A Test of Personality and Complementarity in Dyadic Interactions Using Sequential Analyses

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Master's Thesis

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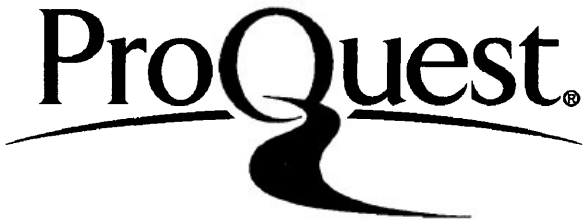

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Abstract

Can ́patterns or redundancies be identified in the sequences of behaviors that are exchanged between individuals in social interactions? The present study directly examined the most controversial form of complementarity: whether dominant behaviors are followed by submissive behaviors, and whether submissive behaviors are followed by dominant behaviors. We were specifically concerned with recent claims that complementarity on the dominant - submissive axis does not exist, and that dominant - submissive behavior is instead the result of personality tendencies. Clear evidence was found for complementarity in relational control behaviors utilizing appropriate aggregated and sequential analyses. However, there was also an unexpected tendency for dominance to evoke further dominant behaviors. Individual difference tendencies were correlated with relational control behaviors, but not as strongly or consistently as predicted.

A Test of Personality and Complementarity in Dyadic Interactions Using Sequential Analyses

Can patterns or redundancies be identified in the sequences of behaviors that are exchanged between individuals in social interactions? Many scientists believe that redundancies do exist, and one particular form, "interpersonal complementarity," has recently received considerable attention. However, as Orford (1986) suggests, "the principle rules of complementarity have remained virtually unchanged for so long, with the danger that they be accepted as well-established" (p. 365). Orford concluded by suggesting a "rethinking" of the complementary hypothesis due to the ambiguous findings in his review of complementarity research. The present study directly examined the most controversial form of complementarity: whether dominant behaviors are followed by submissive behaviors, and whether submissive behaviors are followed by dominant behaviors. We were specifically concerned with recent claims that complementarity on the dominant - submissive axis does not exist, and that dominant - submissive behavior is instead the result of

personality tendencies (Bluhm, Widiger, & Miele, 1990; Orford, 1986).

Interpersonal Theory

Specific patterns of interpersonal behavior have been hypothesized by interpersonal theorists (Carson, 1969; Kiesler, 1983; & Leary, 1957), based on the seminal work of Sullivan (1953). Most of these theorists base their discussions on the interpersonal circle or circumplex model. Leary and his colleagues (Freedman, Leary, Ossorio, & Coffey 1951) were the first to conceptualize interpersonal behavior and complementarity, both "normal" and "maladaptive", in a circular model. "Leary's System" is a systematic method for classifying the interpersonal behavior styles that people use to maintain interpersonal security (Paddock & Nowicki, 1986). Leary's system, as outlined in his book, Interpersonal Diagnosis of Personality (1957), has had a major impact on the study of interpersonal behavior (Paddock et al., 1986; Wiggins, 1982). Leary (1957) identified 16 interpersonal styles (generic security styles) which were ordered in a counter-clockwise circular fashion. Each of these interpersonal variables may be thought of as representing a blend of two underlying orthogonal

components, status (dominance-submissiveness) and affiliation (hostility-friendliness) (Kiesler, 1983; Wiggins, 1982). These underlying components act as coordinates that depict interpersonal variables as vectors in a two dimensional Euclidean circular space (Benjamin, 1974; Carson, 1969; Kiesler, 1983; Leary, 1957; Lorr & McNair, 1965; Wiggins, 1979).

Leary also identified five levels of personality which were developed as a diagnostic scheme to analyze intrapsychic processes as they relate to interpersonal transactions (Paddock et al., 1986; Truckenmiller & Schaie, 1979). Leary's personality levels were represented on the circular model as the distance from the origin to the outer regions with more adaptive behavior placed closer to the origin and maladaptive behavior located at the circumference.

Guttman (1954) referred to the combination of a circular ordering and levels of intensity as a "radex" and also coined the term "circumplex" for the interpersonal model. A circular ordering implies a specific set of assumptions: (1) in a given domain there may be an order which has no beginning or end and which may be represented as a closed sequence or circle; (2) the size of the correlations between variables would act as a criteria thereby placing

variables which are more "psychologically similar" adjacent to each other than to variables which are "psychologically dissimilar" (Carson, 1969). In this manner, variables which are located opposite to each other are considered bipolar contrasts. For example, submissive is the opposite of dominant (Leary, 1957). The correlations in a circumplex will be largest with variables which are adjacent and will first decrease monotonically (without directional change) up to a certain point, then increase monotonically depending on the distance between variables around the circle (Carson, 1969; Guttman, 1954).

Leary's System of interpersonal styles may be described in three ways: 16ths, octants, or quadrants. The 16 discrete categories may be collapsed by combining adjacent 16ths to form octants. In the present study the octants are labelled dominant, hostile-dominant, hostile, hostile-submissive, submissive, friendly-submissive, friendly and friendly-dominant (see Figure 1). These octants may further be collapsed into the quadrants of hostile-dominant, hostile-submissive, friendly submissive and friendly dominant (Strong & Hills, 1986). Research examining the circular model has more commonly utilized octants and quadrants, and less commonly 16ths (Orford, 1986).

Leary's System has been revised several times by various authors (Benjamin, 1974; Kiesler, 1983; Lorr & McNair, 1965; Strong & Hills, 1986; Wiggins, 1979). However, the underlying components of status and affiliation are common in all circumplex revisions (Orford, 1986). The differences that have been identified in the various circles involve the labelling of the interpersonal variables which depict the 16 discrete categories (Orford, 1986).

Complementarity

The principle of complementarity, which is based on Leary's first level of personality style (public communication), involves the concept of the "interpersonal reflex" (Leary, 1957). Reflexes are defined as observable, expressive units of face-to-face social behavior which are automatic, usually involuntary, and express an individual's spontaneous method of interaction with others. Leary (1957) states that, "Interpersonal reflexes tend (with a probability significantly greater than chance) to initiate or invite reciprocal interpersonal responses from the 'other' person in the interaction that lead to a repetition of the original reflex" (p. 123). Leary believed that the single most important aspect of

personality is the reflexive manner in which we react and train others to respond to us in our preferred style.

Reciprocal interpersonal responses are expected for behaviors occurring along the status dimension. For example, dominance is said to pull behaviors located directly opposite on the circumplex, (submissiveness) rather than behaviors located in adjacent octants (Leary, 1957). However, along the affiliative dimension correspondence is the expected response. In other words, friendly behavior will more likely elicit further friendly responses, and hostile behavior will more likely evoke hostility in others (Leary, 1957). Complementary responses are those most likely to reduce anxiety and maintain a harmonious balance between interactants (Leary, 1957). Kiesler (1979, 1983, 1988, 1992) suggests that a complementary response is designed to elicit from other interactants a response that is confirming or validating of one's self-perception and self-presentational style. On the other hand, anticomplementary responses are those which are non-reciprocal on the status dimension and non-corresponding on the affiliative dimension. In essence, an anticomplementary response does not confirm the other individual's self-presentational style on

either the status or affiliative axes.

Kiesler (1983) suggests that Leary's (1957) complementary hypothesis is both theoretically and clinically significant in that it explains how disordered interpersonal behavior may be maintained. It is also the most extensively investigated concept of Leary's System (Kiesler, 1983). However, research on the complementarity hypothesis has yielded equivocal results (Bluhm et al., 1990; Orford, 1986; Paddock et al., 1986; Thompson, Hill & Mahalik, 1991).

Review of Complementarity Research

According to interpersonal theory, complementarity should exist in both the personality characteristics of individuals in enduring relationships and in the sequences of behaviors exchanged between individuals in social interactions. There is considerable evidence for complementarity on the affiliative dimension, but researchers have had much more difficulty finding evidence for complementarity on the status or dominance dimension (Orford, 1986). Much of the early work focused on whether marriage partners tend to have complementary personality characteristics, and the conclusion has been that there is little or no evidence for complementarity on the dominance dimension,

although the literature is plagued with methodological problems (Campbell, 1980; Friedlander, 1993).

Orford (1986) reviewed 14 studies that were conducted between 1959 and 1983 which examined behavioral complementarity. The evidence for complementarity was not strong, especially for the dominant - submissive dimension. However, Orford questioned many of the studies for their use of post-interaction ratings or aggregated data. Orford suggests that aggregated data may be useful when examining the interpersonal "styles" of individual personalities, as Leary (1957) first intended the circular model to be utilized. However, the complementarity hypothesis focuses on the "microsocial" level of interaction, which requires analyses of individual antecedent and subsequent behaviors.

Orford (1986) found only four studies of behavioral complementarity that reported sequential statistics. These studies examined complementarity in distressed marital couples (Billings, 1979), client-therapist relationships (Dietzel & Abeles, 1975), hyperaggressive boys (Raush, 1965), and undergraduate females (Shannon & Guerney, 1973). These studies did not find clear support for the complementary hypothesis. However, the analyses were always

performed on base rates or proportions, which are potentially misleading (Bakeman & Gottman, 1986; Wampold, 1989), and in no case did the authors report accurate sequential statistics on the existence of complementarity.

Orford (1986) concluded his review by suggesting that the lack of support for complementarity on the dominance dimension may be due in part to an individual's attempt to maintain or restore status when faced with the threatening stance of hostile-dominant behavior from others. Individual differences, therefore, may act as moderating variables in interpersonal behavior. This suggests that interpersonal reflexes are not always automatic, involuntary responses but rather they may be moderated by individual differences (Orford, 1986).

There has recently been much interest in complementarity in psychotherapy interactions. One stream of this research (e.g., Henry, Schact & Strupp, 1986; Kiesler & Watkins, 1989; Quintana & Meara, 1990; Svartberg & Stiles, 1992; Talley, Strupp & Morey, 1990; Tasca & McMullen, 1992; Tracey, 1985) has examined post-session ratings of interpersonal behavior. The focus is usually on stage differences in degree of complementarity, or on complementarity in relation to

therapeutic outcomes. The findings have again been mixed, with few studies specifically assessing the existence of complementarity. Another stream of psychotherapy research (Dietzel & Abeles, 1975; Heatherington & Friedlander, 1990) has used categorizations of speaking turns, usually into circumplex quadrants, to examine complementarity. Evidence for complementarity on the dominance dimension in these studies has also been mixed, but the findings have been unclear because researchers usually do not report statistics on the existence of complementarity per se, and instead focus on stage differences or on complementarity in relation to therapeutic alliance. Furthermore, although sequential data are often collected in this research, the authors usually conduct their analyses on untransformed base rates (which are potentially inaccurate and misleading) and not on proper sequential analytic statistics (e.g., z-scores, kappas). According to Tracey and Sherry (1993), "More research is needed that examines complementarity using more specific indices as well as indices that are not confounded by response base rate..." (p. 310). A final problem with many of these past psychotherapy studies is that Leary's Interpersonal Check List (ICL) was often the system used for rating or categorizing

behavior and the ICL does not have proper circumplex characteristics (Paddock et al., 1986).

Another relevant stream of research has focused on "relational control" (Millar & Rogers, 1987; Rogers-Millar & Millar, 1979). These researchers have been specifically concerned with complementarity on the dominance dimension and have developed refined coding systems. These coding systems examine communication patterns in a specific situation without interpreting them as a reflection of an individual's personality, as does interpersonal theory and the ICL (Friedlander, 1993). But the focus of relational control research has usually been on the degree of complementarity as a predictor of communication satisfaction and not on assessing the existence of complementarity. Although sequential data are usually collected, researchers almost always conduct their analyses on cell frequencies or on untransformed proportions. They typically do not report appropriate sequential statistics on the existence of complementarity.

A study by Strong, Hill, Kilmartin, DeVriews, Lanier, Nelson, Strickland, & Meyer (1988) yielded perhaps the strongest positive conclusions regarding the existence of complementarity. They had confederates and subjects interact in pairs, with the

confederates enacting behavior from a given octant of the interpersonal circle. Each speaking turn of each interaction was coded and placed on the interpersonal circle. Strong et al., thus collected data for a proper sequential analysis, but instead reported the results of unorthodox and less informative statistical tests. A proper sequential analysis of their data would have been performed on 16-by-16 matrices (based on eight octants of the interpersonal circle, and using both the confederates and subjects in the stimulus and response positions). Instead, the authors discarded all data involving the confederate as the target (p.804). Furthermore, confederates had been instructed to enact behavior from just one octant of the circle in an interaction. Although they were good performers, they were not completely consistent in their role-playing and Strong et al. discarded all sequential data in which confederates acted out-of-role (p. 804). The authors thus discarded 248 cells of a 256-cell matrix for each interaction. Using the remaining eight cells, the authors computed indices of the degree to which the confederate stimulus behaviors evoked the predicted complementary responses in comparison to other possible responses. The results were encouraging: complementarity "occurred" for most regions of the

interpersonal circle, including the dominance-submissive dimension. We believe the Strong et al. (1988) findings are suggestive, but that a more direct and precise test of complementarity would focus on naturalistic interactions between pairs of subjects; would not discard data; and would involve complete and appropriate sequential analyses.

In sum, although there has been only occasional evidence for complementarity on the dominance dimension the hypothesis has rarely been directly and appropriately tested. Researchers have either: (1) used general post-interaction ratings, which do not indicate whether there is complementarity in sequences of behaviors; or (2) they have collected sequential-type data, but have not used accurate sequential statistics or have not focused on the existence of complementarity per se. Furthermore, only one study (Bluhm et al., 1990) has specifically examined subjects' own personality traits as a predictor of complementarity.

Personality and Complementarity

Bluhm et al. (1990) have specifically investigated the contribution of individual differences to interpersonal complementarity. They hypothesized

that personality significantly affects behavior on the status dimension. On the other hand, they hypothesized that behavior on the affiliative dimension should correspond with the interpersonal style of one's interaction partner. For example, friendly behavior by one person should evoke friendliness from the other person.

Their study utilized three confederates, each trained to portray the four nodal personality styles (i.e., dominant, submissive, hostile, friendly) of the interpersonal circumplex. The confederates and subjects were given a list of questions (e.g., academic-vocational, social-recreational and the experimental situation) to discuss and creative tasks (Lego block designs) to complete together. Only the subjects (not the confederates) were videotaped and audiotaped during the final ten minute segment of their discussion and task periods. This latter procedure ensured that the raters examining the video and audio tapes would not be influenced by the confederates' behaviors. Subjects completed the Interpersonal-Adjective Scales (IAS; Wiggins, 1979) describing themselves, and the raters completed both the IAS and the Impact Message Inventory (IMI; Kiesler, Anchin, Perkins, Chirico, Kyle & Federman, 1985) describing the

subjects' behaviors and the impact the subjects' behaviors evoked in them.

The results of the Bluhm et al. (1990) study confirmed their predictions that complementarity occurs on the basis of correspondence on the affiliative dimension. However, as predicted, there was no evidence for reciprocity on the dominance dimension. Instead, individual differences were more likely to determine the observed behavior on the dominance dimension than was the behavior of the confederate.

However, there are limitations to their study. For example, the use of staged confederate behavior may have made the interactions "artificial" and therefore not representative of realistic encounters. As well, this study did not use a unit by unit or sequential analyses of behaviors, which, as mentioned previously, are more appropriate in examining behavioral complementarity.

The Present Study

Complementarity on the dominant - submissive axis is a key aspect of interpersonal theory, yet the existence of this form of complementarity has apparently not been adequately tested in naturalistic interactions. Evidence from the less-than-informative

studies to date has led to the (alarming) conclusions that complementarity on dominance does not exist and that dominant behavior is instead the result of personality traits. In the present study we examined actual interactions between real subjects. We used the more refined dominance coding schemes devised in relational control research, and we conducted proper sequential analyses to evaluate the existence of complementarity. We also examined the personality traits of interactants as predictors of behavioral dominance.

Method

Subjects and Setting

The data for this study consisted of videotaped sessions of initial conversations between two female strangers at Lakehead University. The subjects were informed of the videotaping of their discussions prior to their initial encounter. They were assured that their contributions would be kept confidential and anonymous.

Eighty female undergraduate students participated in the study. The subjects were volunteers from undergraduate psychology classes. They received $25.00 for their participation. This monetary gratuity was

given to subjects in an effort to have a more equitable distribution of personality characteristics in the sample. The age of the subjects ranged from 18 to 53, with the mean age being 22 years.

The research was conducted in a small house on campus with family room furnishings and video facilities. One video camera was placed in the room directly facing the subjects and approximately 25 feet away.

Procedure

The randomly paired subjects were first introduced to each other at the time of their conversation session. The subjects' instructions were to speak freely on any topic of their choosing. Each conversation session was videotaped for approximately 15 minutes and verbatim transcripts of the conversations were prepared.

Coding of Behavior

The verbatim transcripts of the conversations were coded by giving each speaking turn a dominance or relational control score. The verbal content of each speaking turn was judged based on the criteria for relational control as outlined in Appendix A, which

were derived from past research (see Ellis, 1979; Fisher & Drecksel, 1983; Millar & Rogers, 1987; Rogers & Farace, 1975; Rogers-Millar & Millar, 1979; Tullar, 1989; VanLear & Zietlow, 1990; Zietlow & VanLear, 1991). A speaking turn was considered "one-down" if it consisted of simple agreement or questions. In other words, if the speaking turn indicated an acceptance of the other's definition of reality it was considered one-down. Speaking turns which suggested equivalence and were brief statements that neither indicated submission to the other's definition of reality or attempted to structure reality were considered "one-across." Speaking turns that exhibited dominant behaviors (e.g., directing the topic of conversation, assertive behaviors or in general defining reality) were considered "one-up."

Personality Measures

Immediately following the interactions the participants were asked to complete a questionnaire package that included demographic information and the Revised Interpersonal Adjective Scales (IAS-R; Wiggins, Trapnell & Phillips, 1988). The IAS-R consists of 64 adjectives, eight for each of the octants of the interpersonal circumplex (see Appendix B). The

subjects rated the self-description accuracy of each adjective using a seven-point Likert scale ranging from strongly disagree (1) to strongly agree (7).

Results

Measures

The Cronbach alpha internal consistency values for the eight IAS-R subscales ranged from .82 to .87. Coordinate values for the dominance and affiliative axes were then calculated for each subject from the IAS-R subscales utilizing the formulas provided by Wiggins, Phillips and Trapnell (1989). The scores for the dominance coordinate ranged between -2.36 and 3.40. The scores for the affiliative coordinate fell between -3.07 and 3.06. Our subjects were randomly paired into dyads and there should have been no significant associations in the dyad IAS-R scores. Pearson correlations indicated that this was indeed the case: r = -.05 for dominance, and r = .02 for affiliation.

One rater coded the verbatim transcripts for relational control. A second rater coded approximately 10% of each dyad's transcript. Cohen's kappa (Cohen, 1960) was utilized to assess the observed agreement between the two raters. This method provides a conservative agreement statistic which corrects

observed agreement percentages for the effect of agreements expected by chance. The proportion of agreement actually observed for the dominance dimension was .84, and the value of kappa was .74.

The Existence of Complementarity

Aggregated Behaviors. The number of one-up, one-across and one-down behaviors displayed by a subject was divided by the individual's total number of coded behaviors, resulting in proportion scores for each of the three relational control behavior codes. The total number of behaviors varied across subjects and dyads and so arcsine transformations (Cohen & Cohen, 1983) were used to correct for these unequal base rates:

$$A = 2 \text{ arcsine } (\text{proportion})^{1/2}$$

Correlations between the partners' behaviors were then calculated to examine the existence of complementarity in the transformed proportions. There was a significant negative correlation between the partners' one-down behaviors, $r = -.31$, $p = .05$, indicating that as individuals employed more one-down behaviors their partners were less likely to display one-down behaviors. There was also a significant negative correlation between the partners' one-up behaviors, $r = -.49$, $p = .001$, suggesting that as

individuals increased their usage of one-up behaviors their partners were less likely to display one-up behaviors.

We also computed correlations between the one-up and one-down behaviors of the subjects as they appeared in the left and right sides of the videotapes. The correlation between left one-up and right one-down behaviors was $r = .46$, $p = .003$, and the correlation between left one-down and right one-up behaviors was $r = .34$, $p = .03$. This suggests that as individuals increased their usage of one-up behaviors, their partners tended to increase their usage of one-down behaviors. Complementarity was thus clearly evident in the base rates.

Sequential Analyses. The initial step in performing the sequential analyses entailed constructing transitional frequency matrices for each dyad for the relational control codes of the verbatim transcripts. A transitional frequency matrix displays the number of times each event was followed by each of the other possible events; in this instance, the number of times an individual's "given" dominance code was followed by their partner's "target" response code. The "given" behavior codes are reported in the rows and the "target" behavior codes are reported in the columns

of the matrices. The coding of the transcripts captured each subject's speaking turns and allowed for a change in relational control status within each speaking turn. A six-by-six frequency matrix was therefore constructed to reflect the total number of paired combinations possible given this scoring method. The transitional frequencies for the data pooled across dyads are reported in Table 1.

The row-frequencies of the transitional frequency matrix were then utilized in calculating the transitional probabilities for each cell in the matrix (see Table 2). This step involved dividing each observed cell frequency by the corresponding total frequency for that row. In a transitional probability matrix each cell is reported as a proportion of the total row frequency which, when summed across all row cells, should equal to one (Bakeman et al., 1986).

Transformed kappas were then calculated to determine if the transitional probabilities of events were significantly greater or less than chance (Wampold, 1989; Wampold & Kim, 1989). The kappa statistic measures the magnitude of the dependence between "given" and "target" behaviors and is not influenced by factors such as length of sequence or base rates (Wampold, 1989). A transformed kappa is

similar to a correlation coefficient in that it ranges from -1.00 to 1.00, with the latter indicating that the target behavior followed the given behavior to its greatest possible extent. A transformed kappa of -1.00 would indicate that the target behavior succeeded the given behavior to the least possible extent. A transformed kappa of zero would indicate that the target behavior succeeded the given behavior with no greater likelihood than chance.

The kappas for the pooled data are provided in Table 3. Although pooled data provides an overall picture of the data, Wampold (1989) and others have argued that sequential statistics based on pooled data can be misleading. Wampold claimed that researchers should compute statistics for each dyad and report the mean kappas for each cell of the transitional matrices. Our subjects in the "left" and "right" positions (based on their positions in the videotape) had very similar sequential statistics (see Tables 1 to 3) and so mean kappas for the collapsed 3 X 3 matrix are reported in Table 4. The significance levels of these mean kappas were evaluated by one-sample t-tests, as recommended by Wampold.

One-sample t-tests were calculated on the mean transformed kappas for the four cells of the matrix

that depict complementary and non-complementary sequences (e.g., one-down followed by one-down; one-down followed by one-up; one-up followed by one-down; one-up followed by one-up). One-down behaviors tended not to be followed by one-down behaviors, mean kappa = -.30, $\underline{t}(79) = -6.66$, $p < .01$. One-down behaviors tended to be followed by one-up behaviors, mean kappa = .47, $\underline{t}(79) = 24.74$, $p < .01$. And one-up behaviors tended to be followed by one-down behaviors, mean kappa = .55, $\underline{t}(79) = 27.36$, $p < .01$. These findings are all consistent with the complementarity hypothesis. However, it was also found that one-up behaviors tended to be followed by more one-up behaviors, mean kappa = .29, $\underline{t}(79) = 18.59$, $p < .01$.

Personality as a Predictor of Dominance

Aggregated Behaviors. The IAS-R Dominance coordinate scores, which are a composite of self-report ratings of one's own dominance, were correlated with the arcsine transformed proportions for one-up and one-down behaviors (see Table 5). In contrast to predictions, personality Dominance was positively and significantly correlated with the occurrence of one-down behaviors, $\underline{r} = .26$, $p = .02$, but not with one-up behaviors, $\underline{r} = -.08$, n.s.. The correlations between

the relational control behaviors and the Affiliative coordinate scores are also reported in Table 5, for readers who wish to "picture" the behaviors on the interpersonal circle.

The proportion of one-up messages transmitted by a person has been described as an individual "domineering" index by Rogers-Millar and Millar (1979). These authors also recommended computing another domineeringness index, the ratio of one-up statements to one-down statements, reflecting an individual's relational pattern of assertion and submission. But this ratio was also not significantly correlated with personality Dominance (see Table 5).

Sequential Analyses. Correlations were also computed between the IAS-R Dominance scores and the transformed kappas (see Table 5). Only one significant effect emerged: higher scores on trait dominance were associated with a tendency to display one-up behaviors in response to partners' one-down behaviors, $r = .29$, $p = .009$.

Three sequential dominance indices, Pure Dominance, Comparative Dominance and Total Dominance, were calculated from the relational control codes as suggested by Rogers-Millar and Millar (1979). The indices are all proportion scores based on sequential

data. Pure Dominance is the proportion of one-up statements made by one individual that are followed by a one-down response from the other person. The Pure Dominance scores in this sample ranged from .04 to .57 with a mean of .22. Comparative dominance indexes one's partner's acceptance of and resistance to one's own one-up behavior. Computationally, it is the difference between the proportion of self's one-up to partner's one-down behavior and the proportion of self's one-up to partner's one-up behavioral transactions. Higher scores indicate a tendency for partners to submit to self's one-up behavior. Comparative dominance scores in this sample ranged from -61.00 to 17.00 with a mean of -29.24. Total Dominance "is based on all transactional types in which one person's message is at a 'higher' control position than the other person's response message. It is a measure of an individual's relative 'upness' in a relationship. Operationally, total dominance is a combination of each speaker's percent of one-up, one-down transactions; one-up, one-across transactions; and one-across, one-down transactions..." (Rogers-Millar & Millar, 1979, pp. 241-242). Total dominance scores in this sample ranged from .10 to 1.21 with a mean score of .53. The correlations between these indices of behavioral

dominance and personality are reported in Table 5, and none were significant.

Discussion

The purpose of this study was to directly examine the existence of complementarity on the dominance - submissive dimension. Complementarity is a complex phenomenon that has been investigated with a variety of methods, but no previous study has specifically compared these differing methods (Thompson et al., 1991). Earlier studies have also not provided clear support of the complementarity hypothesis regarding the dominance dimension. One possible reason for this may have been inaccurate or improper analyses of the data (Bluhm et al., 1990; Orford, 1986; Thompson et al., 1991; Tracey et al., 1993). Another possible explanation for these equivocal results is the use of the Interpersonal Check List as the criteria for classifying behaviors in past complementarity research. The ICL's internal structure is not consistent with the Leary model (Paddock et al., 1986). Other common problems with past complementarity research are the lack of unit-by-unit analysis of interactional data and the use of confounding response base rates (Orford, 1986; Tracey et. al, 1993).

The present study we specifically examined the complementarity hypothesis utilizing precise relational control dominance codes, and appropriate sequential and base rate analyses. In addition, the relationship between personality and the dominance dimension was considered.

Existence of Complementarity

Complementarity was clearly evident in the base rate proportions. Specifically, when individuals utilized dominant behaviors their partners were more likely to display submissive behaviors and were less likely to display dominant behaviors. Most past studies that focused on interaction totals reported only proportions (which are misleading) and concluded that there was little evidence for complementarity on dominance (Orford, 1986; Tracey et al., 1993). We found consistent evidence for complementarity on dominance by simply computing correlations between the relational control code proportions of interactants. Perhaps this was not done in previous research because the focus of previous studies has sometimes not been on the existence of complementarity per se.

Sequential analyses of our data also revealed clear evidence for the existence of complementarity.

Dominant behaviors tended to be followed by submissive behaviors, and, conversely, submissive behaviors tended to be followed by dominant behaviors. Sequential data had been collected in four previous studies reviewed by Orford (1986), who claimed there was only mixed evidence for complementarity on dominance. Strong et al. (1988) performed quasi-sequential analyses on their data derived from confederate - subject interactions and found suggestive evidence for complementarity on dominance - submissiveness. Our findings indicate that much stronger evidence for complementarity in sequential data emerges when proper sequential statistics (Wampold, 1989) are used. However, there was one significant result that was inconsistent with the complementarity hypothesis. Sequential analyses suggested that dominant behaviors tended to be followed by similar dominant behaviors. This latter finding supports Orford's (1986) observation that dominance is often met with dominance, particularly during transactions involving individuals of equal status, in this instance, fellow students. One purpose of our study was to examine whether subjects' own personality traits may be responsible for this tendency.

Personality as a Predictor of Dominance

Only one study has previously examined the contribution of individual differences to interpersonal complementarity (Bluhm et el., 1990). These researchers suggested that the reason complementarity was not evident in previous research was due to the influence of personality on dominance - submissive behaviors. Their findings supported their hypothesis: they observed complementarity on the affiliative dimension but not the dominance dimension. Dominant behavior was instead associated with personality dominance. However, the lack of support for complementarity on the dominance axis in their study may have been due to the inadequate measurement of dominant behavior, to the lack of sequential analyses, or to the artificial interactions. "Clearly, the best tests of the Interpersonal Circle are those that take place in situations where free interactions between participants are allowed rather than scripted scenarios, or reactions to written paragraphs, audio or videotapes" (Wright & Ingraham, 1986).

In this study we also predicted that personality would be associated with dominant behaviors. However, contrary to predictions, trait dominance was positively correlated with proportions of submissive (one-down)

behaviors and not with the occurrence of dominant behaviors. There was only slightly more support for the role of personality traits in the sequential data. Sequential analyses indicated that higher scores on trait dominance were correlated with dominant behaviors in response to submissive behaviors. This suggests that individuals with dominant personality characteristics tended to respond in a complementary (dominant) manner to submissive behaviors. Surprisingly, personality dominance scores were not associated with the tendency to display dominant behavior in response to dominant behavior from one's interaction partner, $r = -.07$, $p = n.s.$. In sum, complementarity was clearly evident in both the base rate and sequential data, and individual differences do not seem to be a primary determinate of behavior on the dominance dimension, as suggested by Bluhm et al. (1990).

The discrepant findings for the existence of personality are perplexing and require explanation and further research. Perhaps the relational control codes are too fine grained and do not reflect personality dominance tendencies but merely normal conversational behavior. It is peculiar that correlations between relational control behavior and personality dominance

have not been reported in previous relational control research, which has instead focused on predictions of communication satisfaction. This may be due to the theoretical orientation of relational control researchers, who are usually "situationists." Another possibility is that personality was used in past research but significant effects did not emerge, and so the authors focused on communication satisfaction. In sum, relational control codes may be useful for discovering evidence for complementarity, but more general post-interaction ratings of individuals on trait terms may be required for discovering evidence for the importance of personality.

Limitations with the Present Study and Future Research

Our findings provide suggestive evidence for the existence of complementarity, although researchers should consider some of the limitations with our study. The relational control coding scheme utilized in this study has a limited range for categorizing behaviors. Increasing the scale range (e.g., 1 to 10) may result in more accurate coding of behaviors to capture the "radex" or intensities of behaviors depicted in the circumplex.

Our study focused only on the verbal behaviors of

interactants. However, Birdwhistell (1970) suggested that nonverbal behavior communicates most of the social meaning that occurs in dyadic interactions, and this may be particularly true of initial encounters with strangers. Nonverbal behaviors may act as triggers or "social signals" in specific social situations that elicit from others complementary behaviors (Eibl-Eibesfeldt, 1989). In the Bluhm et al. (1990) study confederates were given instructions directing both their verbal and nonverbal behaviors to match each of the four interpersonal styles they were depicting. Future research examining the complementarity hypothesis could incorporate the contribution of nonverbal behavior. Tone of voice and patterns of eye contact may be particularly important aspects of dominant - submissive behavior.

Researchers have questioned when complementarity begins, and over-learned codes of behaviors end, in interactions (Duke & Nowicki, 1982). "People probably begin interactions with strangers cautiously and rather quickly modify their behavior in the light of their growing knowledge of the other's characteristics" (Strong et al., 1988). Some individuals may not possess the ability to modify their behavior more quickly than others, thereby creating a "mismatch" for

some individuals until they can gather enough information to respond in a complementary manner. This study examined 15 - minute interactions in their entirety and did not partition the interactions to examine at which time complementarity began. Future research may include this feature and also incorporate various lengths of interaction times when examining complementarity.

This study involved subjects in only one specific situation (unstructured interactions). Future research designs may incorporate male subjects, mixed gender dyads, and structured and task-oriented situations. A further limitation of this study was that only the dominance dimension was examined, future investigations should assess behavior on the affiliative dimension.

Conclusions

This study examined the existence of complementarity on the dominance - submissive dimension in unstructured interactions between females. We coded for relational control behaviors and found relatively clear evidence for complementarity. The only exception was a tendency for dominant behavior to be followed by further dominant behavior, a tendency that was not associated with the personality characteristics of

interactants.

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Appendix A

Coding Criteria for Relational Control (Dominance-Submissiveness):

One-Down = Submitting-deferring; simple agreement; taking instruction; asking questions or requesting information; accepting the other's definition of reality; following behavior.

One-Across = Equivalence; does not seek control or submit to the other; neither accepts the other person's definition of the relationship nor defines the relationship themselves; statements such as "I don't know' or "Oh" or "Maybe"; one-word or very brief responses to a question about self (e.g. Q: "What is your name?" R: "Andrea"). Another example: Q: "You are in the Intro Psych class?" R: "Ya.". This may seem like simple agreement, but it is more properly categorized as equivalence because it does not submit to the other's definition of reality or structure reality itself.

One-Up = Defining the reality (e.g., "The test was hard ...", "You are ..."); asserting; giving instruction; restricting the behavior of others; talking about self; an attempt to control the

interaction; agreement with extension (e.g., "Yes, and I also think that ..."); disagreement; domineering-structuring; directing the topic of conversation; questioning the truthfulness of what the other person said.

Appendix B

Interpersonal Adjective Scales - Revised

Below are some words that can be used to describe peoples' personal characteristics. Using the 1-7 scale below, indicate how accurately each word describes you by placing the appropriate number on the line.

1	2	3	4	5	6	7
strongly disagree	disagree	slightly disagree	neither	slightly agree	agree	strongly agree

_____I am dominant	_____I am domineering
_____I am self-assured	_____I am assertive
_____I am firm	_____I am persistent
_____I am forceful	_____I am self-confident
_____I am crafty	_____I am wily
_____I am sly	_____I am cunning
_____I am calculating	_____I am cocky
_____I am boastful	_____I am tricky
_____I am hardhearted	_____I am cruel
_____I am ruthless	_____I am uncharitable
_____I am unsympathetic	_____I am ironhearted
_____I am coldhearted	_____I am warmthless
_____I am uncheery	_____I am unsociable
_____I am introverted	_____I am unneighbourly

_____I am antisocial

_____I am distant

_____I am bashful

_____I am unaggressive

_____I am unauthoritative

_____I am meek

_____I am uncalculating

_____I am unargumentative

_____I am uncunning

_____I am boastless

_____I am softhearted

_____I am sympathetic

_____I am charitable

_____I am gentlehearted

_____I am friendly

_____I am extraverted

_____I am enthusiastic

_____I am jovial

_____I am dissocial

_____I am unsparkling

_____I am forceless

_____I am shy

_____I am timid

_____I am unbold

_____I am unwily

_____I am uncrafty

_____I am undemanding

_____I am unsly

_____I am tenderhearted

_____I am accommodating

_____I am kind

_____I am tender

_____I am perky

_____I am neighbourly

_____I am cheerful

_____I am outgoing

Table 1

Transitional Frequencies for the Pooled Data

	Target					
	Left Person			Right Person		
	One-down	One-across	One-up	One-down	One-across	One-up
Given						
Left Person						
One-down	67	3	64	74	141	751
One-across	8	6	33	95	35	752
One-up	118	11	599	750	649	1901
Right Person						
One-down	88	132	778	50	7	67
One-across	99	29	658	16	8	37
One-up	714	747	1902	129	7	532

Note: Total number of observations = 12,057

Table 2

Transitional Probabilities for the Pooled Data

	Target					
	Left Person			Right Person		
Given	One-down	One-across	One-up	One-down	One-across	One-up
Left Person						
One-down	.06	.002	.06	.07	.13	.68
One-across	.009	.007	.04	.10	.04	.81
One-up	.03	.03	.15	.19	.16	.47
Right Person						
One-down	.08	.12	.69	.04	.006	.06
One-across	.12	.03	.78	.02	.009	.04
One-up	.18	.19	.47	.03	.002	.13

Note: Total number of observations = 12,057

Table 3

Transformed Kappas for the Pooled Data

	Target					
	Left Person			**Right Person**		
Given	One-down	One-across	One-up	One-down	One-across	One-up
Left Person						
One-down				-.28	-.08	.52
One-across				.01	-.46	.71
One-up				.50	.65	.21
Right Person						
One-down	-.14	.05	.54			
One-across	.03	-.56	.66			
One-up	.47	.71	.21			

Note: Total number of observations = 12,057

Table 4

Mean Transformed Kappas

	Target		
Given	**One-down**	**One-across**	**One-up**
One-down	-.30*	-.03	.55*
One-across	-.25	-.67	.69
One-up	.47*	.64	.29*

Note: Total number of observations = 12,057.

* = indicates $p < .01$.

Table 5

Correlations Between Dominance and Affiliation Personality Scores and Conversational Behaviors

	Dominance	Affiliation
Proportions		
One-down	.26*	.15
One-across	-.22**	.08
One-up	-.08	-.19
Dominance Indices		
Interpersonal Domineeringness	-.14	-.23***
Pure Dominance	.05	-.14
Comparative Dominance	.04	-.11
Total Dominance	.06	-.09
Sequential Statistics		
One-down to One-down	-.20	-.06
One-down to One-up	.28****	-.12
One-up to One-down	.07	.19
One-up to One-up	-.07	-.17

Note: * p = .02; ** p = .06; *** p = .05; **** p = .01.

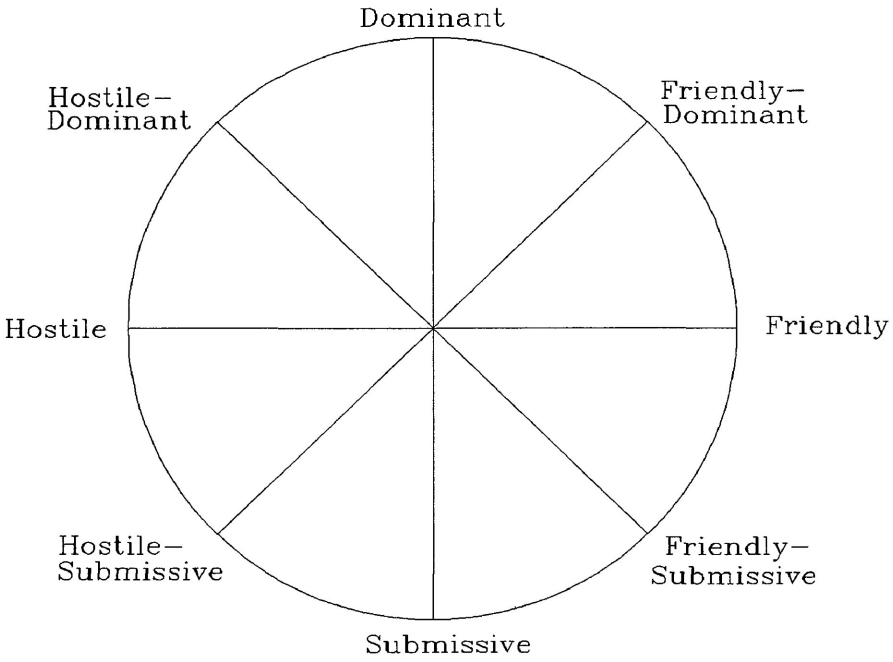

Figure 1. The interpersonal circle.

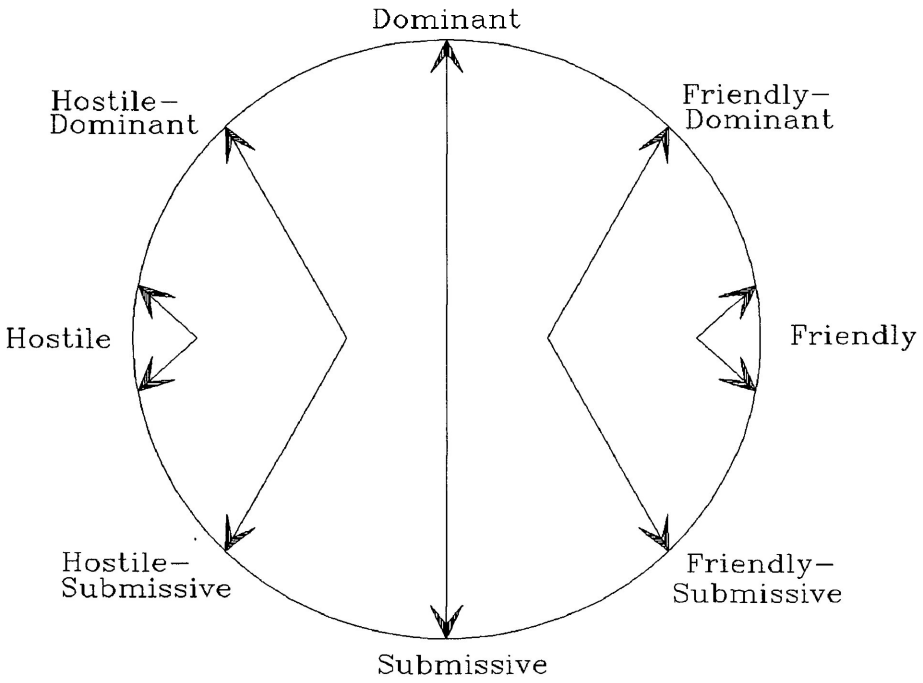

Figure 2. Complementary links between the eight interpersonal styles.