Postural Congruence and Judgements of Liking and Perceived Similarity

Gabrielle M. Maxwell and Michael W. Cook

University of Otago

The study tests the hypothesis that perceived similarity and liking are related to the amount of postural congruence displayed by a dyad. The design also attempted to ascertain whether judgements of liking are affected by postural congruence or congruence by liking, or whether both are true. Liking was manipulated by arranging for subjects to agree or disagree by assigning them to roles which dictated their attitudes to a potential flatmate. Congruence was manipulated by assigning subjects to a condition where they sat in similar chairs (same chair) or different chairs. Thirty-two student subjects took part in a 2×2×2 design where the conditions were agreement, chairs and gender of dyad. The results showed that liking and perceived similarity were successfully manipulated by the agreement role plays and the chair manipulation successfully manipulated postural congruence. Those who sat in similar chairs, liked one another more suggesting that congruence in postures is indeed a cue that is used in judging liking. The results were more ambiguous in testing whether increasing liking increased the amount of postural congruence that was displayed. Although the subjects who were in agreement and hence liked one another more displayed more congruence than those who disagreed, the results did not quite reach the 5% level of significance.

Several observers have noted that two people in close rapport who are conversing may adopt identical postures (Scheflen, 1964; Birdwhistell, 1971; Kendon, 1972). Although there have been previous attempts to verify this observation experimentally, the reliable assessment of such a fleeting feature of interaction is difficult. A previous study (Maxwell & Pringle, 1981) developed a technique for assessing congruence that enabled reliable measurement to be made during the course of a video-taped conversation.

The theoretical reasons for expecting that postural congruence and other aspects of matched non-verbal behaviour are indicators of positive affect, are reasonable compelling. There is a wealth of evidence that perceived similarity and liking are two very closely related variables (Murstein, 1972; Byrne, 1971). Indeed actual similarity in behaviour, attitudes and opinions has been demonstrated to be related not only to liking, but also to attraction and the degree of intimacy or acquaintanceship. Furthermore, similarity of beliefs tends to increase as intimacy increases. Those who like one another influence one another's attitudes, opinions and dress. Thus it seems reasonable to assume that liking and

intimacy will also influence the more subtle features of behavioural display, especially at moments when people are deeply involved in discussions which bring forth similarities in their views and the content of the interaction also emphasises the general similarity of the participants. Thus, in as much as two students of art from similar backgrounds may be expected to choose similar garments for the same social occasion; so also might two people who are discussing their identical situation, display identical views, feel very similarly, perceive one another to be similar, like one another and also display similar behaviour even to the extent of matching postures, movements and expressions. Various versions of this 'matching' hypothesis have been previously advanced with some supporting evidence (Trower, 1979; Knapp, 1978; La France & Ickes, 1981; Condon & Ogston, 1966). However none of these studies has demonstrated definitively a relationship between the presence of postural congruence and liking, or that liking is being judged depending on the amount of postual congruence that is displayed.

While most authors have suggested that rapport and sympathy are the critical factors that bring about an increased incidence of

postural congruence, the outcome of increments to moments of feeling rapport and sympathy are likely to be reflected in the amount of liking which the participants feel toward one another. This is particularly likely to be true when the members of the dyad are previously unacquainted and hence are likely to be affected only by what has occurred during a relatively short interaction. Thus liking has been chosen as one of the dependent variables in this study. The other is 'perceived similarity'. It is clear that not only is postural congruence an actual instance of behavioural similarity that might affect perception, but also that liking and similarity tend to be very closely related variables.

Thus the study tests the hypothesis that there is a relationship between the amount of liking felt by a subject involved in a dyadic interaction and the amount of postural congruence displayed by the dyad. In measuring postural congruence, advantage is taken of an earlier study (Maxwell & Pringle, 1981) which developed a measurement methodology based on judging the degree of congruence separately for the upper and lower halves of the body and then examining both the separate and combined scores. This study concluded that the measures most likely to show an association with liking appeared to be those which used a very stringent definition of 'apparently completely identical postures either matched or mirrored in one half of the body' and a combined measure based on congruence in either the upper or the lower half. All measures were taken as percentages of the total time sampled. However it was noted that there were larger gender differences in the incidence of lower body congruence and that furthermore, perhaps because the lower half of the body is less visible, that only the upper body congruence seemed to be related to person perception variables.

This design also attemps to test whether liking induced the postural congruence or whether postural congruence induced liking, by manipulating both liking and congruence. Liking was manipulated by involving previously unacquainted subjects in a role-play that led them either to agree or disagree with another. Congruence in the upper half of the body was manipulated by either seating subjects either in identical chairs or in chairs that tended to result in rather different placement of the arms and upper torso.

It is argued that if liking leads to increments in postural congruence, then the subjects in the agreement role-play will display more congruence that those in the disagreement role-play. On the other hand if the presence of congruence leads subjects to judge that they like one another more, then there will be more liking in the same chair condition when the congruence in the upper body is higher. It is also possible that both causal relationships could be true and that a reciprocal feedback situation exists. Previous research has demonstrated that although facial expressions are usually regarded as a display of affect, artificially smiling while experiencing painful shocks can result in lessening the intensity of the painful affect which is reported by the subjects (Lanzetta, Cartwright-Smith, & Kleck, 1976). Similarly in this case it is possible that liking leads to increases in postural congruence and also that increases in postural congruence leads to increases in liking.

Thus three alternatives can be tested:
1. that increased liking leads to increased postural congruence, i.e. more congruence in the agree role-play condition;
2. that increases in congruence lead to increases in liking i.e. more liking in same chair condition, and
3. that both the above are true and that liking and congruence show a reciprocal feedback effect.

Method

Subjects

Thirty-two subjects, 16 males and 16 females were selected from a pool of 42 volunteers from undergraduate psychology classes. All subjects were between the ages of 18–32 years and had at least three months' experience of living in a flat. Subjects were paired in same-sex dyads with a stranger. Selection was based on the extent to which pairs of strangers could be arranged at similar experimental times. Dyads were randomly allocated to chair and role play conditions.

Design

The design was a 2×2×2 analysis of variance. The factors were: 'same' versus 'different' chairs, 'agree' versus 'disagree' role-play and gender of dyad (male/male or female/female; MM or FF).

Procedure

Subjects were informed that the goal of the experiment was to study interactions between flatmates. They would therefore be asked to take part in a role-play during which they would be asked to behave in the same way that they would if the situation were real. The role-plays would be videotape for subsequent analysis.

Subjects arrived at the laboratory separately and were shown to separate rooms where the experimenter gave them copies of the role-play script to read and think about. After a few minutes, the experimenter went over the role-play script with the subject and encouraged the subjects to imagine as vividly as possible the background to the role-play, their own feelings about desirable qualities in flatmates and the way they felt about the imaginary people described in the script.

Both subjects then entered the interaction room and the role-play was videotaped. Subjects then entered separate rooms before completing questionnaires on their responses to the other subject. After the conclusion of the experiment, subjects were fully debriefed on the experimental purposes.

Apparatus and setting

The room in which the role-plays occurred was furnished and decorated as a comfortable sitting-room with open fire-place, worn upholstered arm chairs, coffee table, pictures, pot-plants, etc. The subjects sat in two modern metal and vinyl lounge chairs on either side of the fire-place at an angle of about 40° from one another. In the 'same chair' condition, both chairs had arms. In the 'different chair' condition, one chair was replaced with one identical in all respects except that it lacked arms. Subjects were videotaped through a one-way mirror which formed the back wall of shelving on which small nick-nacks were displayed.

Interactors were recorded on two cameras each of which was placed so that each subject was recorded in a full frontal view on one camera only. The two images were recorded on the same tape using a vertically split screen.

The role-plays outlined an agreement situation and a disagreement situation. In the 'agree' condition, the subjects were to discuss which of two possible applicants to choose for a vacancy in their flat. They were told to envisage a situation where they both preferred one of the applicants but a third flatmate did not agree with them about the choice. In the 'disagree' condition, the situation was the same in all respects except that the two participants had different preferences. In order to increase realism, the participants used their own names and were given names for the other characters in the script. Male names were used throughout for male dyads and female names when female dyads were the subjects. Participants were also encouraged to express their own opinions about the desirable qualities in flatmates and to ascribe the imagined applicants to the appropriate characteristics.

Byrne's Interpersonal Judgement Scale (I.J.S.) was used to measure liking. (Byrne, 1971). This scale consists of six 7-point scale items. The items on how much the subject likes the other and how much the subject would like to work with the other person are the only two items which are summated to form the liking score. Two of the less appropriate dummy items (2. knowledge of current events, and 4. adjustment) were replaced with similarly worded items on temperament, suitability as a flatmate and 'perceived similarity'. While the first two new items were included only to make the cover story more plausible, the third item on 'perceived similarity' was used as one of the dependent variables with the other dependent variable being 'liking' based on averaging the two Byrne's items in the normal manner. Seven-point confidence scales were also used for each item to check that the subjects found the rating task realistic and manageable.

Analysis

The method of measuring postural congruence is identical to that described in an earlier study (Maxwell & Pringle, 1981) and correspond to the measures called 'complete upper', 'complete lower' and 'any complete' in that paper. In this paper the names have been abbreviated to 'upper', 'lower' and 'any'. 'Upper' refers to an identity of either matched or mirrored posture to within 15 cm in all parts of the body above the waist including arms and hands but excluding the head (as head movements are dependent on gaze direction and hence may reflect what is normally measured as looking behaviour). 'Lower' refers to the same degree of postural identity in all parts of the body below the waist. 'Any' is a combined measure derived from the other two and reflects the percentage time that congruence is present in *either* the upper *or* lower parts of the body. Thus this measure does not necessarily imply a complete match of posture and will be more heavily influenced by the half of the body which shows the greater frequency of congruent positions. Its usefulness as a measure is therefore doubtful. The more conceptually useful measure of total body congruence has not been reported due to its complete absence in most of the dyads which makes statistical comparisons impossible.

The two basic measures of 'Upper' and 'Lower' congruence were made simultaneously by two judges who viewed the tapes and independently recorded their judgements on pushbuttons connected to an electro-mechanical paper-tape recording device (Dingwall, Hartley, & Maxwell, 1975) which sampled the data every 0.64 seconds.

The two judges were unable to see one another and there were no auditory cues which could have biased their judgements. Computer analysis of the paper tapes gave percentage data on the two original measures 'upper' and 'lower', and the combined measure 'any'. Reliability was calculated for the two judges whose results were thereafter averaged for the subsequent analyses of variance and product moment correlations.

Results

None of the subjects reported any speculations about the experimental hypotheses that were at all related to the actual goals. All reported that, despite initial nervousness, they became very comfortable with the roles, very involved in the discussion and identified readily with the task of selecting a new flatmate which almost all had actually experienced.

The role-plays varied in length from about two to 16 minutes with an average length of 5.5 ± 2.4 minutes. Disagreement sessions lasted slightly longer than agreement sessions and males took longer than females on average.

Reliability of the judges was assessed using a concordance ratio (r_C) described previously by Maxwell and Pringle (1981). All ratios were greater than 0.70 for interactions where the incidence of the behaviour was at least 3%. The average ratio was 0.94 for all interactions showing at least some behaviour.

Table 1: *Measure of Congruence: Intercorrelations and Mean Percentage Occurrence*

Correlations	Upper	Lower	Any
Upper	—	.01	.66**
Lower		—	.73**
Any			—
Percentage occurrence:			
M	7.34	9.13	15.15
SD	15.73	19.45	22.63

**indicates* $p < .01$

Table 1 reports the means and standard deviations of the congruence measures and the intercorrelations between them. As in the previous study, complete identity of postures in both the upper and lower part of the body was exceedingly rare with most dyads showing none at all. Thus the measurement of complete congruence is not possible in a systematic investigation of normal behaviour.

The correlations showed that the upper and lower half measures were completely unrelated to one another, suggesting that these should be regarded as two completely independent measures without any attempt to combine them. The fact that lower congruence occurred more frequently meant that it inevitably accounted for more of the variance in the 'any' score and thus created an automatic bias in the 'any' score. This further suggested that the use of a combined score was of dubious value. For these reasons the 'any' score was excluded from the subsequent results.

The relatively low percentage incidence of upper congruence and the relatively high standard deviation reported in Table 1 are deceptive. As the later results show, the same versus different chair conditions resulted in a very successful manipulation of upper body congruence. In fact, the percentage upper congruence in the same chair condition was 13.5%, with a standard deviation of 8.0, while in the different chair condition the mean percentage was only 1.2%, with a fairly large standard deviation ($\pm4.7\%$).

A 2×2×2 analysis of variance was performed on each of the four dependent variables: liking, similarity, and upper and lower congruence. For convenience the results for the main effects are presented separately under the headings, gender effects and chair and role-play effects. In all cases the F values and associated p values are derived from the 2×2×2 analyses of variance. It should be noted that as liking and similarity were available for all 32 subjects, 24 degrees of freedom are associated with the error term. On the other hand, congruence is a measure only available for the 16 dyads and thus the error term has only 8 degrees of freedom.

Gender effects

Table 2 reports differences in the scores as a function of gender of the dyad. Males show over twice as much upper body congruence as females ($F(1,8)=8.8$; $p<.02$) whereas there is almost no congruence in the lower part of the body for the male dyads ($F(1,8)=7.7$; $p<.02$).

The table also shows that the perceived similarity and liking scores varied as a function of gender. The female dyads perceived one another as significantly more similar than did the male dyads ($F(1,24)=7.1$;

Table 2: *Gender Differences in Liking, Perceived Similarity and Congruence: Means and Standard Deviations*[1]

		Male	Female	Significance
Liking	M	2.78	2.38	$p<.06$
	SD	0.54	0.60	
Perceived Similarity	M	4.56	3.56	$p<.05$
	SD	0.98	0.40	
Upper Congruence	M	10.80	3.90	$p<.05$
	SD	6.4	6.8	
Lower Congruence	M	2.30	16.0	$p<.01$
	SD	3.8	19.5	

Table 3: *Chair Condition Differences in Liking, Perceived Similarity and Congruence: Means and Standard Deviations*[1]

		Same	Different	Significance
Liking	M	2.34	2.81	$p<.05$
	SD	0.54	0.60	
Perceived Similarity	M	3.38	4.75	$p<.01$
	SD	0.43	0.97	
Upper Congruence	M	3.31	0.54	$p<.05$
	SD	2.89	1.54	
Lower Congruence	M	1.68	1.73	N.S.
	SD	3.31	2.99	

Table 4: *Role-play Condition Differences in Liking, Perceived Similarity and Congruence: Means and Standard Deviations*[1]

		Agreement	Disagreement	Significance
Liking	M	2.34	2.81	$p<.05$
	SD	0.66	0.47	
Perceived Similarity	M	3.19	4.94	$p<.01$
	SD	0.92	0.53	
Upper Congruence	M	2.57	1.29	N.S.
	SD	2.93	0.52	
Lower Congruence	M	2.06	1.35	N.S.
	SD	3.75	2.42	

[1] *Lower mean ratings indicate more liking and perceived similarity. All the congruence data have been transformed to compensate for skew by taking the square root of the original percentage. Higher congruence scores indicate greater incidence.*

$p<.02$). The same trend for the female dyads to like one another more than the male dyads, was almost significant ($F1,24)=4.1$; $p<.06$).

Chair and role-play effects

Tables 3 and 4 show the results of major interest. Firstly, the results show that the intended manipulations were successful. The role-play conditions manipulated liking and similarity so that subjects in the agree condition liked one another more ($F(1,24)=5.4$; $p<.03$) and perceived one another to be more similar ($F(1,24)=21.8$; $p<.01$). The chair condition manipulated postural congruence in the upper half of the body with those in the same chair showing greater upper congruence ($F(1,8)=5.7$; $p<.05$). As was expected, no differences were found in lower body congruence as a function of the chair condition.

Hypothesis One was confirmed as greater liking ($F(1,24)=5.4;p<.03$) and perceived similarity ($F(1,24)=13.4;p<.01$) was found in the same chair condition. On the other hand the results testing Hypothesis Two, that those in the agreement role-play would display more postural congruence, just failed to reach significance at the 5% level. Nor was a significant difference found for lower half congruence although in this case no difference had been expected.

Interactions

Interaction effects were not predicted. In fact only one of the possible 16 interactions reached significance. A role-play by gender interaction occurred with the similarity data ($F(1,24)=13.4;p<.01$) indicating that the effect of disagreement on perceived similarity was much greater for males than for females (mean difference=3.1 for males and only 0.4 for females).

Discussion

Firstly it is worth commenting on the incidence and gender differences in congruence. Despite previous hypotheses about the importance of identity of postures, (Scheflen, 1964; Birdwhistell, 1971) it is evident from the data that identical postures occur rarely in the interactions between relative strangers such as have occurred in both this and the previous Maxwell and Pringle (1981) experiment. The fact that lower body congruence rarely occurs among males although it is very common among females, probably reflects a cultural norm which encourages women to either keep their legs together or to cross them at the ankle when sitting. Males on the other hand are allowed much more latitude; indeed discussions with students lead to the conclusion that there are no commonly agreed rules about leg positions in seated postures for men. It can be argued that in any case the restricted visibility of the lower part of the body during seated conversations, makes it improbable that the lower half of the body is an important cue affecting liking.

Thus if congruence and liking are related, it is upper body congruence which is the variable of interest. In this study males showed far more upper congruence than the females despite the fact that the females in general liked one another more and perceived more similarity than the males. This finding makes it clear that if congruence and liking are related, then as with many of the other non-verbal variables (cf. smiling: Bugental, Love, & Gianetho, 1971; looking: Argyle & Cook, 1976), the base rates differ very much depending on gender. Comparisons therefore should ideally be within gender. It is fortunate that in this study the analysis of variance design enabled the variance due to the experimental conditions to be considered independently of that due to gender.

In this study the causal relationship between postural congruence and liking and perceived similarity has been examined by manipulating both variables. The manipulation of liking and perceived similarity was successfully achieved by the use of agreement and disagreement role-plays. The manipulation of postural congruence in the upper half of the body was achieved by using either the same or slightly different chairs. The effects of these manipulations enabled a test of the two hypotheses: that liking results from congruence as varied independently by the chair condition and that congruence results from liking as varied independently by the role-plays. A third hypothesis was also suggested, namely that there is a reciprocal feedback loop linking liking and congruence so that changes to either variable will affect the other.

The results support the contention that the judgement of liking and perceived similarity will be affected by the perception of behavioral similarity even at the level of small ongoing shifts in posture. The complementary hypothesis that not only will liking be affected by visible behavior but that visible behaviour will also reflect affect, just fails to reach significance. The null finding is not however conclusive evidence against the hypothesis. The small numbers of subjects, the relatively slight differences created in liking, and the gender differences in upper half congruence which increase variability, are all factors that suggest that further research is necessary before rejecting the hypothesis that judgements of liking are affected by the degree of postural congruence.

In conclusion the study shows clearly that increases in congruence lead to increases in liking. However, further research is needed

before ruling out the possibility that increased liking also leads to increased congruence and that a reciprocal feedback situation exists.

Further, it is congruence in the visible parts of the body that seems to be most important and reliable. As males show rather more upper body congruence it is possible that congruence is a more likely precursor of liking for men. Additional research is needed to explore the relationship of congruence and other behavioural cues associated with liking. It may also be possible to establish the extent to which a variety of aspects of behavioural similarity are critical in determining positive responses. Then a fuller evaluation can be made of the suggestion that behaviourally we are like those we like.

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