

恋愛感情の有無による異性との対人距離

Interpersonal Distance to the Opposite Sex due to Romantic Feelings

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要 旨

男女の対人距離, 特に顔見知り程度の間柄で, 恋人関係ではないが恋愛意識を持つと心の中で想定した男女の距離に着目した。室内で二人だけで会話する状況で, 片方が相手との最短距離に立位で近づくように教示する実験を行った。その結果, 好みのタイプの異性との距離は, 男性は暗くて横並びの場合に, 女性は暗くて正面方向の場合に最も近くなった。また男性も女性も, 暗くて横並びの時に最も話しやすいと評価した。既に恋愛関係にあるカップルは横並びで接近するという傾向があるということは既往研究で示されているが, 恋愛初期でもその状態が好まれることが確認できた。

キーワード: パーソナルスペース, 恋愛感情, 対面, 横並び, 空間の明るさ

Summary

This research focused on the physical distance between male and female individuals assumed to have romantic feelings but are not yet considered as couples. While talking with just two people, one subject was asked to adjust the position to the shortest distance with the partner in a standing position. As a result of the experiment, it was found that the distance to the favorite opposite sex was the closest when men were side by side with dark lighting and women were facing each other with dark lighting. Both men and women also evaluated that they were the easiest to talk when it was dark and side by side. Previous studies have shown that couples approach side by side, and this tendency was confirmed even in the early stages of romance.

Keywords: *personal space, romantic feeling, face to face, side by side, brightness*

1. Introduction

This research focuses on the physical distance between male and female individuals with mutual romantic intentions but are not yet considered as couples. Men and women who are in romantic relationships started out as strangers and eventually progressed to being acquaintances. If one person has an interest in another individual of the opposite sex or if both favor each other, this usually leads to a relationship of love. The physical distance between romantic partners changes appropriately depending on the stage of the relationship. As the relationship deepens, they become more comfortable being physically near one another, and their close proximity makes it easier for a more intimate conversation and encourages body contact. Previous research conducted on physical distance in relation to the opposite sex is broadly classified into two based on study subjects: The first type targets couples who are already in romantic relationships while the second type focuses on complete strangers. In the former, couples have a tendency to be within a shorter distance from their partners compared when they are with friends of the same sex¹⁻⁵⁾. On the other hand, in the case of the latter, strangers tend to be distant and uncomfortable with the opposite sex than the same sex, especially when an unfamiliar man approaches a woman⁵⁻⁷⁾.

The purpose of this research is to examine the extent a person with romantic interests will approach and talk to an acquaintance from the opposite sex. Generally, comfortable distance is observed between partners with favorable interpersonal feelings⁸⁻¹⁰⁾. However, there are a few studies that included romantic intention with mutual feeling and almost no international studies regarding the observation of the interpersonal distance during the early romance period. As a comparison of interpersonal settings, cases of same sex and opposite sex with no romantic interest are also covered. Furthermore, lighting conditions are also taken into consideration as a factor that seems to influence communication, mood and distance to others. In our previous studies^{12, 13)}, a heterosexual couple sitting at a cafe or resting place was getting more eye contact and approaching posture in dark places when talking. On the other hand, personal space was affected by lighting¹¹⁻¹⁴⁾ as many results indicate that a wider distance from others is observed when the place is dark.

In this research, the situation to stand up and talk is set, taking into consideration that the distance is freely adjustable with an acquaintance partner. The orientation of the body when standing and talking can be classified as facing each other, diagonally opposite or side by side (shoulder to shoulder). Most of the research deals with distances when facing each other or when

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approaching from the side to the front. In this experiment, two orientations are set: face to face and side by side. People are easy to talk to in a side-by-side position as if they stand beside the walls or along the aisles and look outside the window or towards the center of the room^{4,13,15}. The couples tend to relax for a long time when standing side by side, making it is easy for intimate communication^{16,17}. Studies that examined interpersonal distances at the same time by simultaneously changing the direction of the body, the presence or absence of romantic consciousness and the lighting condition during conversation were not conducted.

2. Experimental method

The experiment involved a conversation between two classmates who were familiar with each other, but were not yet friends. The total number of subjects was 51, including 25 male and 26 female Japanese college students in the age group 20-22 years. It was decided to conduct the experiment in a university building in Tokyo. During the conversations, the participants were asked to adjust their position so as to indicate that they “do not want to approach any closer.” The partners of opposite sex were asked to discuss one favorite and one unpleasant subject.

The favorite subject was “acquaintance with opposite sex with romantic feelings” and the not favorite subject was “acquaintance with opposite sex without romantic feelings.” In conversations between participants of the same sex, they displayed neutral relationships without registering emotions such as favorite or not favorite. Although the conversations were set up between actual classmates (both same sex and opposite sex), the settings of favorite and not favorite were assumed by them in their minds.

After about five minutes into the conversation, it was observed that only one side of the subject (who is the evaluator) adjusted the position. The experiment did not intend to investigate the most comfortable interpersonal distance, but to ascertain the minimum distance that could be maintained without being awkward. That is because proximity could be considered as a factor for making two individuals more intimate.

Table 1 shows the experimental conditions, and Figure 1 presents the situation at the time of the experiment. In the entrance hall of the university building, the experiment was carried out under four conditions combining two conditions where the floor illuminance was set to 300 lux and 10 lux and the subjects stood face to face and side by side. The minimum

Table 1 Experimental condition

Place and time	Entrance hall of college building from 16:00 to 20:00	Subjects	25 males and 26 females aged 20 to 22
Lighting	Bright situation: average floor illuminance 300 (lx) Dark situation: average floor illuminance 10 (lx)	Procedure	1. Move to the shortest distance not to be awkward when talking to the other person. 2. Set interpersonal distance with total of 4 conditions of body direction and lighting. 3. In each interpersonal setting answer one condition that was most easy to talk. 4. Describe the reason for the most easy-to-talk condition.
Orientation with conversation partner	Face to face Side by side		
Supposed conversation partner	Favorite opposite sex acquaintance with romantic feelings Unfavorite opposite sex acquaintance without romantic feelings Acquaintance of same sex without likes and dislikes The actual conversation partner is a classmate who knows each other's face, but is neither a friend nor a lover.		
Subjects	25 males and 26 females aged 20 to 22 26 opposite-sex pairs, 13 male pairs and 13 female pairs		
Procedure	1. Move to the shortest distance not to be awkward when talking to the other person. 2. Set interpersonal distance with total of 4 conditions of body direction and lighting. 3. In each interpersonal setting answer one condition that was most easy to talk. 4. Describe the reason for the most easy-to-talk condition.		

Table 2 The result of interpersonal distance (cm) Horizontal distance between the tops of the heads in standing position

		Male		Female		All subjects		
		Face to face	Side by side	Face to face	Side by side	Face to face	Side by side	
Average	Favorite opposite sex	Bright	85	76	79	79	80	78
		Dark	77	73	69	73	70	70
	Unfavorite opposite sex	Bright	121	105	115	116	115	108
		Dark	107	100	109	117	110	106
	Same sex	Bright	▲▲ 88	▲▲ 75	62	56	70	61
		Dark	80	▲▲ 73	57	54	60	60
Standard deviation	Favorite opposite sex	Bright	22	20	14	15	19	17
		Dark	18	18	15	13	17	15
	Unfavorite opposite sex	Bright	36	28	22	24	30	27
		Dark	26	21	28	31	27	28
	Same sex	Bright	34	22	12	14	28	20
		Dark	22	23	13	14	21	21
Median	Favorite opposite sex	Bright	80	78	81	78	82	78
		Dark	77	68	70	73	73	73
	Unfavorite opposite sex	Bright	120	103	114	109	118	110
		Dark	110	98	105	108	108	109
	Same sex	Bright	84	73	64	57	77	65
		Dark	78	70	59	56	68	63

T-test by gender of evaluator ▲▲ ▼▼: p < 0.01, ▲ ▼: p < 0.05

▲▲ ▲: Male distance is longer than female, ▼▼ ▼: Female distance is longer than male

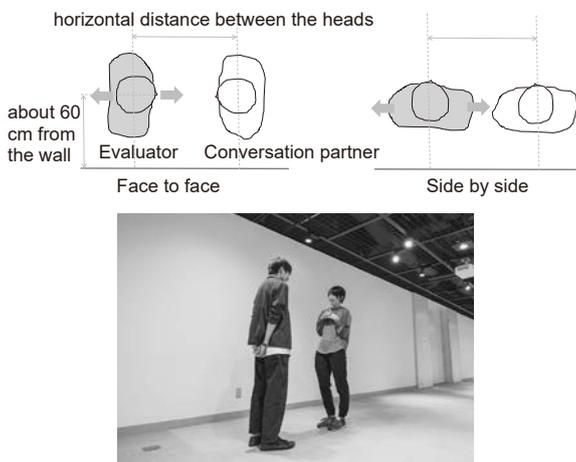


Fig. 1 Experimental situation

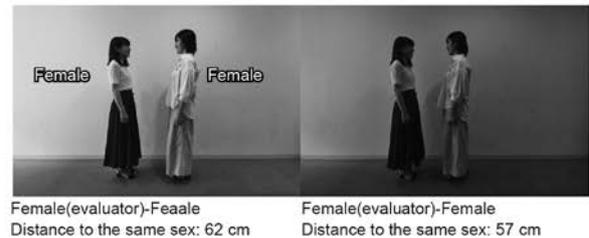
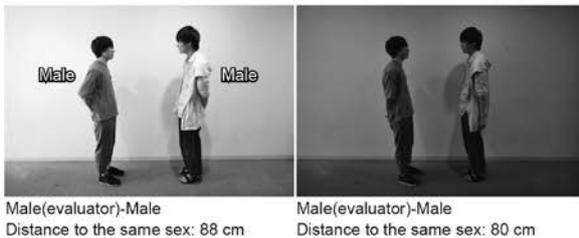
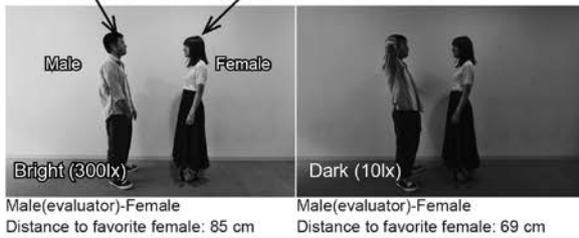
illuminance that could be inside the university building was set at 10 lux. In all conditions, the subjects stood at a point about 60 cm away from the wall, and there were no other people within 8 m of the surroundings. After completing the position adjustment of the four conditions of one interpersonal setting, they answered the most easy-to-talk condition and the reason.

The experiment was carried out from 16:00 to 20:00 from May to August 2018. The entrance hall is about 300 square meters. During the experiment, daylight was blocked by blinds

at the opening, and the illuminance was adjusted by turning off part of the ceiling lighting. The subjects were 2nd to 4th graders of the Tokyo City University Architectural Department, and it was confirmed beforehand that all the pairs of subjects were familiar with each other, but were not yet friends. The conversation partner was the same person in all settings for one subject. A small height difference was set, which is 6–18 cm between male and female subjects and within 10 cm between subjects from the same sex. Fifty-one subjects participated in

Face to face situation

Left: Evaluator Right: Conversation Partner



Side by side situation

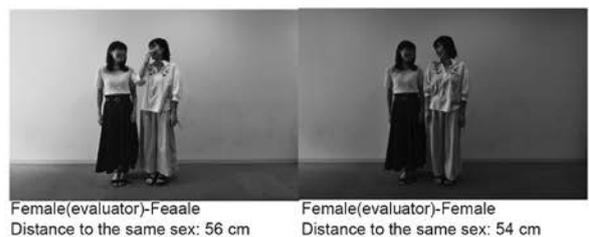
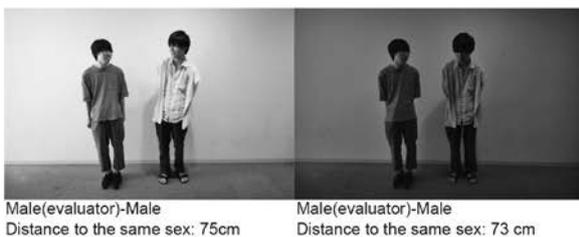


Fig. 2 Reproduction of conversational situation based on average of interpersonal distance

Table 3 Result of interpersonal distance t test (paired t-test)

Common condition	Compared conditions		Male		Female	
			Face to face	Side by side	Face to face	Side by side
Bright	Favorite opposite sex	Unfavorite opposite sex	**	**	**	**
Dark	Favorite opposite sex	Unfavorite opposite sex	**	**	**	**
Bright	Favorite opposite sex	Same sex	**	**		
Dark	Favorite opposite sex	Same sex	**	**		
Bright	Unfavorite opposite sex	Same sex	**	**	**	**
Dark	Unfavorite opposite sex	Same sex	**	**	**	**
Favorite opposite sex	Dark	Bright	*		**	*
Unfavorite opposite sex	Dark	Bright	*			
Same sex	Dark	Bright	*		**	

** : The right condition is longer, and $p < 0.01$ in the t test.

* : The right condition is longer, and $p < 0.05$ in the t test.

all the conditions. The order of the conditions performed varies depending on the subjects.

After adjusting the position under each condition, the positions of the feet of the subjects in a standing position were measured, and the horizontal distance between the tops of the heads was obtained. There were no restrictions regarding whether or not they could make physical contact, but some of their clothes might have touched them when they stood side by side.

3. Results and discussion

3.1 Minimum interpersonal distance in face to face

Table 2 shows the average, standard deviation, and median values of interpersonal distance (horizontal distance between head and head center) under each condition. The average and median values are slightly different, but the tendencies are almost identical. Although there are some individual differences, the standard deviation is about the same as that of the past studies^{10, 18)}. In the following description, the average value is used as representative of each condition. Tables 2 and 3 show the t-test results between subjects' sexes and between interpersonal settings and lighting conditions respectively. Figure 2 displays the reproduction photos of the conversation situation based on the average of interpersonal distance under each condition.

From Table 2, it was found that female pairs were closest to each other when they talked face to face. Followed by the favorite opposite-sex pairs, male pairs, and not favorite opposite-sex pairs in that order. The distance from the not favorite opposite-sex pairs was about twice the distance between female pairs. Regarding the distance between the favorite opposite-sex pairs, male subjects were 85 cm in the bright situations and 77 cm in the dark situations, while female subjects were 79 cm in the bright situations and 69 cm in the dark situations. For both favorite type and not favorite opposite sex, male evaluations were slightly longer than female evaluations. The order of distances by sex in this result is consistent with the past studies¹⁻⁵⁾.

In any interpersonal setting, the distance was closer in the dark situation than the bright situation, and the difference was the farthest at about 10 cm of the favorite opposite sex. From Table 3, significant differences were found in the face to

Table 4 Result of the most easy-to-talk condition (Ratio of subjects)

Subject	Conversational partner	Bright		Dark	
		Face to face	Side by side	Face to face	Side by side
Male (n=25)	Favorite opposite sex	16	12	32	40
	Unfavorite opposite sex	8	16	28	48
	Same sex	44	44	4	8
Female (n=26)	Favorite opposite sex	8	15	12	65
	Unfavorite opposite sex	35	27	27	12
	Same sex	54	42	4	0
All subjects (n=51)	Favorite opposite sex	12	14	22	53
	Unfavorite opposite sex	22	22	27	29
	Same sex	49	43	4	4

Bold letters above 40%

face situation where the distances were closer than the bright situation in all conditions other than the not favorite type by females. Generally, there is a tendency that the distance to a stranger tends to be farther in a dark situation^{11, 14)}, whereas female friends and couples get closer to the dark situation^{13, 16, 17)}. The result of this experiment is similar to the latter, and it can be considered that the relationship that they already knew each other became accessible even in the dark situation.

The distance from the favorite opposite sex is close to the "far phase" (76 to 122 cm) of "personal distance" indicated by E. T. Hall¹⁹⁾ and corresponds to the classification for conversation between friends and family. Nishide²⁰⁾ indicated that the Japanese conversation area is about 50 to 150 cm, and when it exceeds 80 cm, it tends to change to formal conversation. This study also showed that the distance was almost similar when people approached their favorite types of opposite sex. In this experiment, the difference between the interpersonal distance of the favorite and not favorite opposite sex was about 40 cm, whereas in the past studies, the difference between friendly (favorite) and unfriendly (not favorite) opposite sex was about 20 cm^{10, 18)}, and the distance from the unknown opposite sex was farther than the known opposite sex, which is 10 cm for males and 100 cm for females⁵⁾. As to why various interpersonal distances were taken, it is presumed that the settings and places of the past experiments are not consistent with each investigation and the unknown partners are not friends or a couple but are acquaintances in this experiment.

Table 5 Reasons for easy-to-talk conditions
(Total number of respondents, the inside of () is female)

Reasons	Favorite opposite sex				Unfavorite opposite sex				Same sex			
	Bright		Dark		Bright		Dark		Bright		Dark	
	Face to face	Side by side	Face to face	Side by side	Face to face	Side by side	Face to face	Side by side	Face to face	Side by side	Face to face	Side by side
Easy to perceive the partner's expression	3(1)	3(3)	3(0)						21(12)			
Not to be too conscious of the partner because not facing each other		4(2)	1(1)	14(8)						3(1)	1(1)	2(2)
Not want to see each other face					4(4)	8(3)	11(2)					
To be able to talk with the partner closely		2(2)	1(1)	13(6)								
To be able to talk calmly		2(2)		7(3)					3(1)	7(2)	1(0)	
Desire to confirm the partner's appearance because of anxiety					5(5)	6(6)	5(4)	3(0)				
Moderate distance is easy to take	1(1)	1(1)			6(6)	4(2)	4(2)	1(1)	2(0)			
To relieve tension or to be able to be in nature	2(2)	1(1)	3(1)	7(4)				1(1)				
Not to be anxious about the surrounding people			2(0)	5(3)								
Easy to create a mood of conversation			4(1)						1(0)			
Unlikely to feel embarrassed with the partner					1(0)	1(0)	1(1)					

3.2 Minimum interpersonal distance in side by side condition

The horizontal distances between two heads were generally closer when side by side than when facing each other. When they had a conversation side by side, female pairs were also closest to each other, followed by the favorite opposite-sex pairs and male pairs, and not favorite opposite-sex pairs. The distance of male subjects to the favorite opposite sex was 76 cm under bright situations and 73 cm under dark situations. Female subjects were 79 cm under bright situations and 73 cm under dark situations. Female subjects had farther interpersonal distance than male subjects compared to both the favorite and not favorite opposite sex, and they became particularly noticeable in the dark situations with not favorite types. Compared to the face to face direction, male subjects side by side were closer while female subjects were slightly farther. It is generally known that a male's personal space is wider in the forward direction than female's area^{5, 9, 15}. Even when communicating, it is considered that male subjects are trying to leave their partners when they face each other. Although the distance is close under the darker situations than the bright situations, the difference is not as pronounced as when facing each other. Significant differences were found only in female evaluations of the favorite opposite sex (Table 3). Conversely, in female evaluations of the not favorite opposite sex, the average value was slightly larger in the dark situation.

After the experiment, female subjects were interviewed why they took distance in the case of side by side for not favorite types of opposite sex. As a result, the following comments were obtained from multiple subjects: "Desire to avoid contact with males" and "Taking distance for the safety to confirm the behaviors of the other person". Even if the distances between the heads are the same, the shortest distance between the body and the body is close in side by side because the body is spreading to the shoulder side. Therefore, it may be considered to keep a distance in order to avoid body contact. Also, it is considered that consciousness about safety is involved when the distance becomes a little wider under the dark situations for female subjects.

3.3 Easy-to-talk orientation and brightness

Among four conditions of the direction and the lighting in

each interpersonal setting, one situation was selected that was most easy to talk. Table 4 shows the result. It presents the state of talking with the shortest distance under each condition. From the table, a certain number of male subjects answered that dark and side by side conditions were the easiest to talk, for both the favorite and not favorite opposite sex. In the case of male pairs, bright situations were answered as easy to talk, and there is hardly any difference when it comes to orientation. Female subjects responded that dark and side by side conditions were easier to talk for the favorite opposite sex, and bright and face to face conditions were easier to talk for the not favorite opposite sex. Both female and male pairs answered that they were easy to talk under bright situations.

Table 5 summarizes the reasons why they felt easy to talk at the selected condition. Because it is based on free description, it shows not the answer ratio but the number of subjects. The numbers in parentheses indicate the number of female subjects. The major reasons why dark and side-by-side conditions were easy to talk to for the favorite opposite sex are as follows: "Not to be too conscious of the partner because not facing each other", "To be able to talk with the partner closely", "To relieve tension or to be able to be in nature", and "Not to be anxious about the surrounding people". In the case of the not favorite opposite sex with dark and side by side condition, "Not want to see each other face" is mentioned, and the explanations that they preferred not looking at their partners' faces are quite different. On the other hand, the reasons why female subjects preferred the face to face direction for the not favorite opposite sex are described as "Desire to confirm the partner's appearance because of anxiety" and "Moderate distance is easy to take". The reason that same sex favored brightness and face to face direction is described because it is easy to confirm the expression of the partner.

From these results, it was found for the favorite opposite sex that men were easy to approach side by side in the dark situation while women prefer face to face in the dark situation. It was also found that both men and women were the easiest to talk in dark and side by side condition. It can be said that it is possible to approach without being too conscious of the partner and

to talk calmly. People who already have romantic relationships such as couples had confirmed the tendency to approach side by side^{16,17)}, but it turned out that the condition was preferred even in the very early romance period. A situation that is easy for conversation encourages distance to be close, and a situation where it is comfortable even if it is close to the partner promotes a more intimate conversation. When both have romantic feelings for each other, the increase in one's nonverbal intimacy behavior is often returned from the other party in the same way^{8,15)}, so the proximity of each other may be promoted. Moreover, it can be predicted that the psychological resistance of approaching the partner is also relatively small in the dark and side by side situation. Sommer⁹⁾ mentioned that it was the easiest to talk when partners sit at an angle of 90 degrees. Since this research assumed a conversation while standing, it was not set to face at 90 degrees, but it is necessary to examine how to face each other.

4. Conclusion

In this research, an experiment was conducted to ascertain the extent a conversation can be made in close proximity to the opposite sex of an acquaintance having romantic intentions. In the experiment, instead of confirming the presence or absence of real romantic feelings, the subjects imagined those situations in their minds. As a result, the distance to the favorite opposite sex was the closest when men were side by side with dark lighting and women were facing each other with dark lighting. At this time, the average horizontal distance between the partners' heads was about 70 cm. Both men and women also evaluated that they were the easiest to talk when it was dark and side by side. The interpersonal distance was not as close as that of female pairs, but it was similar or closer to that of male pairs and clearly closer than the not favorite opposite sex. The distance from the favorite opposite sex was strongly influenced by the lighting in the case of face to face direction, and approaches made in the dark situation were about 10 cm shorter than the bright situation.

The condition of favorite or not favorite opposite sex in this experiment was assumed in the subjects' minds. It is not easy to grasp the interpersonal distance based on real romantic intentions, but examining the probability of setting is a future research topic. Also, in this experiment, young Japanese university students were adopted as subjects, but it is considered that there are also differences depending on age, personality and culture.

Although interpersonal distance research findings exist enormously up to now, investigations that examined romance consciousness, body orientation and lighting as variables were not found internationally. These results seem to be usable for setting interpersonal distance that is comfortable to the opposite sex who is just an acquaintance but not yet a friend. It could also be utilized for planning restaurants and entertainment halls for people of opposite sex who want to promote romantic relationships in a gentle manner because of passive personality. Finally, although this study was set up for romantic relationships with the opposite

sex, this does not cover all combinations of romantic relationships. Diversity in romantic feelings should be respected and individual feelings and interpersonal relationships should be nurtured.

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