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# The Effect of Two Pairing Techniques on Specific Feedback and Comfort Levels of Learners in the Reciprocal Style of Teaching

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In the reciprocal style of teaching learners are paired, and as one practices the task, the other provides immediate feedback. This study examined the effect of pairing learners in the reciprocal style by ability (high, low, and mixed) and by companionship (friend and nonacquaintance) on provision of feedback and perceived comfort while learning motor skills. Thirty-two students between 9 and 12 years of age practiced soccer juggling during a 25-minute lesson and soccer dribbling during another 25-minute lesson, in both of which they were paired for similar versus different ability and for friend versus nonaquaintance. After each lesson, the students were asked how comfortable they felt giving and receiving feedback. The results showed that the observers gave specific feedback more frequently to friends than nonacquaintances, and that the doers felt more comfortable receiving feedback from friends than nonacquaintances. Learner ability level did not affect the amount of specific feedback provided by the observer or the doer comfort in receiving feedback. This study supports several claims set forth by Mosston and Ashworth (1986) for the reciprocal style of teaching.

Peer tutoring, also known as peer teaching, is the system of instruction in which students teach each other. This system of instruction, which was pioneered in the late 18th and early 19th century (Salmon, 1932), is frequently employed in math and language arts classroom settings at the elementary level (Harris & Sherman, 1973; Pumfrey, 1986; Smith, 1983). Tutoring schemes employed in classroom settings have been shown to be more effective in promoting students' cognitive and social learning than conventional methods of instruction (Anania, 1983; Burke, 1983/1984; Klosterman, 1970; Russell & Ford, 1983; Sharon, 1980). Researchers indicate that both the giver and the receiver of information have much to gain in peer tutoring systems (Allen, Feldman, & Devin-Sheehan, 1976;

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Erickson & Cromack, 1972; Morgan & Toy, 1970). Peer tutoring can be conducted in dyads, triads, and small groups. It has been suggested that the dyad is generally the most effective of these tutoring structures in terms of student learning (Anania, 1983; Burke, 1983/1984).

One of the most commonly employed peer-teaching systems of instruction in physical education is the reciprocal style of teaching (Mosston & Ashworth, 1986). In this style, learners form partners, and as one learner (doer) performs the task, the other (observer) gives specific feedback to the doer based on information provided by the teacher, in the form of a criteria sheet. When the doer completes the task(s), the doer and the observer switch roles. The extent of peer teaching in the reciprocal style is specifically the provision of feedback from one learner to another.

Many strengths are realized in the reciprocal style of teaching. First, students learn to give feedback to a peer. Siedentop (1991) suggests that this will result in a higher number of correct responses by the doer because of the increased frequency of feedback provided by the observer. In the reciprocal style of teaching, positive or corrective feedback specific to the critical skill cues of the task is provided by the observer immediately following each task performance. Second, giving and receive feedback with a peer results in an expansion of learner-socialization skills (Mosston & Ashworth, 1986). Third, students learn about the learning process in physical education (Mosston & Ashworth, 1986; Siedentop, 1991). By observing the performance of the doer, comparing the performance against the criteria, drawing conclusions about the accuracy of the performance, and giving appropriate feedback, the observer better understands the process of learning a task.

Although many assets are realized in the reciprocal style of teaching, this style is not without liabilities. First, and most noticeably, practice time per learner is reduced as a result of one learner giving feedback to another. Second, the possibility of giving incorrect feedback is increased because each learner is responsible for giving their partner specific task-related feedback. Third, opportunity for conflict between learners is increased given the social/emotional nature of the reciprocal style of teaching. Fourth, the opportunity for learners to engage in small-talk is increased. As with any instructional approach, teachers must address these liabilities when employing the reciprocal style of teaching.

Learner psychomotor and social behaviors have been examined in several studies in physical education using the reciprocal style of teaching or peer tutoring. The results from a series of three spectrum studies incorporating the practice, reciprocal, and inclusion styles of teaching revealed that fifth-grade children learned a hockey accuracy task equally well when taught in the practice, reciprocal, or inclusion styles of teaching, in both a laboratory and naturalistic type setting (Goldberger, Gerney, & Chamberlain, 1982; Goldberger, 1983). The reciprocal style was also found to enhance social development for those behaviors related to giving and receiving feedback with a peer (Goldberger, Gerney, & Chamberlain, 1982). In addition, children with average aptitude for learning motor skills responded best when taught in the practice style, whereas children with exceptional aptitude (those with above- and below-average aptitude) responded best when taught in the inclusion style (Goldberger & Gerney, 1986). Children of average and exceptional aptitude performed equally well when taught in the reciprocal style.

The provision of positive feedback statements and antisocial behaviors was examined in a study of Mosston and Ashworth's (1986) command, practice, and reciprocal styles of teaching (Cox, 1986). The results revealed that a greater number of positive feedback statements were given and fewer antisocial behaviors exhibited in teaching episodes conducted in the reciprocal style of teaching versus teaching episodes conducted in the command and practice styles.

The influence of peer tutors on academic learning time of mentally handicapped learners was examined in an adapted physical education setting (Webster, 1987). The amount of time that the mentally handicapped learners spent in motor activity increased substantially when a peer tutor was present.

The effects of gender, ability, and friendship on learner processes and outcomes in dyadic peer tutoring schemes have been examined in several studies conducted in classroom settings. Cloward (1967) and Mevarech (1985) found that mixed-gender pairings had no significant effects on doer achievement in reading and math. Same-gender combinations were found to be as effective as mixed-gender combinations for the doer. In a study of same-age tutorial systems in reading, male-male tutorial combinations were found to be good for both the doer and observer, female-female combinations better for the observer than the doer, and mixed-gender pairings better for the observer than the doer (Topping & Whiteley, 1988).

In a study of language spelling, Ehly and Larson (1976) reported that type-of-gender pairing (same or mixed) and learner-ability pairing (same or mixed) were not predictive of student spelling outcomes or tutorial-process variables. However, the observer's liking of the doer was found to be predictive of observer-doer interaction. This "liking" finding supports the research of Little and Walker (1968) who found learner "likeableness" to be correlated significantly with outcome achievement of the doers in dyadic systems.

In summary, the classroom literature indicates that pairing by gender and ability has little effect on learner processes and outcomes in peer tutoring schemes. In contrast, learner likeableness seems to have a significant effect on learner process and outcome variables.

## Purpose of the Study

The effect of using different learner-pairing techniques in peer teaching situations has not been examined thoroughly in the gymnasium setting. It has been suggested, however, that the method used for pairing learners in peer-teaching systems in the gymnasium setting may have some impact on what the doer and observer learn. Mosston and Ashworth (1986), as well as Siedentop (1991), suggest that students will be more successful in peer-teaching situations where they are able to select a partner whom they like and with whom they like to work.

The purpose of this study was to investigate theoretical statements associated with Mosston and Ashworth's (1986) reciprocal style of teaching. More specifically, this study was carried out to examine the effect of two different learner-pairing techniques—pairing by companionship (friend and nonacquaintance) and pairing by ability level (homogeneous and heterogeneous)—on the frequency of observer feedback and on learner-perceived comfort in giving and receiving feedback.

Two questions were addressed in the study: (a) What effect does pairing learners by ability level and companionship have on the frequency of observer feedback in the reciprocal style of teaching?; and (b) What effect does pairing learners by ability level and companionship have on learner-perceived comfort in giving and receiving feedback in the reciprocal style of teaching?

## Methods and Procedures

### *Subjects*

Student subjects and teacher subjects were involved in the study. Thirty-two student subjects (learners) from three physical education classes at one elementary school volunteered to participate. Twelve of the learners were fourth graders, 10 were fifth graders, and 10 were sixth graders. The learners were between 9 and 12 years of age. Eighteen of them were female and 14 were male. These fourth, fifth, and sixth graders were used as subjects because all of them had some previous experience with peer tutoring in the classroom and gymnasium.

The learners were taught by 12 teacher subjects (preservice teachers) who were undergraduate students in the same teacher preparation program. The preservice teachers, who were all juniors, were in the process of completing their second formal pre-student-teaching practicum at the time of the study. The selection of these preservice teachers was based on three criteria: (a) they had demonstrated a thorough understanding of the theoretical basis of Mosston and Ashworth's Spectrum of Teaching Styles (demonstrated by scoring 80% or higher on a written exam); (b) they demonstrated teaching behaviors for each of Mosston and Ashworth's (1986) didactic teaching styles consistent with Sherman's (1982) Style Analysis Checklists (demonstrated by scoring 80% or higher in all teaching-style episodes); and (c) they identified that their primary reason for participating was to gain further insight into the reciprocal style of teaching. Twelve preservice teachers from the initial pool were chosen to participate in this study because they met the stated criteria. Preservice teachers were chosen for this study because it seems to make sense to introduce future teachers to different teaching styles and to allow them to practice and coach one another as they work each style into their repertoire before they enter the real world of teaching and become socialized into one style of teaching.

### *Setting*

Each learner participated in two 25-minute lessons. For each lesson, the learners were assigned a partner, and each pair was then randomly assigned to a preservice teacher. Thus, a triad relationship (two learners and a teacher) existed during each lesson. Mosston and Ashworth's (1986) reciprocal style of teaching was used in all lessons. At the beginning of each lesson, the purpose of the teaching style was stated and the roles of the doer, observer, and teacher described. Next, the specific task was announced and delivered (show and tell) and the criteria sheet explained. The preservice teacher then instructed the pair to decide who would first be the doer and observer, and to begin the task when ready.

When in activity, the doer performed the given task while the observer observed and provided task-related feedback. The observer employed the criteria sheet to help analyze the doer's performance and to help give accurate feedback

to the doer. Instructions for the observer and doer, a list of five critical skill cues, and examples of appropriate specific feedback statements were listed on the criteria sheet (see Figure 1). Both learners performed the roles of doer and observer in each lesson. In one lesson the subject matter was soccer juggling and in the other, soccer dribbling. All lessons were conducted in a gymnasium setting.

During activity the preservice teacher interacted with the observer only when the observer either asked a question, provided the doer with inaccurate or negative feedback, or was off-task, and interacted with the doer when the doer was off-task. In addition, the preservice teacher refrained from providing role-related feedback, even though providing role-related feedback is appropriate for the teacher in the reciprocal style (Mosston & Ashworth, 1986). Interaction was limited in this manner to minimize any effect that the preservice teacher might

**Task and Criteria Sheet**
**Reciprocal Teaching Style**
**Soccer—Dribbling**

Instructions to the student:

**To the doer:**

**Task 1** Dribble the soccer ball around the end cone and back. Go as quickly as you can while keeping the ball under control. Stop and rest after each trial while the observer provides feedback. Complete 5 trials.

**Task 2** Dribble the soccer ball through the 3-cone course. Go as quickly as you can while keeping the ball under control. Stop and rest after each trial while the observer provides feedback. Complete 5 trials.

**To the observer:**

Analyze the doer's form by comparing the performance to the criteria listed below. Offer feedback about what is done well and what needs to be corrected. Check each criteria listed below. Switch roles after both tasks have been completed.

| Task Criteria | Correct | Needs Work |
|---|---|---|
| 1. Ball close to feet, within one foot? | _____ | _____ |
| 2. Body under control? | _____ | _____ |
| 3. Head up, looking ahead? | _____ | _____ |
| 4. Using instep of foot? | _____ | _____ |
| 5. Using both feet? | _____ | _____ |

**Examples of feedback:**

1. The ball was close to your feet on that trial. Good job!
2. The ball was too far from your feet on that trial. Try slowing down.
3. I like how you used the instep of your foot while you were dribbling.

**Figure 1 — Reciprocal teaching style criteria sheet for soccer dribbling.**

have on the type and frequency of feedback that the observer directed to the doer.

### *Learner Pairings*

Each learner was randomly matched with a partner of similar ability (homogeneous condition) in one lesson ($n$=32) and with a partner of different ability (heterogeneous condition) in the other lesson ($n$=32). In one of the two lessons, the learners were randomly paired with a friend. During the other lesson, the learners were randomly paired with a nonacquaintance. The learners were informed with whom they would be paired as they arrived for their scheduled physical education class. Learners were paired with a friend in half of the lessons in each condition. Information about learner friends and nonacquaintances was gathered prior to the start of the study.

*Pairing by ability.* To classify the learners into high- and low-ability groups, soccer juggle and dribble tests were administered as described by the Canadian Soccer Association (Keith, 1980). Two individual soccer skill tests, rather than one general soccer ability test, were employed to classify students into ability groups for two reasons: (a) each lesson was specifically based on one of the tested skills, and (b) approximately 35% of the learners were found to perform well (high ability) in one of the skill tests, but poorly (low ability) in the other.

For juggling, the learners were instructed to keep the soccer ball in the air for as long as possible using all (legal) parts of the body. Total air time was recorded for each of the three trials allowed per learner, with the highest (best) score being used in the classification process. Age-specific, norm-referenced standards, developed by the Canadian Soccer Association (Keith, 1980), were used to classify the learners into high- and low-ability groups. Half of the learners were classified as low ability and half as high ability.

In the dribbling test, the learners were instructed to dribble around six cones over a distance of 10 yards. Each learner performed two timed trials, with the lowest timed trial (best) being recorded and used to classify the learners. Again age-specific, norm-referenced standards, developed by the Canadian Soccer Association (Keith, 1980), were used to classify the students into high- and low-ability groups. Half of the learners were classified as low ability and half as high ability. The skill tests were administered by the 12 teacher subjects, all of whom were trained, one week prior to the study.

*Pairing by companionship.* Before the study began, the learners classified their classmates as "best friends," "friends," "know the student's name," or "don't know the student's name." Classmates who were identified as "best friends" or "friends" were categorized as friends, while classmates who were identified as "know the student's name" or "don't know the student's name" were categorized as nonacquaintances for the purpose of the study. This procedure was followed so that the learners could be randomly assigned to a "friend" partner during one teaching episode and to a "nonacquaintance" partner during the other.

Mosston and Ashworth (1986) prescribe that learners should select their own partners to accommodate the purpose of the reciprocal style. They suggest that people like to work with someone they know and would feel more comfortable giving and receiving feedback with a person they like. Although the learners in

this study were not specifically asked if they would choose to work with their identified "friends," the researchers felt it was highly probable that learners identified as friends would have been chosen as partners.

### *Design*

A comparative research design was employed to examine the effect pairing by ability and pairing by companionship (independent variables) had on observer feedback and learner-perceived comfort giving and receiving feedback (dependent variables) in a peer teaching relationship. The design used was a $4 \times 2$ (Ability—high-high, low-low, high-low, and low-high $\times$ 2 Companionship—friend, nonacquaintance) with repeated measures on the second variable.

### *Instrumentation*

Two instruments were used in the data-collection process, one to gather information about observer feedback and one to record information about learner-perceived comfort in giving and receiving feedback. Statements that observers directed to doers that provided positive or corrective information about a specific part of the doer's skill performance were defined as specific feedbacks. "I like how you used the instep of your foot while dribbling" is an example of a specific positive statement, whereas "Use the instep of your foot to control the ball while going around the outside of the cone" is an example of a specific corrective statement. Specific feedback statements that the observer directed to the doer were systematically live-coded by a coder (another preservice teachers) during each lesson using an event recording technique. No attempt was made to code specific positive feedback separate from specific corrective feedback. It was felt that both types of specific feedback were as important to student learning.

Specific positive and corrective feedback statements were coded because of their importance to student skill learning. In the reciprocal style of teaching, success is more likely to be realized when the observer correctly assesses the doer's performance and immediately provides the doer with accurate specific feedback (Mosston & Ashworth, 1986; Siedentop, 1991).

A second instrument was used to gather information about learner perceived comfort in giving and receiving feedback. Following each lesson, the learners responded to two statements about participating with a partner. These statements were: (a) I was comfortable giving feedback to my partner; and (b) I was comfortable receiving feedback from my partner. A four-point semantic-differential scale, with two favorable and two unfavorable responses, was used to answer each statement. Answers to these statements were collected to determine whether the students' feelings about working with a partner were favorable or unfavorable.

The two attitude measures were administered to the same class of 24 fifth graders on two separate occassions (test-retest) following episodes conducted in the reciprocal style of teaching to determine an estimate of reliability. Both episodes were completed under the same conditions that were present in the study. Seven days were scheduled between episodes. Intraclass correlation coefficients of $R$=.84 (for comfort in giving feedback) and $R$=.81 (for comfort in receiving feedback) were yielded.

### *Coder Reliability*

Prior to the study, the preservice teachers were trained to code learners' verbal specific feedback statements. The preservice teachers coded the episodes because the observation system employed was relatively simplistic; only one type of student behavior was coded. During the first stage of training, the preservice teachers were given definitions and examples of specific positive and specific corrective feedback statements. They then coded two 10-minute teaching episodes (reciprocal style) from videotape and evaluated their observations. During the second stage of training, specific positive and corrective feedback statements were coded for a pair of learners during three 10-minute peer teaching episodes. Interobserver agreement scores were calculated to determine coder reliability for the third 10-minute episode. An interobserver agreement coefficient of at least .86 was yielded by each coder.

The study investigators live-coded 20 lessons (31%) to determine the level of interobserver agreement for the coding of specific feedbacks. Ten of each of the juggling and dribbling lessons were randomly selected and then observed to determine coder reliability. Coefficients between .80 and .96 were obtained for the 20 lessons. An overall mean coefficient of .88 was yielded. The scored-interval technique was employed to compute interobserver reliability (Hawkins & Dotson, 1975).

### *Teaching Style Training and Verification*

The preservice teachers were trained in the reciprocal style of teaching as part of a module on teaching styles prior to the study. The training procedure included a study of the theoretical basis of the teaching style, observations of demonstration episodes, and practice and feedback in a peer teaching setting, all of which are elements that Joyce and Weil (1986) identify for successful implementation of a teaching style. During the first stage of training, two videotaped lessons were viewed by the preservice teachers followed by a 30-minute lecture-discussion. This was followed by participation (as learners) in two 10-minute lessons. During the second stage of training, each preservice teacher taught a scripted 15-minute lesson and then planned (including criteria sheet) and taught two 10-minute lessons to their peers. Each lesson was observed by one of the investigators and assessed using Sherman's (1982) Reciprocal Style Analysis Checklist (see Figure 2).

The preservice teachers received written and verbal feedback about their teaching performance during training. In addition, a written exam was administered to test the preservice teacher's knowledge of the reciprocal style of teaching. By the end of training, all of the preservice teachers demonstrated appropriate teacher behaviors for the reciprocal teaching style (minimum checklist score of 80%) and scored a minimum of 80% on the style specific exam.

Style implementation during the study was verified through systematic observation. A modified version of the Reciprocal Style-Analysis Checklist (Sherman, 1982) was employed to verify the fidelity between teacher behaviors and teaching style. Each preservice teacher was observed and coded by one of the investigators during at least one lesson in the study. An average score of 88% was obtained.

## Reciprocal Style-Analysis Checklist

Name _____

Directions: Identify who makes the specific decision by circling T (teacher), L (learner), or O (observer).

**Phase 1: Role Identification**

T L 1. Locates learners for introductory ceremony
T L 2. Names the teaching style
T L 3. States the purpose of the teaching style
T L 4. Identifies the triad, describes its structure and function
T L 5. Describes the roles of the doer, observer, and teacher

**Phase 2: Subject Matter Identification**

T L 6. Announces the general subject matter (objectives)
T L 7. Announces specific task(s)
T L 8. Delivers task to learners (show and tell)
T L 9. Establishes quality and quantity of task performance
T L 10. Establishes order of task performance
T L 11. Delivers the criteria (explains what a criteria is and how to use it)
T L 12. Establishes parameters and logistics for the task(s)
T L 13. Asks questions for task and/or role clarification
T L 14. Announces "Select a partner. Decide who will first be doer and observer, then begin."

**Phase 3: Performance of the Task**

T L 15. Selects a partner
T L 16. Decides who is first doer and observer
T L O 17. Makes impact decisions within established parameters
T L O 18. Performs the task
T L 19. Switches roles of doer and observer

**Phase 4: Evaluation and Feedback**

T L O 20. Has the criteria sheet
T L O 21. Monitors the performance
T L O 22. Compares and contrasts task performance against criteria
T L O 23. Draws conclusions about accuracy of task performance
T L O 24. Offers task-related feedback to doer
T L O 25. Initiates communication with the teacher, if necessary
T L O 26. Moves around classroom visiting each pair of learners
T L O 27. Responds to communications initiated by the learner
T L O 28. Reminds learners about details of task and roles, if necessary
T L O 29. Offers role-related feedback to observer and doer
T L O 30. Makes episode adjustments when deemed necessary

**Phase 5: Closure**

T L 31. Locates learners for closure
T L 32. Summarizes main points of episode
T L 33. Provides role-related feedback to learners based on objectives of the reciprocal style.

Figure 2 [illegible]

### *Data Analysis*

Descriptive and inferential statistics were computed to examine the effect of pairing by ability level and companionship on frequency of specific feedback statements (as provided by the observer) and learner-perceived comfort in giving and receiving feedback. For each lesson, the frequency of specific feedback statements was summarized and a rate per minute was calculated. Rate per minute scores were computed because the lesson varied in length (23 to 26 minutes). Mean and standard deviation scores were calculated for each condition. The students' semantic-differential scale scores were directly employed to calculate the means and standard deviations for the postlesson questionnaire responses for each condition.

To further interpret the questions addressed, mean rates per minute for specific feedback statements and means for learner-perceived comfort giving and receiving feedback were analyzed in separate 4 × 2 (Ability—high-high, low-low, high-low, and low-high × Companionship—friend, nonacquaintance) ANOVAs with repeated measures on the second variable for a sample size of 32. A .05 level of significance was employed in all analyses.

## Results

Significant main effects were revealed for one independent variable, pairing by companionship, on observer specific feedback and perceived comfort receiving feedback (doer), but not on perceived comfort giving feedback (observer). No significant main effects were realized for the independent variable pairing by ability.

### *Observer Feedback*

Pairing by companionship had a significant effect on the amount of specific feedback given to the doer by the observer, $F(1,28)=13.35$, $p<.05$. Learners who were paired with a friend provided specific feedback at a higher rate per minute (3.6) than learners who were paired with a nonacquaintance (2.39). In contrast, pairing by ability level seemed to have little effect on the amount of specific feedback the observers directed to the doers in the lessons, $F(3,28)=.92$. Learners who were matched with a partner of similar ability averaged 3.41 for high to high (H to H) and 3.09 for low to low (L to L) specific feedback statements per minute, while learners who were matched with a partner of different ability averaged 2.71 for high to low (H to L) and 2.76 for low to high (L to H) specific feedback statements per minute. Condition means and standard deviations for specific feedback statements are reported in Table 1.

### *Perceived Comfort Receiving Feedback*

A significant main effect was found for pairing by companionship, $F(1,28)=7.52$, $p<.05$, but not for pairing by ability level, $F(3,28)=.32$. When students were paired with a friend, the mean rating (on a four-point rating scale, with 1 being *not comfortable* and 4 being *very comfortable*) for doer-perceived comfort receiving feedback was 3.66. When paired with a nonacquaintance, the mean rating for doer-perceived comfort receiving feedback was 3.28. Students who were matched

**Table 1**

**Means and Standard Deviations for Specific Feedback Statements**

| Ability Level | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| H-H $n$=16 | | L-L $n$=16 | | H-L $n$=16 | | L-H $n$=16 | |
| *M* | *SD* | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| 3.41 | 1.40 | 3.09 | .99 | 2.71 | 1.60 | 2.76 | 1.66 |

| Companionship | | | |
|---|---|---|---|
| Friend $n$=32 | | Nonacquaintance $n$=32 | |
| *M* | *SD* | *M* | *SD* |
| 3.60 | 1.45 | 2.39 | 1.13* |

*$p<.05$

with a partner of similar ability averaged 3.37 (H to H) and 3.37 (L to L) on the four-point rating scale, while students who were matched with a partner of different ability averaged 3.56 (H to L) and 3.56 (L to H). Condition means and standard deviations for doer perceived comfort receiving feedback are reported in Table 2.

### *Perceived Comfort Giving Feedback*

No significant main effects were revealed for observer-perceived comfort in giving feedback in either condition. Learners who were matched with a partner of equal ability felt as comfortable giving feedback to the doer (H to H mean= 3.12; L to L mean=2.75) as learners who were matched with a learner of different ability (H to L mean=3.06; L to H mean=2.87). Similarly, learners who were paired with a partner identified as a friend seemed as comfortable giving feedback to the doer (mean=3.06) as the learners who were paired with a partner identified as a nonacquaintance (mean=2.84). Condition means and standard deviations for observer-perceived comfort giving feedback are reported in Table 3.

## Discussion

The results of this study indicate that the amount of specific feedback that observers direct to the doers in peer-teaching situations (reciprocal style of teaching) is greatest when learners are paired with friends. When learners are

**Table 2**

**Means and Standard Deviations for Perceived Comfort Receiving Feedback**

| Ability Level | | | | | | | |
|---|---|---|---|---|---|---|---|
| H-H | | L-L | | H-L | | L-H | |
| *n*=16 | | *n*=16 | | *n*=16 | | *n*=16 | |
| *M* | *SD* | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| 3.37 | .96 | 3.37 | .62 | 3.56 | .51 | 3.56 | .51 |

| Companionship | | | |
|---|---|---|---|
| Friend | | Nonacquaintance | |
| *n*=32 | | *n*=32 | |
| *M* | *SD* | *M* | *SD* |
| 3.66 | .54 | 3.28 | .73* |

*Note.* Ratings were based on a four-point semantic-differential scale.
*$p<.05$

matched by ability, homogeneously or heterogeneously, rate of specific feedback is approximately the same.

The results from the postlesson questionnaire indicate that doers felt more comfortable receiving feedback from an observer who was a friend than from an observer who was a nonacquaintance. However, pairing by ability seemed to have little effect on doer-perceived comfort in receiving feedback.

If observers provide specific feedback at a higher rate to friends and if doers feel more comfortable receiving the feedback from friends, then it seems imperative that physical education teachers allow students to select their own partners when employing a peer-instructional strategy, unless some other contingencies are evident. The provision of immediate formative feedback might be most valuable in the early stages of learning a skill or when learning a complex skilled movement.

The one dependent measure that remained constant across both pairing techniques was observer-perceived comfort in giving feedback. The learners seemed relatively comfortable giving feedback to friends as well as nonacquaintances, and to partners of similar ability as well as different ability. Perhaps having a criteria sheet and a teacher present during each lesson reduced the effect of working with an unknown partner. Or, perhaps no differences were realized because the learners were inexperienced at giving feedback to a peer and, thus, were more concerned about what they themselves were doing than to whom they were giving feedback.

**Table 3**

**Means and Standard Deviations for Perceived Comfort Giving Feedback**

| Ability Level | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| H-H | | L-L | | H-L | | L-H | |
| *n*=16 | | *n*=16 | | *n*=16 | | *n*=16 | |
| *M* | *SD* | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| 3.12 | .50 | 2.75 | .77 | 3.06 | .77 | 2.87 | .88 |

| Companionship | | | |
|---|---|---|---|
| Friend | | Nonacquaintance | |
| *n*=32 | | *n*=32 | |
| *M* | *SD* | *M* | *SD* |
| 3.06 | .67 | 2.84 | .81 |

*Note.* Ratings were based on a four-point semantic-differential scale.

Ehly and Larson (1976) and Little and Walker (1968) reported that ability was not predictive of student-learning outcomes or tutorial-process variables, but that the tutor's liking of the tutee was predictive of tutorial-process variables. The results from this study seem to corroborate the limited research findings about similar-age peer-tutoring programs conducted in the classroom environment.

Researchers have found that physical education teachers provide students with 0 to 3 specific positive and/or corrective task feedbacks per minute in a lesson (Byra & Marks, in press; Cusimano, 1987; Werner & Rink, 1989). If specific feedback was provided at a rate of 3 contacts per minute by the teacher, the lesson was 30 minutes, and there were 30 learners in the class, then 3 specific feedbacks would be directed to each learner during the lesson, assuming that the specific feedback statements were evenly distributed across the 30 learners. If a peer instructional strategy like the reciprocal style of teaching was employed for 10 minutes of a 30 minute lesson, each learner could receive 15 bits of skill related information (3 specific feedbacks per minute for 5 minutes). Receiving 15 specific feedback statements in a 30-minute lesson is substantially more than receiving 3. This difference is magnified even further when one considers the type of cognitive operations (comparing, contrasting, drawing conclusions) that the observer is engaged in when giving feedback to a doer (Mosston & Ashworth, 1986). While a gain in amount of task-related feedback is made in the reciprocal style of teaching, one must be reminded that the number of practice trials per learner is significantly reduced.

This study provides evidence to support two claims set forth for the reciprocal style of teaching: (a) that the most appropriate pairing technique is self-selection, as evidenced by learners working with friends, especially when the the reciprocal style is introduced to a group of learners for the first time; and (b) that feedback is provided at a much higher rate when the instructional strategy requires learners provide task-related information to a partner (Mosston & Ashworth, 1986).

Much still remains to be learned about pairing learners in peer-teaching episodes in physical education. Important questions that need to be addressed include: (a) How much interaction occurs between pairs in classes where one teacher is present (as opposed to this study where a preservice teacher was present with a pair of learners at all times)?; (b) what are the long-term effects of using different pairing techniques?; (c) what effects do different pairing techniques have on learner outcomes?; and (d) what gains are made by the observers and are these gains affected by the pairing technique employed? These are several of the questions that need to be investigated in future research.

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