consciousness and respite from depression and stress . . .” (p. 341) similar to spiritual practices and that aerobic exercise provided a sense of virtuousness that tied into the traditional “work-ethic religion” (p. 348). On the other hand, the extent that one experiences improved positive affect during exercise may be related to the
cohesiveness of the group in which an individual participates (Courneya, 1995). Still another potentially powerful element in evaluation of improved mood state is the implication that there is a strong placebo or expectancy effect that enhances the perceived improvement in one’s sense of well-being (Desharnais, Jobin, Côté, Lèvesque, & Godin, 1993). Considering this wide array of hypotheses, it may be reasonable to assume the effects that exercise exerts on mental health may be very complex and involve several pathways.

Studies of exercise and mood state can be divided into two major areas. Some researchers have examined psychological effects of regular exercise over an extended period of time. Other researchers have studied the acute effects of a single bout or session of exercise. Within each category, some studies have compared nonaerobic exercise with aerobic activity; other studies have compared aerobic activity with control groups involved in nonexercise activities; a few studies have used aerobic exercise, nonaerobic activity, and nonce xercise groups. To clarify, aerobic involvement is defined as exercising at an intensity of 60 to 90% of maximal heart rate (HR; estimated maximal HR = 220 – age) or exercising at an intensity of 50 to 85% of VO_{2\text{max}} (maximum oxygen consumption in 1 min). One simple way to calculate an estimate of VO_{2\text{max}} is: HR reserve = 220 – age – resting heart rate; 50 to 85% × HR reserve + resting heart rate = desired target VO_{2\text{max}} intensity (American College of Sports Medicine, 1995).

Results of studies conducted over extended periods of time have often been contradictory. For example, in a 1986 study Hughes, Casal, and Leon used treadmill walking, which raised mean HR of participants to 55% of maximum, followed by stair climbing, which raised mean HR of participants to 82% of maximum, and found no improvement in anger, tension, confusion, depression, fatigue, or total mood disturbance over a period of 12 weeks. In another study that provided for aerobic exercise at a level of 60 to 70% maximum HR, Williams and Getty (1986) compared the effects of 10 weeks of jogging or aerobic dance against 10 weeks of nonaerobic recreational games. When compared to the recreational games group, the aerobic groups showed increased improvement in physical fitness and had less anger, but they did not reflect significant improvement in mood states.

In contrast, Simons and Birkimer (1988) conducted an 8-week study and found that all of their exercise groups (jog, walk-jog, brisk walk, and mild walk), regardless of aerobic level, showed significant improvement in mood state, whereas their sedentary control group did not. In addition, rate of improvement was not dependent on initial physical fitness. Rate of improvement was most pronounced in those whose pretesting indicated the most psychological disturbance. They also found no correlation between cognitive variables relating to physical status, beliefs about exercise, enjoyment of exercise, or satisfaction with exercise.

In another contrasting example, Moses, Steptoe, Mathews, and Edwards (1989) proposed that positive mood affect is achieved simply by physical activity without the need for aerobic fitness. They conducted a program that included a 10-week walk-jog or discontinuous exercise at three levels of target HR. In direct conflict with Williams and Getty (1986), who found no improvement using 60 to 70% maximum HR, significant positive psychological improvement was found by Moses et al. (1989), but only for the moderate (60% of maximal HR) group. This result indicated the presence of an aerobic component to mood improvement and supported their hypothesis that vigorous physical activity was more important than improvement in aerobic fitness (which would be achieved by regular exercise at a higher rate of a person’s maximum VO_{2} capacity).

A third contrasting example is found in a 6-week study comparing moods of college-age runners, aerobic dancers, and weight lifters conducted by Dyer and Crouch (1988). Dyer and Crouch concluded that exercise may help cope with stress. Their research found in a comparison from early to midsemester, aerobic dancers and runners had a significantly more positive mood profile than nonexercisers and a somewhat more positive profile than weight lifters. In addition, runners increased in vigor and decreased in confusion, whereas weight lifters experienced the opposite effect.

In an effort to identify the components that contribute to improved mood, many researchers examined the effects of a single bout of exercise. As with long-term studies, these studies are also plagued with methodological problems, as well as some contradictory results. Yeung (1996) compiled an excellent review of the current literature on single-session studies. Of the 23 studies he reviewed and classified as “experimental design” (which required a control group composed of randomly assigned participants), 18 showed mood improvement of the experimental group as compared to the control group on at least one measure, whereas 5 reported no change in mood state. Yeung also reviewed 18 “quasi-experimental design” studies and reported results showing improvement on at least one measure of mood state in 17 of the studies. These two blocks of studies used aerobicics, swimming, fencing, running, weight training, sports,
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Karate, walking, racquetball, tennis, cycling, or mixed exercises for the experimental activity. These activities were compared against quiet rest, lecture, yoga, clerical work, sugar snack, massage, eating lunch, relaxation, discussion group, reading, cognitive task, no exercise, or low-level cycling.

Likewise, Tooman (1982, as cited in Harris, 1987) found significant main effects for improved state anxiety and reduced anger, tension, depression, and confusion in both competitive and recreational runners from prerun to postrun testing. It is interesting to note that the competitive runners had more positive moods on all of the subscales measured both before and after the run.

In another single-bout study, Roth (1989) compared mood level changes between very active and markedly inactive college-age participants using a bicycle ergometer for testing while maintaining the participants’ aerobic level of exertion via heart rate checks and appropriate workload adjustments. In apparent contradiction to Tooman’s (1982, as cited in Harris, 1987) observations, Roth found that neither prior activity level nor sex yielded better mood states prior to the exercise test and that the active and inactive participants of both sexes experienced acute reductions in anxiety and tension following a single bout of exercise. At the same time, Roth’s quiet resting control group failed to improve, demonstrating that exercising appears to be more effective than a time-out for reducing anxiety. When considering the contradictions between these studies, it should be noted that Tooman had no inactive control group or sedentary participants and that Roth, on the other hand, compared active to inactive participants, which included no competitive-level athletes. The use of different types of participants may have contributed to the difference in conclusions that were drawn.

Addressing the effects of one 45-min session of vigorous HR-monitored aerobic exercise on mood disturbance of volunteers, Barabasz (1991) found significant improvement in total mood disturbance of the aerobic group, as compared to the control group which quietly viewed a 45-min aerobics videotape. Similar results were obtained by McGowan et al. (1991) who tested college-age participants in a 75-min activity class which included aerobic-level measures. Running and weight lifting participants reported a significant reduction in mood disturbance, whereas the karate and lecture class participants did not.

Both Choi, Van Horn, Picker, and Roberts (1993) and Maroulakis and Zervas (1993) examined the effects of one session of an aerobic class on adult women from college age to 55 years using self-measured pulse to maintain 60 to 80% maximal HR. Maroulakis and Zervas noted mood improvement regardless of morning or afternoon sessions and additionally found some of the improved state to persist 24 hr after the exercise was performed. Choi et al. (1993) found increased positive mood, decreased negative mood, and decreased fatigue in both high- and low-exercise-frequency volunteers.

In a study using both competitive amateur male athletes and inactive men riding a cycle ergometer, Steptoe, Kearsley, and Walters (1993) found no differences between two groups, one of which was controlled to exercise at 50% of VO_2max and the other at 70% of VO_2max. Both groups showed increases in mental vigor and exhilaration responses when tested 2 min after exercising. In addition, some of the increase in exhilaration was still evident in a posttest conducted 30 min after exercise.

It is apparent from the available research that both running and other forms of aerobic exercise have similar effects on self-reported improvement of mood state. Studies on the long-term effects are not consistent in reporting improved mood state; in contrast, research studying the effects of a single bout of exercise has suggested that a positive mood improvement can result (Yeung, 1996). It appears, however, that little research has been conducted that attempts to determine the length of time, in one session of physical activity, that is required to show a positive improvement. It is also interesting to note that in two unpublished studies (Stephens, 1988; Morris & Salmon, 1988; both as cited in Choi et al., 1993) it was found that the positive association between physical activity and mood state is stronger in women than in men. This comparison was not addressed in other research cited.

The purpose of this study is to examine the effects of a single bout of running of different lengths of time on anger, fatigue, tension, confusion, and depression in competitive-level athletes. It is hypothesized that as the length of running time increases, the degree of mood improvement will increase for both men and women.

Method

Participants

Twenty men and 21 women aged 18 to 23 from a university track team (who generally run from 19 to 37 km per week) volunteered to participate. One male participant suffered minor injuries during his run and was excluded from test results. All participating track members raced long-distance events. Some of the volunteers were also enrolled in undergraduate psychology courses and received course credit for participating in the experiment. Participants were treated
in accordance with the “Ethical Principles of Psychologists and Code of Conduct” (American Psychological Association, 1992).

**Materials**

Mood state was measured with self-reporting Mood Thermometers (Tuckman, 1988) to quantify tension, confusion, anger, fatigue, and depression. The instrument involves a combination of Thurstone scaling and magnitude estimation and was originally designed as a simple, more direct measure of mood to be used with adolescents. To disguise the intent of the measurement, additional scales were devised and added for confidence, physical state, hunger, and thirst.

**Procedure**

Testing was conducted on 2 separate days, one for the women’s team and one for the men’s team. Within each team, participants were randomly assigned to one of four groups consisting of the following levels: Group 1 sat for 45 min; Group 2 sat for 30 min and then ran for 15 min; Group 3 sat for 15 min and ran for 30 min; and Group 4 ran for 45 min. During the sitting session, participants were allowed to study, read, or converse. The runners were advised to run at their normal team practice pace. All but one of the participants ran with members of the group to which they were assigned.

The mood thermometer questionnaire was administered immediately before and right after the 45-min sit/run sessions and took approximately 5 min to complete. Participants also were asked to provide their target HR at a level of 75% VO$_{2\text{max}}$. In addition, they were asked to take their pulse and provide a HR immediately at the end of the 45-min session. Participants were instructed to complete the questionnaire indicating their honest feelings at that moment. They were advised in general terms that the test was meant to assess their feelings before and after the session. After completion of the postrun testing, participants were advised as to which mood states were being measured for potential changes affected by the sit/run session. To preserve the anonymity of the participants, the completed pre- and postsession questionnaires were paired by reported birth dates. The amount of increase or decrease for each mood category and for confidence was then calculated for each participant by subtracting the postsession score from the participant’s presession score.

**Results**

Target heart rates at 75% VO$_{2\text{max}}$ for all participants ranged from 156 to 170 beats per min. End-of-session, mean heart rates for each group are delineated in Table 1. Only a small number of the participants reached their 75% target heart range by completion of the run. Most of the 30- and 45-min runners finished in target ranges of 60 to 70%, whereas the 15-min runners finished under 50%. An analysis of variance (ANOVA) on heart rates indicated significant increases for time of run, $F = 49.27, p < .001$. Means for Groups 1 through 4 were 55.80, 117.65, 143.40, and 143.25, respectively. The results of Newman-Keuls post hoc tests confirmed significant ($p < .05$) HR increase between Groups 1 and 2, Groups 1 and 3, Groups 1 and 4, Groups 2 and 3, and Groups 2 and 4. There was no significant difference in HR between Groups 3 and 4. In addition, no significant effects were found for sex, and no significant interaction was found.

A between-subjects factorial ANOVA was used to analyze the scale difference in pre- to posttesting for each mood category using a $2 \times 4$ (Sex $\times$ Length of Running Time) design. With regard to depression, a significant difference was found showing decreased depression in the running groups, $F(3, 32) = 4.10, p < .014$; means for Groups 1 through 4 were $-1.50, -16.13, -21.25, \text{and} -18.29$ (the negative sign indicates a reduction of symptoms), respectively. Newman-Keuls post hoc analyses confirmed the significant ($p < .05$) decrease between Groups 1 and 2, Groups 1 and 3, and Groups 1 and 4. However, as noted below, this main effect was primarily due to improvements for the women’s groups.

A significant interaction for depression was found between sex and group as shown in Figure 1, $F(3, 32) = 3.24, p = .014$; improvement level for women was greater than for men. When comparing groups within sex, the Newman-Keuls analyses found no significant difference in depression for men between groups; a significant ($p < .05$) difference was found for women comparing Groups 1 and 2, Groups 1 and 3, and Groups 1 and 4.

With regard to tension, a significant interaction between sex and group was found, $F(3, 32) = 3.86,$

<table>
<thead>
<tr>
<th>Gender</th>
<th>Target HR*</th>
<th>Length of running time (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>75% of VO$_{2\text{max}}$</td>
<td>0</td>
</tr>
<tr>
<td>Male</td>
<td>163</td>
<td>54</td>
</tr>
<tr>
<td>Female</td>
<td>164</td>
<td>58</td>
</tr>
</tbody>
</table>

*Estimated using age 20 and the mean resting heart rate for Group 1.
Effects of Running on Mood State

Hansen, Moses, and Gardner

FIGURE 1
Decrease in depression on a mood scale for each length of running time.

Note: The vertical lines indicate ±1 SE.

Effects of running on mood state for each length of running time within each sex revealed a significant increase in confusion for men between Groups 3 and 4 and significant decrease in confusion for women between Groups 1 and 4, 2 and 4, and 3 and 4. These results indicated that for women, running 45 min resulted in a larger reduction in confusion than sitting or running 15 or 30 min. However, running 30 min did not reflect an improvement over running 15 min.

A Pearson product-moment correlation was performed comparing HR increases to reduction in depressive symptoms as length of running time increased. The results, \( r(37) = -.44, p < .01, \) confirmed that as aerobic level increased, the reduction in symptoms was more pronounced.

No significant differences were found on any level for anger or fatigue. In addition, no significance was found on any level for confidence, a measure not designed to assess mood improvement. The confidence measure was used to evaluate potential participant expectation of improved mood state due to running.

Discussion

As expected, depression, at least for women, showed a significant improvement for the running groups, but results did not reflect the anticipated increase in mood improvement that would correlate with an increase in length of running time. These
results indicated that women experience an improvement in depressive state after only 15 min of running and prior to reaching aerobic levels. However, the significant correlation between increased HR and greater reduction of depressive symptoms support the hypothesis that as aerobic levels increase, the benefits of reduced depressive symptoms become more pronounced.

For the remaining measures—tension, confusion, anger, and fatigue—significant improvement in mood state as running time increased was not apparent when scores for men and women were combined. However, although not statistically significant, women showed decreased tension in the 30- and 45-min categories; whereas men decreased in the 15-min category, but then showed more tension over 30 and 45 min as compared to no running (see Figure 2). Women also showed significantly less confusion, whereas men moved toward more confusion. The differences between men and women in these areas was not expected, although this phenomenon has been noted in the unpublished studies mentioned previously (Stephan, 1988; Morris & Salmon, 1988; both as cited in Choi et al., 1993). In those studies women showed a stronger correlation between physical activity and mood improvement than men did.

It should also be noted that although both teams ran during the same week in April, the men ran on Tuesday and the women ran on Thursday. Temperatures and cloud cover on both days were similar, but the women also experienced the addition of light rain and some wind. One would normally expect the addition of rain and wind to adversely affect mood state for both men and women. In this case, then, if based solely on the weather, men would be expected to perform better. Admittedly, however, testing the men and women on different days of the week could possibly have affected the results and may even have counteracted any effects caused by the weather.

A review of Figures 1, 2, and 3 reveals that men experienced improved postrun mood states for both the sitting and running groups with the exception of Group 4’s response to tension and confusion. It was informally observed that the men seemed less eager to run the longer time trials and were pleased to be assigned to the sitting group. On the other hand, the women seemed to prefer running over sitting in a control group. The men’s control group interacted socially, which may have contributed to their consistent mood improvement. The women’s control group did very little socializing and also did not reflect improvement in mood state. These informally observed sex differences in attitudes and expectations very likely had some influence on the direction and magnitude of mood change in this study. In addition, it may also hold that the men interpreted the experience of tension and confusion differently than the women and so reported these measures as more severe instead of less.

The ANOVA for confidence was used to evaluate the possibility of conformity by the participants to expected changes in mood state. No significant difference was expected or found on this measure indicating participants were selectively responding to the scales. It is still possible that some Hawthorne effects influenced participants’ answers on postrun testing. Expected positive effects of running have been accepted as common knowledge, especially by runners. Disguising the measurements being used, although helpful, is difficult to achieve. The small number within each group also makes it difficult to generalize these results to a larger population.

Further exploration of the amount of time needed to achieve positive increase in psychological mood as well as the response differences between men and women is certainly appropriate. Research regarding the possible cumulative effects of exercise from one workout to the next would also be helpful, noting that Maroulakis and Zervas (1993) found positive residuals 24 hr later, whereas Tooman (1982, as cited in Harris, 1987) found increased anxiety after 48 hr without regular exercise. Increased knowledge in both areas will supply fitness experts with the tools needed to design effective exercise programs with regard to both session duration and frequency. For those individuals seeking a means to improve periods of mild depression, results of this study support other research in the field: aerobic-level running does appear to decrease depressive symptoms, at least for women, thus improving one’s state of mind.

References


EFFECTS OF RUNNING ON MOOD STATE  
Hansen, Moses, and Gardner


Using Senior Exit Surveys and Alumni Surveys to Assess the Quality of an Undergraduate Psychology Degree Program

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Valerie Whittlesey Lawrence
Linda M. Noble
Kennesaw State University

This study evaluated the psychology undergraduate program at a large regional state university using four measures: (a) a senior exit survey administered to psychology seniors in 1994 and 1995, and (b) an alumni survey administered to psychology alumni in 1992 and 1995. Alumni responding to the surveys attended the university between 1981 and 1994. Results indicated that students and alumni are satisfied with the quality of teaching in the department and with the knowledge and skills they developed; however, respondents indicated it was difficult to obtain employment with a bachelor’s degree alone, and they desired more research and applied experiences in psychology.

Criticism of higher education and nationwide calls for educational accountability have increased in the last 10 years (Halpern, 1988; Jackson & Griggs, 1995; Norcross, Gerrity, & Hogan, 1993; Sheehan, 1993, 1994). Assessment of student outcomes is an issue that needs to be addressed at both the institutional and departmental levels, and psychology departments, whose subject matter deals with testing and measurement, should take the lead in developing such methods (Halpern, 1988; Jackson & Griggs, 1995; Norcross et al., 1993). Increasing concern with the quality of education, coupled with the demand for evidence of quality, derives from several sources: (a) all six regional accrediting agencies, (b) legislation passed in 40 states requiring public institutions to assess educational outcomes, (c) the United States Department of Education, and (d) task forces at the state, local, and national levels (Halpern, 1988; Lincoln, 1990; Sheehan, 1993, 1994). All sources either suggest or require that colleges and universities document student achievements. Students are equally concerned with the value of their education. The high cost of education today has necessitated increasing student loan amounts, so students wonder whether their degree will guarantee their ability to pay back large loan amounts (McGovern & Carr, 1989).

Approximately 66,728 psychology degrees were awarded during 1992 and 1993 (United States Department of Education, 1995, as cited in Murray, 1996). Despite these large numbers, Jackson and Griggs (1995) suggest that a minority (19–32%) of psychology departments are doing any type of assessment. In addition, although a myriad of research exists documenting assessment in general (McGovern & Carr, 1989; Pettit, 1991; Terenzini, 1989), very little has been published dealing specifically with the quality of education in an undergraduate psychology program (Sheehan, 1993).

This assessment is based on data collected from a regional state university, Kennesaw State University (KSU), that is part of the University System of Georgia. The university services students throughout a suburban area of a large city. The psychology department has 11 full-time faculty members and approximately 550 majors. The program in psychology is based on a liberal arts model of higher education. Using a combination of lectures, individual and group

Author note. Portions of this paper were presented at the 42nd Annual Meeting of the Southeastern Psychological Association, Norfolk, VA, March 1996. Correspondence should be addressed to the first author at the Department of Psychology, Kennesaw State University, 1000 Chastain Road, Kennesaw, GA 30144.
assignments, and laboratory projects, the program is designed to provide a background in both scientific and applied areas of psychology. Students must complete the following courses to graduate from the department: General Psychology, Quantitative Psychology, Research Methods, Experimental Psychology, the Senior Capstone course, and a psychology elective. The Senior Capstone course encourages students to synthesize, integrate, and apply previously learned information from psychology courses. Students must also take one course from each of four substantive groupings. The first grouping is composed of courses covering diversity in behavior: Developmental Psychology, Learning and Conditioning, and Cross-Cultural Psychology. The second grouping of courses covers individual and social perspectives on behavior: Social Psychology, Theories of Personality, and Principles of Psychological Testing. The third grouping of courses examines applied approaches in psychology: Applied Psychology, Abnormal Psychology, and Personnel Psychology. The fourth grouping examines scientific approaches in psychology: Physiological Psychology, Theories of Perception, and Cognitive Psychology.

Based on an initiative from the Chancellor’s office of the University System of Georgia, the psychology faculty developed an assessment plan in 1993 in an effort to keep the major current and of high quality. Two senior exit surveys and two alumni surveys were designed and administered by the psychology faculty. A review of the literature on surveying psychology students indicates that instruments designed in-house, with faculty input, when compared to instruments designed and normed based on national standards, can more accurately measure the quality of a specific program and can lead to program improvements (Halpern, 1988; McGovern & Carr, 1989; Sheehan, 1993, 1994; Terenzini, 1989). The contents of the senior exit and alumni surveys were designed to be specific to the KSU psychology program and were based on the learning outcomes and expected results of the psychology program (see Table 1).¹

The purpose of this study was to present results of the senior exit surveys and the alumni surveys. Based on results of earlier studies (McGovern & Carr, 1989; Sheehan, 1994), it was hypothesized that we would obtain a valid assessment of the Psychology Department at KSU. Information derived from these surveys is intended to be used to continuously improve the teaching and quality of the psychology program at KSU.

¹One alumni survey was developed and administered prior to the completion of the learning outcomes.

Method

Participants

The senior exit survey was given to all seniors graduating in the spring, 1994, and the spring, 1995, with a B.A. or B.S. in psychology. The names and addresses of psychology alumni were obtained from the Alumni Affairs Office at KSU. The alumni survey administered in 1992 was mailed to all graduates who received a B.A. or B.S. in psychology between 1981 and 1991, and the alumni survey administered in 1995 was mailed to all graduates who received a B.A. or B.S. in psychology between 1989 and 1994.

Materials

The first senior exit survey, administered in 1994, consisted of a 17-item written questionnaire and an oral group interview. Since the results of the oral and written portions of the senior exit survey administered in 1994 indicated the same findings, the second senior exit survey, administered in 1995, contained only the written questionnaire and consisted of 59 items. Using an ordinal scale of measurement ranging from 1 (very inadequate) to 5 (very adequate), seniors were asked to rate their present level of knowledge and skills in areas of psychology. Specifically, seniors provided opinions regarding level of knowledge of experimental, applied, and ethical areas of psychology. Seniors rated level of skill in areas such as written and oral communication, and critical thinking. Responding to a combination of open-ended and closed-ended questions, seniors gave their opinions regarding quality of teaching by the faculty, advisement, plans for the future, opportunities for involvement in research and applied experiences, the strengths and weaknesses of the psychology program, and specific courses within the program. Finally, demographic data were collected.

The first alumni survey, administered in 1992, consisted of a combination of 58 open-ended and closed-ended items. The second alumni survey, administered in 1995, was modified to better reflect the learning outcomes; it also consisted of 58 items. Using the same scale as the senior exit surveys, alumni evaluated knowledge in experimental, applied, and ethical areas of psychology; alumni rated the usefulness of this knowledge as it applied to their present job and/or graduate studies. Alumni also evaluated the quality of teaching and advisement, opportunities for research and applied experiences, the strengths and weaknesses of the program, and specific courses within the program. Again, demographic data were collected. In cases in which the same questions were asked of seniors and alumni, the questions were worded identically for the surveys.
TABLE I
Learning Outcomes and Expected Results of the Psychology Program at KSU

<table>
<thead>
<tr>
<th>Learning outcomes</th>
<th>Expected results</th>
</tr>
</thead>
<tbody>
<tr>
<td>The psychology major should develop:</td>
<td>The psychology major will:</td>
</tr>
<tr>
<td>1. An understanding of the scientific method as it is used to study behavior.</td>
<td>Demonstrate an ability to apply scientific methods in the evaluation of existing research or in the design of original research.</td>
</tr>
<tr>
<td>2. An understanding of nonempirical approaches (e.g., phenomenological, experiential) used to study behavior.</td>
<td>Demonstrate an ability to apply nonempirical methods in understanding behavior.</td>
</tr>
<tr>
<td>3. Competence in scientific writing.</td>
<td>Demonstrate the appropriate use of APA style in written assignments.</td>
</tr>
<tr>
<td>4. Competence in skills needed to make oral presentations of theoretical and empirical work.</td>
<td>Make oral presentations in a manner appropriate to that expected at professional meetings.</td>
</tr>
<tr>
<td>5. An understanding of statistical concepts and reasoning used in psychological research.</td>
<td>Demonstrate an appropriate use and interpretation of descriptive and inferential statistics.</td>
</tr>
<tr>
<td>6. An understanding of the variability in human and/or animal behavior.</td>
<td>Demonstrate an ability to identify and comprehend pertinent issues related to variability in behavior.</td>
</tr>
<tr>
<td>7. An understanding of individual and social perspectives on human behavior.</td>
<td>Demonstrate an ability to identify and comprehend pertinent issues related to individual differences and social factors in analyzing and interpreting human behavior.</td>
</tr>
<tr>
<td>8. A knowledge of the scientific areas of study in psychology.</td>
<td>Identify, describe, and comprehend the major issues and theoretical approaches related to scientific areas of study.</td>
</tr>
<tr>
<td>9. A knowledge of the applied areas of study in psychology.</td>
<td>Identify, describe, and comprehend the major issues and theoretical approaches related to applied areas of study.</td>
</tr>
<tr>
<td>10. An understanding of the major ethical issues related to research and application in psychology.</td>
<td>Identify, comprehend, and discuss the major elements of the “Ethical Principles of Psychologists and Code of Conduct” as published by the American Psychological Association (1992).</td>
</tr>
</tbody>
</table>

Procedure
The senior exit surveys were given to students by members of the psychology faculty during regularly scheduled class periods in the upper level psychology courses. Students were encouraged to return the completed surveys. The senior exit survey administered in 1994 (n = 44) yielded an 18% return rate, and the senior exit survey administered in 1995 (n = 44) yielded a 57% return rate. Extra-credit class points were obtained by the seniors who responded to the survey administered in 1995, so the 1995 survey had a higher response rate. The margin of error for the 1994 and 1995 senior exit surveys was 35% and 20%, respectively.
The alumni survey administered in 1992 was mailed to all graduates \( n = 380 \) and yielded a 29% return rate. The alumni survey administered in 1995 was mailed to all graduates \( n = 405 \) and yielded a 15% return rate. A small number of the 1992 and 1995 surveys were undeliverable and were returned (1% and .5%, respectively). No follow-up mailings were done. The margin of error for the 1992 and 1995 alumni surveys was 10% and 13%, respectively.

**Results**

First, a summary of demographic data from the two senior exit surveys and two alumni surveys is presented. Second, students’ and alumni’s perceptions of the quality of the psychology program are presented. Mean scores were tabulated for all items on the surveys. Recall that a score of 1 indicated very inadequate and a score of 5 indicated very adequate. Means above 3.00 were interpreted as favorable, and means below 3.00 were interpreted as unfavorable. Similarities and differences among all four surveys are presented when possible. It should be noted that the authors are aware that given the large margins of error for some of the data, conclusions from the data are tentative.

**Demographic Data**

**Seniors.** The majority of respondents to the senior exit surveys administered in 1994 and 1995 were nontraditional students \( \text{age} > 27; 75\% \text{ and } 52\% \), respectively; the nontraditional graduates in 1995 for the KSU Psychology Department and for the total KSU population were 45% and 48%, respectively. The majority of respondents were women \( (75\% \text{ and } 88\%) \), respectively.

**Alumni.** The majority of respondents to the alumni survey administered in 1992 were traditional-age students \( 61\% \) when they were attending KSU, and the majority of respondents surveyed in 1995 were nontraditional-age students \( 67\% \) when they were attending KSU. Most respondents were women \( (75\% \text{ and } 84\%) \), respectively. Fifty-three percent of alumni responding to the 1992 survey graduated between the years 1989 and 1991, and over 60% of alumni responding to the 1995 survey graduated between the years 1992 and 1994. Thus, there is some overlap for graduates during the years 1989–91. Fifty percent of alumni responding to the 1992 survey applied to graduate school, and 14% earned a graduate degree. Thirty-three percent of alumni responding to the 1995 survey applied to graduate school, and 18% earned a graduate degree. A majority of respondents to both alumni surveys are employed in business or educational settings \( (63\% \text{ and } 51\%) \), respectively.

### TABLE 2

<table>
<thead>
<tr>
<th></th>
<th>1994 Seniors</th>
<th>1995 Seniors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Means and Standard Deviations for Psychology Seniors’ Perceived Level of Skill and Knowledge in Four Areas</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Critical thinking</td>
<td>4.62</td>
<td>4.60</td>
</tr>
<tr>
<td>Written communications</td>
<td>3.88</td>
<td>4.48</td>
</tr>
<tr>
<td>Oral communications</td>
<td>3.62</td>
<td>4.04</td>
</tr>
<tr>
<td>Cultural/individual diversity</td>
<td>3.62</td>
<td>4.00</td>
</tr>
</tbody>
</table>

Note. Scores were on a 5-point scale \( 1 = \text{very inadequate}, 2 = \text{inadequate}, 3 = \text{adequate}, 4 = \text{somewhat adequate}, 5 = \text{very adequate} \).

**Assessment Data**

As displayed in Table 2, the survey data revealed the seniors responding to the 1994 and 1995 surveys rated present level of knowledge and awareness of cultural and individual diversity favorably. Favorable ratings were also given by most seniors responding to the 1994 and 1995 surveys when asked to rate level of critical thinking, and written and oral communication skills.

Seniors responding in 1994 and 1995 and alumni responding in 1995 evaluated their level of knowledge as a result of their education in experimental, applied, and ethical areas of psychology positively (see Table 3); alumni responding in 1992 were not asked these questions on the survey. Post hoc analyses revealed that seniors responding in 1994 rated their knowledge of experimental areas higher than their knowledge of applied areas, Newman-Keuls, \( p < .05 \). Also, alumni responding in 1995 rated knowledge of experimental areas higher than seniors responding in 1995, and seniors responding in 1995 rated knowledge of applied areas higher than alumni responding in 1995, Newman-Keuls, \( p < .05 \). Alumni responding to the 1995 survey indicated that their knowledge of experimental, applied, and ethical areas in psychology was useful in their present job and even more useful in their graduate school program.

Seniors and alumni responding to the surveys were very positive when evaluating the quality of teaching \( 1994 \text{ seniors}, M = 4.65, SD = 0.53; 1995 \text{ seniors}, M = 4.56, SD = 0.65; 1992 \text{ alumni}, M = 4.53, SD = 0.65; 1995 \text{ alumni}, M = 4.72, SD = 0.45 \). In addi-
TABLE 3

Means and Standard Deviations for Psychology Seniors’ and Alumni’s Perceived Level of Knowledge in Three Areas of Psychology

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994 Seniors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Applied areas</td>
<td>3.38</td>
<td>1.85</td>
</tr>
<tr>
<td>Ethical areas</td>
<td>4.00</td>
<td>0.00</td>
</tr>
<tr>
<td>1995 Seniors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Applied areas</td>
<td>4.12</td>
<td>0.78</td>
</tr>
<tr>
<td>Ethical areas</td>
<td>4.25</td>
<td>0.68</td>
</tr>
<tr>
<td>1995 Alumni</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Applied areas</td>
<td>3.67</td>
<td>0.99</td>
</tr>
<tr>
<td>Ethical areas</td>
<td>4.11</td>
<td>1.03</td>
</tr>
<tr>
<td>1995 Alumni</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Usefulness in present job</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Applied areas</td>
<td>3.11</td>
<td>1.25</td>
</tr>
<tr>
<td>Ethical areas</td>
<td>3.28</td>
<td>1.29</td>
</tr>
<tr>
<td>1995 Alumni</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Usefulness in graduate program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Applied areas</td>
<td>4.01</td>
<td>0.81</td>
</tr>
<tr>
<td>Ethical areas</td>
<td>3.68</td>
<td>1.25</td>
</tr>
</tbody>
</table>

Note. Scores were on a 5-point scale (1 = very inadequate, 2 = inadequate, 3 = adequate, 4 = somewhat adequate, 5 = very adequate).

Discussion

The surveys suggest that seniors and alumni are satisfied with the quality of teaching in the KSU Psychology Department and with their choice of psychology as a major. Consistent with the demographic trend in higher education (Dollar, 1991), a majority of the respondents are nontraditional-age women; however, more nontraditional students than traditional students responded to the senior exit surveys indicating the results may be somewhat more reflective of nontraditional psychology graduates than of all KSU psychology graduates.

KSU psychology majors are employed in a variety of jobs and enrolled in a range of graduate and professional programs for which they feel well prepared. The positive overall ratings provided for perceived level of knowledge of cultural and individual diversity, and experimental, applied, and ethical areas of psychology indicate the majors’ perceived knowledge base in psychology is good. Similar to Keyes and Hogberg’s (1990) findings, alumni rated a variety of specific courses in the psychology curriculum, including the Research Sequence, as useful in their jobs. Favorable ratings were provided by most seniors in response to their critical thinking skills and written and oral communication skills and how much they learned from specific courses; this finding provides evidence that responding in 1995 were asked to rate how much they learned from specific courses in the psychology program, seniors gave all psychology courses in the curriculum favorable ratings. Similarly, alumni responding in 1995 evaluated the Research Sequence as useful in their job and/or graduate school. Overall, alumni gave favorable ratings to 15 of the 18 psychology courses in the curriculum.

When asked open-ended questions (e.g., “what do you see as the strengths and weaknesses of the psychology program?”), students responding in 1994 and 1995 and alumni responding in 1992 and 1995 were in agreement (two coders had to agree on the categorization of each student’s response for the response to be included in the coding). Strengths mentioned most often by both seniors and alumni were: the quality of the faculty (59%), the Research Sequence (57%), and the strong preparation for graduate school (22%). Weaknesses mentioned most often by seniors and alumni were: limited opportunity to participate in directed research study experiences and applied experiences (55%), limited career options with an undergraduate psychology degree (50%), lack of a variety of classes (31%), and little advisement regarding career options (21%).
TABLE 4

Means and Standard Deviations for Psychology Seniors’ and Alumni’s Perceived Amount of Learning in Individual Psychology Courses

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995 Seniors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abnormal Psychology</td>
<td>4.66</td>
<td>0.64</td>
</tr>
<tr>
<td>Applied Psychology</td>
<td>3.83</td>
<td>0.94</td>
</tr>
<tr>
<td>Cognitive Psychology</td>
<td>4.20</td>
<td>0.84</td>
</tr>
<tr>
<td>Cross-Cultural Psychology</td>
<td>4.20</td>
<td>0.84</td>
</tr>
<tr>
<td>Developmental Psychology</td>
<td>4.50</td>
<td>0.72</td>
</tr>
<tr>
<td>Experimental Psychology</td>
<td>4.48</td>
<td>0.79</td>
</tr>
<tr>
<td>General Psychology</td>
<td>4.30</td>
<td>0.82</td>
</tr>
<tr>
<td>History and Systems</td>
<td>4.38</td>
<td>0.65</td>
</tr>
<tr>
<td>Learning and Conditioning</td>
<td>4.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Personnel Psychology</td>
<td>4.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Physiological Psychology</td>
<td>4.25</td>
<td>0.89</td>
</tr>
<tr>
<td>Psychological Testing</td>
<td>3.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Psychology of Adjustment</td>
<td>4.83</td>
<td>0.41</td>
</tr>
<tr>
<td>Quantitative Psychology</td>
<td>3.52</td>
<td>1.28</td>
</tr>
<tr>
<td>Research Methods</td>
<td>4.36</td>
<td>0.76</td>
</tr>
<tr>
<td>Social Psychology</td>
<td>4.00</td>
<td>0.84</td>
</tr>
<tr>
<td>Theories of Perception</td>
<td>4.08</td>
<td>0.52</td>
</tr>
<tr>
<td>Theories of Personality</td>
<td>4.52</td>
<td>0.51</td>
</tr>
<tr>
<td>1995 Alumni</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abnormal Psychology</td>
<td>3.41</td>
<td>1.37</td>
</tr>
<tr>
<td>Applied Psychology</td>
<td>3.13</td>
<td>1.25</td>
</tr>
<tr>
<td>Cognitive Psychology</td>
<td>2.67</td>
<td>1.51</td>
</tr>
<tr>
<td>Cross-Cultural Psychology</td>
<td>2.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Developmental Psychology</td>
<td>3.48</td>
<td>1.25</td>
</tr>
<tr>
<td>Experimental Psychology</td>
<td>3.32</td>
<td>1.45</td>
</tr>
<tr>
<td>General Psychology</td>
<td>3.00</td>
<td>0.94</td>
</tr>
<tr>
<td>History and Systems</td>
<td>3.00</td>
<td>1.50</td>
</tr>
<tr>
<td>Learning and Conditioning</td>
<td>3.61</td>
<td>1.24</td>
</tr>
<tr>
<td>Personnel Psychology</td>
<td>3.33</td>
<td>1.43</td>
</tr>
<tr>
<td>Physiological Psychology</td>
<td>3.54</td>
<td>1.35</td>
</tr>
<tr>
<td>Psychological Testing</td>
<td>3.75</td>
<td>1.89</td>
</tr>
<tr>
<td>Psychology of Adjustment</td>
<td>3.82</td>
<td>1.07</td>
</tr>
<tr>
<td>Quantitative Psychology</td>
<td>3.10</td>
<td>1.52</td>
</tr>
<tr>
<td>Research Methods</td>
<td>3.38</td>
<td>1.44</td>
</tr>
<tr>
<td>Social Psychology</td>
<td>3.22</td>
<td>1.12</td>
</tr>
<tr>
<td>Theories of Perception</td>
<td>2.71</td>
<td>1.15</td>
</tr>
<tr>
<td>Theories of Personality</td>
<td>3.62</td>
<td>0.83</td>
</tr>
</tbody>
</table>

Note. Scores were on a 5-point scale (1 = very inadequate, 2 = inadequate, 3 = adequate, 4 = somewhat adequate, 5 = very adequate).

students perceive the quality of the program as good. Based on results of other studies (Allen & Scrams, 1991; Finney, Snell, & Sebby, 1989; Hogan, 1991; Korn & Lewandowski, 1981; Quereshi, 1988) and data from this study, KSU psychology faculty may need to focus more attention on advisement regarding career options with an undergraduate degree. There was improvement in perceived faculty availability by seniors responding to the 1995 survey compared to seniors responding in 1994 indicating the KSU psychology faculty improved in this area. However, alumni responding in 1995 rated faculty availability as good even though 1994 seniors rated faculty availability lower; 1994 seniors were among the group of 1995 alumni. This change in rating cannot be explained. Perhaps future surveys should not use a scale of measurement ranging from 1 (very inadequate) to 5 (very adequate), rather a more balanced scale (e.g., 1, not satisfied, to 5, very satisfied) should be used.

McGovern and Carr (1989) found that 41–70% of psychology undergraduates begin employment upon graduation; the present results indicate a similar pattern. Advisement on career options with an undergraduate psychology degree was mentioned by some respondents as an area that needs to be strengthened in the program. As suggested by Korn and Lewandowski (1981), KSU psychology faculty may need to highlight nonclinical occupational opportunities to enable students to make informed decisions regarding career options with an undergraduate psychology degree. In addition, Hogan (1991) suggests that psychology faculty emphasize skills or competencies acquired as a psychology major that are generalizable to the workplace. These attributes include interpersonal, behavior observation, writing, public speaking, and problem-solving skills. The Psychology Department at KSU is initiating an effort to provide students with more information on career options and opportunities. Future plans include offering as part of the psychology curriculum a Career Issues in Psychology course and a Computer Applications in Psychology course.

Also, based on this assessment, KSU psychology faculty need to focus on providing more research and applied experiences. Hogan (1991) indicates that applied experiences bridge the gap between the school environment and the work setting. Future plans for the KSU Psychology Department involve encouraging every psychology student to complete a research and/or applied internship as part of the undergraduate degree. Also, the department is adding laboratory components to many courses in the curriculum for more applied learning.

Terenzini (1989) indicates the most successful assessment programs begin small and expand in stages. The KSU Psychology Department has taken this developmental approach to assessment, and the two senior exit surveys and two alumni surveys re-
ported represent the department’s initial step toward a comprehensive evaluation of the major. Future assessment plans include incorporating into the assessment program (a) students’ scores from a test of methods of psychological research (students will critique faculty-selected psychological articles and readings), (b) an analysis of students’ research proposals from the Research Methods course, and (c) an analysis of the major assignments from the Senior Capstone course. The Senior Capstone course was offered for the first time in the department during the fall of 1995. In a manner similar to other studies of assessment of student outcomes (Halpern, 1988; Sheehan, 1993, 1994; Terenzini, 1989), the KSU Psychology Department’s next evaluation will include data gathered from multiple measures (i.e., senior exit surveys, alumni surveys, students’ scores from a test of methods of psychological research, an analysis of students’ research proposals, and an analysis of students’ assignments from the Senior Capstone course); these additional evaluative methods should increase the validity of the assessment results and provide a more comprehensive indication of the quality of education being provided.

References
The Effect of Advertising Cues on Consumers’ Recall Rate of Celebrity Endorsements

To determine if recall of celebrity advertisements is dependent on the type (celebrity or brand name) or number (one or two) of advertising cues, participants were randomly assigned to 1 of 4 conditions. The celebrity condition considered recall of brand names when given the celebrity cue(s), and the brand-name condition examined recall of celebrity endorsers when given the brand-name cue(s). No difference was found in recall based on type or number of cues given. However, male celebrities were recalled significantly ($p = .001$) more than female celebrities. Also, male participants recalled male celebrities better, and female participants recalled female celebrities better ($p < .001$). Results are discussed in terms of congruence between the celebrity and the product being endorsed.

In an attempt to make their product stand out in the blurred flash of information bits between television program cliff-hangers, advertisers use catchy slogans, cute kids, humorous situations, and celebrities. Celebrity endorsements are popular because advertisers can capitalize on an actor’s unusual movie and television character traits, an athlete’s strength or grace, a singer’s signature style, or a comedian’s creative outlook on life. The assumption is that consumers will relate celebrities with the brand name(s) they endorse. Is the celebrity endorsement really effective? Previous research suggests consumers have a higher recall rate for celebrities who are similar to the brand name they endorse (Kamins & Gupta, 1994; Misra & Beatty, 1990). Also, consumers can remember that particular celebrities endorse a product and that certain brand names have celebrity endorsers, but consumers cannot relate the celebrity and brand name(s) correctly (Tripp, Jensen, & Carlson, 1994). However, several questions remain unanswered by previous research. How do consumers relate a celebrity to the brand name(s) they endorse? Is the brand-name recall dependent on the celebrity or is the celebrity recall dependent on the brand name? The present study attempts to answer these questions by isolating the direction of the relationship between type of cue and recall in advertising.

The general purpose of advertising is to persuade people to purchase a product or service. Kahle and Homer (1985) designed a study to test the effects of product involvement, physical attractiveness, and likability of the celebrity on recall and recognition of the brands, purchase intentions, and attitudes toward the product’s impression. Involvement reflected whether an item or event had an important, a slight, or no impact on an individual. Involvement was manipulated by promising a high- (disposable razor) or low- (toothpaste) involvement gift to the participants. The disposable razor constituted a high-involvement item for participants because the manipulated advertisement was a razor advertisement. Also, involvement was increased when participants were told the test product would be released in their area versus in another part of the country. Kahle and Homer found that in conditions with both high involvement and a physically attractive celebrity the recall was higher than in conditions with only low involvement and an unattractive celebrity. Interestingly, there was a parti-

Author note. I thank Dr. Kris Biondolillo for her helpful comments and suggestions during the development of this manuscript.

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participant sex interaction for likability. Women recalled more when both high involvement and likable celebrities were present; whereas, men in the high-involvement condition recalled more with an unlikely celebrity. It is arguable the Kahle and Homer study was confounded because the attractive celebrity was matched with an attractiveness-related product (disposable razor). Kamins (1990) addressed this confound and concluded a physically attractive celebrity has an advantage over a physically unattractive celebrity only when the product endorsed has a high level of attractiveness.

Moreover, Friedman, Termeni, and Washington (1977) demonstrated that any type of spokesperson is better than no spokesperson at all, and celebrities generally are better than noncelebrities for increased public knowledge of a product (Freiden, 1984; Friedman & Friedman, 1979). Also, celebrities were rated more trustworthy, attractive, and competent than noncelebrities and showed a greater impact on younger (13- to 17-year-old) consumers compared to older (18- to 77-year-old) consumers (Kahle & Homer, 1985).

Even when noncelebrity conditions are separated into expert, company president, and typical consumer, celebrity endorsers are still more effective on increasing public knowledge and endorsement recall (Freiden, 1984; Friedman & Friedman, 1979). Freiden found different attributes applied to different types of endorsers. For example, celebrities were rated highest on likability, but experts were rated highest on knowledge. Friedman and Friedman (1979) also tested spokesperson type (celebrity, expert, typical consumer, and control) against product types. Overall, the participants’ believability rating of the advertisements depended on the specific pairing of spokesperson and product. These findings lend support to the idea of congruence between spokespersons and the products they endorse.

Congruence involves a match between the spokesperson’s occupation, appearance, or personality trait and the product’s image or use. Kamins and Gupta’s (1994) results showed a celebrity plus a congruent product equals a significant increase in believability and attractiveness above a noncelebrity. Misra and Beatty (1990) matched false products with characteristics that were similar, dissimilar, or indifferent to the celebrity’s image. They found recall rates were higher when the celebrity and brand name were similar or congruent. The results were the same for immediate and delayed (1 week) recall. However, according to Kamen, Azhari, and Kragh (1975), an incongruent celebrity may not ruin an advertisement campaign. They found incongruence decreased with increased pairings of the celebrity with the brand name over time.

Despite the advantages of celebrity endorsers, advertisers must be careful not to overexpose consumers to one celebrity endorsing a variety of products. Tripp et al. (1994) studied the effectiveness of celebrity multiple-product endorsements and found celebrities who endorsed fewer products (one to two) were rated higher on trustworthiness, likability, and expertise than those who endorsed more products (three to four). Also, favorable attitudes toward the advertisement (not brand) and intent to purchase decreased with increased exposures. Tripp et al. conducted a follow-up study to learn more about the association between celebrity and brand name. Using open-ended questions, the authors conducted interviews with 10 participants from the original study. Most of these individuals could remember either the celebrity or the brand name but not both.

The present study focused on an area that was not explored in the Tripp et al. (1994) study: whether the type of advertising cue (celebrity or brand name) or the number of advertising cues (one or two) would have an effect on consumers’ recall rate of celebrity endorsements. Because of the increased use of celebrity endorsers by advertisers, it was hypothesized that the celebrity advertising cue would receive a higher recall rate than the brand-name advertising cue. Also, it was hypothesized that participants given more information or cues (one or two) about the celebrity endorsement would have a higher recall rate. One cue consisted of only the celebrity name or the brand name of the product. Two cues were composed of secondary information about the celebrity cue (i.e., television show or sports team affiliation) or the brand name (i.e., product category).

Method

Participants

The participants were 199 students (119 women, 80 men) who volunteered to complete the survey during class time. The participants were a convenience sample enrolled in various lower and upper division undergraduate classes in a mid-sized southern public college during the spring semester, 1996. The sample was racially composed of 84.4% White, 12.1% Black, and 3.5% other, and it contained 25.6% freshmen, 25.6% sophomores, 22.6% juniors, 25.6% seniors, and .5% graduate students. Participants’ ages ranged from 17 to 48 (M = 23.20, SD = 6.66), and participants watched from 0 to 100 hr (M = 13.9, SD = 11.26) of television per week. The participants were randomly assigned to one of four conditions: celebrity, celebrity–occupational, brand name, or brand name–product.
TABLE 1

Celebrities, Occupational Cues, Product Categories, and Brand Names
Used on the Main Study Questionnaires

<table>
<thead>
<tr>
<th>Celebrity</th>
<th>Occupation</th>
<th>Product category</th>
<th>Brand name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Candice Bergen</td>
<td><em>Murphy Brown</em></td>
<td>phone service</td>
<td>Sprint</td>
</tr>
<tr>
<td>Bill Cosby</td>
<td><em>The Cosby Show</em></td>
<td>pudding</td>
<td>Jello</td>
</tr>
<tr>
<td>Kathie Lee Gifford</td>
<td><em>Live! with Regis and Kathie Lee</em></td>
<td>cruise line</td>
<td>Carnival</td>
</tr>
<tr>
<td>Melanie Griffith</td>
<td><em>Milk Money</em></td>
<td>makeup</td>
<td>Revlon</td>
</tr>
<tr>
<td>Whoopi Goldberg</td>
<td><em>Sister Act</em></td>
<td>phone service</td>
<td>MCI</td>
</tr>
<tr>
<td>Charles Barkley</td>
<td><em>Phoenix Suns</em></td>
<td>deodorant</td>
<td>Right Guard</td>
</tr>
<tr>
<td>Andy Griffith</td>
<td><em>Matlock</em></td>
<td>restaurant</td>
<td>Shoney's</td>
</tr>
<tr>
<td>Queen Latifia</td>
<td><em>Living Single</em></td>
<td>cereal</td>
<td>Cheerios</td>
</tr>
<tr>
<td>Jerry Van Dyke</td>
<td><em>Coach</em></td>
<td>fast-food restaurant</td>
<td>Hardee's</td>
</tr>
<tr>
<td>Claudia Schiffer</td>
<td>model</td>
<td>video rental</td>
<td>Blockbuster</td>
</tr>
<tr>
<td>Regis Philbin</td>
<td><em>Live! with Regis and Kathie Lee</em></td>
<td>pain medication</td>
<td>Aspercreme</td>
</tr>
<tr>
<td>Jamie Lee Curtis</td>
<td><em>True Lies</em></td>
<td>artificial sweetener</td>
<td>Equal</td>
</tr>
<tr>
<td>Ahmad Rashad</td>
<td><em>NBC sports announcer</em></td>
<td>popcorn</td>
<td>Pop Secret</td>
</tr>
<tr>
<td>Fabio</td>
<td>model</td>
<td>butter substitute</td>
<td>I Can’t Believe It’s Not Butter</td>
</tr>
<tr>
<td>Shaquille O’Neal</td>
<td><em>Orlando Magic</em></td>
<td>fast-food restaurant</td>
<td>Taco Bell</td>
</tr>
<tr>
<td>Kathy Ireland</td>
<td>model</td>
<td>potato chips</td>
<td>Lays</td>
</tr>
<tr>
<td>Steve Young</td>
<td><em>San Francisco 49ers</em></td>
<td>cereal</td>
<td>Wheaties</td>
</tr>
<tr>
<td>Cindy Crawford</td>
<td>model</td>
<td>makeup</td>
<td>Revlon</td>
</tr>
<tr>
<td>Gilbert Gottfried</td>
<td>comedian</td>
<td>cereal</td>
<td>Cheerios</td>
</tr>
<tr>
<td>Zsa Zsa Gabor</td>
<td>actress</td>
<td>artificial sweetener</td>
<td>NutraSweet</td>
</tr>
</tbody>
</table>

Note. For the celebrity condition, only the celebrity column was given to participants. For the celebrity–occupational condition, only the celebrity and occupational columns were given to participants. For the brand name condition, participants were given only the brand name column. For the brand name–product condition, participants were given the brand name and product category columns.

Materials

A pilot study was conducted to determine the celebrities, brand names, and occupational cues that would appear on the final survey. Prior to the pilot study, a list of celebrities, their occupations, and brand names they endorse on television was generated by the experimenter. Only current endorsement campaigns and well-known celebrities were included on the pilot survey. During the pilot study, 60 participants (33 women and 27 men) were approached at various locations on campus, asked to read informed consent statements, and randomly assigned to one of three conditions: celebrity pilot, brand name pilot, or occupational pilot. Participants were asked to indicate (yes or no) whether they recognized the names of 47 celebrities, 38 brand names, or 26 occupational characteristics of celebrities (i.e., television shows, movies, and sports teams). During analysis of the data, six responses were eliminated because of unanswered or contaminated data. Across all conditions, the 21 items that reached a 75% recognition rate were included on the final survey.

A survey was constructed for the present study to measure the effects of advertising cues on the recall rate in a celebrity and brand name condition consisting of one or two cues. Participants were given the names of 20 celebrities (e.g., Candice Bergen) for the celebrity condition or 20 celebrities and a cue that related to their occupation (e.g., Candice Bergen and *Murphy Brown*) for the celebrity–occupational condition and were asked to provide the brand name the celebrity endorsed. See Table 1 for celebrity and
Celebrity Endorsements  Hutton

occupational cues used on the questionnaires. Participants were given 20 brand names (e.g., Sprint) for the brand name condition or 20 brand names and product categories (Sprint and phone service) for the brand name–product condition and were asked to name a celebrity who endorsed the brand name. See Table 1 for brand names and product categories used on the questionnaires. Participants could receive a recall score from 0–20, with a larger number score representing a higher recall rate.

Procedures

After the informed consent document was read, the surveys were randomly assigned to participants. On the first page of the survey, in all conditions, participants were asked basic demographic information and television viewing habits. On the second page of the survey, the directions instructed participants to fill in the missing brand name or celebrity from a currently running campaign. Deion Sanders of the Dallas Cowboys endorsing the cereal Wheaties was given as an example. All participants completed the survey within 15 min. Participants were debriefed after all surveys had been collected.

Results

The two hypotheses were analyzed in a 2 × 2 (Type of Cue [celebrity or brand name] × Number of Cues [one or two]) between-subject factorial design. Because there was no main effect for type of cue, \( F(1, 198) = 1.46, p = .70 \), the hypothesis that the celebrity cues would receive a higher recall rate than the brand-name cues was not supported. Because no main effect emerged for the number of cues, \( F(1, 198) = .102, p = .749 \), there was no support for the hypothesis that two cues would receive a higher recall rate than one cue. Likewise, the interaction between the type of cue and number of cues was not significant, \( F(1, 198) = 1.285, p = .258 \). The mean recall across all conditions was 5.261 (\( SD = 2.901 \)). See Table 2 for mean recall for type and number of cues. During analysis of the data, 34 items (less than 1%) were eliminated because the responses could not be scored as correct or incorrect.

An effect due to participant sex was not anticipated but was found after data analysis. The celebrity conditions were collapsed and were analyzed using a repeated-measures analysis of variance (ANOVA) to test for recall differences due to the celebrity spokesperson’s sex. Participants recalled male celebrities (\( M = 2.86, SD = 1.87 \)) significantly more than female celebrities (\( M = 2.32, SD = 1.86 \)), \( F(1, 97) = 12.34, p = .001 \). Also, male participants recalled significantly more male celebrities (\( M = 3.63, SD = 2.11 \)); whereas, female participants recalled significantly more female celebrities (\( M = 2.58, SD = 1.90 \)), \( F(1, 97) = 21.82, p < .001 \).

Due to the nature of the celebrity questionnaires, the number of male and female celebrity advertisements participants were able to recall was fixed. The brand-name questionnaires allowed flexibility in the number of celebrity endorsements recalled because participants were required to name the celebrity who endorsed the brand name, and it was possible that male and female celebrities endorsed the same brand name (i.e., Phylicia Rashad and Ahmad Rashad endorsing Pop Secret popcorn). In all, 30 individual celebrities were recalled. The 5 most frequently recalled celebrities constituted approximately 50% of the total recall, and the top 10 recalled celebrity endorsements accounted for approximately 80% of the total recall. Due to the low percentage of recall for the other 20 celebrity endorsements, only the top 10 celebrities recalled are listed in Table 3.

Discussion

The results of the present study indicated comparable recall rates regardless of type of cue (celebrity or brand name) and number of cues (one or two); therefore, the research hypotheses were not supported. Overall, participants’ recall of celebrity advertisements was very poor. Across all conditions, only 25.8% of the celebrity endorsements were recalled correctly, and only 4% of the participants had recall rates above 50%. These results mirror Tripp et al.’s (1994) findings that advertising cues were not important because most participants could recall either the celebrity or the brand name, but they could not relate them correctly.

Overall, participants recalled more male celebrity endorsers than female celebrity endorsers.

<table>
<thead>
<tr>
<th>Type of cue</th>
<th>One</th>
<th>Two</th>
<th>Across conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Celebrity</td>
<td>5.48 (3.11)</td>
<td>4.88 (2.92)</td>
<td>5.18 (3.02)</td>
</tr>
<tr>
<td>Brand name</td>
<td>5.18 (3.04)</td>
<td>5.49 (2.58)</td>
<td>5.34 (2.79)</td>
</tr>
<tr>
<td>Across conditions</td>
<td>5.33 (3.05)</td>
<td>5.19 (2.75)</td>
<td>5.26 (2.90)</td>
</tr>
</tbody>
</table>

Note. Numbers represent mean (standard deviation).
they finished the questionnaires at different rates, and those who finished early talked amongst themselves. This interaction may have masked a difference between the conditions. Also, this study is different from most other studies on celebrity endorsements because it dealt with actual brand names and television celebrity endorsements and not laboratory mock advertisements. This feature made the study more externally valid. In other experiments, the mock advertisements were shown to participants as part of the experiment. If, as part of this study, the participants had been exposed to the advertisements and then asked to recall the celebrity or brand name, the results could have shown a significant difference between the conditions. In addition, this study utilized verbal cues, but other studies have used visual stimuli. If pictures had been utilized, a difference might have appeared.

The present study contained a selection problem; the participants were chosen because of their convenience and not by random sample. Further, the sample was composed solely of college students. These two problems reduced the generalizability of the results.

One future direction of research in this area could include verbal versus visual cues in celebrity advertising, such as an experiment designed to compare the recall of celebrity endorsements when cued with a celebrity’s name versus the celebrity’s picture. It is predicted that celebrities’ pictures would have a higher recall rate than their names. An additional area for study could include a test of celebrity animated spokespersons, animated company spokespersons, and celebrity spokespersons. It is predicted that consumers would have a higher recall rate for animated company spokespersons than for celebrity animated or celebrity endorsers. These results are expected because the animated company spokesperson would have limited associations (e.g., Toucan Sam and Fruit Loops); whereas, celebrity animated (e.g., Bugs Bunny) or celebrity endorsers (e.g., Michael Jordan) have multiple associations.

The findings of the present study question the effectiveness of celebrity endorsements. Why do companies invest millions of dollars in celebrity advertisements that yield such a low recall rate? Celebrity endorsers are favored by advertisers for many reasons. For example, consumers can identify with their favorite characters from television and film; a celebrity spokesperson stands out compared to an unknown

<table>
<thead>
<tr>
<th>Celebrity</th>
<th>Recall rate</th>
<th>Percentage</th>
<th>Cumulative percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Bill Cosby</td>
<td>184</td>
<td>17.62</td>
<td>17.62</td>
</tr>
<tr>
<td>2. Kathie Lee Gifford</td>
<td>97</td>
<td>9.29</td>
<td>26.91</td>
</tr>
<tr>
<td>3. Candice Bergen</td>
<td>93</td>
<td>8.91</td>
<td>35.82</td>
</tr>
<tr>
<td>4. Whoopi Goldberg</td>
<td>84</td>
<td>8.05</td>
<td>43.87</td>
</tr>
<tr>
<td>5. Cindy Crawford</td>
<td>83</td>
<td>7.95</td>
<td>51.82</td>
</tr>
<tr>
<td>6. Fabio</td>
<td>70</td>
<td>6.70</td>
<td>58.52</td>
</tr>
<tr>
<td>7. Shaquille O’Neal</td>
<td>70</td>
<td>6.70</td>
<td>65.22</td>
</tr>
<tr>
<td>8. Charles Barkley</td>
<td>64</td>
<td>6.13</td>
<td>71.35</td>
</tr>
<tr>
<td>9. Andy Griffith</td>
<td>50</td>
<td>4.79</td>
<td>76.14</td>
</tr>
<tr>
<td>10. Michael Jordan</td>
<td>38</td>
<td>3.64</td>
<td>79.78</td>
</tr>
<tr>
<td>20 Other Celebrities</td>
<td>211</td>
<td>20.22</td>
<td>100.00</td>
</tr>
</tbody>
</table>

\( N = 1044 \)

Freiden (1984) found that, overall, the sex of the endorser was not statistically significant, but male endorsers were rated higher than female endorsers on attitudes toward the advertisement (i.e., informative and interesting) and specific characteristics of the endorser (i.e., trustworthy and knowledgeable). The author suggested “when in doubt, use a male” (Freiden, 1984, p. 40). Freiden’s endorser sex difference analysis was limited because the product used in his study was a general product that did not contain an inherent sex preference (i.e., television set). In the present study, male participants recalled more male celebrity endorsements, and female participants recalled more female celebrity endorsements. A logical explanation for this discrepancy involves the type and/or use of the product endorsed by the celebrity. The results of the present study and Freiden’s study suggest that matching the function of the endorser and the product (i.e., matching a female endorser with products used primarily by females) makes the two components of advertising more congruent. This suggestion of congruence is related to Misra and Beatty’s (1990) finding that both immediate and delayed recall were higher with a congruent endorser and product. This explanation warrants further investigation because increasing congruence of the product and target consumer could maximize advertisement effectiveness. Congruence could take place at multiple levels since the impact of an endorser has the potential to be multifaceted (Freiden, 1984).

A reason for the low recall rate may be due to participant interaction during the experiment. Because participants were tested in a classroom setting,
spokesperson. Moreover, celebrities may improve or establish an image for a brand-name product. Whether celebrity endorsements are effective or not, advertisers use them.

**References**


Female and Male Postformal Reasoning in Relation to Feminine and Masculine Characteristics

This study examined pathways between postformal reasoning, sex role characteristics, and environmental factors. Thirty-two female and 29 male undergraduate college students participated. A demographic questionnaire assessed age, sex, marital status, family structure, family income when growing up, female and male siblings, education level, and expected salary upon graduation. The Social Paradigm Belief Inventory (Kramer, Kahlbaugh, & Goldston, 1992) assessed absolute, relativistic, and dialectical reasoning. The Bem Sex Role Inventory (Bem, 1974) assessed participants’ masculine and feminine sex role factors. Relationships existed between age and reasoning and between certain sex role characteristics and types of reasoning. A path or link connects one’s family income while growing up to endorsement of certain sex role characteristics which, in turn, leads to particular types of reasoning.

For several decades, researchers investigated how adult reasoning develops (e.g., Basseches, 1984; Kramer, 1983, 1989; Labouvie-Vief, 1982; Pascual-Leone, 1983; Perry, 1970; Riegel, 1973) and how one’s level of reasoning influences behavior (e.g., Kramer, 1983, 1989; Kramer & Melchior, 1990). Other researchers investigated the development of sex role characteristics (e.g., Bem, 1974, 1975, 1981, 1984; Block, 1973; Condry, 1984; Emmerich, 1973; Golombok & Fivush, 1994; Kagan, 1964; Katz, 1979, 1987; Maccoby & Jacklin, 1974; Ullian, 1976) and how sex role orientation influences behavior (e.g., Bem, 1974; Brems & Johnson, 1988; Megargee, 1969; Spence & Helmreich, 1980). Only a few studies investigated the relationship between reasoning and sex role. This study examined whether paths or links exist between reasoning types, sex role characteristics, and particular environmental factors.

Thoughts and perceptions of self are forever changing or being rearranged over the course of our development. Reasoning and sex role orientation may develop simultaneously and/or run parallel (to some degree) throughout the maturational process. Reasoning and sex role orientation appear to be cohesive, complementary, and compatible with one another. A person’s reasoning and identity are likely shaped and/or influenced (to some degree) by beliefs and attitudes of a particular culture. If this is the case, then a greater understanding of how reasoning and gender identity formation work together to foster the development of the unique self would be beneficial.

Development of Reasoning

Kramer, Kahlbaugh, and Goldston (1992) posit three general levels of organization, proceeding from an absolute, universalistic mode of thought through an extreme relativistic mode of thought, and culminating in a dialectical mode of thought.

During absolute thinking “there are fixed universal truths waiting to be discovered and . . . there is a universal order to things” (Basseches, 1984, p. 10). At this stage of formal operations, thinking operates according to black-and-white principles. In order to understand the world, the absolute thinker attempts to reduce it to its basic elements, either by reflecting on its ideal forms (via categorization), or by experimenting to determine antecedent causal linkages. Such a view holds that the world is stable and fixed, that when change occurs, it is due to external forces, making the concepts of change and development derived rather than intrinsic categories of explana-
tion. Contradiction is seen as incorrect or undesirable, resulting in absolute, dualistic conceptions of right versus wrong, truth versus falsehood, weak versus strong, etc. Thus, thought is highly egocentric, and people are seen as fitting into neat traits that cannot be changed.

This period of formal operations is followed by a period during which individuals expand their knowledge of the world to include new perspectives, thereby resulting in relativism. According to Kramer (1985, p. 92) "post-formal operational thought describes a shift toward the realization of the relativistic, non-absolute nature of knowledge."

Relativism involves an acceptance of mutually incompatible systems of knowledge (Labouvie-Vief, 1980; Perry, 1970; Riegel, 1973) and an awareness that conceptual abilities influence the knowledge obtained about the world (Koplowitz, 1978; Riegel, 1973). The adult’s expanding social world, which includes differing viewpoints and potentially incompatible roles (Sinnott, 1983), and the necessity of committing oneself to a chosen course from among a multitude of possibilities (Labouvie-Vief, 1980), fosters such a view.

Unlike absolute reasoning, relativistic thinking does not construe the universe as an inherently orderly machine. Any order that exists is externally imposed via one’s cognitive framework. The universe is seen as a bed of chaos, disorder, contradiction, and change. Relativistic thinking rests on the concepts of change, subjectivity, and novelty. Knowledge is seen as highly individual and subjective, resulting in irreconcilable contradictory positions. All knowledge is influenced by context, and contexts are continually changing. As one’s standpoint, or context, changes, so too does one’s knowledge (Pepper, 1942). "Knowledge continues to undergo reorganization in order to achieve an understanding that integrates continuity and discontinuity, change and stability, etc.” (Kramer, 1983, pp. 92–93). This reorganization results in dialectical thinking.

Dialectical reasoning is sometimes referred to as postformal operational reasoning or mature thought and is considered by many psychologists to be the final period of cognitive development. Riegel (1973) suggests when cognitive reasoning continues to develop beyond the stage of formal operations during late adolescence and adulthood, it involves the achievement of a dialectical stage of cognitive organization. However, controversy exists as to when, and if, individuals actually develop dialectical reasoning (Kramer, 1989). Supposedly, dialectical reasoning results when an individual is exposed to conflicting viewpoints and an awareness of contradiction emerges. In the dialectical framework all phenomena are in continual movement, and contradiction is seen as an inherent feature. Forward movement (i.e., growth) and the contradictions are interrelated—part of the same whole, rather than simply shifts in perspective—and are more apparent than real (Basseches, 1984; Kramer, 1989). All phenomena are believed to develop as a result of an ongoing tension between events, their negation, and the resolution of that negation into momentary structures that soon give way to new tensions, initiating the cycle anew (ad infinitum).

**Differences in Women’s and Men’s Perceptions and Reasoning of Self**

There are major distinctions between the way women and men develop perceptions of themselves. One’s perception and reasoning fosters self-evaluations throughout the life span. Furthermore, how one subjectively experiences her or his self-evaluation is substantially different for women and men (Labouvie-Vief, Orwoll, & Manion, 1995). For example, the man is perceived and attributed with such traits as powerful, aggressive, and achieving; thus, he can derive a positive sense of self-worth from his identification. The woman is perceived and attributed with such traits as powerless, nurturing, and nonachieving; she is degraded and devalued by those around her and by society in general.

Labouvie-Vief et al. (1995) point out that “gendering of intellectual activity continues to have implications for how the individual is able to integrate intellectuality and creativity into a sense of developing self” (p. 245). For example, studies have indicated sex differences in intellectual performance and one’s self-concept regarding performances (Beyer, 1990). Men use self-enhancing strategies (Dweck, Davidson, Nelson, & Enna, 1978) and attributional patterns that bolster self-esteem (Roberts, 1991). They are inclined to overestimate their performance and remain unaffected by negative evaluations, whereas, women are just the opposite. They underestimate their performance and react to others’ positive (and negative) feedback as if it were objective (Labouvie-Vief et al., 1995).

Family patterns play a major role in cognitive development and in shaping gender identity. Beal (1993) suggested that gender role development varies according to such family patterns as the employment status of the mother and the presence or absence of the father in the home. Beal pointed out that a girl seeing her mother employed and earning wages expands the girl’s own ideas about the future and makes her less stereotyped. Although the mother is a less salient role model for boys, Beal suggests boys'
perceptions of the father are changed when their mother works. Flanagan (1990) and Katz (1987) found that boys tend to view their mother’s employment as a failure by the father; thus, they may see him as an inadequate role model. Some men may compensate by “adopting exaggerated stereotypes by insisting that women should remain at home with their children and that their future wives will not have to work” (Beal, 1993, p. 81). “Contemporary popular literature suggests that such rigid sex-role stereotypes tend to restrict emotional and intellectual growth” (Craig & Kermis, 1995, p. 127).

**Sex Differences and Types of Reasoning**

To date, scant evidence allows an evaluation of sex differences in types of postformal reasoning. Kramer et al. (1992) found that more college men than college women were absolute reasoners. Blanchard-Fields (1986) and Kramer and Melchior (1990) also reported more relativistic and/or dialectical thinking in women. Braun and Sebby (1996) found that men who scored high in absolute reasoning and men who scored high in masculine characteristics reacted in a manner opposite to men who scored high in feminine characteristics when presented with real-life dilemmas. In contrast to these studies, other studies (Kitchner & King, 1981; Kramer & Woodruff, 1986) have failed to find a sex difference related to reasoning.

**Empirical Research on Reasoning, Sex Roles, and Behavior**

It is presumed that individuals continue to refine, reshape, and reorganize their reasoning throughout their lives as a result of increased differentiation and integration of formal structures. According to Kramer and Melchior (1990), each level of the reorganized structure is followed with the adoption and application of a new or modified set of paradigm beliefs about social reality. As Kramer and Melchior suggest, it is assumed there will be continued opportunities for developing and applying relativistic and dialectical modes of thinking to new domains during adulthood. For example, learning to negotiate in inherently conflictual and complex interpersonal relationships may be one such domain. Within this same framework, continued opportunities for expansion, reshaping, and development of one’s sex role identity (orientation) also occur in connection with these very same new adult domains. Thus, both our reasoning and sex role identities are continually being reshaped and/or redefined.

Kramer and Melchior (1990) suggest that a person’s level of reasoning may influence how he or she perceives, experiences, and manages role conflict. They theorize, for instance, that women, as adulthood approaches, experience more role conflict than men because they have more role choices. Women’s experience of greater role conflict may foster the development of more advanced thinking (e.g., relativistic and/or dialectical) earlier in a woman’s cognitive development, thus facilitating resolution of the conflict. It is supposed that men do not experience role conflict because they focus on the single role of occupation.

In an effort to examine factors that are possibly related to the nature of role understanding experienced by men, Braun and Sebby (1996) focused on men’s perception of role conflict and men’s satisfaction and happiness with resolutions to conflicts regarding occupation, societal demands, intimate relationships, and familial goals. Results indicated there was a relationship between types of reasoning and participants’ perception of conflict. For example, men having higher absolute reasoning scores perceived more conflict when presented with a dilemma requiring relocation (to his or to his romantic partner’s location with a better job offer). Participants also rated the intensity of conflict experienced in the same situation. Results indicated that men having higher absolute, mechanistic, and relativistic reasoning scores perceived more intense conflict. In contrast, no correlation was found between men having higher dialectical reasoning scores and their perception of conflict. Conflict perception varied depending on the type of reasoner and the particular situation; absolute/mechanistic reasoners expected more conflict in situations concerning job offers and relocation. The results also indicated a relationship between one’s sex role and the perception of role conflict in relation to specific situations to which participants responded. These data would lead one to believe that some kind of a relationship might exist between one’s level of reasoning and one’s sex role characteristics.

**Sex Role Orientation and Reasoning**

The question still remains: does one’s sex role orientation influence one’s level of reasoning or vice versa? Would not one’s level of reasoning also facilitate perception, organization, and, ultimately, behavior and resolution of problem-solving situations and enhance interrelationship communication?

Although previous research has assessed perceptions and appraisal of role conflict, the use of coping skills with problem solving, gender and sex roles, and how particular environmental factors influence performance on IQ tests and academic achievement, few
studies have focused on the relationships among these factors. The present research assessed the relationship between one's reasoning type and one's sex role orientation, and whether particular environmental factors were linked to reasoning and sex role identity. Specifically, the present study determined whether individuals who score high in androgyny were more likely to score high in dialectical reasoning; whether individuals who score high in feminine or masculine characteristics were more likely to score high in absolute reasoning; and whether particular environmental characteristics influence or relate to the participants' background and to the development of sex role and/or reasoning. Androgynous individuals and individuals who were dialectical reasoners were expected to share a common relationship: both were expected to be more flexible in their thinking and behavior. This flexibility should facilitate resolution of problem-solving situations and enhance interpersonal relationships. Androgynous individuals were expected to engage in both masculine and feminine behaviors that should expedite their problem-solving resolutions. Likewise, dialectical reasoners were expected to engage in more flexible thinking patterns and behaviors (probably including masculine and/or feminine perspectives) that expedite problem resolutions in problem-solving situations. In addition, particular environmental factors (e.g., family income, etc.) were expected to mediate whether an individual becomes an androgynous individual and/or a dialectical reasoner. Individuals who grow up in more affluent environments (as opposed to lower income environments) may have greater opportunities, more exposure, and more choices with regard to more diversified situations. Such exposure and experiences may influence thinking, behavior, and even perception of the self.

**Method**

**Participants**

Thirty-two female and 29 male undergraduate college students ranging in age from 18 to 43 (\( M = 21.67, SD = 5.70 \)) volunteered to participate in the study.

**Materials**

**Demographic questionnaire.** Participants answered questions concerning age, sex, marital status, family structure (e.g., was the participant reared in a single-parent environment or in a two-parent environment), level of family income when growing up, number of female and/or male siblings, year in college, expected occupation upon graduation, expected salary upon graduation, and racial or ethnic background.

**Social Paradigm Belief Inventory (SPBI).** The SPBI (Kramer et al., 1992), a forced-choice preference measure assessing absolute, relativistic, and dialectical paradigm beliefs was administered. Each of the 27 items consists of three statements representing a particular social domain. Participants rate each statement on a 6-point scale ranging from 1 (strongly disagree) to 6 (strongly agree). Greater weight is given to statements representing developmentally more advanced worldviews. Scores are summed across the 27 items for a possible total of 81 points. In addition, participants are assigned a score for the number of absolute, relativistic, and dialectical responses chosen.

The SPBI has good reliability, with internal consistencies of .60, .83, and .84, respectively, for absolute, relativistic, and dialectical statements, and test-retest correlations ranging from .77 to .82 (Kramer et al., 1992). The SPBI, which also is age sensitive, correlates with an in-depth interview of absolute, relativistic, and dialectical assumptions and shows both convergent and discriminant validity (Kramer et al., 1992).

**Bem Sex Role Inventory (BSRI).** The BSRI (Bem, 1974) consists of 60 socially desirable “feminine” (e.g., shy and warm), “masculine” (e.g., aggressive and self-reliant), and “neutral” (e.g., happy and sincere) adjectives. Participants indicate the extent to which each statement on a 7-point scale ranging from 1 (never or almost never true) to 7 (always or almost always true). The BSRI test gives separate femininity and masculinity scores that can be combined into one of four types: (a) androgynous (high on both the feminine and masculine); (b) feminine (high on the feminine items and low on the masculine ones); (c) masculine (low on the feminine items and high on the masculine ones); and (d) undifferentiated (low on both the feminine and masculine). On the basis of each individual’s responses, each individual receives three major scores: a Masculinity score, a Femininity score, and an Androgyny score.

Bem (1974) found high levels of internal consistency for the Masculinity (.86), Femininity (.80), and Social Desirability (.75) items. Test-retest reliability was .90 for Masculinity, .90 for Femininity, .93 for Androgyny, and .89 for Social Desirability.

**Procedure**

The same female experimenter administered the tests to four groups of participants on four different occasions either on a Tuesday, Wednesday, or Thursday at 1:00 p.m. Each test was conducted in the same classroom and in the same manner. On each testing day, after all participants completed an informed
consent form, the experimenter handed out packets containing the questionnaires and demographic sheet. Upon completion of these instruments, the participants were allowed to leave.

**Results**

The demographic data are summarized in Table 1. In order to study patterns of relationships among the variables, path analyses were performed. A series of multiple regression analyses were used to determine what type of linear relationships among the three sets of variables (demographic, sex roles, reasoning) existed. The data obtained from the BSRI were scored according to the procedure outlined by Pedhazur and Tetenbaum (1979). Pedhazur and Tetenbaum identified a four-factor solution for each sex when the BSRI data were analyzed. Accordingly, the same two sets of factor solutions were used. A correlation matrix that reflects relationships among the demographic variables and the BSRI and the SPBI variables is presented in Table 2.

**Path analysis**

Path analysis was developed by geneticist Sewall Wright as a method for studying the direct and indirect effects of variables taken as causes of variables taken as effects. The goal of path analysis (or structural equation analysis) is to provide plausible explanations of observed correlations by constructing models of cause-and-effect relations among variables. In cases in which the causal relations are uncertain, the method can be used to find the logical consequences of any particular hypothesis in regard to them. However, path analysis is not a method for discovering causes. An observed correlation can never be used as proof of a causal relationship. Yet very convincing arguments for causality can be constructed from statistical inference, together with postulated relationships developed from knowledge of subject matter and common sense. (For further details see Johnson & Wichern, 1992, pp. 345–346.)

**TABLE 1**

* Means and Standard Deviations of All Demographic Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th></th>
<th>M</th>
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<td>Age</td>
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<tr>
<td>Brothers</td>
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<tr>
<td>Feminine</td>
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<td>6.60</td>
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</tr>
<tr>
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<td></td>
</tr>
<tr>
<td>Relativistic</td>
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</tr>
<tr>
<td>Dialectical</td>
<td>54.80</td>
<td>5.79</td>
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</table>

**TABLE 2**

Correlation Matrix of Demographics, Social Paradigm Belief Scale (SPBI), and the Bem Sex-Role Inventory (BSRI)

<table>
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</thead>
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<td>.16</td>
<td>.33</td>
<td>.11</td>
<td>.05</td>
<td>.05</td>
<td>.01</td>
<td>.53</td>
<td>.04</td>
<td>.01</td>
<td>.04</td>
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<td>.18</td>
<td>.20</td>
<td>.24</td>
<td>.05</td>
<td>.02</td>
<td>.12</td>
<td>.13</td>
<td>.07</td>
</tr>
<tr>
<td>Marital</td>
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<td>.51</td>
<td>.01</td>
<td>.34</td>
<td>.09</td>
<td>.18</td>
<td>.15</td>
<td>.15</td>
<td>.07</td>
<td>.07</td>
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<tr>
<td>Single Parent</td>
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<td>.02</td>
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<td>.19</td>
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<td>.04</td>
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<td>Salary</td>
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<td>.01</td>
<td>.04</td>
<td>.03</td>
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<td>Masculine</td>
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<td>.21</td>
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<td>.04</td>
<td>.03</td>
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<td></td>
</tr>
<tr>
<td>Feminine</td>
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<td>.08</td>
<td>.23</td>
<td>.22</td>
<td>.02</td>
<td>.18</td>
<td>.15</td>
<td>.25</td>
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<tr>
<td>Mechanistic</td>
<td>1.00</td>
<td>.15</td>
<td>.25</td>
<td>.25</td>
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<td>.03</td>
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<td>Relativistic</td>
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<td>Dialectical</td>
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Pedhazur and Tetenbaum Four-Factor Scoring Procedure

Pedhazur and Tetenbaum (1979) performed separate factor analyses for male and female groups and found that four interpretable factors emerged from each analysis: Assertive, Interpersonal Sensitivity, Self-Sufficiency, and Masculine/Feminine. Masculine/Feminine factor is bipolar; items that loaded on the Masculine/Feminine factor were different for the male and female groups. For the female groups, this factor consisted of only two traits having meaningful loadings: feminine, with a positive loading, and masculine, with a negative loading. Females who rated themselves high on feminine rated themselves low on masculine. For the male groups, in addition to the masculine and feminine items, two additional items loaded on this factor: gullible and childlike. These two items had negative loadings. Males rated themselves high on masculine and rated themselves low on feminine, gullible, and childlike, implying that they perceive these traits as related to their conception of feminine. (For further details see Pedhazur and Tetenbaum, 1979, pp. 996–1016.)

Path Analysis Using Female Factor Solution

The data in this study were analyzed using the factor solution obtained for women and the factor solution obtained for men. Path analysis using Pedhazur and Tetenbaum’s (1979) Female factors solution failed to reveal any significant pathways among demographic, BSRI factors, and SPBI Reasoning factors. However, the study found several other specific relationships (see Figure 1). An inverse relationship between age and absolute reasoning was obtained. As individuals aged, they were less likely to be absolute reasoners. Results indicated a positive relationship between an individual’s level of family income when growing up and being Assertive (Factor 1) and Self-Sufficient (Factor 3). The higher an individual’s level of family income when growing up, the more assertive and self-sufficient the individual tended to be. There were no significant results found for Sensitivity (Factor 2) or for Masculinity/Femininity (Factor 4).

Path Analysis Using Male Factor Solution

Significant pathways were found to connect demographic variables, gender role, and reasoning when the Male factors were used in the analysis. Figure 2 reflects a significant pathway connecting family income while growing up to the Masculine/Feminine factor and to absolute and relativistic reasoning. Individuals with family income above $30,000 a year were more likely to be relativistic reasoners; individuals from lower income families were more likely to be absolute reasoners. Individuals who had high relativistic reasoning scores were more likely to describe themselves as feminine, relative to individuals with low relativistic reasoning scores (Ms = 4.35 and 3.81, respectively). A similar pattern was observed when gullible and childlike items were examined. Individuals with high relativistic reasoning scores were more likely to describe themselves as being more gullible (M = 3.48) and more childlike (M = 3.52), relative to individuals with low relativistic reasoning scores (Ms for gullible and childlike were 2.97 and 2.69, respectively). Conversely, high relativistic reasoners were less likely to describe themselves as masculine, relative to low relativistic reasoners (Ms = 3.48 and 3.91, respectively).

Individuals who scored high in absolute reasoning described themselves as masculine (M = 3.79), rather than feminine (M = 3.63). Individuals who scored high in absolute reasoning saw themselves as being less gullible and childlike (Ms were 3.03 and 3.00, respectively).

Similar to the results found using Female factors, an inverse relationship between age and absolute reasoning was found. A positive relationship was found for “salary expected upon graduation from college” and the Assertive gender role factor. The higher the salary one expected, the more assertive the individual tended to be. There were no significant results found for the Sensitive factor.

Discussion

The principal objective of this study was to examine the relationships among three sets of variables (viz., types of postformal reasoning, sex roles, and demographic/environmental factors) utilizing path analysis. The major hypotheses advanced for testing in this study concerned androgyny and were, therefore, predicated on the identification of androgynous individuals. Individuals with androgynous sex roles (regardless of their sex) were expected to be more likely to use dialectical reasoning; conversely, individuals with stereotypically masculine or feminine sex roles were expected to use absolute reasoning. Unfortunately, no individuals in this study were identified as having an androgynous sex role.

Pathways were found that connected demographic variables, sex role, and reasoning. Individuals with family income higher than $30,000 a year agreed more strongly with the feminine items (i.e., feminine, childlike, gullible). Income was also found to influence reasoning. Higher income leads to greater endorsement of the feminine items, to lower absolute reasoning, and to higher relativistic
reasoning. In contrast, lower income leads to greater endorsement of masculine items (i.e., aggressive, dominant) and, correspondingly, lower relativistic reasoning.

Significant paths were particular to the analysis utilizing the factors Pedhazur and Tetenbaum (1979) obtained from male participants' responses on the BSRI. None of the other path analyses that were performed (viz., using Pedhazur and Tetenbaum's factors derived from female's BSRI responses) produced significant pathways across the three sets of variables. However, these latter analyses were successful in identifying pathways between two sets of variables. These pathways are discussed subsequently.

Examination of Figure 2 reflects a pathway connecting one's environment while growing up (viz., family income) with the Masculine/Feminine sex role factor and relativistic reasoning and absolute reasoning; pathways connecting age to absolute reasoning, salary expected upon graduation from college to Assertive factor, and family income while growing up to Assertive and Self-Sufficient factors.

An interpretation of these findings suggests the perception of having an adequate financial environment while growing up may influence how assertive or how self-sufficient one perceives himself or herself to be. For instance, individuals raised in more affluent environments may perceive themselves differently than individuals raised in lower income environments. Perceptions of self are influenced by the benefits that such environments provide. For example, an affluent environment provides greater opportunity, choice, and more varied experience. Females may be encouraged to pursue stereotypical masculine roles and vice versa. These individuals are not locked into limited avenues of existence or ways of looking at their worlds. Therefore, a person's perception of self (i.e., feminine and/or masculine, and endorsement of stereotypical feminine or masculine characteristics) as influenced by an affluent environment is expanded. In addition, perceptions of self as
derived from one’s financial environment may influence the way the person reasons. The present study found that sex role orientations lead to particular types of reasoning, namely, absolute reasoning or relativistic reasoning. For example, individuals who were highly masculine also tended to be absolute reasoners. Because absolute reasoners are assumed to think in black-and-white terms, individuals who are high in masculine characteristics and high in absolute reasoning would more likely see themselves as aggressive (rather than shy); dominant (rather than yielding); and self-sufficient (rather than childlike). We would expect highly masculine, absolute reasoning individuals to be locked into stereotypical patterns of thinking and behavior, thus endorsing masculine traits rather than feminine traits. In addition, their world would be as fixed as their reasoning.

In contrast to absolute reasoners, relativistic reasoners see people and events as novel, unique, and continually changing in unsystematic ways because they have not yet developed a mechanism that allows them to integrate across contexts and time frames. This may be why relativistic reasoners identified with the feminine items *gullible* and *childlike*. Because their world is somewhat unstable, they may be more aware of gullible and childlike tendencies. It may be that relativistic reasoners (on the verge of dialectic reasoning) tend to be open-minded, ready and willing to accept several and various alternatives because they no longer have the answers or solutions to situations and relationships (as they previously assumed they did when they were absolute reasoners). Relativistic reasoners are beyond absolute reasoning, a reasoning type that is no longer a workable or an effective process for them. Relativistic reasoning is a transitional period in which individuals may be open and willing to consider just about any scenario that may be potentially effective in solving problems or in reaching resolutions. Their open-mindedness and willingness to consider alternatives may be a pre-
requisite to dialectical reasoning. These characteristics may be the driving force that spurs the relativistic reasoner into dialectical reasoning.

Path analysis also identified several other pathways that connected variables in the demographic/environmental set with either sex role variables or reasoning variables. The strongest path was between age and absolute reasoning. As age increased, the use of absolute reasoning decreased. We would expect this to be the case. Throughout the life span, individuals are exposed to new and different situations and interactions within their own worlds; these new experiences should foster higher levels of reasoning. This is a logical and comprehensible conclusion that has been found by other research studies (i.e., Kramer & Melchior, 1990).

The study also indicated that individuals with higher family income described themselves as being assertive and self-sufficient. In addition, individuals who expected to earn more salary upon graduation from college described themselves as being more assertive than those individuals who expected less salary. Possibly there is a relationship between one’s family income while growing up and the salary one expects upon graduation from college. This relationship between finances and assertiveness and self-sufficiency is not surprising because having money in today’s world is one main ingredient for being self-sufficient. Being self-sufficient is a form of security that affords individuals the opportunity to be assertive. Money is power, and assertiveness is an expression of power. Financial affluence is a power by which individuals are “carefree” and “freed up” to pursue their own interests, goals, and aspirations. They are not restricted by financial boundaries that set constraints or limitations for others, thereby, inhibiting their assertive expression and sense of self-sufficiency.

The results of the other two path analyses conducted in this study offer little additional information with respect to the relationship between the three sets of variables examined here. Examination of the results of the analysis using Pedhazur and Tetenbaum’s (1979) factors derived from women only offers the additional finding that individuals who perceived themselves as being more self-sufficient were less likely to use mechanistic reasoning. Having some belief in one’s ability to resolve issues or to be independent may be related to having less of a need to rely upon external guidelines or structure for solving issues or conflicts.

The results using the factor structure Pedhazur and Tetenbaum (1979) derived from women provides little information about the relationships between sex role and postformal reasoning as that relationship is influenced by characteristics of the participants. Although reliability analyses conducted on all three methods of scoring the BSRI indicated high levels of agreement among items composing each scale factor (coefficient alpha levels ranged from .85 to .89), only one path analysis obtained significant pathways across all three sets of variables. Undoubtedly, the inclusion of gullible and childlike as items on the Masculine-Feminine factor influenced the ability to detect a significant pathway across the three sets of variables when the factor structure obtained by Pedhazur and Tetenbaum from men was used in one of our analyses.

Whether the factors identified by Pedhazur and Tetenbaum (1979) are truly reflective of one’s perception of the role one is to play in society (as related to one’s biological sex) remains unclear. The relationship reported in this study for the Masculine-Feminine factor in the path analysis indicated that participants with different relativistic reasoning scores (high vs. low) see themselves differently when responding to the masculine, feminine, childish, and gullible items composing the Masculine-Feminine factor. However, the fact that individuals who use relativistic reasoning are more likely to describe themselves as childish and gullible may provide an important insight into the means by which one may move from relativistic to dialectical types of thinking.

Although we cannot assume from the results of this study that absolute reasoners are more stereotypically masculine and that relativistic reasoners are more stereotypically feminine, we can assume that a relationship does exist between one’s reasoning and certain sex role characteristics. For example, we tend to view individuals who appear to us as displaying more stereotypical masculine characteristics versus stereotypical feminine characteristics (i.e., aggressive, self-sufficient, assertive, dominant, acts as a leader versus childish, sensitive to the needs of others, gullible, shy, yielding) as “getting their own way” or “having things done their way.” This attitude appears to be conducive to absolute reasoning: thinking and behaving in black-and-white terms, which is often analogous to not taking others’ desires or wishes into consideration. On the other hand, we tend to view individuals who appear to us as displaying more feminine characteristics as “doing things to help others” or “taking others’ wishes into consideration.” This attitude is conducive to high relativistic reasoning (verging on dialectical reasoning) because their world includes differing viewpoints and alternative perspectives, even though they may not have yet mastered integration and synthesis of contradictions and knowledge.
Although the present study revealed relationships between reasoning, sex role characteristics, and environment, the study was weakened by several factors. For example, the number of participants (61), most of whom were relatively young and never married, may have limited an identification of androgynous or dialectical reasoners. Because of their age, their exposure to confrontational situations or roles (e.g., marriage, career) is limited. Exposure to these types of situations often forces individuals to consider varying viewpoints and/or more than one perspective (i.e., dialectical reasoning). In addition, having to deal with such situations often decreases stereotyping in situations and relationships. The absence of such experiences may inhibit the formation or development of finer or more effective ways of relating, or other skills and behaviors considered to be characteristic of androgynous individuals and dialectical reasoning. It could be, too, that because they are still relatively young and less experienced, some of the items on the BSRI were not meaningful to these participants. In any case, various factors such as the number of participants and their young ages, lack of experience, and marital status may all have been of consequence as to why this particular participant pool might have set limitations or constraints on the present research.

In addition to these considerations, the reliability of the SPBI is of concern because our analysis of this instrument indicated low alpha coefficients for each type of reasoning. The low alpha scores may be an indication that the statements on the SPBI do not consistently measure particular types of reasoning. If this is the case, then the findings with respect to this instrument are questionable. It is suggested that the reliability of the SPBI be tested again using a larger and more appropriate sample. Furthermore, it is suggested that this particular study be repeated with participant pools comprised of men and women, consisting of a range from 18 to 70 years old. A study designed as such may provide more information related to specific paths connecting environmental factors and sex role characteristics with types of reasoning.

Conclusions

The financial environment in which a person is directed toward investigating and understanding how sex role and reasoning influence one another, and how these two entities converge to form the unique self.

References

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Psi Chi Research Awards and Grants

Psi Chi annually sponsors national undergraduate and graduate research award competitions, as well as research awards for members submitting the best research for the regional and national paper/poster sessions. In addition, Psi Chi has recently launched four new research award/grant programs—the National Convention Research Awards, the Thelma Hunt Research Awards, the Undergraduate Research Grants, and the Chapter Advisor Research Grants.

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. Descriptions of the award/grant competitions follow. Further information and submission forms may be obtained from the Psi Chi National Office, 407 East 5th Street, Suite B, Chattanooga, TN 37403-1823; telephone: (423) 756-2044; e-mail: psichi@utc.campus.mci.net.

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 $500 for first place, $300 for second place, $200 for third place, and $100 for honorable mentions (up to five). 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 $500 for first place, $300 for second place, and $200 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 April 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: (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 depart-
ment, 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 the only student research award 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 $150 each are presented to students submitting the best research papers to Psi Chi sessions at regional conventions. The number of awards in each region vary with the size of the regions; 75 awards of $150 each were given in the 1996–97 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 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 $150 each are presented to students submitting the best research for Psi Chi sessions at the APA and APS national conventions. For the 1996–97 year, eight awards were 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. The deadline for submissions to the Psi Chi student sessions at both the APA and APS conventions is December 15 (postmark).

### Hunt Research Awards

All Psi Chi student and faculty members are eligible to apply for a Thelma Hunt Research Award. Up to three awards will be 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 Awards focus on research directly related to the mission of Psi Chi. Beginning in the 1998–99 year, these awards will increase to $2,000 each. The deadline for this award program is September 10 (postmark).

### Undergraduate Research Grants

All undergraduate Psi Chi members are eligible to apply for these new 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 $1,000 for each project. The deadline for this grant program is October 1 (postmark).

### Chapter 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 new chapter 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). One grant will be awarded annually within each of Psi Chi’s six regions. The maximum amount of each grant will be $1,500. The deadline for this grant program is June 1 (postmark).
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.

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