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ASSERTION IN WOMEN'S INTERCOLLEGIATE TENNIS SINGLES

*The University of North Carolina at Greensboro*

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ASSERTION IN WOMEN'S INTERCOLLEGIATE  
TENNIS SINGLES

by  
Janice C. Shelton

A Dissertation Submitted to  
The Faculty of the Graduate School at  
The University of North Carolina at Greensboro  
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of the Requirements for the Degree  
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Greensboro  
1979

Approved by

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APPROVAL PAGE

This dissertation has been approved by the following committee of the Faculty of the Graduate School at the University of North Carolina at Greensboro.

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The broad purpose of this investigation was to study the assertive behaviors of women intercollegiate tennis players. The inquiry further sought to develop a systematic observation technique for use in analyzing intercollegiate tennis play. Singles play was selected as the specific sport environment in which to identify and describe assertion. A specific purpose of the research was to study the relationship between the obtained observations and players' scores on a general assertion scale, the CSES (Galassi et al., 1974). A comparison was also made between observed assertion in tennis play, team ranking, and points and games won and lost. Finally, player profiles were compiled which illustrate possible uses of observation findings.

Procedures for the development of the systematic observation technique involved the identification and description of assertive play behaviors in women's intercollegiate tennis singles. Three experienced judges were presented with a videotape of ten point sequences of singles play. The player selected was ranked fifth among AIAW Southern Region intercollegiate tennis players. Judges were requested to verify, add, or delete categories of play behaviors and descriptors of assertion on a summary sheet provided by the investigator. Agreement between two of the three judges was required to include a play behavior or descriptor of assertion. The observation tool provided for the recording of:

- (a) assertive, nonassertive, and neutral play, (b) points served or received and won or lost, (c) game, set, and match scores, and (d) frequencies of behaviors observed on each point sequence.

The Galassi et al. (1974) College Self-Expression Scale was administered to the top six ranked players of the University of Tennessee's Women's Tennis Team. Their competitive participation in tennis singles was observed during two separately scheduled intercollegiate tennis matches by trained observers. Inter-observer agreement on the first observation (.76, .72) was somewhat lower than on the second observation (.83, .82), but within an acceptable level.

The Kendall rank correlation coefficient, tau, was used to determine the relationship between the scores on the CSES and those obtained from observed assertion in women's intercollegiate tennis singles. The analysis revealed low correlations (0, .266) between the CSES and two observations of assertive behaviors. The results support the position that assertion in women's intercollegiate tennis is unique to the specific sport environment. Furthermore, the analysis reinforces the idea that assertion in tennis is more accurately analyzed from behavioral observations than from generalized assessment, i.e., paper-and-pencil measures.

Analysis of observed assertiveness with points and games won and lost considering player ranking on the squad was presented in table and figure form. Comparison revealed that, in general, there is a definite association between observed assertiveness and success in tennis competition as determined by points and games won. The finding was common among all players regardless of ranking.

A player profile was compiled from data collected during the two observations. The profile included: (a) a comparison of assertive scores when serving and receiving, (b) a comparison of points won and

lost when play was assertive, nonassertive, and neutral, (c) a summary of game-by-game behavior, and (d) a summary of player behavior following points that were lost when play was assertive. Player profiles were presented to illustrate the possible use of the observation tool. It was suggested that such information could benefit the coach and player in determining what phases of the player's game need modification and/or changes. The profile was also suggested for possible use in screening potential intercollegiate tennis players.

### Acknowledgments

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## CHAPTER I

### INTRODUCTION

Within the past decade behavioral scientists have begun to focus more attention on assertive behavior. It is the present opinion of most clinicians that it is healthier for a person to be assertive than to be either nonassertive or aggressive. A great deal of confusion, however, surrounds the meaning of the term assertion. That is, in part, due to the failure to clearly distinguish it from aggression. Woods (1971) indicated that the same problem exists in sport. He noted that the objective of competitive sport of "triumph over" is often translated as "demolish and destroy."

Clarification of the meaning of these behavioral constructs is important in sport psychology because assertion is generally assumed to be a necessary component of successful performance. Alberti and Emmons (1974) reported that teachers and coaches work with students of considerable potential who are unwilling to try new behaviors or who hesitate to respond in competitive situations. Nonassertion can thus be considered as an inhibitor of successful performance. Aggression can also interfere with an athlete's attempt to achieve his/her goal.

In Wyrick's (1972) investigation of aggression in foil fencing, she reported that when foil fencers lose control and become aggressive, chances for success are diminished. Therefore, an important aspect of successful performance in sport is being assertive without feeling inhibited and without losing control. Alberti and Emmons (1974) noted this in their

definition of assertion which states that assertive behavior "enables a person to act in his/her own best interests without undue anxiety and without denying the rights of others" (p. 2). Rimm and Masters (1974) suggested that the benefits of this behavior allow one to feel better about oneself which provides for more rewarding experiences.

Coaches often observe that nonassertive behavior is inhibiting, allowing the opponent to gain the advantage in competition. It is also observed that aggressive behavior results in losing control and/or breaking the rules of the game, thus reducing the opportunity to achieve one's intended goals. These generalizations, however, derive from experience, not necessarily from systematic inquiry.

How then is assertive behavior identified and analyzed in sport so that the coach and the athlete can deal with assertion in order to enhance training? What methods have been proven profitable in the assessment of assertion in a competitive environment?

Traditional sport studies of assertion have employed paper-and-pencil measures which record an overall score of general assertiveness. However, these measures are not designed to analyze assertion in specific sport situations and fall short of providing relevant information for understanding assertion in sport.

Recent studies (Bredemeier, 1975; Collis, 1972; and Dailey, 1978) have focused attention on developing paper-and-pencil measures of aggression and assertion in sport. Although this approach is an attempt to insure that the measures are more relevant to sport situations, Cratty (1973) suggested that their use alone is not totally effective. He recommended that a combination of observation and objective tests be employed in sport studies.

He further noted that a more valid index would probably be a coach's observation of an athlete's need and willingness to be assertive in a competitive experience.

Kroll (1970), Martens (1975), and McKenzie and Rushall (1973) emphasized the need for research utilizing specific assessment techniques capable of analyzing behavior in the unique competitive sport situation. Relying solely upon general personality assessment techniques fails to enrich and enhance the body of knowledge about sport personality.

In summary, it is apparent that an innovative approach to behavioral assessment in sport is desirable. This investigation was conceived to serve this purpose. It represents an attempt to define assertive behavior in a specific sport environment and take an initial step toward the development of a systematic observation technique to analyze assertion within the sport context. The sport chosen for study was tennis.

### The Problem

The broad purpose of this research was to study the assertive behaviors of women intercollegiate tennis players. More specifically research was carried out to obtain answers to the following questions:

1. By what means can one systematically observe assertive behaviors in women's intercollegiate tennis? What specific behaviors are identifiable? How are these behaviors described?
2. How do the assertive behaviors observed in women's intercollegiate tennis relate to a paper-and-pencil measure of assertiveness?
3. How do team ranking and games and points won and lost compare to observed assertiveness in play using a systematic observation tool?

4. How might systematic observation of assertiveness be used by a coach and player to improve or strengthen performance?

### Definitions

The following terms were defined for use in this study.

Assertion. Behavior which allows a person to act in his/her own best interest without undue anxiety, and without denying the rights of others (Alberti & Emmons, 1974).

Assertion in Competitive Tennis. Behavior which allows a person to act in his/her own best interest to gain and/or maintain control of play in order to win a point, without being inhibited and without denying the rights of the opponent to play within the rules of the game.

Behavioral Descriptors. Overt observable characteristics of a tennis player categorized by judges as:

Confident--a commanding assurance of self.

Determined--being unalterable.

Direct--taking an exact approach.

Forceful--powerful, vigorous action.

Intense--high concentration.

Readiness--being prepared to initiate action without hesitation.

Risking--exposure to chance of loss.

Control of Play. Gained and/or maintained superiority of position or condition during play.

Judges. A panel of three persons who viewed the videotaped play of a female intercollegiate tennis player to identify and describe assertive behavior in tennis.



Neutral Play in Competitive Tennis. A situation where neither player is attempting to gain or maintain control of play.

Nonassertion in Competitive Tennis. Behavior which inhibits a person from acting in his/her own best interest to maintain control of play in order to win a point.

Observers. A team of eight persons who used the observation tool to record assertive behaviors of women tennis players.

Women Intercollegiate Tennis Players. Female undergraduate students enrolled in the University of Tennessee during the 1978-79 academic year who are members of the varsity women's tennis team and who have participated in the Fall, Winter, and Spring competitive tennis schedules.

#### Assumptions

The following assumptions were made with respect to the present study:

1. Assertive behaviors in women's intercollegiate tennis competition can be identified, described, and analyzed utilizing videotaped performance.
2. The videotaped performance of a highly ranked female intercollegiate tennis player can be objectively and validly judged by individuals having experience and expertise in competitive tennis.
3. Selected periods of performance for both videotaping and observing subjects are representative of players' "real" abilities and playing styles.
4. The College Self-Expression Scale (CSES) is a valid and reliable self-report measure of assertiveness in a broad variety of interpersonal situations when administered to a college population.

### Scope

The boundaries set forth for this study included:

1. Descriptors of assertion in tennis were derived from videotaped play as evaluated by the judges. They were intended to provide a means for recording observations of assertion in tennis play.

2. Judges, who were used to confirm, reject, or add descriptors, were selected on the basis of their knowledge in the area of sport psychology or who have special competencies in aggression/assertion research or teaching and coaching of tennis.

3. Observers, who recorded occurrences of assertive play by women intercollegiate tennis players, were selected on the basis of their knowledge of tennis or their competency in teaching, coaching or participating in intercollegiate tennis. The observers were not familiar with the subjects or their play behaviors.

4. The systematic study of assertive behavior was made from observations of six members of an AIAW Large College Women's Tennis Team at the University of Tennessee at Knoxville. Observations were made from the beginning of the fifth game in the first set through the end of the second set of two separately scheduled competitive matches. The matches observed were part of the regular Spring tennis schedule of 1979.

5. No attempt was made to control for motivation or prior experience beyond membership on the tennis team.

### Significance

A major problem in sport personality research is the understanding and interpretation of general behavioral descriptors outside of the context in which the behavior occurs. Traditional studies in sport personality

employ paper-and-pencil measures which generally relate to "real-life" situations. Responses taken from these measures are presumed to have ramifications for the understanding and control of behavior in specific sport environments.

Martens (1975) and McKenzie and Rushall (1973) urge sport psychologists to move in a new direction in sport personality research. They emphasize the need for research which utilizes systematic sport-specific behavioral analysis. Rushall noted that this shift in focus requires innovative methodological design.

A number of psychologists contend that a close relationship exists between assertion and success. McClelland (1961) spoke of this relationship in regard to achievement in our economic system. Alberti and Emmons' (1974) view of assertion is that it is a socially potent behavior which enables a person to respond in his/her own best interests and allows achievement of desired goals.

Within the context of sport, assertive behavior is also considered to be a necessary component of successful performance (Harris, 1973; Tutko & Richards, 1971; and Wyrick, 1973). Tutko and Richards (1971) stressed the view that an athlete's ability to assert him/herself is a "vital part of athletic success."

The systematic analysis and recording of assertive behavior has the potential to identify and describe specific elements of successful performance in women's intercollegiate tennis. An understanding of such behavior may assist the coach in training athletes to perform more consistently the actions which lead to success in athletic competition.

Rushall (1973) indicated that teachers and coaches frequently acknowledge their difficulties in evaluating and changing performance

characteristics. Coaches attempt to explain behaviors they think are occurring; however, they have no definitive evidence upon which to rely for behavioral identification and analysis. McKenzie and Rushall (1973) emphasized the effective use of applied behavioral analysis for assisting the coach in changing certain performance characteristics of athletes.

An observation tool designed to describe and analyze assertive behaviors in tennis may enhance coaches' knowledge of the principles and realities of assertive tennis play. Thus, a coach may obtain cues for dealing more effectively with athletes whose behaviors may be either non-assertive or too aggressive. Moreover, the tool may also be useful for screening potentially successful tennis players. Finally, the descriptors may provide suggestions for further study of assertiveness in other sports.

## CHAPTER II

### REVIEW OF LITERATURE

The survey of literature focuses on three major topics. Within the first section, the general constructs of assertion are discussed with special attention given to definition and behavioral components. Sport research emphasizing the assertion/success relationship and studies of instrumental aggression are addressed in the second section. The third part of the review examines measures of assertion and aggression in sport and the use of observation tools.

#### Assertion

Although assertion was not labelled as such until the late fifties, a description of assertive behavior appeared earlier in the writings of Salter (1949). The author theorized that humans were born free of inhibitions. It was exposure to different conditioning experiences that developed their inhibitory behaviors. Salter described individuals as having either an excitatory or inhibitory personality. According to his diagnosis, the neurotic suffered from an excess of inhibition. He observed that inhibitory forces produced bewildered persons who were lacking in self-sufficiency. They found themselves doing things they did not want to do and were incapable of responding as they desired. When excitatory forces prevailed, people were observed to be action-oriented and emotionally free. Salter described the excitatory personality as being direct, responding outwardly to its environment. The clinician noted that for psychological health,

there must be a proper balance of excitatory and inhibitory processes in the brain.

Wolpe (1958) classified behaviors similar to those described by Salter as assertion and nonassertion. His definition of assertive behavior included "the outward expression of practically all feelings other than anxiety" (1969, p.1). He indicated that nonassertive individuals were not only inhibited, but many were lacking in interpersonal skills. Either of these conditions produced increased anxiety causing the inability to be assertive. Wolpe suggested that if an individual could be trained to behave assertively, then his/her assertive responses would help overcome the underlying anxiety. The decrement in anxiety would thus reinforce the overt assertive response.

Wolpe and Lazarus (1966) viewed nonassertion as a behavioral deficit related to specific situations rather than as a general personality trait. They introduced a program of assertive training which included behavioral rehearsals and other role-playing techniques. The need for assertive training was based on routine behavior therapy interviews and results from the Wolpe-Lazarus Assertive Inventory (Wolpe & Lazarus, 1966).

Lazarus (1971) emphasized the point that an important aspect of assertive training was teaching people the difference between assertion and aggression. He wrote that "outbursts of hostility, rage, or resentment usually denote pent-up or accumulated anger rather than spontaneous expression of healthy emotion" (p. 115). Assertive training programs developed by Wolpe and Lazarus focused on the expression of healthy emotions in interpersonal relationships.

Alberti and Emmons (1974) considered assertion to be both generalized and specific. They also drew attention to the need to make a distinction

between assertive, nonassertive, and aggressive behaviors. The authors defined assertion as "behavior which enables a person to act in his own best interests, to stand up for himself without undue anxiety, to express his honest feelings comfortably, or to exercise his own rights without denying the rights of others" (p. 2). The assertive person does not manipulate others, but is one who is fully in charge of himself and who spontaneously expresses his emotions. The nonassertive person is inhibited and is likely to think of an appropriate response after the opportunity has passed. An aggressive individual responds too vigorously, denying the rights of others, while leaving a deep and negative impression.

Alberti and Emmons viewed generalized nonassertion as a pervasive condition. They suggested that the individual who is inhibited in a variety of situations experiences deepened anxiety and thus becomes less assertive. However, the authors also acknowledged specific situational nonassertion, i.e., the inability to assert oneself or act spontaneously in a particular setting.

Rimm and Masters (1974) and Lange and Jakubowski (1976) refuted the idea that assertiveness--or the lack of it--is a pervasive trait. Rimm and Masters noted that a person may be quite assertive in one situation, yet tremulous and ineffective in another seemingly related set of circumstances. Lange and Jakubowski reported that "the available research evidence does not support the view of assertion as a unitary and pervasive personality trait, but rather that assertion is a situation-specific set of behaviors" (p. 276). They indicated that there are many different ways of acting assertively in numerous situations. Assertive behavior, according to the authors, includes spontaneous expression of oneself without dominating,

humiliating, or degrading others. Such behavior helps one maintain control while it reduces vulnerability and insecurity. Lange and Jakubowski also underlined the need for teaching people the difference between assertion and aggression and between nonassertion and politeness.

Rathus (1975) wrote that assertiveness is not a synonym for belligerence or antagonism. He stressed the idea that self-respect does not require continued aggravated confrontation. Rather, assertion is a positive and productive expression of oneself. The assertive individual is capable of evaluating social encounters and can determine appropriate responses.

In general, the review of literature on assertion shows that there is agreement among psychologists that such behavior is the spontaneous and free expression of oneself, without experiencing anxiety, and without denying the rights of others. A consensus of opinion also seems apparent that a need exists to teach individuals to distinguish assertion from aggression and nonassertion from politeness. However, a division of opinion remains as to whether assertion is a pervasive characteristic or situation-specific.

What then are the characteristics of assertive behavior? Eisler, et al. (1973) stated that "relatively little attention has been directed toward specifying behaviors comprising assertiveness" (p. 295). They reported that it is evident from Wolpe and Lazarus' definition that assertiveness is a complex construct involving many component behaviors. Alberti and Emmons (1974) also agreed that the issue of labelling assertive behaviors is complex, and noted that each situation must be evaluated individually.

In their assertive training program, Lange and Jakubowski (1976)



refer to "characteristics" of assertive behavior. Included in their list of assertive characteristics were: (a) confident, (b) direct, (c) emotionally honest, (d) expressive, (e) self-enhancing, (f) self-respecting, and (g) respect for others. Osborn and Harris (1975) offer an extensive list of descriptive characteristics of assertive behavior. The list includes:

active	enterprising	passionate
adequate	expressive	responsible
adventuresome	flexible	risking
appreciating	"flowing"	secure
authentic	forgiving	self-assured
bold	"go-getting"	self-enhancing
capable	honest	self-fulfilling
caring	independent	self-reliant
confident	integrated	spontaneous
confrontive	intervening	striving
congruent	initiating	supportive
creative	intimate	tolerant
determined	level	trustworthy
direct	loving	truthful
effective	open	vigorous
energetic	open-minded	vital (p. 37)

These authors also presented descriptors of nonassertive and aggressive behaviors to help distinguish between the two. They claimed that the purpose of their assertive training program is to help women develop a more adequate repertoire of assertive behaviors so they may

choose appropriate and self-enhancing responses in a variety of situations.

However, most assertive training programs focus on verbal expressions of assertion and do not address nonverbal and physical assertion. Serber (1972) recognized that most published research on assertion concentrated primarily on language assertion. He stated that "unfortunately, a most important aspect of assertive training, the nonverbal component, has not had its fair share of attention and has been left mostly to chance . . ." (p. 179). Serber classified three nonverbal behaviors: (a) eye contact, (b) facial expression, and (c) body expression.

Bodner (1975) identified "motoric behavior" as a component part of assertive behavior. Wolpe and Lazarus (1966) also included facial, postural, and nonverbal characteristics as important components of assertive behavior.

The most extensive research into the components of assertion was reported by Eisler, et al. (1973). They recommended the use of audio and videotaping to provide a more precise description of nonverbal components of assertive behavior. Serber (1972) trained raters of assertive behavior by using prepared videotaped models of body and facial expressions, appropriate to the social setting being observed. He emphasized that "if one is not in a position to measure kinetics, it is especially important to have a well-defined picture of the behavior" (p. 181).

In a more recent article related to physical activity, Boslooper (1976) called attention to the importance of learning physical assertive behaviors. In his counseling practice, the author discovered that numerous women had what he called a "negative physical orientation." They were inhibited in physical activity and could not cope with its emotional environment.

Boslooper suggested that physical assertive activities provide a "means for developing self-confidence, self-control, self-discipline, and coordination between mental and physical functions" (p. 37). He noted that when one can be vigorous and strong in competitive sport without hostility, then skill rather than hostility becomes the prerogative for winning.

The only program reported to date designed as physical assertive training is the Physical Confidence Therapy Program at Pine Rest Christian Hospital in Grand Rapids, Michigan (Beukema, et al., 1977). PCT was originally designed for inpatient adolescents at the hospital. It uses physical activities to develop group trust, self-awareness, body awareness, assertiveness, and conditioning. The physical assertive activities focus on goal-directed achievement, self-competition, and self and peer evaluation (constructive criticism). An example PCT activity is the "chicken fighting routine." In this exercise, two children stand facing one another at opposite walls, while balancing on one foot with their arms folded across their chest. They hop towards each other and attempt to bump the other off balance. The exercise is designed to allow participants to observe and feel pressure, touch, and learn control in an atmosphere of caring and sharing. The authors have reported that the exercises help free inhibitions that preclude effective interpersonal behavior and, also, that the patients develop physical confidence while learning to deal with fears of winning and losing.

In summary, the process of identifying and describing components of assertive behavior for the purpose of developing training techniques is relatively new. This is particularly the "state of the art" with respect to nonverbal and physical expressions of assertion.

Research About Assertion/Success Relationship  
and Instrumental Aggression

A number of psychologists contend that within the context of sport, assertive or aggressive behavior is considered a necessary component of successful performance. In 1969, Singer noted that extensive investigations were under way to examine the psychological factors associated with success in athletic competition. Studies by Peterson et al. (1967), Bird (1970), Cheska (1970), Mushier (1970), Williams, et al. (1970), and Harris (1973) identified such traits as dominance, aggression, ambition, self-confidence, self-sufficiency, and goal directedness as being necessary for female athletes if they were to successfully engage in sport.

Tutko (1972) wrote that success in sport depends on assertive behavior, and that "successful athletes as well as teams are able to assert themselves in competition" (p. 1). The author used the term assertion to describe the athlete that he classified as "aggressive--not hostile". He observed that traditional studies of aggression in sport employed group personality tests, which defined aggression in broad general terms. There was no clear distinction between hostile and assertive behaviors. Tutko's description of the aggressive--not hostile--athlete was one "who is cool under pressure, who seldom is carried away by personal feelings" (p. 3). The athlete is able to be assertive without feeling guilty or experiencing remorse. To the performer, assertion is a behavioral part of the contest, a means of achieving his/her goal.

In more recent research, sport psychologists made the distinction between assertion and aggression. Feshbach's (1964) term "instrumental aggression" has most often been adopted to operationally define goal-directed behavior in sport. It is not associated with an intent to do

harm or hostile aggression. However, it is noteworthy that indeed both behaviors, assertion and aggression, are observable in sport. As Woods (1971) aptly observed, "sport often resides in the gray area between aggression and assertion" (p. 56).

Wyrick (1972) contended that foil fencing was a sport in which goal-directed behavior (assertion) was distinguishable from hostile aggression. She emphasized that control is necessary for success in fencing, and that the fencer who loses control and becomes aggressive diminishes his/her chances for success. The purpose of Wyrick's study was to obtain a behavioral measure of aggression that was not assertive. She stated that "if an effective behavioral measure of interpersonal aggression could be isolated, it would be more highly related to antisocial characteristics as measured by personality inventories than it would be to factors of assertiveness" (p. 546). The research was also designed to determine the relationship between success and aggression.

The behavioral measure of aggression selected for the investigation was the lunge. By definition, in the sport of fencing, the lunge is an attack initiated against the opponent with the intent to hit. The Cattell 16PF was used to assess aggressiveness as a trait which might be compared with the behavioral measure of aggression. Wyrick noted that Cattell's personality inventory clearly refers to aggressiveness as assertiveness rather than hostility. Characteristics of the aggressive items of the measure are identified as: (a) assertive, (b) self-assured, (c) independent minded, (d) stern, (e) unconventional, and (f) attention-getting.

The results of Wyrick's study supported the hypothesis that the behavioral measure of aggression was not highly related to elements of

assertiveness. The correlations between Aggression/Ascendance on the 16PF and the behavioral aggression scores ranged from .03 to -.11.

Regarding the relationship between success and aggression, the investigator concluded that the attack, when coupled with success or failure in terms of scoring, was not an adequate measure of aggression representing hostility or assertiveness. Therefore, no conclusive evidence was reached concerning the success/aggression relationship.

In studies conducted by Morgan, et al. (1968, 1970, and 1974), psychological characteristics associated with assertion were found to be significantly related to successful performance. Morgan (1974) reported that "in behavioral-state terms the successful athlete tends to be less anxious, depressed, and confused, as well as possessing more psychic vigor than the unsuccessful athlete" (p. 381). However, Morgan stressed that this generalization is made with reservation because there are individual exceptions.

Although sport psychologists argue that assertion is a necessary component of successful performance, the research conducted to date has not provided sufficient observable evidence to significantly support such a hypothesis. New research strategies, i.e., systematic observational analysis, is needed to provide new means for examining the relationship between assertion and success in competitive sport.

#### Measures of Aggression and Assertion in Sport and the Use of Observation Tools

Although numerous studies have been conducted which investigate aggression in sport, relatively few have focused on or been related to assertive behavior. The research on aggression and assertion that has

been reported has generally followed the traditional research model of employing group personality measures. This approach has produced varied and inconsistent results which have been of little practical use. Attempting to assess an athlete's behavioral tendencies in this manner, is, as Goslin (1963) put it, "like trying to guess the ultimate size and shape of an oak tree by measuring a sapling in pitch darkness with a rubber band as a ruler, and without taking into account the conditions of the soil, the amount of rainfall, or the woodsman's axe." However, as Goslin further noted, "the amazing thing is that sometimes we get the right answers" (p. 156).

Within the past decade, sport psychologists have begun to develop specific sport-related paper-and-pencil measures of aggression and assertion. Collis (1972) developed a 50-item athletic aggression scale attempting to answer the following questions: (a) how important is winning to a group or individual, (b) what measures are subjects prepared to take in order to achieve success, and (c) how much are aggressive attitudes related to success in any given sport?

The author's main interest in devising the scale was to examine aggression in relation to athletic success. Responses considered to be highly aggressive were those which were most clearly related to winning. Collis defined athletic aggression by dividing it into two broad categories. The first one was referred to as "legal aggression", meaning a driving quest for perfection within the rules of the game. The second category was labelled "extra-legal aggression", which denoted a willingness to cheat and break the rules of the game in order to win.

In Collis' presentation of the scale, he did not indicate that any attempt was made to validate the instrument. Furthermore, he hinted that

perhaps the scale could best be considered a competitive or athletic success scale rather than one measuring athletic aggression. To date, no further research has been reported which has employed the Collis Scale of Athletic Aggression.

Bredemeier (1975) developed and validated a 100-item self-report scale (BAAGI) for the assessment of athletic aggression in female athletes. The scale was designed from a Likert-type format and assessed both reactive and instrumental athletic aggression. A negative correlation of .69 was obtained between the instrumental and reactive items. The investigator considered that this added to the construct validity of her instrument. Bredemeier's study also utilized the Buss-Durkee Hostility Scale, The Marlowe-Crowne Social Desirability Scale, and a coach's evaluation in the test battery. Significant correlations were found between the Buss-Durkee items and the reactive aggression items of the BAAGI. There was a smaller significant effect of social desirability on the instrumental aggression items. A factor analysis of the BAAGI showed that assertive emotional control items of the scale were related to instrumental aggression.

In 1977, Bredemeier reported BAAGI test scores of 95 female athletes and 23 male football players. The male athletes' mean scores were comparable to the female athletes' mean scores on the instrumental items, but the football players' levels of reactive aggression were significantly higher than those of the female athletes.

More recently, Dailey (1978) developed a 30-item situation-specific self-report measure of competitive assertion for college athletes. Included with the DAS in the test battery were the Galassi College Self-Expression Scale, The Marlowe-Crowne Social Desirability Scale, and



a player/coach rating scale. An analysis of variance revealed a scale reliability of .409 and an internal consistency of .941. No significant correlation was found between a competitor's self-reported assertiveness on the DAS and his/her behavior as viewed by the coach and/or teammates. A significant, but low relationship was shown between the scores on the DAS and the CSES.

With due respect for the sport psychologists who continue to develop self-report measures of aggression and assertion in sport, it remains evident that paper-and-pencil tests have yet to significantly enhance the coach's understanding of these behaviors in specific sport environments. Alternative research methods must be sought which yield information that has value for application.

Recently the focus of behavioral research in physical education and sport has shifted from the traditional model previously mentioned to descriptive analysis. Rosenshine (1976) reported that this new era of research was strongly influenced by the work of Flanders (1960) in the field of education. Flanders' Interaction Analysis System was designed to observe and analyze the teaching process from within the classroom. This systematic observation technique provided a tool to identify and quantify verbal and nonverbal interactions between teachers and students in the natural educational environment. Herbert and Attridge (1975) noted that "instruments for systematic observation probably form the most rapid growing set of tools becoming available to researchers" (p. 2).

Locke (1977) reported that the development of instruments for systematic observation in physical education is Cheffer's Adaptation of Flanders' Interaction Analysis System (CAFIAS). Cheffer's instrument was

designed to describe and analyze both teacher and student verbal and non-verbal interaction behaviors in the gymnasium. Nonverbal categories describing facial expressions, gestures, and postural positions are added to each of the ten FIAS categories.

Rushall and Siedentop (1972) initiated a system of applied behavioral analysis which they indicated could offer more efficient methods for skill analysis and correction. The authors suggested that applied behavioral analysis can also provide a vehicle for understanding sport behaviors and can be beneficial in defining effective coaching behaviors and strategies.

Rushall (1977) defined applied behavioral analysis as a discipline which studies the definition, maintenance, and change of behavior. In sport, it is used to develop more clear, concise, operational definitions of "traits." Then it goes a step further to determine what is maintaining the behavior. The final step of applied behavioral analysis is to develop procedures to change the behavior.

Applied behavioral analysis has several characteristics (Rushall, 1977):

1. It is applied. The immediate concern of a project is the behavior of the individuals involved. The importance of the behavior in a social context is stressed rather than relating the behavior to some theory.
2. It is behavioral. The focus of study is on what the subjects do rather than what they say or think or report on a questionnaire. Therefore, the procedures of applied behavior analysis are objective.
3. It is analytic. The events which are responsible for the occurrence or nonoccurrence of a behavior are determined.

An applied analysis of behavior is achieved if the user can demonstrate control over the important behavior.

4. It is technological. The elements in the behavior analysis are completely identified and described.
5. It is effective. The results of applications are of practical importance rather than scientific value.
6. It is practical. Applications are only deemed successful if produced effects are large enough to be of practical value. Statistical analyses are not required (or appropriate) for decision making with regard to the magnitude of effects.
7. It is conceptually systematic. The concern of applications and studies is to utilize the principles of behavior rather than to test isolated concepts or theories (pp. 13-14).

Ziegler and Callahan (1977) reported about the procedures involved in applied behavioral analysis. First they indicated that the behavior is observed in its natural environment. An operational definition then evolves from the observations. Once the behavior is clearly defined in observable terms, the rate, frequency, and/or duration of the behavior can be recorded by using a systematic observation and recording technique. After the information is assessed, a variety of programs can be developed, specifically designed to reach immediate objectives or final training goals. The behavior itself can be changed, modified or maintained through specific training techniques. Although behavior analysis research is a relatively young field of investigation, Zeigler and Callahan underscore its potential to "provide some new tools for the understanding of behavior, its maintenance and its change--goals which have thus far eluded our grasp" (p. 309).

In the writer's opinion, applied behavioral analysis is the most promising research technique available to date. It offers the most practical and systematic process for analyzing sport behaviors. If these behaviors can be systematically observed and operationally defined, then coaches and athletes can develop training techniques which will allow them to achieve the behavioral goals set for their competitive sports program.

### CHAPTER III

#### PROCEDURES

The description of the procedures followed in carrying out the present study is organized in two phases. The first phase, instrumentation, involved identifying and describing assertive behaviors of a female tennis player in competitive intercollegiate tennis singles. Assertive behaviors so identified and described were then used to develop a systematic observation tool. The second phase of the inquiry, observation, involved using the observation tool during regularly scheduled competitive matches of women's intercollegiate tennis.

#### Instrumentation

A videotape of tennis play was prepared for judges to evaluate and modify key descriptions of assertive behavior. Using the judges' descriptions of assertion, the observation tool was next developed for actual observation of assertion during women's intercollegiate tennis play.

#### Videotape Preparation

The videotape crew consisted of three cameramen and two play-by-play commentators. The camera crew had prior experience in videotaping various sporting events. Two trial videotaping sessions were conducted during a three-day indoor tennis tournament at Vanderbilt University in Nashville, Tennessee in early February, 1979. Seven 1978 All-American players, who were members of five AIAW Large College Tennis Teams, were videotaped during tournament play.

Permission was requested from one of the top six ranked AIAW Southern Region tennis players to videotape her in a competitive singles match during the 1979 Spring tennis schedule. The match was played and videotaped in an indoor tennis facility at East Tennessee State University in Johnson City, Tennessee during the third week of February, 1979.

Three videotape cameras with zoom lens were used to record the first two sets of play in the singles match on RCA 4-hour VHS tape recorders with sound and in color. One camera was positioned on a press box platform approximately 75 feet high and 100 feet back of mid-court to provide a full field of vision of the court and play. Two other cameras were positioned approximately 30 feet back from the court and 45 feet high in viewing stands beside the court. One camera provided close-up coverage of the subject's play while the other camera recorded close-up coverage of the play of the subject's opponent. Each camera was equipped with a microphone to provide an audio description of each point played and the score of the match for coordination of editing each view of the point sequences.

From the two sets videotaped, ten point sequences were edited out for judges to view. The selection of point sequences was made on the basis of their potential to display assertive behavior during a variety of play patterns. The completed tape viewed by the judges showed each point in the following sequence: (a) full-court view of play once, (b) the server playing the point twice, (c) the receiver twice, and (d) the full-court view once again. Each point sequence was preceded by an audial description of the set, game and point played and the score. Two duplicate videotapes were produced so each judge had a full tape of all ten point sequences. The length of each tape was approximately 20 minutes.

### Judges Selection and Their Evaluations

A panel of three judges was selected on the basis of their special competencies in assertion research and the teaching or coaching of tennis. Appendix A indicates the names and affiliations of judges. Each judge viewed the ten points played and used a behavioral description summary sheet to identify possible occurrences of assertion displayed by the subject of the videotape. The summary sheet was designed and reviewed with each judge. This consultation was intended to assure an understanding of terminology and intent of the form. The judges' summary sheet and directions are also presented in Appendix A.

The judges were instructed to view the videotape to verify, delete, or add any behavior or description that did or did not appear on the summary sheet. Moreover, they were requested to mark a check to indicate that the assertive behavior clearly occurred as described. A zero was used to denote that the behavior did not occur as described. Coding with a letter N represented no opportunity to observe the behavior. The results of the judges' responses served as the basis for developing the observation tool for the descriptive analysis of assertive behaviors in women's intercollegiate tennis.

### Development of the Observation Tool

The technique used to observe and record assertive behaviors, developed by the investigator, derived from the videotape and judges' responses to the taped performance. This observation tool was not intended to serve as a validated measure of tennis assertiveness, but, rather, to be utilized as a means of describing and analyzing the assertive behaviors of women's intercollegiate tennis players. Face validity of the observation tool was

obtained from expert judgments. A behavioral descriptor summary sheet, designed as a guide for the judges in viewing the videotape, provided the point of departure in further studying of the behaviors. The descriptors provided each judge the opportunity to verify, delete, or add behaviors or descriptors.

The summary sheet was organized in two sections: (a) the basic play behaviors of tennis and (b) descriptors of these behaviors. The play behaviors of tennis were categorized as: (a) movement--coverage of the court, (b) position--established posture prior to the stroke, and (c) the stroke--execution and placement. The behavioral descriptors were adapted and synthesized from listings of general assertive descriptors (Alberti & Emmons, 1974; Lange & Jakubowski, 1976; Osborn & Harris, 1975).

Descriptors included on the summary sheet were: confident, confrontive, intense, and risking.

The results recorded on the summary sheet by the judges contributed to the actual design of the instrument developed for recording assertive behaviors in women's intercollegiate tennis. Descriptors and play behaviors were used in the observation tool only when at least two of the three judges were in agreement.

The investigator assumed responsibility for the actual translation of the judges' responses used in the design of the observation tool. The judges' description of assertion, taken from their observations of videotaped performance, was translated and used to describe the play behaviors they identified which related to the reality of competitive tennis. Wording used to describe assertive behavior in each category of



tennis play was chosen on the basis of observation, rather than being inferential.

Criteria used in carrying out this procedure followed suggestions cited above by Rushall and Ziegler and Callahan. They suggested that the first step in applied behavioral analysis is to observe the behavior in its natural environment. An operational definition then evolves from the observations. Once the behavior is clearly defined in observable terms a recording technique can be developed to systematically observe the behavior.

The tool was designed to provide a frequency count of assertive behaviors for each point sequence observed. Recordings were made on the observation form with a plus (+) when assertive behaviors were clearly seen. Such behaviors were defined as the player gaining and/or maintaining control of play. When nonassertive behavior was observed, a minus (-) was recorded. This indicated that the subject lost control of play. A zero (0) was marked on each point when neither assertive or nonassertive behavior was clearly seen and neither player was in control. This situation was considered as neutral play. Pluses, minuses, and zeroes were tabulated and then summed for each point. Each point was also marked won or lost and served or received. See Appendix C for the observation tool.

### Observations

#### Selection of Players

The players invited to participate in the segment of the research during which the tool was tested were female undergraduate students who were the top six ranked players of a squad of ten members of the University

of Tennessee's Women's Intercollegiate Tennis Team. These athletes competed in AIAW state, regional, and national competition during the Fall, Winter, and Spring quarters of 1978-79. All regulations assuring protection of human subjects were followed in accord with University of North Carolina at Greensboro policies.

#### Administration of the CSES

The Galassi et al. (1974) College Self-Expression Scale was administered to the top six ranked members of the University of Tennessee's Women's Tennis Team in a classroom setting prior to a practice session during the first week of Spring quarter, 1979 by the principal investigator. The testing session consumed approximately 20 minutes. Self-explanatory directions accompanied the distribution of the CSES. All team members were informed of the intended purpose of the study and were properly thanked for their participation.

Scoring followed recommended procedures by Galassi et al. (1974). The CSES is a 50-item self-report measure utilizing a five-point Likert format (0-4) with 20 positively worded items and 30 negatively worded items. A total score for the scale was obtained by summing all positively worded items and reverse scoring and summing all negatively worded items. Low scores were indicative of a generalized nonassertive response pattern. Tennis players with scores falling in the 95-105 range were ranked as low assertive, in the 122-127 range as moderately assertive, and those in the 145-155 range as highly assertive (Galassi, Hollandsworth, Radecki, Gay, Howe, & Evans, 1976).

#### Training Observers

A team of eight observers was selected for training with the use of

the observation tool on the basis of their knowledge and experience in teaching, coaching and/or participating in intercollegiate tennis. See Appendix C for names and affiliations of the observation team.

The first phase of training the observers included three discussion and practice sessions between the investigator and the observation team. At the first session, observers were given written definitions and descriptions of assertive, nonassertive, and neutral play behaviors. The investigator discussed the descriptions of tennis play behaviors and answered observers' questions related to distinguishing among the behaviors. See Appendix C for written definitions and descriptions of tennis play behaviors discussed with the observation team. During the second and third sessions of the first phase of training explanations of the observation tool and the directions for using it were given. Observers then viewed the videotape of ten point sequences prepared for the judges and practiced using the observation tool while viewing the videotape. The observation tool and the written instructions accompanying it are presented in Appendix C.

The second phase of training involved "live" observation of women's intercollegiate competition. The observation team attended two separately scheduled women's intercollegiate tennis matches, between teams other than the University of Tennessee, to practice using the observation tool. The first set of play was observed and recorded. The investigator then reviewed with the observers the recordings they made during the "live" tennis competition.

#### Data Collection

The investigator and observation team travelled to Knoxville,

Tennessee, to observe two scheduled matches between the University of Tennessee and Furman University on April 11, 1979, and University of Tennessee and Virginia Tech University on April 28, 1979. Both matches were played during approximately the middle third of the 1979 Spring tennis schedule and were approximately two weeks apart. By the middle third of the season, the beginning of the Spring quarter had passed, team positions were well established, and the team had had sufficient time to practice and adapt to a rigorous schedule.

Two observers recorded behaviors during the singles matches of the first and second ranked players. Assigning two observers each on the first two position singles matches allowed the investigator to determine inter-observer agreement. Three observers on each of the six singles matches would have been preferred to determine inter-observer reliability; however, all six singles matches were played simultaneously and it was not feasible to secure a squad of observers that large in number.

For the other four position players (3-6), one observer each was assigned. Observations began in the first set, fifth game and second point and continued until the end of the match. This allowed for at least a minimum of 18 points to be observed in each match. Observing every other point provided the observer time to view the point and then record the data before the next even point was played. Even points were chosen to be observed to allow the observer to record game and set scores during the first point of each game and also because it permitted observation of most deuce points.

A plus (+) recorded on the form in any of the four categories of play indicated that assertive behavior by the subject was clearly seen. A minus (-) recording indicated nonassertive behavior was observed and a

zero (0) noted that neither player was taking control of play. This situation is described as neutral play, when each player is keeping the ball in play but is not attempting to gain control in order to win the point. Each point sequence was also marked served or received and won or lost. Points played were marked by the score of the subject, i.e., 1-5-2 (first set, fifth game, second point), 1-0 (subject ahead in game points), and 3-2 (subject ahead in games won). Frequencies of assertive behaviors were then tabulated and summated for each point sequence.

#### Player Ranking

The ranking of the players, referred to as establishing the ladder position, on the ten-member squad was accomplished by intersquad competition prior to the first scheduled competitive match of the Spring season. The ladder remained the same during the month of April, 1979, in which the observations were made. Therefore, player squad position was pre-determined and not an integral part of this investigation.

#### Preparation of Data for Analysis

The preparation of data for analysis was carried out in two phases. The first phase, preparation of judges' responses to videotaped assertive behavior in tennis served as the basis for answering Question 1 and for developing a systematic observation tool. The second phase, preparation of observation data for analysis, provided information for answering Questions 2-4 set forth in Chapter I of the study.

To answer Question 1, concerning the identification and description of assertive behaviors in tennis, a frequency summary was made of the assertive play behaviors identified and described by expert judges. Tennis play behaviors and descriptive assertive cues selected by two of

three judges were summarized and synthesized for use in defining assertion in tennis and also in developing an observation tool for use in analyzing assertion in women's intercollegiate tennis.

Following the two observations of the top six ranked players of the University of Tennessee's Women's Tennis Team, two steps were taken to prepare the recorded data for analysis. First, a frequency summary of tennis play behaviors was made for each point sequence observed. Then, game and set summaries of the play behaviors of each of the six players for both observations were made. Each point sequence, game, and set of both matches was classified as assertive, nonassertive, or neutral. After the play behaviors were summarized, points won and lost, served and received were summarized and collated with game, set, and match scores for each match.

In preparation to answer Question 2 concerning the relationship between the CSES and observed assertion in tennis, general assertive scores on the CSES were determined. Behavioral assertive scores taken from observations were computed and ranked. This was done for the top six singles players of the University of Tennessee's Women's Tennis Team. The Kendall Tau rank correlation coefficient was then computed to measure the degree of association between the CSES and the two behavioral observations.

In preparation to answer Question 3 concerning the comparison of points and games won and lost and observed assertiveness with respect to team ranking, summaries of points and games won and lost were tabled by team ranking for comparison.

In preparation to answer Question 4 as to how systematic observation of assertiveness could be used to improve or strengthen performance, player profiles were compiled from data collected during the two observations.

The profile included: (a) a comparison of assertive scores when serving and receiving, (b) a comparison of points won and lost when play was assertive, nonassertive, and neutral, (c) a summary of game-by-game behavior, and (d) a summary of player behavior following points lost when play was assertive.

CHAPTER IV  
FINDINGS AND DISCUSSION

The findings and discussion of data are organized and presented in accordance with the procedures stated in Chapter III. Discussion is directed to: (a) systematic identification and description of behaviors, (b) relationship between the GSES and observed assertion in tennis, (c) comparison of team ranking and points and games won and lost with observed assertion in tennis, (d) inter-observer agreement, and (e) player profiles.

Systematic Identification and Description  
of Assertive Behaviors

A videotape of the tennis singles play of a selected woman athlete was evaluated for key descriptors of assertive behaviors. The tape consisted of ten point sequences edited from two sets of one of the subject's intercollegiate tennis matches. The selection of point sequences was made on the basis of their potential to display assertive behavior during a variety of play patterns.

A panel of three judges viewed the taped performance and used a behavioral description summary sheet to identify and describe occurrences of assertive tennis play. The summary sheet was designed and prior consultation with each judge assured an understanding of terminology and intent. The judges were instructed to verify, add, or delete any behavior or descriptor that did or did not appear on the summary sheet. See Appendix A for the summary sheet and directions to the judges.



The summary sheet was organized in two sections: the basic play behaviors of tennis and descriptors of these behaviors. The play behaviors of tennis were categorized as (a) movement--coverage of the court, (b) position--established posture prior to the stroke, and (c) the stroke--execution and placement. The behavioral descriptors of assertion included: (a) confident, (b) confrontive, (c) intense, and (d) risking. The selection of behaviors and descriptors, used to identify and define assertion in women's intercollegiate tennis, was made on the basis of having been verified, added, or deleted by two of the three judges.

Three of the four behavioral descriptors listed on the summary sheet were verified; one was eliminated. Of seven additional descriptors listed by the judges, five were selected by two of the three judges and were therefore added to the instrument. The results of the judges' selections are shown in Table 1.

Each of the three categories of basic play behaviors of tennis was verified by the judges and retained. However, the judges recommended that the categories be broadened to include movement and position in a wider range of play behaviors, i.e., offensive and defensive court coverage. A new category of mannerisms was added by the judges. Table 2 indicates the tennis play behaviors categorized by the judges.

The judges' identification and description of assertive behaviors in tennis served as the basis for further development of the observation tool. Definitions of assertion, nonassertion, and neutral play in competitive tennis were formulated and used by the observers to analyze and record these behaviors in women's intercollegiate tennis. Moreover, a definition of control of play was formulated to explain the effect

Table 1  
 Assertive Behavioral Descriptors  
 Selected by Judges

Descriptor	Judge 1	Judge 2	Judge 3
bold			x
confident	x	x	x
confrontive			x
determined	x	x	
direct		x	x
forceful	x		x
initiate	x	x	
intense	x	x	x
readiness	x	x	
risking	x	x	x
unhesitating			x

Table 2  
Tennis Play Behaviors Categorized by Judges

Play Behavior	Judge 1	Judge 2	Judge 3
defensive court coverage		x	x
(a) movement	x	x	x
(b) position	x	x	x
offensive court coverage		x	x
(a) movement	x	x	x
(b) position	x	x	x
mannerisms	x	x	
stroke	x	x	x
(a) execution	x	x	x
(b) placement	x	x	x

assertive, nonassertive, and neutral play behaviors may have on the possibility of winning a point. When a player is in control of play, he/she has gained and is maintaining superiority of position or condition during play which allows for greater opportunity to win the point by making a winning shot that the opponent cannot return or by forcing the opponent to commit an error. Assertive behavior generally results in control of play. Nonassertive behavior allows the opponent to maintain control of play. Neutral play behavior is a response of keeping the ball in play when neither player is attempting to gain control of play. In this situation, a point will usually be won by the player who does not commit an unforced error. Chapter I presents complete definitions of the above terms.

#### Relationship Between the CSES and Observed Assertion in Tennis

The degree of association was determined by correlating scores on the CSES with those obtained from observed assertion in women's intercollegiate tennis. The Kendall Tau rank correlation coefficient was used to compute the relationship.

A measure of assertion in women's intercollegiate tennis, i.e., situation-specific behavior, was expected to yield a low to moderate positive correlation coefficient with a generalized scale, i.e., the CSES. The results of the comparison were as anticipated.

The correlation between the CSES and the first observation yielded a value of zero. However, the second observation correlated somewhat higher at .266 (not significant). These results permit the inference that assertion in women's intercollegiate tennis is unique to the specific

sport environment. The obtained value of tau is representative of the inverse relationship of CSES and assertiveness for five of the six players observed. See Appendix D. The analysis gives support to the idea that assertion in tennis is more accurately analyzed from behavioral observations than from generalized paper-and-pencil behavioral measures.

### Comparison of Assertion and Points and Games

#### Won and Lost with Player Ranking

The two observations of assertion in women's intercollegiate tennis singles yielded data about points and games won and lost, as well as an assertive score for each point sequence and game observed. The tennis team observed chose to play their competitive matches using the regular deuce game scoring method which resulted in different numbers of points played in each game. Because of the uneven number of points played by each of the six players, a statistical comparison was not carried out. Rather a descriptive "picture" of assertive play was presented in table form. Games as well as points are shown in the comparison because games won and lost are used as the standard measure of success in winning a set or match in tennis.

For each point sequence a participant's play behaviors were recorded as assertive (+), nonassertive (-), and neutral (0). A positive score, obtained by summing all behaviors recorded during a point sequence, indicated assertive play; a negative score indicated nonassertion; and a zero represented neutral play. Tables 3 and 4 show a comparison of points and games played assertively, nonassertively, or neutrally during the first observation; and whether each of the six players won or lost. Tables 5 and 6 show the same comparison on the second observation.

The comparison in Tables 3-6 reveal that in general there is a definite relationship between observed assertiveness and success in tennis as determined by points and games won. However, this relationship is common regardless of team ranking.

Figures 1 and 2 are also presented in graphic form to reveal the relationship between points won and points played assertively and nonassertively for both observations. In Figure 1 a definite pattern is visible between points played assertively and points won. Figure 2 reveals the haphazard pattern and relationship between points won and points played nonassertively.

#### Inter-Observer Agreement

On both occasions when observations were made, all six singles matches were played simultaneously. Therefore, only two observers could be used to establish inter-observer agreement on two position players. The results of the inter-observer agreement on observations of the first and second position players for both scheduled matches are recorded in Tables 7-10. Values obtained were .76 and .72 on the first observation for games observed and .83 and .82 for the second observation.

The inter-observer agreement on the first observation was lowest. However, for both teams of observers, the agreement was higher on the second observation. Considerations which may have influenced the obtained agreement coefficients include: (a) one of the observers seldom gave a rating in the category of mannerisms on the observation form, while others customarily did; (b) from the first to the second observation, it is evident that each rater became more capable of judging neutral play;

Table 3  
 Comparison of Points won and Lost by Player Position  
 First Observation

Position	Points Observed	Assertive	Nonassertive	Neutral
1	36	25	9	2
won/lost	22/14	21/4	0/9	1/1
2	37	24	12	1
won/lost	25/12	24/0	0/12	1/0
3	35	28	4	3
won/lost	27/8	26/2	0/4	1/2
4	18	13	2	3
won/lost	12/6	11/2	0/2	1/2
5	28	21	4	3
won/lost	22/6	20/1	1/3	1/2
6	34	23	6	5
won/lost	24/10	20/3	1/5	3/2

Table 4  
 Comparison of Games Won and Lost by Player Position  
 First Observation

Position	Games Observed	Assertive	Nonassertive	Neutral
1	13	11	2	0
won/lost	9/4	9/2	0/2	0/0
2	14	11	3	0
won/lost	10/4	9/2	1/2	0/0
3	12	12	0	0
won/lost	10/2	10/2	0/0	0/0
4	6	6	0	0
won/lost	5/1	5/1	0/0	0/0
5	11	10	1	0
won/lost	9/2	9/1	0/1	0/0
6	13	10	3	0
won/lost	9/4	8/2	1/0	0/0

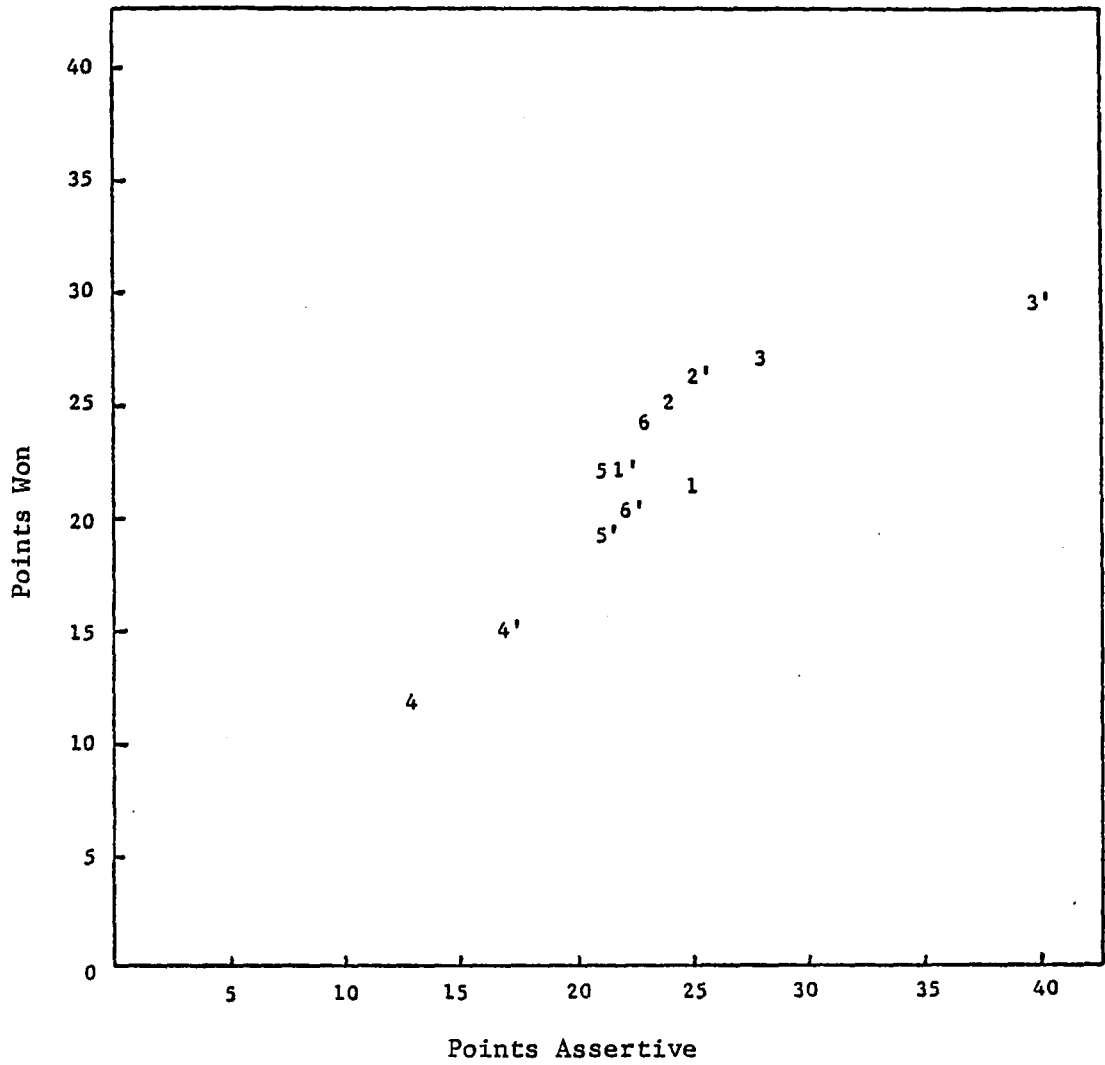


Table 5  
 Comparison of Points Won and Lost by Player Position  
 Second Observation

Position	Points Observed	Assertive	Nonassertive	Neutral
1	36	22	9	5
won/lost	22/14	17/5	1/8	4/1
2	41	25	13	3
won/lost	26/15	23/2	1/12	2/1
3	46	40	2	4
won/lost	29/17	28/12	1/1	0/4
4	26	17	1	8
won/lost	15/11	14/3	1/0	0/8
5	37	21	10	6
won/lost	18/19	17/4	0/10	1/5
6	38	22	11	5
won/lost	20/18	17/5	0/11	3/2

Table 6  
 Comparison of Games Won and Lost by Player Position  
 Second Observation

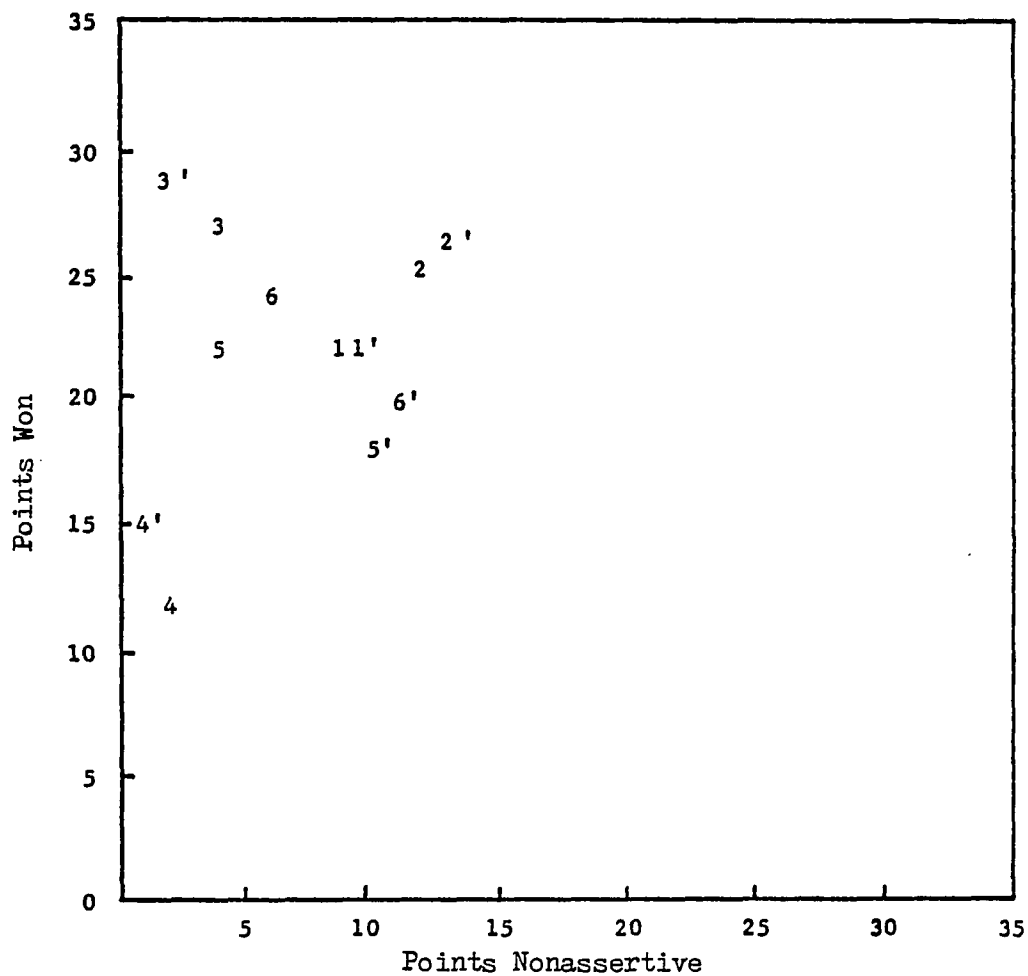
Position	Games Observed	Assertive	Nonassertive	Neutral
1	11	8	3	0
won/lost	9/2	8/0	1/2	0/0
2	13	10	3	0
won/lost	9/4	8/2	1/2	0/0
3	12	12	0	0
won/lost	9/3	9/3	0/0	0/0
4	9	9	0	0
won/lost	9/0	9/0	0/0	0/0
5	11	9	1	1
won/lost	9/2	8/1	1/0	0/1
6	15	10	5	0
won/lost	8/7	7/3	1/4	0/0



First Observation Shown by Player Position Number

Second Observation Shown by Player Position Number Prime

Figure 1. Graphic representation of points won and points assertive.



First Observation Shown by Player Position Number

Second Observation Shown by Player Position Number Prime

Figure 2. Graphic representation of points won and points nonassertive.

and (c) the "live" observation of behavior is often affected by various environmental conditions. For example, wind conditions during the first observation caused the scoring standards to rotate. This presented a problem of the score being less visible to the observers at various times.

With respect to agreement, the numerical value does not identify the complete similarity of observations. There were, for example, only three of 36 points during Observation #1 on Player #1 for which the observers marked different behaviors. On all three occasions one of the observers had recorded a zero indicating neutral behavior, while the other observer recorded either assertive or nonassertive behavior. There were no points observed for which one observer marked the behavior as assertive while the other recorded it as nonassertive. On only one point during the first and second observations on Player #1 and Player #2 did observers disagree as to whether the behavior was assertive or nonassertive.

An examination of inter-observer agreement by games also shows that for Observation #1 on Player #1 observers totally agreed upon which behavior predominantly occurred. The only disagreement was in the value (degree of assertion, nonassertion, or neutral play displayed). For Observation #2 on Player #1 only one game showed a difference in behavior recorded. One observer marked neutral behavior while the other recorded the play as assertive. For both observations on Player #2 observers were in total agreement as to which behavior occurred on a game-by-game basis. The only disagreement was likewise in the value recorded for the behavior. This indicates that inter-observer agreement was high with respect to recording which behavior occurred, although the numerical value more often differed.

Table 7  
 Inter-Observer Agreement on Position One's Singles Match  
 First Observation

Game	Observer # 1	Observer # 2	Agreement
1	-1	-2	.50
2	+9	+7	.78
3	+2	+2	1.00
4	+9	+7	.78
5	+9	+6	.67
6	+7	+7	1.00
7	+3	+2	.67
8	+9	+7	.78
9	+4	+4	1.00
10	-5	-5	1.00
11	+13	+10	.77
12	+12	+9	.75
13	+4	+3	.75
Match Total	+75	+57	.76

Agreement was determined by use of the following formula:

$$\frac{\text{Score \#1}}{\text{Score \#2}} = \text{Agreement}$$

Table 8  
Inter-Observer Agreement on Position Two's Singles Match  
First Observation

Game	Observer # 1	Observer # 2	Agreement
1	+6	+3	.50
2	+9	+8	.89
3	+3	0	.00
4	+18	+16	.89
5	+3	+1	.33
6	-2	-3	.67
7	+4	+3	.75
8	+15	+10	.67
9	-5	-4	.80
10	+8	+6	.75
11	+2	+1	.50
12	+5	+5	1.00
13	+14	+11	.79
14	-6	-4	.67
Match Total	+74	+53	.72

Table 9  
Inter-Observer Agreement on Position One's Singles Match  
Second Observation

Game	Observer # 1	Observer # 2	Agreement
1	+10	+17	.59
2	+3	+2	.67
3	+9	+6	.67
4	+6	+4	.67
5	-6	-2	.33
6	+5	+3	.60
7	+1	+2	.50
8	+6	+7	.86
9	+2	+2	1.00
10	-4	-4	1.00
11	+2	+4	.50
Match Total	+34	+41	.83



Table 10  
 Inter-Observer Agreement on Position Two's Singles Match  
 Second Observation

Game	Observer # 1	Observer # 2	Agreement
1	+5	+4	.80
2	+8	+5	.63
3	+8	+6	.75
4	-4	-4	1.00
5	+5	+4	.80
6	+8	+7	.88
7	+4	+3	.75
8	+7	+7	1.00
9	-2	-2	1.00
10	-3	-3	1.00
11	+11	+10	.91
12	+5	+5	1.00
13	+2	+2	1.00
Match Total	+54	+44	.82

Player Profiles

The observations of the top six ranked players of the University of Tennessee's Women's Tennis Team yielded information which is organized into player profiles. Each profile includes: (a) a comparison of assertive scores when serving and receiving, (b) a comparison of points won and lost when play was assertive, nonassertive, and neutral, (c) a summary of game-by-game play behaviors, and (d) a summary of play behavior following points lost when play was assertive. The profiles are presented in summary form for concise comparative analysis.

Player Position # 1

Assertive scores for points served and received are presented for comparison by observation.

	<u>Observation # 1</u>	<u>Observation # 2</u>
Points Served	21	20
Assertive	12	13
Points Received	15	16
Assertive	13	9

Points won and lost are compared for assertive, nonassertive, and neutral play.

	<u>Observation # 1</u>	<u>Observation # 2</u>
Assertive Points	25 (won 21, lost 4)	22 (won 17, lost 5)
Nonassertive Points	9 (won 0, lost 9)	9 (won 1, lost 8)
Neutral Points	2 (won 1, lost 1)	5 (won 4, lost 1)

Game behaviors are summarized for comparison of consistent and inconsistent patterns of play.

	<u>Observation # 1</u>	<u>Observation # 2</u>
Games Observed	13	11
Consistent Behavior	11	5
Assertive	8	3
Nonassertive	2	1
Neutral	1	1
Inconsistent Behavior	2	6
Assertive/Nonassertive	0	0
Assertive/Neutral	2	3
Nonassertive/Neutral	0	0
Assertive/Nonassertive/Neutral	0	3

A summary of play behaviors following points lost when play was assertive is presented for comparison by observation.

	<u>Observation # 1</u>	<u>Observation # 2</u>
Points Lost When Assertive	4	5
Following Points		
Assertive/Won	2	3
Assertive/Lost	0	0
Nonassertive/Won	0	0
Nonassertive/Lost	2	1
Neutral/Won	0	0
Neutral/Lost	0	1

Player Position # 2

Assertive scores for points served and received are presented for comparison by observation.

	<u>Observation # 1</u>	<u>Observation # 2</u>
Points Served	21	15
Assertive	15	9
Points Received	16	24
Assertive	9	14

Points won and lost are compared for assertive, nonassertive, and neutral play.

	<u>Observation # 1</u>	<u>Observation # 2</u>
Assertive Points	24 (won 24, lost 0)	25 (won 23, lost 2)
Nonassertive Points	12 (won 0, lost 12)	13 (won 1, lost 12)
Neutral Points	1 (won 1, lost 0)	3 (won 2, lost 1)

Game behaviors are summarized for comparison of consistent and inconsistent patterns of play.

	<u>Observation # 1</u>	<u>Observation # 2</u>
Games Observed	14	13
Consistent Behavior	10	9
Assertive	8	9
Nonassertive	2	0
Neutral	0	0

Inconsistent Behavior	4	4
Assertive/Nonassertive	0	0
Assertive/Neutral	0	0
Nonassertive/Neutral	0	0
Assertive/Nonassertive/Neutral	4	4

A summary of play behaviors following points lost when play was assertive is presented for comparison by observation.

	<u>Observation # 1</u>	<u>Observation # 2</u>
Points Lost When Assertive	0	2
Following Points		
Assertive/Won	0	2
Assertive/Lost	0	0
Nonassertive/Won	0	0
Nonassertive/Lost	0	0
Neutral/Won	0	0
Neutral/Lost	0	0

### Player Position # 3

Assertive scores for points served and received are presented for comparison by observation.

	<u>Observation # 1</u>	<u>Observation # 2</u>
Points Served	19	19
Assertive	16	18
Points Received	16	27
Assertive	12	22

Points won and lost are compared for assertive, nonassertive, and neutral play.

	<u>Observation # 1</u>	<u>Observation # 2</u>
Assertive Points	28 (won 26, lost 2)	40 (won 28, lost 12)
Nonassertive Points	4 (won 0, lost 4)	2 (won 1, lost 1)
Neutral Points	3 (won 1, lost 2)	4 (won 0, lost 4)

Game behaviors are summarized for comparison of consistent and inconsistent patterns of play.

	<u>Observation # 1</u>	<u>Observation # 2</u>
Games Observed	12	12
Consistent Behavior	11	10
Assertive	11	10
Nonassertive	0	0
Neutral	0	0
Inconsistent Behavior	1	2
Assertive/Nonassertive	0	0
Assertive/Neutral	0	2
Nonassertive/Neutral	0	0
Assertive/Nonassertive/Neutral	1	0

A summary of play behaviors following points lost when play was assertive is presented for comparison by observation.

	<u>Observation # 1</u>	<u>Observation # 2</u>
Points Lost When Assertive	2	12

## Following Points

Assertive/Won	1	8
Assertive/Lost	1	3
Nonassertive/Won	0	0
Nonassertive/Lost	0	0
Neutral/Won	0	0
Neutral/Lost	0	1

Player Position # 4

Assertive scores for points served and received are presented for comparison by observation.

	<u>Observation # 1</u>	<u>Observation # 2</u>
Points Served	7	14
Assertive	7	9
Points Received	11	12
Assertive	6	8

Points won and lost are compared for assertive, nonassertive, and neutral play.

	<u>Observation # 1</u>	<u>Observation # 2</u>
Assertive Points	13 (won 11, lost 2)	17 (won 14, lost 3)
Nonassertive Points	2 (won 0, lost 2)	1 (won 0, lost 1)
Neutral Points	3 (won 1, lost 2)	8 (won 0, lost 8)

Game behaviors are summarized for comparison of consistent and inconsistent patterns of play.

	<u>Observation # 1</u>	<u>Observation # 2</u>
Games Observed	6	9
Consistent Behavior	5	4
Assertive	5	4
Nonassertive	0	0
Neutral	0	0
Inconsistent Behavior	1	5
Assertive/Neutral	0	5
Assertive/Nonassertive	0	0
Nonassertive/Neutral	0	0
Assertive/Nonassertive/Neutral	1	0

A summary of play behaviors following points lost when play was assertive is presented for comparison by observation.

	<u>Observation # 1</u>	<u>Observation # 2</u>
Points Lost When Assertive	2	3
Following Points		
Assertive/Won	2	2
Assertive/Lost	0	1
Nonassertive/Won	0	0
Nonassertive/Lost	0	0
Neutral/Won	0	0
Neutral/Lost	0	0

#### Player Position # 5

Assertive scores for points served and received are presented for comparison by observation.



	<u>Observation # 1</u>	<u>Observation # 2</u>
Points Served	16	22
Assertive	13	11
Points Received	12	15
Assertive	8	10

Points won and lost are compared for assertive, nonassertive, and neutral play.

	<u>Observation # 1</u>	<u>Observation # 2</u>
Assertive Points	21 (won 20, lost 1)	21 (won 17, lost 4)
Nonassertive Points	4 (won 1, lost 3)	10 (won 10, lost 0)
Neutral Points	3 (won 1, lost 2)	6 (won 1, lost 5)

Game behaviors are summarized for comparison of consistent and inconsistent patterns of play.

	<u>Observation # 1</u>	<u>Observation # 2</u>
Games Observed	11	11
Consistent Behavior	8	8
Assertive	7	7
Nonassertive	0	1
Neutral	1	0
Inconsistent Behavior	3	3
Assertive/Neutral	0	0
Assertive/Nonassertive	0	0
Nonassertive/Neutral	0	0
Assertive/Nonassertive/Neutral	3	3

A summary of play behaviors following points lost when play was assertive is presented for comparison by observation.

	<u>Observation # 1</u>	<u>Observation # 2</u>
Points Lost When Assertive	1	5
Following Points		
Assertive/Won	1	2
Assertive/Lost	0	1
Nonassertive/Won	0	0
Nonassertive/Lost	0	0
Neutral/Won	0	1
Neutral/Lost	0	1

Player Position # 6

Assertive scores for points served and received are presented for comparison by observation.

	<u>Observation # 1</u>	<u>Observation # 2</u>
Points Served	16	17
Assertive	12	13
Points Received	11	21
Assertive	8	9

Points won and lost are compared for assertive, nonassertive, and neutral play.

	<u>Observation # 1</u>	<u>Observation # 2</u>
Assertive Points	23 (won 20, lost 3)	22 (won 17, lost 5)
Nonassertive Points	6 (won 1, lost 5)	11 (won 0, lost 11)
Neutral Points	5 (won 3, lost 2)	5 (won 3, lost 2)

Game behaviors are summarized for comparison of consistent and inconsistent patterns of play.

	<u>Observation # 1</u>	<u>Observation # 2</u>
Games Observed	13	15
Consistent Behavior	9	9
Assertive	7	7
Nonassertive	2	2
Neutral	0	0
Inconsistent Behavior	4	6
Assertive/Neutral	3	0
Assertive/Nonassertive	1	0
Nonassertive/Neutral	0	0
Assertive/Nonassertive/Neutral	0	6

A summary of play behaviors following points lost when play was assertive is presented for comparison by observation.

	<u>Observation # 1</u>	<u>Observation # 2</u>
Point Lost When Assertive	3	5

## Following Points

Assertive/Won	1	2
Assertive/Lost	0	0
Nonassertive/Won	0	0
Nonassertive/Lost	1	1
Neutral/Won	0	1
Neutral/Lost	1	1

SUMMARY

In summary, player profiles are presented to illustrate the value of behavioral information which can be obtained by systematic observations. The profile provides a "picture" of the type and frequency of behavior displayed by a player throughout all phases of a match. For example, the serve in tennis is the most potent offensive stroke a player can possess. It provides the player with the opportunity to control play at the very outset of the game. However, if the behavioral profile shows that a player is less assertive on the serve than when receiving (as it does in the case of Player # 1 on page 52), then a coach can work specifically with the player on this aspect of her game. Training techniques can be developed for such a player to change the behavioral pattern from non-assertive to assertive when serving so that the player may have a greater opportunity for success. The profile also presents additional information which can aid the coach in developing and individualizing the training program.

CHAPTER V  
SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The broad purpose of this investigation was to study the assertive behaviors of women intercollegiate tennis players. The inquiry further sought to develop a systematic observation technique for use in analyzing intercollegiate tennis play. Singles play was selected as the specific sport environment in which to identify and describe assertion. A specific purpose of the research was to study the relationship between the obtained observations and players' scores on a general assertion scale, the CSES (Galassi et al., 1974). A comparison was also made between observed assertion in tennis play, team ranking, and points and games won and lost. Finally, player profiles were compiled which illustrate possible uses of observation findings.

Procedures for the development of the systematic observation technique involved the identification and description of assertive play behaviors in women's intercollegiate tennis singles. Three experienced judges were presented with a videotape of ten point sequences of singles play. The player selected was ranked fifth among AIAW Southern Region intercollegiate tennis players. Judges were requested to verify, add, or delete categories of play behaviors and descriptors of assertion on a summary sheet provided by the investigator. Agreement between two of the three judges was required to include a play behavior or descriptor of assertion. The observation tool provided for the recording of: (a) assertive, nonassertive,

and neutral play, (b) points served or received and won or lost, (c) game, set, and match scores, and (d) frequencies of behaviors observed on each point sequence.

The Galassi et al. (1974) College Self-Expression Scale was administered to the top six ranked players of the University of Tennessee's Women's Tennis Team. Their competitive participation in tennis singles was observed during two separately scheduled intercollegiate tennis matches by trained observers. Inter-observer agreement on the first observation (.76, .72) was somewhat lower than on the second observation (.83, .82), but within an acceptable level.

The Kendall rank correlation coefficient, tau, was used to determine the relationship between the scores on the CSES and those obtained from observed assertion in women's intercollegiate tennis singles. The analysis revealed low correlations (0, .266) between the CSES and two observations of assertive behaviors. The results support the position that assertion in women's intercollegiate tennis is unique to the specific sport environment. Furthermore, the analysis reinforces the idea that assertion in tennis is more accurately analyzed from behavioral observations than from generalized assessment, i.e., paper-and-pencil measures.

Analysis of observed assertiveness with points and games won and lost considering player ranking on the squad was presented in table form. Comparison revealed that, in general, there is a definite association between observed assertiveness and success in tennis competition as determined by points and games won. The finding was common among all players regardless of ranking.

A player profile was compiled from the data collected during the two observations. The profile included: (a) a comparison of assertive scores

when serving and receiving, (b) a comparison of points won and lost when play was assertive, nonassertive, and neutral, (c) a summary of game-by-game behavior, and (d) a summary of player behavior following points that were lost when play was assertive. Player profiles were presented to illustrate the possible use of the observation tool. It was suggested that such information could benefit the coach and player in determining what phases of the player's game needs modification and/or changes. The profile was also suggested for possible use in screening potential intercollegiate tennis players.

### Conclusions

Within the framework and limitations of the study, the following responses are offered to the questions which set forth the research problem:

1. By what means can one systematically observe assertive behaviors in women's intercollegiate tennis? What specific behaviors are identifiable? How are these behaviors described?

Systematic observation was accomplished by using trained observers and an observation tool which acknowledged the following tennis play behaviors: (a) defensive court coverage--movement and position, (b) offensive court coverage--movement and position, (c) stroke--execution and placement, and (d) mannerisms--expressions and gestures. Selected descriptors of assertive tennis play behaviors were: (a) confident, (b) determined, (c) direct, (d) forceful, (e) intense, (f) readiness, and (g) risking.

2. How do the assertive behaviors observed in women's intercollegiate tennis relate to a paper-and-pencil measure of assertiveness?

A low Kendall tau relationship (0, .266) was found between the tennis players' scores on a general assertion scale (The Galassi et al., 1974, College Self-Expression Scale) and observed assertion in women's intercollegiate tennis. These results support the idea that assertion in tennis is more accurately assessed and analyzed from behavioral observations than from paper-and-pencil measures. It also raises a question as to whether assertion in women's intercollegiate tennis is unique to the specific sport tasks and environment.

3. How do team ranking and points and games won and lost compare to observed assertiveness in play using a systematic observation tool?

Comparison revealed that, in general, there is a definite association between observed assertiveness and success in tennis competition as determined by points and games won. This is common regardless of team ranking.

4. How might systematic observation of assertiveness be used by a coach and player to improve or strengthen performance?

Systematic observation provided precise behavioral information which was organized into player profiles. The profile consisted of four sections: (a) a comparison of assertive scores when serving and receiving, (b) a comparison of points won and lost when play was assertive, nonassertive, and neutral, (c) a summary of game-by-game behavior, and (d) a summary of player behavior following points lost when played assertively. From the information presented in the profile, a coach and player may develop training techniques and game strategies which could improve and strengthen the player's performance.



Recommendations for Further Research  
and Use of the Observation Tool

The investigation was conceived as an introductory study leading to a more thorough analysis of assertion in tennis. Therefore, the following recommendations are set forth regarding the continued use of the observation tool and the analysis of assertive behaviors in women's intercollegiate tennis.

1. Use of Videotape. The observations made for the study of tennis play behaviors were conducted in the "live" environment of intercollegiate competition. Play was not videotaped for later analysis. The experience revealed that an observer could not view play and record data as rapidly as the game was being played. Therefore, only every other point played was observed for analysis. For a more complete analysis of a player's game behaviors, it is recommended that competitive matches be videotaped and later analysis be made. Thus, a more complete picture of consistent play behaviors could be obtained. Tapes of matches played throughout the season could also be kept on file for comparative analysis at the end of the season.
2. Interaction Analysis. Although the observation technique used in the investigation provided an analysis of the subject's game behaviors, it did not yield an interaction analysis of play between the subject and her opponent. Observation of both players could provide relevant information for addressing the following questions: (a) when the subject is assertive but loses a point, game, or match, is it because the opponent

is also assertive, but more so? (b) does the subject lapse into neutral play when the opponent does? (c) do the opponent's mannerisms affect the subject's play? (d) is the opponent more assertive when the subject is serving or when she is? Numerous other questions related to interactions between the subject and her opponent could be addressed if observations were made on both players during competition.

3. Refinement of Observation Tool. The observation tool was designed to record the occurrence and frequency of assertion, nonassertion, and neutral play behaviors during each point sequence. It was noted that some point sequences involved only one or two exchanges of strokes between the players while others continued for as long as 30-40 strokes. During a long exchange, the subject may have been observed to be highly assertive, yet the point was lost because an unforced error was committed on the final stroke. It was also noted that when a server committed double faults, there was, of course, no exchange of strokes between the players. Therefore, it is recommended that the observation form provide a column for marking double faults and unforced errors on each point sequence. A record of errors would help distinguish between assertive points lost because of the subject's own error, and those lost because of the opponent's assertive play.
4. Further Training for Observers. The observation team noted two concerns following the first "live" observation. The

first involved an inability to clearly distinguish between neutral and nonassertive play. Although the observers studied written descriptions of these behaviors and had two trial observation sessions, they suggested that additional "live" observation experience would have been beneficial. A comparison of each observer's recording on the first and second observation showed an improvement in the observer's ability to distinguish between the play behaviors.

The second concern of the observers was related to the short period of time available to record observations during the "live" performance. The nature of the task called for considerable experience in order for them to feel comfortable. These concerns suggest that the investigator recommend the training of observers be extended to include trial observations of at least two complete "live" competitive matches. This would better prepare the observers to distinguish precisely among game behaviors.

Rushall (1977) emphasized that applied behavioral analysis is a practical psychology which should be used by sport psychologists and coaches to develop training techniques to modify, change, and/or maintain desirable sport behaviors. The systematic observation of assertion in women's intercollegiate tennis described in this research provides the potential framework for developing training techniques to change or maintain desirable tennis play behaviors. Its continued use and refinement is highly recommended.

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**APPENDICES**

**APPENDIX A**  
**JUDGES' MATERIALS**

JUDGES

Dr. Jackie Dailey, Assistant to Women's Athletic Director, Washington State University, Pullman, Washington.

Mr. Gilbert "Buddy" Hartsell, Men's Tennis Coach, Assistant Professor of Physical Education, East Tennessee State University, Johnson City, Tennessee.

Dr. Joan Nessler, Professor of Physical Education, Former Women's Tennis Coach, Pennsylvania State University, University Park, Pennsylvania.

## INSTRUCTIONS TO JUDGES

### I. Viewing of the Videotape

The videotape that you are receiving was recorded on a RCA 4-hour VHS tape recorder with sound and in color. It is necessary that the tape be played on a 4-hour recorder because it was recorded at this slower speed. A 2-hour recorder which plays at a faster speed will cause the picture and sound to be jumbled. It does not matter what color TV monitor you use, however, it should be one with clear reception since the tape needs to be viewed closely to analyze play. You should have access to this type of VHS videotape recorder and color monitor at your school. If the picture at times begins to shake, turn the tracking button on the recorder you use to adjust the picture. If you cannot find color video equipment to use for viewing, the tape can be viewed in black and white. The tape is approximately 20 minutes in length. You will probably find it necessary to run the tape back to review each point sequence several times for closer analysis.

### II. Judging the Ten Point Play Sequences

Please read carefully the definitions of the behavioral descriptors on the following page. These descriptors also appear on the enclosed summary sheets.

Let me emphasize at this point that the summary sheet to which I have referred is merely a guide for your judgment. The purpose of seeking your judgment is to help the investigator define and describe assertive behavior in women's intercollegiate tennis. If you wish to view tennis play behavior differently than in terms of movement, position, and stroke as is shown on the summary sheet, and if you wish to add or delete any descriptor, then please do so in making your judgments of the ten point play sequences on the tape. However, keep in mind that your judgments, descriptions and definitions should be concise since they will be used in further developing the observation tool. Also keep in mind that your purpose is to analyze and define what is assertive behavior in tennis, not to analyze tennis skill per se.

### III. Match Information Related to the Ten Point Play Sequences

The ten point plays which have been edited from the original full match tapes made from the three separate angles are chosen for your viewing because of their potential to show assertive behavior and because they show a variety of play behaviors including serving, receiving, serve and volley plays, as well as baseline play. Note the circumstances before and during each point sequence; the set score, game score, opponent's reactions, etc. Additional match information is included for reference on page three of the instructions.

### Basic Play Behaviors of Tennis

1. Movement -- coverage of the court.
2. Position -- established posture prior to the stroke.
3. Stroke -- execution and placement.

### Descriptors of Assertion

1. Confident -- sureness of self-producing unhesitating action.
2. Confrontive -- direct, face-to-face opposition.
3. Intense -- magnitude of force.
4. Risking -- exposure to chance of loss.

Videotaped Match Information

## Set # 1

<u>Games</u>	<u>S/R</u>	<u>Subject Points</u>	<u>W/L</u>	<u>S/R</u>	<u>Opponent Points</u>	<u>W/L</u>
1	S	2,3,4,6	W	R	1,5	L
2	R	1,2,4	L	S	3,5,6,7	W
3	S	2,5	L	R	1,3,4,6	W
4	R	4	L	S	1,2,3,5	W
5	S	2,3,5,6	W	R	1,4	L
6	R	3,4,6,7	W	S	1,2,5	L
7	S	2,3,4,5	W	R	1	L
8	R		L	S	1,2,3,4	W
9	S	2,3,4,5	W	R	1	L
10	R	2,4	L	S	1,3,5,6	W
11	S	1,2,4,5	W	R	3	L
12	R		L	S	1,2,3,4	W
13 Tie-breaker		1,2,7	<u>L</u>		3,4,5,6,8	<u>W</u>
			6			7

## Set # 2

1	R	1,3	L	S	2,4,5,6	W
2	S	1,4	L	R	2,3,5,6	W
3	R	1,2,5,6	W	S	3,4	L
4	S	1,2,4,5	W	R	3	L
5	R	1,2,3,5	W	S	4	L
6	S	1	L	R	2,3,4,5	W
7	R	4	L	S	1,2,3,5	W
8	S	2,5,6	L	R	1,3,4,7	W
9	R	2,3,6	<u>L</u>	S	1,4,5,7	<u>W</u>
			3			6

JUDGES' SUMMARY SHEET

POINT SEQUENCE	1	2	3	4	5	6	7	8	9	10									
BEHAVIORAL DESCRIPTORS	Movement	Position	Stroke	Movement	Position	Stroke	Movement	Position	Stroke	Movement	Position	Stroke	Movement	Position	Stroke	Movement	Position	Stroke	
	CONFIDENT																		
	CONFRONTIVE																		
INTENSE																			
RISKING																			

■ = seen clearly

○ = not seen clearly

n = no opportunity to observe

APPENDIX B  
THE COLLEGE SELF-EXPRESSION SCALE  
AND PLAYER CONSENT FORM



The College Self-Expression Scale

Directions: The following inventory is designed to provide information about the way in which you express yourself. Please answer the questions by circling the appropriate number from 0-4 (Almost Always or Always, 0; Usually, 1; Sometimes, 2; Seldom, 3; Never or Rarely, 4) on the scale. Your answer should reflect how you generally express yourself in the situation.

- 0 1 2 3 4    1. Do you ignore it when someone pushes in front of you in line?
- 0 1 2 3 4    2. When you decide that you no longer wish to date someone, do you have marked difficulty telling the person of your decision?
- 0 1 2 3 4    3. Would you exchange a purchase you discover to be faulty?
- 0 1 2 3 4    4. If you decide to change your major to a field which your parents will not approve, would you have difficulty telling them?
- 0 1 2 3 4    5. Are you inclined to be over-apologetic?
- 0 1 2 3 4    6. If you were studying and if your roommate were making too much noise, would you ask him to stop?
- 0 1 2 3 4    7. Is it difficult for you to compliment and praise others?
- 0 1 2 3 4    8. If you are angry at your parents, can you tell them?
- 0 1 2 3 4    9. Do you insist that your roommate does his fair share of the cleaning?
- 0 1 2 3 4    10. If you find yourself becoming fond of someone you are dating, would you have difficulty expressing these feelings to that person?
- 0 1 2 3 4    11. If a friend who has borrowed \$5.00 from you seems to have forgotten about it, would you remind this person?
- 0 1 2 3 4    12. Are you overly careful to avoid hurting other people's feelings?
- 0 1 2 3 4    13. If you have a close friend whom your parents dislike and constantly criticize, would you inform your parents that you disagree with them and tell them of your friend's assets?

- 0 1 2 3 4 14. Do you find it difficult to ask a friend to do a favor for you?
- 0 1 2 3 4 15. If food which is not to your satisfaction is served in a restaurant, would you complain about it to the waiter?
- 0 1 2 3 4 16. If your roommate without your permission eats food that he knows you have been saving, can you express your displeasure to him?
- 0 1 2 3 4 17. If a salesman has gone to considerable trouble to show you some merchandise which is not quite suitable, do you have difficulty in saying no?
- 0 1 2 3 4 18. Do you keep your opinions to yourself?
- 0 1 2 3 4 19. If friends visit when you want to study, do you ask them to return at a more convenient time?
- 0 1 2 3 4 20. Are you able to express love and affection to people for whom you care?
- 0 1 2 3 4 21. If you were in a small seminar and the professor made a statement that you considered untrue, would you question it?
- 0 1 2 3 4 22. If a person of the opposite sex whom you have been wanting to meet smiles or directs attention to you at a party, would you take the initiative in beginning a conversation?
- 0 1 2 3 4 23. If someone you respect expresses opinions with which you strongly disagree, would you venture to state your own point of view?
- 0 1 2 3 4 24. Do you go out of your way to avoid trouble with other people?
- 0 1 2 3 4 25. If a friend is wearing a new outfit which you like, do you tell that person so?
- 0 1 2 3 4 26. If after leaving a store you realize that you have been "short-changed," do you go back and request the correct amount?
- 0 1 2 3 4 27. If a friend makes what you consider to be an unreasonable request, are you able to refuse?
- 0 1 2 3 4 28. If a close and respected relative were annoying you, would you hide your feelings rather than express your annoyance?

- 0 1 2 3 4 29. If your parents want you to come home for a weekend but you have made important plans, would you tell them of your preference?
- 0 1 2 3 4 30. Do you express anger or annoyance toward the opposite sex when it is justified?
- 0 1 2 3 4 31. If a friend does an errand for you, do you tell that person how much you appreciate it?
- 0 1 2 3 4 32. When a person is blatantly unfair, do you fail to say something about it to him?
- 0 1 2 3 4 33. Do you avoid social contacts for fear of doing or saying the wrong thing?
- 0 1 2 3 4 34. If a friend betrays your confidence, would you hesitate to express annoyance to that person?
- 0 1 2 3 4 35. When a clerk in a store waits on someone who has come in after you, do you call his attention to the matter?
- 0 1 2 3 4 36. If you are particularly happy about someone's good fortune, can you express this to that person?
- 0 1 2 3 4 37. Would you be hesitant about asking a good friend to lend you a few dollars?
- 0 1 2 3 4 38. If a person teases you to the point that it is no longer fun, do you have difficulty expressing your displeasure?
- 0 1 2 3 4 39. If you arrive late for a meeting, would you rather stand than go to a front seat which could only be secured with a fair degree of conspicuousness?
- 0 1 2 3 4 40. If your date calls on Saturday night 15 minutes before you are supposed to meet and says that she/he has to study for an important exam and cannot make it, would you express your annoyance?
- 0 1 2 3 4 41. If someone keeps kicking the back of your chair in a movie, would you ask him to stop?
- 0 1 2 3 4 42. If someone interrupts you in the middle of an important conversation, do you request that the person wait until you have finished?
- 0 1 2 3 4 43. Do you freely volunteer information or opinions in class discussions?

- 0 1 2 3 4 44. Are you reluctant to speak to an attractive acquaintance of the opposite sex?
- 0 1 2 3 4 45. If you lived in an apartment and the landlord failed to make certain necessary repairs after promising to do so, would you insist on it?
- 0 1 2 3 4 46. If your parents want you home by a certain time which you feel is much too early and unreasonable, do you attempt to discuss or negotiate this with them?
- 0 1 2 3 4 47. Do you find it difficult to stand up for your rights?
- 0 1 2 3 4 48. If a friend unjustifiably criticizes you, do you express your resentment there and then?
- 0 1 2 3 4 49. Do you express your feelings to others?
- 0 1 2 3 4 50. Do you avoid asking questions in class for fear of feeling self-conscious?

THE UNIVERSITY OF NORTH CAROLINA AT GREENSBORO  
SCHOOL OF HEALTH, PHYSICAL EDUCATION & RECREATION

SCHOOL REVIEW COMMITTEE

INFORMED CONSENT FORM \*

I understand that the purpose of this study/project is to observe how a tennis player expresses herself while participating in competitive tennis.

I confirm that my participation is entirely voluntary. No coercion of any kind has been used to obtain my cooperation.

I understand that I may withdraw my consent and terminate my participation at any time during the project.

I have been informed of the procedures that will be used in the project and understand what will be required of me as a subject.

I understand that a summary of the results of the project will be made available to me at the completion of the study if I so request.

I wish to give my voluntary cooperation as a participant.

---

Signature

---

Address

---

---

Date

\*Adopted from L. F. Locke and W. W. Spirduso. Proposals that work.  
New York: Teachers College, Columbus University, 1976, p. 237.

Approved 3/78

APPENDIX C  
OBSERVATION TOOL AND OBSERVER MATERIALS

OBSERVERS

- Ms. Billie Abney, Women's Tennis Coach, East Tennessee State University,  
Johnson City, Tennessee.
- Mr. Rick Burton, YMCA Staff, Bristol, Tennessee.
- Ms. Brennan Crump, Member of Women's Tennis Team, East Tennessee State  
University, Johnson City, Tennessee.
- Ms. Debbie Fogle, Women's Athletic Trainer, East Tennessee State University,  
Johnson City, Tennessee.
- Dr. Jack Maxey, Professor of Physical Education, East Tennessee State  
University, Johnson City, Tennessee.
- Mr. Roger Newton, Athletic Ticket Manager, East Tennessee State University,  
Johnson City, Tennessee.
- Mr. George Parris, Former Member of Men's Tennis Team, East Tennessee State  
University, Johnson City, Tennessee.
- Ms. Joan Walters, Coaching Graduate Assistant, East Tennessee State  
University, Johnson City, Tennessee.

## Observer Information

### Unit of Evaluation on the Observation Form

An evaluation of assertion in tennis should cover all phases of the game, not just the strokes per se. A full point sequence is chosen as the unit of evaluation for observation because assertion can be identified and observed in court coverage and mannerisms as well as in the actual execution of the stroke.

### Definitions

Assertion in Competitive Tennis -- behavior which allows a person to act in his/her own best interests to gain and/or maintain control of play in order to win the point without undue anxiety and without denying the right of the opponent to play within the rules of the game.

Control of Play -- gaining and/or maintaining superiority of position or condition during a point sequence.

### How a Player Gains Control of Play to Win a Point

A player has gained control of play when he/she is able to gain a superior position from which he/she can make a winning stroke or at least be able to place the ball in a position which will put the opponent at a disadvantage. The opponent will either commit an error or return a weak stroke which can be put away by the player in control.

### Explanation of Observation Form Categories of Play

1. Defensive Court Coverage -- unhesitating movement to recover after a stroke allowing the player to gain a position which provides adequate court coverage; a readiness to move from this position to counter the play of the opponent. This vigorous movement continually initiated by the player allows him/her to maintain or regain control of play.
2. Offensive Court Coverage -- a direct and determined approach to play the ball, enabling the player to be in position to execute the selected stroke. This positive approach allows the player to be prepared to make a winning stroke or to force an error by the opponent.
3. Stroke -- sureness in execution allowing the player to make a forceful stroke when appropriate and/or to place the ball away from the opponent; risking on placement of the stroke when appropriate.
4. Mannerisms -- (posture, gestures, facial expressions) a commanding assurance shown in court manner prior to and during points being played; also intense mannerisms showing high concentration.



INSTRUCTIONS TO OBSERVERS

1. At the beginning of the match you may wish to practice evaluating the subject and charting the score of observed behaviors. This may help you overcome any "hesitation" you may have (otherwise known as nervousness) about doing the actual observing. You have been given six evaluation sheets; two which may be used for practice and the other four for evaluation of the 24 points to be observed.
2. You will observe and record data for the 2nd and 4th points of each game, beginning in set 1, game 5, point 2 and then following. If a game goes to a 6th point, also evaluate it. So you may have: 1-5-2, 1-5-4, 1-6-2, or possibly: 1-5-2, 1-5-4, 1-5-6, 1-6-2. Again note - always evaluate points 2 and 4 of each game!!
3. If, at any time, you miss being able to evaluate a point, DON'T PANIC. Pick up with the next scheduled point to be evaluated. To save you time, while you are between points mark the points to be played ahead of time and also whether they will be served or received if at all possible.
4. Remember that only one mark is to be given on mannerisms for each point sequence, unless it is very obvious on numerous occasions during that point that the player continues to gesture, make facial expressions, etc.
5. Do not attempt to total any of the behaviors observed in any point sequence. Totals will be calculated by the investigator later.
6. Be sure you can place yourself in a position near the court where your subject is playing so you can see them clearly and so no one will interrupt your observing.
7. Do not compare notes with any other observer during a match. Continue observing in the match until you can complete at least two and one-half pages. Again, don't panic if you only have as few as 16 points observed. GOOD LUCK - CONCENTRATE BUT ENJOY THE MATCH ALSO!

OBSERVATION FORM

POINTS PLAYED										
SCORE	Points Games									
<u>Defensive Court Coverage</u> --unhesitating movement to recover --readiness to counter the opponent's movement, position and stroke										
<u>Offensive Court Coverage</u> --direct and determined approach to the ball enabling the player to establish an assured stroking position										
<u>Stroke</u> --sureness in execution --forceful when appropriate --risking on placement when appropriate										
<u>Mannerisms</u> --confidence and intensity shown in posture and gestures										
TOTALS										
Indicate whether the point is served or received, won or lost.	S - R W - L	S - R W - L	S - R W - L	S - R W - L	S - R W - L	S - R W - L	S - R W - L	S - R W - L	S - R W - L	S - R W - L

- + = assertive behavior seen clearly (player gains or maintains control of play)
- 0 = neither behavior seen clearly (neither player in control of play)
- = nonassertive behavior seen clearly (player loses control of play)

APPENDIX D  
OBSERVATION SUMMARIES

## First Observation on Player #1

By Observer A

Point Observed	Score: Neutral, Assertive, or Nonassertive	Served/Received Won/Lost	Point Played	Game Score	Set Score
1	0 Neutral	S-W	1-5-2	0-1	3-1
2	-1 Nonassertive	S-L	1-5-4	1-2	3-1
3	0 Neutral	S-L	1-5-6	2-3	3-1
4	+2 Assertive	R-W	1-6-2	0-1	3-2
5	+3 Assertive	R-W	1-6-4	1-2	3-2
6	+4 Assertive	R-W	1-6-6	3-2	3-2
7	-1 Nonassertive	S-L	1-7-2	1-0	4-2
8	-1 Nonassertive	S-L	1-7-4	2-1	4-2
9	+4 Assertive	S-W	1-7-6	3-2	4-2
10	+2 Assertive	R-L	1-8-2	1-0	5-2
11	+4 Assertive	R-W	1-8-4	2-1	5-2
12	+3 Assertive	R-W	1-8-6	3-2	5-2
13	+5 Assertive	S-W	2-1-2	1-0	0-0
14	+2 Assertive	S-L	2-1-4	3-0	0-0
15	-2 Nonassertive	S-L	2-1-6	3-2	0-0
16	+3 Assertive	S-W	2-1-8	ad-out	0-0
17	+1 Assertive	S-W	2-1-10	ad-in	0-0
18	+4 Assertive	R-W	2-2-2	0-1	1-0
19	+3 Assertive	R-L	2-2-4	1-2	1-0
20	-1 Nonassertive	S-L	2-3-2	0-1	1-1
21	+4 Assertive	S-L	2-3-4	1-2	1-1

cont'd

22	+4 Assertive	R-W	2-4-2	1-0	1-2
23	+5 Assertive	R-W	2-4-4	2-1	1-2
24	+5 Assertive	S-W	2-5-2	1-0	2-2
25	-1 Nonassertive	S-L	2-5-4	3-0	2-2
26	-3 Nonassertive	R-L	2-6-2	0-1	3-2
27	-2 Nonassertive	R-L	2-6-4	0-3	3-2
28	+6 Assertive	S-W	2-7-2	1-0	3-3
29	+5 Assertive	S-W	2-7-4	2-1	3-3
30	-3 Nonassertive	S-L	2-7-6	3-2	3-3
31	+5 Assertive	S-W	2-7-8	ad-in	3-3
32	+5 Assertive	R-W	2-8-2	1-0	4-3
33	+3 Assertive	R-W	2-8-4	2-1	4-3
34	+4 Assertive	R-W	2-8-6	3-2	4-3
35	+2 Assertive	S-W	2-9-2	1-0	5-3
36	+2 Assertive	S-W	2-9-4	3-0	5-3

SUMMARY:

Match Score: 6-2, 6-3

Assertive Points:	25	Served:	12	Received:	13
Nonassertive Points:	9	Served:	7	Received:	2
Neutral Points:	2	Served:	1	Received:	1
Assertive when Serving:	12/21	Assertive when Receiving:	13/15		
Nonassertive when Serving:	7/21	Nonassertive when Receiving:	2/15		
Neutral when Serving:	1/21	Neutral when Receiving:	1/15		
Assertive Points/Total Points:	25/36	Won:	21/25	Lost:	4/25
Nonassertive Points/Total Points:	9/36	Won:	0/9	Lost:	9/9
Neutral Points/Total Points:	2/36	Won:	1/2	Lost:	1/2

---

## First Observation on Player #1

By Observer B

Point Observed	Score: Neutral, Assertive, or Nonassertive	Served/Received Won/Lost	Point Played	Game Score	Set Score
1	0 Neutral	S-W	1-5-2	0-1	3-1
2	-1 Nonassertive	S-L	1-5-4	1-2	3-1
3	-1 Nonassertive	S-L	1-5-6	2-3	3-1
4	+2 Assertive	R-W	1-6-2	0-1	3-2
5	+2 Assertive	R-W	1-6-4	1-2	3-2
6	+3 Assertive	R-W	1-6-6	3-2	3-2
7	-1 Nonassertive	S-L	1-7-2	1-0	4-2
8	-1 Nonassertive	S-L	1-7-4	2-1	4-2
9	+4 Assertive	S-W	1-7-6	3-2	4-2
10	+1 Assertive	R-L	1-8-2	1-0	5-2
11	+4 Assertive	R-W	1-8-4	2-1	5-2
12	+2 Assertive	R-W	1-8-6	3-2	5-2
13	+4 Assertive	S-W	2-1-2	1-0	0-0
14	+1 Assertive	S-L	2-1-4	3-0	0-0
15	-1 Nonassertive	S-L	2-1-6	3-2	0-0
16	+2 Assertive	S-W	2-1-8	ad-out	0-0
17	0 Neutral	S-W	2-1-10	ad-in	0-0
18	+4 Assertive	R-W	2-2-2	0-1	1-0
19	+3 Assertive	R-L	2-2-4	1-2	1-0
20	-2 Nonassertive	S-L	2-3-2	0-1	1-1
21	+4 Assertive	S-L	2-3-4	1-2	1-1

cont'd

22	+3 Assertive	R-W	2-4-2	1-0	1-2
23	+4 Assertive	R-W	2-4-4	2-1	1-2
24	+4 Assertive	S-W	2-5-2	1-0	2-2
25	0 Neutral	S-L	2-5-4	3-0	2-2
26	-3 Nonassertive	R-L	2-6-2	0-1	3-2
27	-2 Nonassertive	R-L	2-6-4	0-3	3-2
28	+5 Assertive	S-W	2-7-2	1-0	3-3
29	+4 Assertive	R-W	2-7-4	2-1	3-3
30	-2 Nonassertive	S-L	2-7-6	3-2	3-3
31	+3 Assertive	S-W	2-7-8	ad-in	3-3
32	+3 Assertive	R-W	2-8-2	1-0	4-3
33	+3 Assertive	R-W	2-8-4	2-1	4-3
34	+3 Assertive	R-W	2-8-6	3-2	4-3
35	+1 Assertive	S-W	2-9-2	1-0	5-3
36	+2 Assertive	S-W	2-9-4	3-0	5-3

SUMMARY:

Match Score: 6-2, 6-3

Assertive Points:	24	Served:	11	Received:	13
Nonassertive Points:	9	Served:	7	Received:	2
Neutral Points:	3	Served:	3	Received:	0
Assertive when Serving:	11/21	Assertive when Receiving:	13/15		
Nonassertive when Serving:	7/21	Nonassertive when Receiving:	2/15		
Neutral when Serving:	3/21	Neutral when Receiving:	0/15		
Assertive Points/Total Points:	24/36	Won:	21/24	Lost:	3/24
Nonassertive Points/Total Points:	9/36	Won:	0/9	Lost:	9/9
Neutral Points/Total Points:	3/36	Won:	2/3	Lost:	1/3

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## Second Observation on Player #1

By Observer A

Point Observed	Score: Neutral, Assertive, or Nonassertive	Served/Received Won/Lost	Point Played	Game Score	Set Score
1	0 Neutral	S-L	1-5-2	1-0	3-1
2	0 Neutral	S-W	1-5-4	1-2	3-1
3	+2 Assertive	S-L	1-5-6	3-2	3-1
4	+5 Assertive	S-W	1-5-8	ad-out	3-1
5	-1 Nonassertive	S-L	1-5-10	ad-in	3-1
6	-2 Nonassertive	S-L	1-5-12	ad-in	3-1
7	+6 Assertive	S-W	1-5-14	ad-in	3-1
8	-2 Nonassertive	R-L	1-6-2	0-1	4-1
9	0 Neutral	R-L	1-6-4	1-2	4-1
10	+3 Assertive	R-W	1-6-6	2-3	4-1
11	0 Neutral	R-W	1-6-8	ad-out	4-1
12	+2 Assertive	R-W	1-6-10	ad-in	4-1
13	+4 Assertive	S-W	1-7-2	0-1	5-1
14	0 Neutral	S-W	1-7-4	1-2	5-1
15	+5 Assertive	S-W	1-7-6	3-2	5-1
16	+5 Assertive	R-W	2-1-2	0-1	0-0
17	+1 Assertive	R-W	2-1-4	2-1	0-0
18	-3 Nonassertive	S-L	2-2-2	1-0	1-0
19	-4 Nonassertive	S-L	2-2-4	2-1	1-0
20	+1 Assertive	S-W	2-2-6	3-2	1-0
21	+5 Assertive	R-W	2-3-2	1-0	2-0

cont'd



22	0 Neutral	R-W	2-3-4	3-0	2-0
23	0 Neutral	S-W	2-4-2	0-1	3-0
24	0 Neutral	S-L	2-4-4	1-2	3-0
25	+1 Assertive	S-L	2-4-6	2-3	3-0
26	-4 Nonassertive	R-L	2-5-2	1-0	3-1
27	+5 Assertive	R-W	2-5-4	2-1	3-1
28	+5 Assertive	R-W	2-5-6	3-2	3-1
29	0 Neutral	S-W	2-6-2	0-1	4-1
30	+2 Assertive	S-W	2-6-4	2-1	4-1
31	-1 Nonassertive	R-L	2-7-2	1-0	5-1
32	+1 Assertive	R-W	2-7-4	1-2	5-1
33	0 Neutral	R-W	2-7-6	2-3	5-1
34	-4 Nonassertive	R-L	2-7-8	3-4	5-1
35	0 Neutral	S-L	2-8-2	1-0	5-2
36	+2 Assertive	S-W	2-8-4	2-1	5-2

SUMMARY:

Match Score: 6-1, 6-2

Assertive Points:	17	Served:	9	Received:	8
Nonassertive Points:	8	Served:	4	Received:	4
Neutral Points:	11	Served:	7	Received:	4
Assertive when Serving:	9/20	Assertive when Receiving:	8/16		
Nonassertive when Serving:	4/20	Nonassertive when Receiving:	4/16		
Neutral when Serving:	7/20	Neutral when Receiving:	4/16		
Assertive Points/Total Points:	17/36	Won:	15	Lost:	2
Nonassertive Points/Total Points:	8/36	Won:	0	Lost:	8
Neutral Points/Total Points:	11/36	Won:	7	Lost:	4

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## Second Observation on Player #1

By Observer B

Point Observed	Score: Neutral, Assertive, or Nonassertive	Served/Received Won/Lost	Point Played	Game Score	Set Score
1	+1 Assertive	S-L	1-5-2	1-0	3-1
2	+1 Assertive	S-W	1-5-4	1-2	3-1
3	+4 Assertive	S-L	1-5-6	3-2	3-1
4	+4 Assertive	S-W	1-5-8	ad-out	3-1
5	+4 Assertive	S-L	1-5-10	ad-in	3-1
6	-1 Nonassertive	S-L	1-5-12	ad-in	3-1
7	+4 Assertive	S-W	1-5-14	ad-in	3-1
8	-2 Nonassertive	R-L	1-6-2	0-1	4-1
9	-1 Nonassertive	R-L	1-6-4	1-2	4-1
10	+3 Assertive	R-W	1-6-6	2-3	4-1
11	0 Neutral	R-W	1-6-8	ad-out	4-1
12	+2 Assertive	R-W	1-6-10	ad-in	4-1
13	+3 Assertive	S-W	1-7-2	0-1	5-1
14	-1 Nonassertive	S-W	1-7-4	1-2	5-1
15	+4 Assertive	S-W	1-7-6	3-2	5-1
16	+4 Assertive	R-W	2-1-2	0-1	0-0
17	0 Neutral	R-W	2-1-4	2-1	0-0
18	-1 Nonassertive	S-L	2-2-2	1-0	1-0
19	-1 Nonassertive	S-L	2-2-4	2-1	1-0
20	0 Neutral	S-W	2-2-6	3-2	1-0
21	+2 Assertive	R-W	2-3-2	1-0	2-0

cont'd

22	+1 Assertive	R-W	2-3-4	3-0	2-0
23	0 Neutral	S-W	2-4-2	0-1	3-0
24	+1 Assertive	S-L	2-4-4	1-2	3-0
25	+1 Assertive	S-L	2-4-6	2-3	3-0
26	0 Neutral	R-L	2-5-2	1-0	3-1
27	+3 Assertive	R-W	2-5-4	2-1	3-1
28	+4 Assertive	R-W	2-5-6	3-2	3-1
29	0 Neutral	S-W	2-6-2	0-1	4-1
30	+2 Assertive	S-W	2-6-4	2-1	4-1
31	-2 Nonassertive	R-L	2-7-2	1-0	5-1
32	0 Neutral	R-W	2-7-4	1-2	5-1
33	0 Neutral	R-W	2-7-6	2-3	5-1
34	-2 Nonassertive	R-L	2-7-8	3-4	5-1
35	+2 Assertive	S-L	2-8-2	1-0	5-2
36	+2 Assertive	S-W	2-8-4	2-1	5-2

SUMMARY:

Match Score: 6-1, 6-2

Assertive Points:	20	Served:	13	Received:	7
Nonassertive Points:	8	Served:	4	Received:	4
Neutral Points:	8	Served:	3	Received:	5
Assertive when Serving:	13/20	Assertive when Receiving:	7/16		
Nonassertive when Serving:	4/20	Nonassertive when Receiving:	4/16		
Neutral when Serving:	3/20	Neutral when Receiving:	5/16		
Assertive Points/Total Points:	20/36	Won:	14	Lost:	6
Nonassertive Points/Total Points:	7/36	Won:	1	Lost:	6
Neutral Points/Total Points:	8/36	Won:	7	Lost:	1

---

## First Observation on Player #2

By Observer A

Point Observed	Score: Neutral, Assertive, or Nonassertive	Served/Received Won/Lost	Point Played	Game Score	Set Score
1	+2 Assertive	R-W	1-5-2	1-0	2-2
2	0 Neutral	R-W	1-5-4	2-1	2-2
3	+4 Assertive	R-W	1-5-6	3-2	2-2
4	+1 Assertive	S-W	1-6-2	0-1	3-2
5	+4 Assertive	S-W	1-6-4	1-2	3-2
6	+4 Assertive	S-W	1-6-6	2-3	3-2
7	0 Neutral	R-L	1-7-2	1-0	3-3
8	+4 Assertive	R-W	1-7-4	1-2	3-3
9	-1 Nonassertive	R-L	1-7-6	3-2	3-3
10	+7 Assertive	S-W	1-8-2	0-1	4-3
11	+5 Assertive	S-W	1-8-4	1-2	4-3
12	+6 Assertive	S-W	1-8-6	3-2	4-3
13	-2 Nonassertive	R-L	1-9-2	1-0	5-3
14	+5 Assertive	R-W	1-9-4	2-1	5-3
15	-2 Nonassertive	S-L	2-1-2	0-1	0-0
16	0 Neutral	S-L	2-1-4	1-2	0-0
17	+4 Assertive	R-W	2-2-2	0-1	0-1
18	+5 Assertive	S-W	2-3-2	0-1	1-1
19	+5 Assertive	S-W	2-3-4	2-1	1-1
20	+5 Assertive	S-W	2-3-6	3-2	1-1
21	-1 Nonassertive	R-L	2-4-2	0-1	2-1

cont'd

22	-4 Nonassertive	R-L	2-4-4	0-3	2-1
23	+4 Assertive	S-W	2-5-2	1-0	2-2
24	+4 Assertive	S-W	2-5-4	3-0	2-2
25	-2 Nonassertive	R-L	2-6-2	0-1	3-2
26	+4 Assertive	R-W	2-6-4	0-3	3-2
27	-3 Nonassertive	S-L	2-7-2	1-0	3-3
28	+5 Assertive	S-W	2-7-4	2-1	3-3
29	+3 Assertive	S-W	2-7-6	3-2	3-3
30	+5 Assertive	R-W	2-8-2	1-0	4-3
31	+5 Assertive	R-W	2-8-4	2-1	4-3
32	+4 Assertive	R-W	2-8-6	3-2	4-3
33	-5 Nonassertive	S-L	2-9-2	0-1	5-3
34	-5 Nonassertive	S-L	2-9-4	1-2	5-3
35	+3 Assertive	S-W	2-9-6	3-2	5-3
36	+2 Assertive	S-L	2-9-8	3-3	5-3
37	-1 Nonassertive	S-L	2-9-10	ad-out	5-3

SUMMARY:

Match Score: 6-3, 6-3

Assertive Points: 24 Served: 15 Received: 9

Nonassertive Points: 10 Served: 5 Received: 5

Neutral Points: 3 Served: 1 Received: 2

Assertive when Serving: 15/21 Assertive when Receiving: 9/16

Nonassertive when Serving: 5/21 Nonassertive when Receiving: 5/16

Neutral when Serving: 1/21 Neutral when Receiving: 2/16

Assertive Points/Total Points: 24/37 Won: 23 Lost: 1

Nonassertive Points/Total Points: 10/37 Won: 0 Lost: 10

Neutral Points/Total Points: 3/37 Won: 1 Lost: 2

## First Observation on Player #2

By Observer B

Point Observed	Score: Neutral, Assertive, or Nonassertive	Served/Received Won/Lost	Point Played	Game Score	Set Score
1	0 Neutral	R-W	1-5-2	1-0	2-2
2	0 Neutral	R-W	1-5-4	2-1	2-2
3	+3 Assertive	R-W	1-5-6	3-2	2-2
4	+2 Assertive	S-W	1-6-2	0-1	3-2
5	+3 Assertive	S-W	1-6-4	1-2	3-2
6	+3 Assertive	S-W	1-6-6	2-3	3-2
7	-1 Nonassertive	R-L	1-7-2	1-0	3-3
8	+3 Assertive	R-W	1-7-4	1-2	3-3
9	-2 Nonassertive	R-L	1-7-6	3-2	3-3
10	+7 Assertive	S-W	1-8-2	0-1	4-3
11	+4 Assertive	S-W	1-8-4	1-2	4-3
12	+5 Assertive	S-W	1-8-6	3-2	4-3
13	-2 Nonassertive	R-L	1-9-2	1-0	5-3
14	+3 Assertive	R-W	1-9-4	2-1	5-3
15	-1 Nonassertive	S-L	2-1-2	0-1	0-0
16	-2 Nonassertive	S-L	2-1-4	1-2	0-0
17	+3 Assertive	R-W	2-2-2	0-1	0-1
18	+3 Assertive	S-W	2-3-2	0-1	1-1
19	+3 Assertive	S-W	2-3-4	2-1	1-1
20	+3 Assertive	S-W	2-3-6	3-2	1-1
21	-1 Nonassertive	R-L	2-4-2	0-1	2-1

cont'd

22	-3 Nonassertive	R-L	2-4-4	0-3	2-1
23	+3 Assertive	S-W	2-5-2	1-0	2-2
24	+3 Assertive	S-W	2-5-4	3-0	2-2
25	-2 Nonassertive	R-L	2-6-2	0-1	3-2
26	+3 Assertive	R-W	2-6-4	0-3	3-2
27	-2 Nonassertive	S-L	2-7-2	1-0	3-3
28	+4 Assertive	S-W	2-7-4	2-1	3-3
29	+3 Assertive	S-W	2-7-6	3-2	3-3
30	+3 Assertive	R-W	2-8-2	1-0	4-3
31	+5 Assertive	R-W	2-8-4	2-1	4-3
32	+3 Assertive	R-W	2-8-6	3-2	4-3
33	-3 Nonassertive	S-L	2-9-2	0-1	5-3
34	-3 Nonassertive	S-L	2-9-4	1-2	5-3
35	+2 Assertive	S-W	2-9-6	3-2	5-3
36	+1 Assertive	S-L	2-9-8	3-3	5-3
37	-1 Nonassertive	S-L	2-9-10	ad-out	5-3

SUMMARY:

Match Score: 6-3, 6-3

Assertive Points:	23	Served:	15	Received:	8
Nonassertive Points:	12	Served:	6	Received:	6
Neutral Points:	2	Served:	0	Received:	2

Assertive when Serving:	15/21	Assertive when Receiving:	8/16
Nonassertive when Serving:	6/21	Nonassertive when Receiving:	6/16
Neutral when Serving:	0/21	Neutral when Receiving:	2/16

Assertive Points/Total Points:	23/37	Won:	22	Lost:	1
Nonassertive Points/Total Points:	12/37	Won:	0	Lost:	12
Neutral Points/Total Points:	2/37	Won:	2	Lost:	0

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## Second Observation on Player #2

By Observer A

Point Observed	Score: Neutral, Assertive, or Nonassertive	Served/Received Won/Lost	Point Played	Game Score	Set Score
1	+4 Assertive	R-W	1-5-2	0-1	3-1
2	+1 Assertive	R-W	1-5-4	1-2	3-1
3	+4 Assertive	S-W	1-6-2	1-0	3-2
4	+4 Assertive	S-W	1-6-4	3-0	3-2
5	+4 Assertive	R-W	1-7-2	1-0	4-2
6	+4 Assertive	R-W	1-7-4	2-1	4-2
7	-3 Nonassertive	S-L	1-8-2	1-0	5-2
8	0 Neutral	S-L	1-8-4	1-2	5-2
9	+3 Assertive	S-W	1-8-6	2-3	5-2
10	-4 Nonassertive	S-L	1-8-8	ad-out	5-2
11	+1 Assertive	R-W	1-9-2	0-1	5-3
12	+4 Assertive	R-W	1-9-4	2-1	5-3
13	+4 Assertive	S-W	2-1-2	0-1	0-0
14	+4 Assertive	S-W	2-1-4	2-1	0-0
15	-3 Nonassertive	R-L	2-2-2	0-1	1-0
16	0 Neutral	R-W	2-2-4	0-3	1-0
17	+4 Assertive	R-W	2-2-6	2-3	1-0
18	+3 Assertive	R-W	2-2-8	ad-in	1-0
19	+3 Assertive	S-W	2-3-2	1-0	2-0
20	+4 Assertive	S-W	2-3-4	2-1	2-0
21	+2 Assertive	R-L	2-4-2	0-1	3-0

cont'd



22	+2 Assertive	R-W	2- <del>4</del> -4	1-2	3-0
23	-4 Nonassertive	R-L	2-4-6	3-2	3-0
24	-2 Nonassertive	R-L	2-4-8	ad-in	3-0
25	+3 Assertive	R-W	2-4-10	ad-in	3-0
26	-1 Nonassertive	S-L	2-5-2	1-0	4-0
27	-2 Nonassertive	S-L	2-5-4	1-2	4-0
28	+3 Assertive	R-W	2-6-2	1-0	4-1
29	+1 Assertive	R-L	2-6-4	2-1	4-1
30	+3 Assertive	R-W	2-6-6	3-2	4-1
31	+2 Assertive	R-W	2-6-8	ad-out	4-1
32	-3 Nonassertive	R-L	2-6-10	ad-in	4-1
33	+4 Assertive	R-W	2-6-12	ad-in	4-1
34	0 Neutral	R-L	2-6-14	ad-in	4-1
35	-2 Nonassertive	S-L	2-7-2	1-0	4-2
36	+3 Assertive	S-W	2-7-4	2-1	4-2
37	+4 Assertive	S-W	2-7-6	3-2	4-2
38	+1 Assertive	R-L	2-8-2	1-0	5-2
39	+2 Assertive	R-W	2-8-4	2-1	5-2
40	-1 Nonassertive	R-L	2-8-6	3-2	5-2
41	0 Neutral	R-W	2-8-8	ad-in	5-2

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SUMMARY:

Match Score: 6-3, 6-2

Assertive Points:	27	Served:	9	Received:	18
Nonassertive Points:	10	Served:	4	Received:	6
Neutral Points:	4	Served:	2	Received:	2
Assertive when Serving:	9/15	Assertive when Receiving:	18/26		
Nonassertive when Serving:	4/15	Nonassertive when Receiving:	6/26		
Neutral when Serving:	2/15	Neutral when Receiving:	2/26		
Assertive Points/Total Points:	27/41	Won:	24	Lost:	3
Nonassertive Points/Total Points:	10/41	Won:	0	Lost:	10
Neutral Points/Total Points:	4/41	Won:	2	Lost:	2

---

## Second Observation on Player #2

By Observer B

Point Observed	Score: Neutral, Assertive, or Nonassertive	Served/Received Won/Lost	Point Played	Game Score	Set Score
1	+2 Assertive	R-W	1-5-2	0-1	3-1
2	+2 Assertive	R-W	1-5-4	1-2	3-1
3	+3 Assertive	S-W	1-6-2	1-0	3-2
4	+2 Assertive	S-W	1-6-4	3-0	3-2
5	+3 Assertive	R-W	1-7-2	1-0	4-2
6	+3 Assertive	R-W	1-7-4	2-1	4-2
7	-2 Nonassertive	S-L	1-8-2	1-0	5-2
8	-2 Nonassertive	S-L	1-8-4	1-2	5-2
9	+3 Assertive	S-W	1-8-6	2-3	5-2
10	-3 Nonassertive	S-L	1-8-8	ad-out	5-2
11	+1 Assertive	R-W	1-9-2	0-1	5-3
12	+3 Assertive	R-W	1-9-4	2-1	5-3
13	+3 Assertive	S-W	2-1-2	0-1	0-0
14	+4 Assertive	S-W	2-1-4	2-1	0-0
15	-3 Nonassertive	R-L	2-2-2	0-1	1-0
16	-1 Nonassertive	R-W	2-2-4	0-3	1-0
17	+3 Assertive	R-W	2-2-6	2-3	1-0
18	+4 Assertive	R-W	2-2-8	ad-in	1-0
19	+3 Assertive	S-W	2-3-2	1-0	2-0
20	+4 Assertive	S-W	2-3-4	2-1	2-0
21	-2 Nonassertive	R-L	2-4-2	0-1	3-0

cont'd

22	+2 Assertive	R-W	2-4-4	1-2	3-0
23	-4 Nonassertive	R-L	2-4-6	3-2	3-0
24	-4 Nonassertive	R-L	2-4-8	ad-in	3-0
25	+2 Assertive	R-W	2-4-10	ad-in	3-0
26	0 Neutral	S-L	2-5-2	1-0	4-0
27	-3 Nonassertive	S-L	2-5-4	1-2	4-0
28	+4 Assertive	R-W	2-6-2	1-0	4-1
29	+2 Assertive	R-L	2-6-4	2-1	4-1
30	+4 Assertive	R-W	2-6-6	3-2	4-1
31	+2 Assertive	R-W	2-6-8	ad-out	4-1
32	-3 Nonassertive	R-L	2-6-10	ad-in	4-1
33	+4 Assertive	R-W	2-6-12	ad-in	4-1
34	-2 Nonassertive	R-L	2-6-14	ad-in	4-1
35	-2 Nonassertive	S-L	2-7-2	1-0	4-2
36	+3 Assertive	S-W	2-7-4	2-1	4-2
37	+4 Assertive	S-W	2-7-6	3-2	4-2
38	+1 Assertive	R-L	2-8-2	1-0	5-2
39	+3 Assertive	R-W	2-8-4	2-1	5-2
40	-2 Nonassertive	R-L	2-8-6	3-2	5-2
41	0 Neutral	R-W	2-8-8	ad-in	5-2

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SUMMARY:

Match Score: 6-3, 6-2

Assertive Points:	26	Served:	9	Received:	17
Nonassertive Points:	13	Served:	6	Received:	7
Neutral Points:	2	Served:	0	Received:	2
Assertive when Serving:	9/15	Assertive when Receiving:	17/26		
Nonassertive when Serving:	6/15	Nonassertive when Receiving:	7/26		
Neutral when Serving:	0/15	Neutral when Receiving:	2/26		
Assertive Points/Total Points:	26/41	Won:	24	Lost:	2
Nonassertive Points/Total Points:	13/41	Won:	1	Lost:	12
Neutral Points/Total Points:	2/41	Won:	1	Lost:	1

---

## First Observation on Player #3

Point Observed	Score: Neutral, Assertive, or Nonassertive	Served/Received Won/Lost	Point Played	Game Score	Set Score
1	+2 Assertive	S-W	1-5-2	1-0	2-2
2	+4 Assertive	S-W	1-5-4	3-0	2-2
3	+2 Assertive	S-W	1-5-6	3-1	2-2
4	-3 Nonassertive	R-L	1-6-2	1-0	3-2
5	+4 Assertive	R-W	1-6-4	2-1	3-2
6	0 Neutral	R-W	1-6-6	3-2	3-2
7	+2 Assertive	S-W	1-7-2	1-0	4-2
8	0 Neutral	S-L	1-7-4	2-1	4-2
9	+3 Assertive	S-W	1-7-6	3-2	4-2
10	+2 Assertive	R-W	1-8-2	0-1	5-2
11	+5 Assertive	R-W	1-8-4	2-1	5-2
12	+2 Assertive	S-L	2-1-2	1-0	0-0
13	+2 Assertive	S-L	2-1-4	1-2	0-0
14	+3 Assertive	R-W	2-2-2	0-1	0-1
15	+2 Assertive	R-W	2-2-4	1-2	0-1
16	+2 Assertive	S-W	2-3-2	1-0	0-2
17	-1 Nonassertive	S-L	2-3-4	2-1	0-2
18	+2 Assertive	S-W	2-3-6	3-2	0-2
19	+5 Assertive	R-W	2-4-2	1-0	1-2
20	-1 Nonassertive	R-L	2-4-4	2-1	1-2
21	+6 Assertive	R-W	2-4-6	3-2	1-2

cont'd

22	-2 Nonassertive	S-L	2-5-2	0-1	2-2
23	+4 Assertive	S-W	2-5-4	1-2	2-2
24	+2 Assertive	S-W	2-5-6	2-3	2-2
25	+8 Assertive	S-W	2-5-8	ad-out	2-2
26	+3 Assertive	S-W	2-5-10	ad-in	2-2
27	+3 Assertive	R-W	2-6-2	0-1	3-2
28	+7 Assertive	R-W	2-6-4	1-2	3-2
29	+4 Assertive	R-W	2-6-6	3-2	3-2
30	+3 Assertive	S-W	2-7-2	0-1	4-2
31	+2 Assertive	S-W	2-7-4	2-1	4-2
32	+3 Assertive	S-W	2-7-6	3-2	4-2
33	+4 Assertive	R-W	2-8-2	1-0	5-2
34	0 Neutral	R-L	2-8-4	2-1	5-2
35	+4 Assertive	R-W	2-8-6	3-2	5-2
-	-	-	-	-	-

SUMMARY:

Match Score: 6-2, 6-2

Assertive Points:	28	Served:	16	Received:	12
Nonassertive Points:	4	Served:	2	Received:	2
Neutral Points:	3	Served:	1	Received:	2
Assertive when Serving:	16/19	Assertive when Receiving:	12/16		
Nonassertive when Serving:	2/19	Nonassertive when Receiving:	2/16		
Neutral when Serving:	1/19	Neutral when Receiving:	2/16		
Assertive Points/Total Points:	28/35	Won:	26	Lost:	2
Nonassertive Points/Total Points:	4/35	Won:	0	Lost:	4
Neutral Points/Total Points:	3/35	Won:	1	Lost:	2

---

## Second Observation on Player #3

Points Observed	Score: Neutral, Assertive, or Nonassertive	Served/Received Won/Lost	Point Played	Game Score	Set Score
1	+3 Assertive	S-W	1-5-2	1-0	3-1
2	+4 Assertive	S-W	1-5-4	2-1	3-1
3	+3 Assertive	S-W	1-5-6	3-2	3-1
4	+3 Assertive	R-W	1-6-2	1-0	4-1
5	-2 Nonassertive	R-L	1-6-4	2-1	4-1
6	+4 Assertive	R-W	1-6-6	3-2	4-1
7	+1 Assertive	R-L	1-6-8	ad-in	4-1
8	+1 Assertive	R-W	1-6-10	ad-in	4-1
9	+2 Assertive	S-W	1-7-2	1-0	5-1
10	+5 Assertive	S-W	1-7-4	2-1	5-1
11	+6 Assertive	R-W	2-1-2	1-0	0-0
12	+5 Assertive	R-L	2-1-4	2-1	0-0
13	+5 Assertive	R-W	2-1-6	3-2	0-0
14	+1 Assertive	R-L	2-1-8	ad-in	0-0
15	0 Neutral	R-L	2-1-10	ad-out	0-0
16	+1 Assertive	S-L	2-2-2	1-0	0-1
17	+7 Assertive	S-W	2-2-4	1-2	0-1
18	+2 Assertive	S-L	2-2-6	3-2	0-1
19	+8 Assertive	S-W	2-2-8	ad-out	0-1
20	0 Neutral	S-L	2-2-10	ad-in	0-1
21	+7 Assertive	S-W	2-2-12	ad-in	0-1

cont'd



22	+5 Assertive	R-L	2-3-2	0-1	1-1
23	+6 Assertive	R-W	2-3-4	1-2	1-1
24	+2 Assertive	R-W	2-3-6	2-3	1-1
25	+5 Assertive	R-W	2-3-8	ad-out	1-1
26	+6 Assertive	R-W	2-3-10	ad-out	1-1
27	+3 Assertive	R-W	2-3-12	ad-out	1-1
28	+5 Assertive	R-W	2-3-14	ad-out	1-1
29	+4 Assertive	R-W	2-3-16	ad-out	1-1
30	+1 Assertive	R-L	2-3-18	ad-out	1-1
31	+6 Assertive	S-W	2-4-2	1-0	1-2
32	+2 Assertive	S-L	2-4-4	3-0	1-2
33	+1 Assertive	S-L	2-4-6	3-2	1-2
34	+1 Assertive	S-L	2-4-8	ad-out	1-2
35	-2 Nonassertive	R-W	2-5-2	1-0	1-3
36	0 Neutral	R-L	2-5-4	3-1	1-3
37	+7 Assertive	R-W	2-5-6	3-2	1-3
38	+4 Assertive	S-L	2-6-2	1-0	2-3
39	+3 Assertive	S-W	2-6-4	2-1	2-3
40	+8 Assertive	R-W	2-7-2	1-0	3-3
41	+4 Assertive	R-L	2-7-4	3-1	3-3
42	+2 Assertive	R-W	2-7-6	3-2	3-3
43	+2 Assertive	S-W	2-8-2	1-0	4-3
44	+3 Assertive	S-W	2-8-4	3-0	4-3
45	0 Neutral	R-L	2-9-2	1-0	5-3
46	+5 Assertive	R-W	2-9-4	2-1	5-3

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SUMMARY:

Match Score: 6-1, 6-3

Assertive Points:	40	Served:	18	Received:	22
Nonassertive Points:	2	Served:	0	Received:	2
Neutral Points:	4	Served:	1	Received:	3
Assertive when Serving:	18/19	Assertive when Receiving:	22/27		
Nonassertive when Serving:	0/19	Nonassertive when Receiving:	2/27		
Neutral when Serving:	1/19	Neutral when Receiving:	3/27		
Assertive Points/Total Points:	40/46	Won:	28	Lost:	12
Nonassertive Points/Total Points:	2/46	Won:	1	Lost:	1
Neutral Points/Total Points:	4/46	Won:	0	Lost:	4

---

## First Observation on Player #4

Points Observed	Score: Neutral, Assertive, or Nonassertive	Served/Received Won/Lost	Point Played	Game Score	Set Score
1	+2 Assertive	S-W	1-5-2	1-0	4-0
2	+1 Assertive	S-W	1-5-4	3-0	4-0
3	+1 Assertive	R-W	1-6-2	1-0	5-0
4	0 Neutral	R-W	1-6-4	2-1	5-0
5	+3 Assertive	R-W	1-6-6	3-2	5-0
6	+1 Assertive	R-W	2-5-2	0-1	3-1
7	0 Neutral	R-L	2-5-4	1-2	3-1
8	+2 Assertive	R-L	2-5-6	2-3	3-1
9	+3 Assertive	S-W	2-6-2	0-1	3-2
10	+3 Assertive	S-W	2-6-4	2-1	3-2
11	-2 Nonassertive	R-L	2-7-2	1-0	4-2
12	+3 Assertive	R-W	2-7-4	2-1	4-2
13	-1 Nonassertive	R-L	2-7-6	3-2	4-2
14	0 Neutral	R-L	2-7-8	ad-in	4-2
15	+3 Assertive	R-W	2-7-10	ad-in	4-2
16	+3 Assertive	S-W	2-8-2	1-0	5-2
17	+2 Assertive	S-L	2-8-4	3-0	5-2
18	+4 Assertive	S-W	2-8-6	3-2	5-2
-	-	-	-	-	-

SUMMARY:

Match Score: 6-0, 6-2

Assertive Points:	13	Served:	7	Received:	6
Nonassertive Points:	2	Served:	0	Received:	2
Neutral Points:	3	Served:	0	Received:	3
Assertive when Serving:	7/7	Assertive when Receiving:	6/11		
Nonassertive when Serving:	0/7	Nonassertive when Receiving:	2/11		
Neutral when Serving:	0/7	Neutral when Receiving:	3/11		
Assertive Points/Total Points:	13/18	Won:	11	Lost:	2
Nonassertive Points/Total Points:	2/18	Won:	0	Lost:	2
Neutral Points/Total Points:	3/18	Won:	1	Lost:	2

---

## Second Observation on Player #4

Points Observed	Score: Neutral, Assertive, or Nonassertive	Served/Received Won/Lost	Point Played	Game Score	Set Score
1	0 Neutral	S-L	1-7-2	1-1	3-3
2	+2 Assertive	S-W	1-7-4	2-1	3-3
3	0 Neutral	S-L	1-7-6	3-2	3-3
4	+1 Assertive	S-W	1-7-8	ad-in	3-3
5	0 Neutral	R-L	1-8-2	1-0	4-3
6	0 Neutral	R-L	1-8-4	2-1	4-3
7	+1 Assertive	R-W	1-8-6	3-2	4-3
8	+3 Assertive	R-W	1-8-8	ad-in	4-3
9	+2 Assertive	S-W	1-9-2	1-0	5-3
10	0 Neutral	S-L	1-9-4	3-0	5-3
11	+2 Assertive	R-L	2-1-2	1-0	0-0
12	+2 Assertive	R-L	2-1-4	2-1	0-0
13	+3 Assertive	R-W	2-1-6	3-2	0-0
14	0 Neutral	S-L	2-2-2	1-0	1-0
15	+1 Assertive	S-W	2-2-4	1-2	1-0
16	+1 Assertive	S-W	2-2-6	2-3	1-0
17	+1 Assertive	S-W	2-2-8	ad-in	1-0
18	+3 Assertive	R-W	2-3-2	1-0	2-0
19	0 Neutral	R-L	2-3-4	3-0	2-0
20	+3 Assertive	S-W	2-4-2	1-0	3-0
21	0 Neutral	S-L	2-4-4	3-0	3-0

cont'd

22	-1 Nonassertive	R-L	2-5-2	1-0	4-0
23	+1 Assertive	R-L	2-5-4	2-1	4-0
24	+2 Assertive	R-W	2-5-6	3-2	4-0
25	+4 Assertive	S-W	2-6-2	0-1	5-0
26	+4 Assertive	S-W	2-6-4	2-1	5-0
-	-	-	-	-	-

SUMMARY:

Match Score: 6-3, 6-0

Assertive Points:	17	Served:	9	Received:	8
Nonassertive Points:	1	Served:	0	Received:	1
Neutral Points:	8	Served:	5	Received:	3
Assertive when Serving:	9/14	Assertive when Receiving:	8/12		
Nonassertive when Serving:	0/14	Nonassertive when Receiving:	1/12		
Neutral when Serving:	5/14	Neutral when Receiving:	3/12		
Assertive Points/Total Points:	17/26	Won:	14	Lost:	3
Nonassertive Points/Total Points:	1/26	Won:	0	Lost:	1
Neutral Points/Total Points:	8/26	Won:	0	Lost:	8

---

## First Observation on Player #5

Points Observed	Score: Neutral, Assertive, or Nonassertive	Served/Received Won/Lost	Point Played	Game Score	Set Score
1	+1 Assertive	S-L	1-5-2	1-0	3-1
2	+1 Assertive	S-W	1-5-4	2-1	3-1
3	+5 Assertive	R-W	1-6-2	1-0	4-1
4	+5 Assertive	R-W	1-6-4	3-0	4-1
5	+1 Assertive	S-W	1-7-2	0-1	5-1
6	+2 Assertive	S-W	1-7-4	1-2	5-1
7	-1 Nonassertive	S-L	1-7-6	2-3	5-1
8	+2 Assertive	R-W	1-8-2	1-0	5-2
9	+3 Assertive	R-W	1-8-4	2-1	5-2
10	+7 Assertive	R-W	1-8-6	3-2	5-2
11	+4 Assertive	S-W	2-1-2	0-1	0-0
12	+1 Assertive	S-W	2-1-4	1-2	0-0
13	+2 Assertive	S-W	2-1-6	3-2	0-0
14	0 Neutral	R-L	2-2-2	1-0	1-0
15	+3 Assertive	R-W	2-2-4	1-2	1-0
16	0 Neutral	R-W	2-2-6	3-2	1-0
17	+1 Assertive	S-W	2-3-2	0-1	2-0
18	+2 Assertive	S-W	2-3-4	1-2	2-0
19	+2 Assertive	S-W	2-3-6	3-2	2-0
20	-3 Nonassertive	R-L	2-4-2	1-0	3-0
21	+4 Assertive	R-W	2-4-4	2-1	3-0

cont'd

22	-1 Nonassertive	S-L	2-5-2	0-1	4-0
23	0 Neutral	S-L	2-5-4	0-3	4-0
24	+5 Assertive	R-W	2-6-2	1-0	4-1
25	-1 Nonassertive	R-W	2-6-4	2-1	4-1
26	+3 Assertive	S-W	2-7-2	0-1	5-1
27	+3 Assertive	S-W	2-7-4	2-1	5-1
28	+1 Assertive	S-W	2-7-6	3-2	5-1

SUMMARY:

Match Score: 6-2, 6-1

Assertive Points:	21	Served:	13	Received:	8
Nonassertive Points:	4	Served:	2	Received:	2
Neutral Points:	3	Served:	1	Received:	2
Assertive when Serving:	13/16	Assertive when Receiving:	8/12		
Nonassertive when Serving:	2/16	Nonassertive when Receiving:	2/12		
Neutral when Serving:	1/16	Neutral when Receiving:	2/12		
Assertive Points/Total Points:	21/28	Won:	20	Lost:	1
Nonassertive Points/Total Points:	4/28	Won:	1	Lost:	3
Neutral Points/Total Points:	3/28	Won:	1	Lost:	2

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## Second Observation on Player #5

Points Observed	Score: Neutral, Assertive, or Nonassertive	Served/Received Won/Lost	Point Played	Game Score	Set Score
1	0 Neutral	S-L	1-5-2	0-1	3-1
2	+1 Assertive	S-W	1-5-4	1-2	3-1
3	-1 Nonassertive	S-L	1-5-6	2-3	3-1
4	+1 Assertive	R-L	1-6-2	1-0	3-2
5	+4 Assertive	R-W	1-6-4	2-1	3-2
6	+6 Assertive	R-W	1-6-6	3-2	3-2
7	-3 Nonassertive	S-L	1-7-2	0-1	4-2
8	+3 Assertive	S-W	1-7-4	1-2	4-2
9	+4 Assertive	S-W	1-7-6	3-2	4-2
10	0 Neutral	R-L	1-8-2	1-0	5-2
11	+3 Assertive	R-W	1-8-4	1-2	5-2
12	-1 Nonassertive	R-L	1-8-6	3-2	5-2
13	-1 Nonassertive	R-L	1-8-8	ad-in	5-2
14	+3 Assertive	S-W	1-9-2	1-0	5-3
15	+3 Assertive	S-W	1-9-4	2-1	5-3
16	+4 Assertive	R-W	2-1-2	1-0	0-0
17	0 Neutral	R-L	2-1-4	3-0	0-0
18	+4 Assertive	S-W	2-2-2	1-0	1-0
19	-2 Nonassertive	S-L	2-2-4	2-1	1-0
20	+3 Assertive	S-L	2-2-6	3-2	1-0
21	+3 Assertive	S-L	2-2-8	ad-in	1-0

cont'd

22	0 Neutral	S-L	2-2-10	ad-in	1-0
23	-1 Nonassertive	S-L	2-2-12	ad-in	1-0
24	+3 Assertive	S-W	2-2-14	ad-in	1-0
25	-2 Nonassertive	R-L	2-3-2	1-0	2-0
26	+3 Assertive	R-W	2-3-4	2-1	2-0
27	+5 Assertive	R-W	2-3-6	3-2	2-0
28	-2 Nonassertive	S-L	2-4-2	1-0	3-0
29	-1 Nonassertive	S-L	2-4-4	2-1	3-0
30	-2 Nonassertive	S-L	2-4-6	3-2	3-0
31	0 Neutral	S-W	2-4-8	ad-in	3-0
32	+3 Assertive	R-W	2-5-2	1-0	4-0
33	+1 Assertive	R-L	2-5-4	2-1	4-0
34	+3 Assertive	R-W	2-5-6	3-2	4-0
35	0 Neutral	S-L	2-6-2	1-0	5-0
36	+3 Assertive	S-W	2-6-4	2-1	5-0
37	+1 Assertive	S-W	2-6-6	3-2	5-0

SUMMARY:

Match Score: 6-3, 6-0

Assertive Points: 21 Served: 11 Received: 10

Nonassertive Points: 10 Served: 7 Received: 3

Neutral Points: 6 Served: 4 Received: 2

Assertive when Serving: 11/22 Assertive when Receiving: 10/15

Nonassertive when Serving: 7/22 Nonassertive when Receiving: 3/15

Neutral when Serving: 4/22 Neutral when Receiving: 2/15

Assertive Points/Total Points: 21/37 Won: 17 Lost: 4

Nonassertive Points/Total Points: 10/37 Won: 0 Lost: 10

Neutral Points/Total Points: 6/37 Won: 1 Lost: 5

## First Observation on Player #6

Points Observed	Score: Neutral, Assertive, or Nonassertive	Served/Received Won/Lost	Point Played	Game Score	Set Score
1	+1 Assertive	R-W	1-5-2	1-0	3-2
2	-1 Nonassertive	R-W	1-5-4	3-0	3-2
3	-3 Nonassertive	R-L	1-5-6	3-2	3-2
4	-4 Nonassertive	S-L	1-6-2	1-0	3-3
5	+1 Assertive	S-L	1-6-4	2-1	3-3
6	+2 Assertive	R-W	1-7-2	1-0	4-3
7	+4 Assertive	R-W	1-7-4	2-1	4-3
8	+4 Assertive	R-W	1-7-6	3-2	4-3
9	+2 Assertive	S-W	1-8-2	0-1	5-3
10	+4 Assertive	S-W	1-8-4	2-1	5-3
11	+3 Assertive	R-W	2-1-2	1-0	0-0
12	+3 Assertive	R-W	2-1-4	2-1	0-0
13	+3 Assertive	R-W	2-1-6	3-2	0-0
14	+4 Assertive	S-W	2-2-2	1-0	1-0
15	+3 Assertive	S-W	2-2-4	2-1	1-0
16	+4 Assertive	S-W	2-2-6	3-2	1-0
17	0 Neutral	R-W	2-3-2	1-0	2-0
18	+1 Assertive	R-L	2-3-4	3-0	2-0
19	+2 Assertive	S-W	2-4-2	0-1	3-0
20	+2 Assertive	S-L	2-4-4	1-2	3-0
21	-2 Nonassertive	S-L	2-4-6	2-3	3-0

cont'd

22	-1 Nonassertive	R-L	2-5-2	1-0	3-1
23	-3 Nonassertive	R-L	2-5-4	1-2	3-1
24	+4 Assertive	S-W	2-6-2	1-0	3-2
25	+4 Assertive	S-W	2-6-4	3-0	3-2
26	0 Neutral	R-W	2-7-2	1-0	4-2
27	+3 Assertive	R-W	2-7-4	3-0	4-2
28	+1 Assertive	S-L	2-8-2	1-0	5-2
29	0 Neutral	S-L	2-8-4	2-1	5-2
30	+4 Assertive	S-W	2-8-6	2-3	5-2
31	0 Neutral	S-L	2-8-8	ad-out	5-2
32	+4 Assertive	R-W	2-9-2	0-1	5-3
33	+3 Assertive	R-W	2-9-4	2-1	5-3
34	0 Neutral	R-W	2-9-6	3-2	5-3

SUMMARY:

Match Score: 6-3, 6-3

Assertive Points:	23	Served:	12	Received:	11
Nonassertive Points:	6	Served:	2	Received:	4
Neutral Points:	5	Served:	2	Received:	3
Assertive when Serving:	12/16	Assertive when Receiving:	11/18		
Nonassertive when Serving:	2/16	Nonassertive when Receiving:	4/18		
Neutral when Serving:	2/16	Neutral when Receiving:	3/18		
Assertive Points/Total Points:	23/34	Won:	20	Lost:	3
Nonassertive Points/Total Points:	6/34	Won:	1	Lost:	5
Neutral Points/Total Points:	5/34	Won:	3	Lost:	2

---

## Second Observation on Player #6

Points Observed	Score: Neutral, Assertive, or Nonassertive	Served/Received Won/Lost	Point Played	Game Score	Set Score
1	+2 Assertive	S-W	1-5-2	0-1	2-2
2	+6 Assertive	S-W	1-5-4	2-1	2-2
3	-1 Nonassertive	R-L	1-6-2	0-1	3-2
4	+2 Assertive	R-W	1-6-4	1-2	3-2
5	+1 Assertive	R-L	1-6-6	2-3	3-2
6	+2 Assertive	S-W	1-7-2	0-1	3-3
7	+4 Assertive	S-W	1-7-4	2-1	3-3
8	-1 Nonassertive	S-L	1-7-6	3-2	3-3
9	+4 Assertive	S-W	1-7-8	ad-in	3-3
10	-1 Nonassertive	R-L	1-8-2	1-0	4-3
11	+2 Assertive	R-W	2-1-6	3-2	5-3
12	+6 Assertive	S-W	2-2-2	0-1	1-0
13	+3 Assertive	S-W	2-2-4	2-1	1-0
14	+1 Assertive	R-W	2-3-2	0-1	2-0
15	-2 Nonassertive	R-L	2-3-4	1-2	2-0
16	+2 Assertive	R-W	2-3-6	2-3	2-0
17	-2 Nonassertive	R-L	2-3-8	ad-in	2-0
18	0 Neutral	S-W	2-4-2	1-0	2-1
19	+4 Assertive	S-W	2-4-4	3-0	2-1
20	-1 Nonassertive	R-L	2-5-2	0-1	3-1
21	-3 Nonassertive	R-L	2-5-4	0-3	3-1

cont'd

22	-4 Nonassertive	S-L	2-6-2	0-1	3-2
23	+2 Assertive	S-L	2-6-4	1-2	3-2
24	+2 Assertive	R-W	2-7-2	0-1	3-3
25	0 Neutral	R-W	2-7-4	2-1	3-3
26	+2 Assertive	S-W	2-8-2	0-1	4-3
27	+6 Assertive	S-W	2-8-4	2-1	4-3
28	-2 Nonassertive	R-L	2-9-2	1-0	5-3
29	+2 Assertive	R-L	2-9-4	1-2	5-3
30	0 Neutral	R-W	2-9-6	2-3	5-3
31	+2 Assertive	R-L	2-9-8	ad-in	5-3
32	0 Neutral	S-L	2-10-2	0-1	5-4
33	+5 Assertive	S-W	2-10-4	0-3	5-4
34	+4 Assertive	S-L	2-10-6	2-3	5-4
35	-3 Nonassertive	R-L	2-11-2	1-0	5-5
36	-3 Nonassertive	R-L	2-11-4	2-1	5-5
37	0 Neutral	R-L	2-11-6	3-2	5-5
38	+5 Assertive	R-W	2-11-8	ad-in	5-5
-	-	-	-	-	-

SUMMARY:

Match Score: 6-3, 7-5

Assertive Points:	22	Served:	13	Received:	9
Nonassertive Points:	11	Served:	2	Received:	9
Neutral Points:	5	Served:	2	Received:	3
Assertive when Serving:	13/17	Assertive when Receiving:	9/21		
Nonassertive when Serving:	2/17	Nonassertive when Receiving:	9/21		
Neutral when Serving:	2/17	Neutral when Receiving:	3/21		
Assertive Points/Total Points:	22/38	Won:	17	Lost:	5
Nonassertive Points/Total Points:	11/38	Won:	0	Lost:	11
Neutral Points/Total Points:	5/38	Won:	3	Lost:	2

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APPENDIX E  
KENDALL TAU ANALYSIS



## Data Used to Compute Kendall Tau

## First Observation

Player Position	CSES		Observation	
	Score	Rank	Score	Rank
1	127	5	66	2
2	112	6	63.5	3
3	144	2	90	1
4	134	4	28	6
5	139	3	52	4.5
6	145	1	52	4.5

Formula (tied ranks): 
$$= \frac{S}{\sqrt{\frac{1}{2}N(N-1)-T_x} \sqrt{\frac{1}{2}N(N-1)-T_y}}$$

## Data Used to Compute Kendall Tau

## Second Observation

Player Position	CSES		Observation	
	Score	Rank	Score	Rank
1	127	5	36.5	5
2	112	6	41.5	4
3	144	2	149	1
4	134	4	28	6
5	139	3	48	2
6	145	1	45	3

Formula:  $= \frac{S}{\frac{1}{2}N(N-1)}$