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Physical Distance Between Romantic Partners as a Marker for Attachment in Couples: A Proof of Concept Study

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Proximity seeking is at the core of attachment theory. Previously proximity has been studied almost exclusively in psychological terms. In clinical practice, however, couple therapists may interpret physical distance between romantic partners as a marker for the quality of the attachment bond. Unfortunately, this concept of physical distance between partners as an expression of attachment has never been tested. This study examines whether physical distance between romantic partners is associated with attachment. In 53 students and 43 clinical couples physical distance was repeatedly measured from video using novel software with excellent reliability. Attachment was measured with the Experiences in Close Relationships questionnaire. It was found that male attachment anxiety about rejection repeatedly showed statistically significant associations with physical interpersonal distance in student and clinical couples. We conclude that attachment may manifest itself not only in terms of psychological intimacy but also in terms of physical distance. Clinical utility and research implications are discussed.

Keywords: couples, physical distance, attachment, proximity seeking, anxiety about rejection, proof of concept

Key Points

1. Clinicians know that non-verbal behaviour such as physical interpersonal distance can be important in couple therapy as a marker for underlying psychological interpersonal processes.
2. Unfortunately physical distance between romantic partners has never been studied as an expression of underlying partner attachment, although proximity seeking is at the core of attachment theory.
3. The current study finds meaningful associations between physical distance between romantic partners and partner attachment.
4. For clinical practice this means it makes sense to use physical distance between romantic partners to formulate interpretations about attachment processes and to test and explore these with the couple during therapy.
5. For research the current study opens new avenues for exploring the conditions under which anxiously attached partners approach or seek distance from their partners.

In attachment theory, proximity seeking is considered the primary attachment strategy to organise validation and support between romantic partners and to help regulate emotions (Mikulincer & Shaver, 2016). Proximity seeking between partners has almost exclusively been studied in terms of psychological constructs such as verbal communication, trust, commitment, etc. (Mikulincer & Shaver, 2016). However, proximity can also be literally observed as the physical distance between people in the consulting room of couple and family therapists. Changes in the physical distance

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between partners or family members may trigger hypotheses in clinicians about underlying attachment processes in the relationship.

In personal space research, the importance of physical proximity has long been acknowledged. In their seminal study Argyle and Dean (1965) proposed that people continuously orchestrate verbal and non-verbal behaviours such as physical proximity in order to maintain a preferred level of closeness. It has been found, for example, that physical approach or avoidance may cause or attenuate discomfort (e.g. Burgoon & Jones, 1976; Hayduk, 1983).

In the field of couple and family psychology the notion of spatial distance as an indicator of the quality of relationships has been applied in projective tests in which figures representing partners and family members are placed in a two-dimensional space (e.g., Gehring & Schultheiss, 1987; Gerber & Kaswan, 1971). Research based on such projective distance tests is scarce. One study concerned couples (Sinha & Mukerjee, 1990) and another families (Bell, Ericksen, Cornwell, & Bell, 1991), suggesting that extremes of closeness-distance are associated with less warmth and support and more conflict. Only one study measured actual physical distance between partners and found an association between greater distance and lower relationship satisfaction and stability, and increased conflict in couples (Crane, Dollahite, Vincent, & Thylor, 1987).

Unfortunately, empirical studies on associations between physical proximity and attachment in couples are non-existent. In this study we attempt to cover this omission by proofing the concept of physical distance as a marker for underlying attachment predispositions and processes.

Attachment theory

Bowlby (1982) proposed proximity seeking and maintenance to the attachment figure as the primary attachment strategy to fulfil the attachment needs of validation (being loved), support (receiving help when needed), and consolation (being comforted when distressed). In young children proximity seeking is manifested primarily in the need for *physical proximity*, for instance, reaching out to the parent and wanting to be picked up and held (Mikulincer & Shaver, 2016). Other non-verbal behaviours that facilitate proximity are, for example, visually tracking of the mother to ascertain her whereabouts and smiling to attract attention and promote nearness (Bowlby, 1982). When children grow older *mental forms of proximity* develop as a way to satisfy attachment needs (Mikulincer & Shaver, 2016), for example, recollections of prior support provided by attachment figures or verbal support (Jakubiak & Feeney, 2016). Unfortunately, in adult attachment research, proximity is almost exclusively operationalised in terms of mental proximity, ignoring its fundamental non-verbal roots.

The preferred level of mental and, supposedly, physical proximity depends on the experiences one has with attachment figures' reactions to one's proximity seeking (Ainsworth, Blehar, Waters, & Wall, 1978; De Wolff & van IJzendoorn, 1997). Through a broaden-and-build cycle these experiences consolidate in different attachment styles and proximity seeking or avoiding strategies, namely secure, anxious, and avoidant attachment.

Secure attachment develops when caregivers and partners consistently reinforce the primary attachment strategy of proximity seeking. This means that caregivers are structurally available and responsive to attachment needs of validation and support (Mikulincer & Shaver, 2016). Such a learning history results in the expectation that proximity seeking is rewarding and therefore will be applied with trust.

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When people have experienced attachment figures intermittently reinforcing their proximity seeking, that is, caregivers or partners being *inconsistently* available and responsive to attachment needs, anxious attachment may develop. Such a learning history may develop in the expectation that it is unsure whether proximity seeking is rewarding. Consequently, anxiously attached individuals may exaggerate normal proximity seeking into clinging behaviour in order to enlarge the chance that support will eventually be provided. However, when they anticipate rejection or neglect by the attachment figure, they may avoid too much closeness as a self-protective precaution and even enlarge distance to their partner driven by fear, frustration, resentment, or anger (Mikulincer & Shaver, 2016). This ambivalence is also referred to as 'approach-avoidance conflict' (Simpson, Rholes, & Nelligan, 1992).

When people have a history of interactions with *consistently un*available and *un*responsive attachment figures, they no longer expect others to reward their proximity seeking by satisfying their attachment needs, and will develop avoidant attachment. Avoidant-attached individuals are distrustful of others, and consequently avoid proximity seeking and intimacy (Mikulincer & Shaver, 2016).

Taken together, because the use of proximity seeking as an attachment strategy differs between attachment styles, one may anticipate that the interpersonal distance people feel comfortable with may vary as a function of attachment style: anxiously attached individuals may show either approach or more distance, and avoidant-attached individuals more distance.

Attachment and interpersonal distance to strangers

In spite of the centrality of proximity seeking in attachment theory, to our knowledge no empirical studies have been conducted on relations between attachment and physical distance between partners in romantic couples. Remarkably, the only three studies available that examine relations between attachment and interpersonal distance concern distance between respondents and *strangers* (experimenters or confederates), that is, no attachment figures. This is due to the procedure applied in these studies to measure physical distance, that is, the stop-distance procedure (Hayduk, 1983). In this procedure the experimenter slowly approaches the respondent who is standing still and is asked to say 'stop' when the experimenter's closeness becomes uncomfortable. At this point the distance between respondents and experimenter is measured.

Using the stop-distance procedure, avoidant attachment was found to be associated with greater interpersonal distance in students by Kaitz, Bar-Haim, Lehrer, and Grossman (2004, study 1), but Yukawa, Tokuda, and Sato (2007), who also studied a student sample, could not replicate this result. In study 2 Kaitz et al. (2004) used an alternative measure of interpersonal distance: the participant's chosen distance from an interviewer which was scored from film as the chair-to-chair distance. With these measurements they were unable to replicate the positive association between avoidance and distance obtained with study 1. Thus, only one study (Kaitz et al., 2004, study 1) found a positive association with avoidant attachment but this was not replicated (Kaitz et al., 2004, study 2; Yukawa et al., 2007).

Anxious attachment was found to be associated with interpersonal distance in several studies, but not always in the same direction. Using the stop-distance procedure Bar-Haim, Aviezer, Berson, and Sagi (2002) found that young adolescents classified as insecure-ambivalent (i.e., anxious attachment in adults) tolerated shorter distances to the experimenter. Applying the stop-distance procedure Kaitz et al. (2004) found

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no significant association, but in their second study they found that anxious individuals chose greater chair-to-chair distance from the interviewer. Yukawa et al. (2007) also found anxious attachment to be associated with a greater preferred interpersonal distance as measured with the stop-distance procedure. In sum, results were mixed with one study showing a negative association of anxious attachment with distance (Bar-Haim et al., 2002), one study showing no association (Kaitz et al., 2004, study 1), and two studies showing a positive association (Kaitz et al., 2004, study 2; Yukawa et al., 2007).

Complexity of the measurement of interpersonal distance in romantic couples

Although measurement of interpersonal distance seems straightforward, several problems arise when applied to romantic couples. First, it matters whether both, one, or neither of the two *measurement points are fixed*. The main advantage of the stop-distance procedure is that one point is fixed, that is, the respondent stands still while the experimenter moves to the respondent and stops at the point where personal space feels violated to the respondent. However, this procedure is less suitable with romantic partners, since many partners will presumably stop walking until they touch each other, leaving no variation in the distance to be measured.

Social desirability is another problem with the *overt* stop-distance procedure. It seems likely that partners will stop at shorter distances to demonstrate they are in a happy close relationship. Therefore, *unobtrusively* filming two persons while sitting, as Kaitz et al. did in study 2 (2004), may reduce social desirability whereas variation of the distance will be more natural. Of note, the distance between unobtrusively observed romantic partners will be a shared score and not a 'preferred distance' of one partner as in the stop-distance procedure. That is inevitable because in natural circumstances both partners adjust their specific sitting positions and body postures continuously to each other.

Third, *validity* of distance measurements in earlier studies seems limited. In the stop-distance paradigm, distance is measured from toe to toe, while in the study that relied on unobtrusively filming distance was measured between the two closest legs of the two chairs respondents sat on (Kaitz et al., 2004). We think a more valid operationalisation of closeness in terms of physical distance will be the distance between both partners' faces. The main reason for choosing the face is that it harbours important senses (mouth, eyes, ears, and nose) by which we register proximity, communicate preferred closeness, and, partially, regulate physical nearness. Regarding the latter, while seated the face is presumably an important body region with which we approach (lean towards or turn to), or avoid (lean backwards or turn away) our partner. Such variation will not be caught by measuring the distance between the legs of chairs.

A final problem with the measurement of distance in the abovementioned unobtrusive studies was the use of a grid directly drawn on the floor or superimposed over the lens of the camera and counting the number of lines between the chairs' legs. Although the resulting measurement was reliable, precision was limited. We aimed to improve on this.

The current study

Our main objective was to test the hypothesis that physical distance between romantic partners is significantly associated with attachment, c.f. so-called proof of concept

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studies. Specifically, we expected a significant positive association between avoidance of intimacy and physical distance, that is, distancing (Kaitz et al., 2004, study 1). Concerning anxiety about rejection we also anticipated a significant association with physical distance, that could be either negative (approach), c.f. Bar-Haim et al. (2002), or positive (distancing), c.f. Kaitz et al. (2004, study 2) and Yukawa et al. (2007).

Further we wanted to test the reliability of newly developed software with which we measured interpersonal distance between partners from film. Finally, we examined two different samples of couples, that is, student couples and couples attending psychotherapy, in order to broaden insight in to associations of attachment and physical distance. To test for robustness of findings we included per sample two measurements of interpersonal distance.

Method

Participants

Two samples of heterosexual couples participated in the current study, namely (1) student couples, of which at least one partner was a student at the department of Psychology at the University of Amsterdam and (2) clinical couples in the final stage of relationship therapy in the mental health organisation 'Emergis' in Goes, the Netherlands. Inclusion criteria for both samples included having a heterosexual relationship with a duration of at least half a year to ensure couples were not merely dating. The student couples received research credits or 20 euro and were asked to bring their partner with them. The clinical couples were recruited by means of flyers and direct approach by psychotherapists; they received 20 euro for participation.

Procedure

Experiments were conducted according to a strict study protocol in order to ensure comparability across sites at which student couples (Amsterdam) and clinical couples (Goes) were tested. At both locations the room in which the experiments took place had an identical emplacement (see Figure 1 below).

At the centre of the room a table was placed (at which partners sat during two discussions that are not part of this paper). A tripod with a camcorder (Canon Legria FS200) was placed at a right angle to the head of the table. The camcorder covered the table and, importantly, a bench was placed perpendicular to the table at a distnace of approximately two metres. The couple sat on this bench during both distance measurements. This bench was identical in both samples. The sitting surface of the bench was 220 cm long and was made out of one piece, that is, it was not divided into different parts. Thus, we ensured partners were not primed to choose a certain place, but were free to choose any place, enabling maximum variation of interpersonal distance.

Before each couple entered the room, the experimenter filmed a stick of exactly 1000 mm that was placed on the bench approximately at head height of the sitting partners. This recording served as a reference measure for calculating the actual physical distance between the partners from film.

After entering the room, the partners were asked to stand in front of the bench and to inhale and exhale deeply three times in order to relax. Then the couple was told to sit down. This procedure was applied in order to ensure that partners sat down simultaneously. At that moment the pre-discussion distance measurement took

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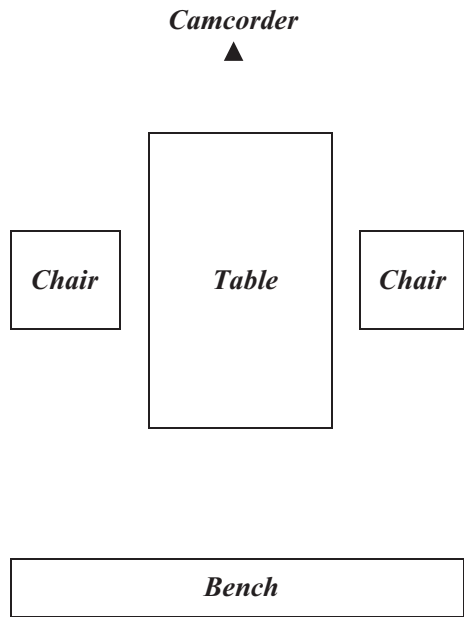

FIGURE 1
Emplacement in the room where the experiments took place.

place. Subsequently, the partners completed several questionnaires (see below) and then engaged in two 8-minute discussions about self-identified issues that bothered them in their relationship. Thereafter, the partners were asked again to stand in front of the bench and inhale and exhale three times before sitting down. Then the post-discussion distance measurement took place.

Unobtrusiveness of the filming was guaranteed by several precautions. First, participants were kept unaware about the distance measurements. They were told they participated in a study measuring heart rate while partners had a discussion with each other. Second, the couples were told the camera was used to determine whether the *experimenters* adhered to the study protocol. Finally, while the screen of the camcorder was opened during the discussions, it was closed during the distance measurements, suggesting the camera was not recording.

The study was approved by the Ethics Committee of the University of Amsterdam (2014-CP-3894). Couples signed an informed consent. During the debriefing couples were provided with an email address by which they would receive all study information, including information about the unobtrusive recording.

Measures

Social-demographic variables. Age, sex, education, and relationship status were established by questionnaire.

Adult attachment. Adult attachment in past and present romantic relationships was measured with the Dutch version of the widely used *Experiences in Close Relationships* (ECR) questionnaire (Conradi, Gerlsma, Van Duijn, & De Jonge, 2006). The ECR

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contains 36 items and assesses two attachment dimensions. *Anxiety about rejection and abandonment* measures the expectation of being perceived by partners as unacceptable or unlovable (example item 'I worry about being abandoned'). Cronbach's alphas in the student sample were .89 (men) and .85 (women) and in the clinical sample .89 (men) and .92 (women). *Avoidance of intimacy* assesses the expectation of inaccessibility and unresponsiveness of partners to one's attachment needs (reverse scored example item 'I turn to my partner for many things, including comfort and reassurance'). Cronbach's alphas in the student sample were .92 (men) and .89 (women) and in the clinical sample .89 (men) and .93 (women). Items are rated on a 7-point Likert response scale ranging from 1 (disagree strongly) to 7 (agree strongly), with a middle position of 4 (neutral/mixed). Favourable psychometric properties support the validity and reliability of the Dutch ECR.

Physical distance. Physical distance between the partners was calculated on the basis of the video material. We measured the distance from the central spot between the eyes of one partner to the central spot between the eyes of the other partner as the central place in the face. Moreover, it was clearly visible and easy to mark with the software we used. Distances between shoulders or hips are not reliably measurable because these are covered by clothes.

The calculation of the interpersonal distance was done with help of *Framesearch*, software developed by B. Molenkamp of Technical Support Psychology of the University of Amsterdam. This was done in several steps. First, we determined the width of each film pixel in millimetres. This was done by marking the two ends of the reference stick on film with the cursor in *Framersearch*. *Framesearch* yielded the two exact X- and Y-pixel coordinates. By subtracting the two X coordinates the length of the stick in number of pixels was calculated. Knowing the stick was exactly 1000 mm long we calculated the width of each pixel in millimetres (1000 mm/stick length in number of pixels). Second, we determined physical distance between the partners in number of pixels by subtracting the X coordinates of the two spots between the eyes of the partners. Third, by multiplying the latter number of pixels with the known width in millimetres of each pixel we obtained the physical interpersonal distance in millimetres. To maximise reliability of these measurements we measured distance six times, that is, at 5-second intervals, during the first 25 seconds of sitting on the bench. Then we averaged these six measurements into the mean physical distance between the partners, one pre-discussion and one post-discussion.

Statistical analyses

First, we determined the inter-observer reliability between the two independent scorers of the 12 physical distance measurements (6 measurements * 2 measurement occasions, i.e., pre- and post-discussion). For this, we computed the intraclass correlation coefficient (ICC) in a two-way mixed model, type absolute agreement.

Next, bivariate Pearson correlations were computed between the attachment dimensions Avoidance of intimacy and Anxiety about rejection of both partners on the one hand, and physical distance on the other hand. Subsequently, we developed a linear mixed model for both samples together in SPSS with couples as the unit of analysis. With this we evaluated the main effects of male Avoidance, male Anxiety, female Avoidance and female Anxiety and sample (student and clinical couples), and

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the four two-way interactions of sample*attachment. Dependent variables were pre- and post-discussion physical distance. Significance levels were set at $\alpha < .05$ (two-tailed). Finally, effect sizes (Cohen's *d*s) were computed, using the estimated marginal means and the SDs from the raw scores.

Results

Partner characteristics

Sociodemographic and study variables are displayed in Table 1 (below). Partners from the clinical sample differed significantly from the student sample on socio-demographic and attachment variables. Clinical couples were on average twice as old, their relationships lasted more than seven times longer and they lived together in approximately 85% of the cases vs. about 10% of the student couples. Clinical couples also scored significantly higher on Avoidance of intimacy and Anxiety about rejection. The samples did not significantly differ on the dependent variables, that is, pre- and post-discussion interpersonal distance.

Inter-observer reliability of interpersonal distance measures

Computation of ICCs between the two observers for the six measurements of each of the two outcomes, that is, pre- and post-discussion physical distance, revealed ICCs ranging from .96 to .99 indicating excellent reliability. The ICC for measurement of the reference stick was 1.00.

Attachment and physical distance

Bivariate correlations between male and female attachment and physical distance are displayed in Table 2. Avoidance of intimacy was not significantly associated with physical distance in both samples at both pre- and post-discussion. In females Anxiety about rejection was not related to physical distance either. However, male Anxiety about rejection was significantly related to physical distance in both samples, but in opposite directions. In the student sample a significant positive association between Anxiety and pre-discussion distance was found, that is, the higher the male anxiety scores the greater the distance. Post-discussion this association appeared in the same direction, but was not significant ($p = .078$). In the clinical couples, significant negative associations between male Anxiety about rejection and pre- and post-discussion distance were found, that is, the higher the male anxiety scores the shorter the distance.

Next, we computed the two described mixed models, that is, for pre- and post-discussion distances, for student and clinical couples together (Table 3). In both models sample*male Anxiety was significant (pre-discussion $F = 8.910$; $p = .004$ and post-discussion $F = 7.314$; $p = .008$).

Inspection of the graphs (Figure 2) supports the finding that Anxiety about rejection in male students was associated with greater physical distance, while the reverse was the case in the clinical sample. The difference in physical distance between couples, including high anxious males in the student vs. clinical sample, was approximately 80 mm. Pre-discussion this difference corresponds with an effect size of $d = .72$ and post-discussion with $d = .58$.

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TABLE 1
Social, Demographic, and Study Variables

	Student Sample			Clinical Sample			
	Men $n = 53$ (%)	Women $n = 53$ (%)	Couples $n = 53$ (%)	Men $n = 43$ (%)	Women $n = 43$ (%)	Couples $n = 43$ (%)	Student vs. Clinical Couples
Education							
Low	2.0	0.0	1.0	24.3	32.1	28.7	**$X^2 = 29.379$; $df = 2$; $p < 0.001$**
Middle	61.2	60.0	60.6	40.5	48.8	45.0	
High	36.7	40.0	38.4	35.1	18.6	26.3	
Living status							
Living apart			90.2			14.0	**$X^2 = 55.355$ $df = 2$; $p < 0.001$**
Cohabiting			5.9			30.2	
Married			3.9			55.8	
	M (SD)	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	
Age (yrs)	22.25 (5.96)	20.49 (5.23)	21.37 (5.65)	44.28 (12.43)	40.42 (11.94)	42.35 (12.27)	**$t = -14.58$; $df = 115.01$; $p < 0.001$**
Relationship duration (yrs)			2.31 (3.00)			16.50 (13.17)	**$t = -6.84$; $df = 45.78$; $p < 0.001$**
Avoidance of intimacy	40.73 (15.91)	37.80 (12.56)	39.26 (14.34)	46.35 (16.41)	53.13 (20.67)	49.74 (18.87)	**$t = -4.22$; $df = 156.68$; $p < 0.001$**
Anxiety about rejection	58.52 (17.17)	63.81 (14.94)	61.17 (16.23)	66.35 (18.95)	72.65 (19.64)	69.50 (19.44)	**$t = -3.20$; $df = 186$; $p = 0.002$**
Distance pre-discussion			574.95 (81.61)			547.81 (107.08)	$t = 1.39$; $df = 92$; $p = -0.17$
Distance post-discussion			548.89 (99.34)			524.72 (108.05)	$t = 1.10$; $df = 88$; $p = 0.28$

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TABLE 2
Correlations between Attachment and Interpersonal Distance

	Interpersonal Distance Pre-discussion		Interpersonal Distance Post-discussion	
	Student Couples $n = 53$	Clinical Couples $n = 43$	Student Couples $n = 53$	Clinical Couples $n = 38$
Male Avoidance of intimacy	.060	.032	.064	−.060
Female Avoidance of intimacy	.012	−.251	−.022	−.099
Male Anxiety about rejection	**.297***	**−.333***	*.247*†	**−.348***
Female Anxiety about rejection	.087	−.141	−.031	−.063

*$p < 0.05$, †$p < 0.10$.

TABLE 3
Effects of Attachment on Interpersonal Distance Pre- and Post-discussion

	Student and Clinical Couples $n = 96$			
	Interpersonal distance pre-discussion		Interpersonal distance post-discussion	
	F	*p*	*F*	*p*
Male Avoidance of intimacy	.367	.547	.016	.901
Male Anxiety about rejection	.069	.793	.221	.640
Female Avoidance of intimacy	1.039	.311	.096	.758
Female Anxiety about rejection	.032	.859	.105	.747
Sample	**5.831**	**.018**	*2.872*	*.094*
Sample*male Avoidance of intimacy	.819	.368	.136	.713
Sample*male Anxiety about rejection	**8.910**	**.004**	**7.314**	**.008**
Sample*female Avoidance of intimacy	.244	.623	.031	.860
Sample*female Anxiety about rejection	1.198	.277	.000	.982

Discussion

This study examined physical distance between romantic partners as an expression of underlying attachment. For this purpose, we developed a novel method for determining interpersonal distance from film, which showed excellent reliability. Avoidance of intimacy and female Anxiety about rejection showed no significant associations with physical distance between partners in both samples. However, male Anxiety about rejection was significantly and repeatedly associated with physical distance in student

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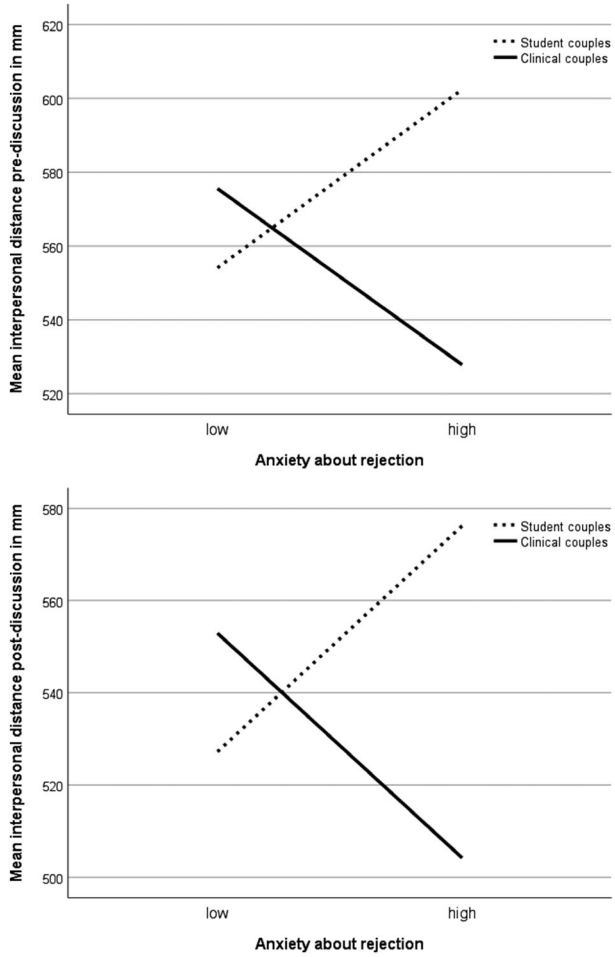

FIGURE 2

Interaction effect of sample * male Anxiety about rejection and pre- and post-discussion interpersonal distance.

and clinical couples. This suggests attachment is not only a psychological, cognitive construct but is also non-verbally expressed.

Physical distance as a marker for attachment: Proof of concept

Although empirical studies overwhelmingly show associations between attachment on the one hand and cognitions, emotions, and behaviour on the other hand (Mikulincer & Shaver, 2016), it is terra incognita whether attachment is linked to physical distance. This study suggests that clinical intuitions about meaningful associations between physical interpersonal distance in romantic partners and underlying attachment processes have an empirical base. Such empirical evidence is important in shoring up clinical practice and has implications for the field of attachment research. In the following paragraphs we suggest future research steps and safe and meaningful

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ways to use physical distance in couple and family therapy without overstretching the results of this study.

Physical distance and attachment: Future research steps

From an attachment-theory perspective we conjectured that avoidance of intimacy would be associated with behaviours creating physical distance. However, no such effect was found in two independent samples. In previous research only Kaitz et al. (2004) in study 1 did find an effect, but they could not replicate this in study 2, nor could Yukawa et al. (2007). Thus, with the current, sparse evidence it is uncertain whether such an association exists.

We speculate that our null finding concerning avoidance might be the result of the partners' specific sitting position. Partners supposedly experience less intimacy when they sit next to each other than when sitting opposite and looking at the each other. Sitting next to each other may leave sufficient possibilities for cognitive avoidance like distracting thoughts. This may reduce the need for physical distancing, ruling out the finding of avoidance effects. Therefore, for future research it is important to have partners sitting opposite each other vs. sitting next to each other, and include assessments of cognitive avoidance.

As stated in the introduction, one might expect an approach-distancing conflict in individuals high in anxious attachment (Mikulincer & Shaver, 2016). Exaggerated proximity seeking and clinging behaviour may occur to overcome feared rejection and having attachment needs satisfied. However, when attachment fears exceed trust in the partner's availability and responsiveness, distancing behaviour will occur to prevent rejection, as Mikulincer and Shaver (2016) explain. This approach-distancing tendency clarifies the results of previous studies and the current study. In clinical couples we found a negative effect of male attachment anxiety on physical distance in line with Bar-Haim et al. (2002), while in student couples the association was positive in line with Kaitz et al. (2004, study 2) and Yukawa et al. (2007). We do not believe this to be a chance finding for two reasons. First, we found these opposing effects while applying an identical study protocol and measurement method in two different samples, instead of using different protocols in different studies (c.f. Bar-Haim et al., 2002; Kaitz et al., 2004; Yukawa et al., 2007). Therefore, results are unlikely to be the result of measurement variance. Second, we found the effects repeatedly, that is pre- and post-discussion, in each sample. Based on this robustness of opposing effects in the current study, combined with similar contradictory effects found in previous studies, we tentatively draw the conclusion that (male) anxiety is either negatively or positively associated with physical distance.

Important in the specific outcome of this approach-distancing conflict, that is, approaching or avoiding the partner, is the appraisal of the chance that proximity seeking will be rewarded by the partner or not. Indeed, theoretically one would expect such situational appraisals to be much more influential in anxious than in avoidant individuals. Avoidant partners have learned not to expect anything good from attachment figures, whereas anxious partners are unsure about that. Unfortunately, research on appraisal of the viability of proximity seeking and the subsequent choice between approach or distancing behaviour is absent (Mikulincer & Shaver, 2016). We speculate that perceived partner *commitment* is important in the appraisal whether the partner is responsive to attachment needs (Schoebi, Karney, & Bradbury, 2012). Perceived commitment might have been relatively uncertain in student couples, who

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lived together in only 10% of the cases and in general had no children. This may have resulted in anxious male students distancing as a form of self-protection. Clinical couples, on the other hand, lived together in 86% of the cases, had children, and invested in couple therapy which they almost finished. Proximity seeking and showing vulnerability might have been learnt in therapy, and tolerated and responded to by the partner, thus explaining the association between anxiety and shorter distances. Unfortunately, we did not measure commitment. Therefore, it is recommended that future research examines conditions under which positive and negative associations between anxiety and physical distance occur.

The absence of effects of attachment anxiety in female participants remains unclear. Unfortunately, previous studies have not tested gender differences. Anxious women might be inclined to let their partner regulate distance, leaving no effect of their own anxiety. Moreover, if the effects of anxiety go in opposite directions, that is, approach and distancing, they may cancel out in women. However, this does not mean that the association between attachment and distance is clinically meaningless for females. The dyadic nature of couple relationships implicates that changes in distance within a couple always affects both partners, male and female.

Physical distance and attachment: Clinical utility

This study suggests that attachment is not only reflected in cognitions and verbal behaviour, but also in non-verbal behaviour such as physical proximity of romantic partners. This is important because it is well-known from research that non-verbal communication plays an important role in the appraisal and expression of emotions in the interaction between individuals (e.g., Burgoon, Buller, & Woodall, 1996). As mentioned in the introduction, the consulting rooms of couple therapists offer good opportunities to observe physical distance between partners, and changes therein, within a session or over the course of therapy. Importantly, smaller distances between partners or family members are not by definition an indication of better quality of the relationship, as proximity may mark healthy intimacy and caregiving, but also intrusiveness (c.f., Green & Werner, 1996). Therefore, therapists should always be tentative. Specifically, therapists may ask: 'What did you feel at the moment you increased (or decreased) the distance between you and your partner?' Subsequently the therapist may turn to the partner and ask: 'What did you feel when your partner came closer to you (or turned away from you)?' This may reveal attachment-related emotions like fear of rejection or abandonment, fear of not measuring up to the expectations of the partner, etc. Questions can also focus on attachment-related cognitions: 'What did you think when you moved away from (or towards) your partner?' Such thoughts can centre around the partner, in attachment theory referred to as the 'model; of other,' for example, 'I expect my partner to be critical of me' or 'I hope my partner will soothe me.' Another category of thoughts is about the 'model of self,' for example, 'I feel unsure whether I am worthy to be loved.' Also, it is important to ask about attachment behaviour in reaction to the partner moving towards or away from oneself. This may reveal a tendency to distance or approach. Answers to these questions can subsequently be used to stimulate a conversation between partners that is characterised by self-disclosures about attachment needs of being validated and loved, supported, or consoled by the partner. The therapist may ask, 'What do you actually need from your partner instead of his turning away from you?' Such

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dialogues between therapists and partners, c.f. Johnson (2008), facilitate relationship diagnostics and interventions.

Additionally, therapists may also observe physical distance in a diagnostic experiment by letting partners position the chairs themselves on a distance they prefer. Chairs on wheels increase the chance of observing changes in preferred distances.

Finally, therapists may be inspired to apply proximity enhancement as a non-verbal add-on intervention to regular verbal interventions. For example, when it is clear that distancing out of fear of rejection impedes further relationship development, instructing partners to enhance physical closeness may help to increase psychological closeness and vice versa. The therapist may ask partners to more often put an arm around each other, hold hands, or hug each other, behaviours that result in beneficial effects concerning cardiovascular reactivity, cortisol, and oxytocin levels (e.g., Grewen, Anderson, Girdler, & Light, 2003; Holt-Lunstad, Birmingham, & Light, 2008), attributions about the toucher (Erceau & Guéguen, 2007), and compliance to requests made by the toucher (Field, 2010). Of note, these effects were found in non-distressed community samples. Therefore, therapists have to be cautious in their timing of proposing a couple increase touching each other. Premature touch, that is, ahead of signs of improvement of the relationship, may not facilitate further recovery but may have adverse effects.

Limitations and strengths

Several limitations should be taken into consideration when interpreting the findings of this study. First, although the unobtrusive measurement we applied reflected natural circumstances better than the stop-distance procedure, the distance measurement was done in a relatively fixed situation. This restricts ecological validity concerning more natural situations in which partners are free to move. Second, physical distance was measured as a shared outcome for couples, not preferred distance for partners which is very hard to realise since partners continuously adapt their position to each other. Hence, the effects of male anxiety of rejection may result from their own behaviour, but also from their partner's reactions or (probably) their interaction. This does not invalidate the resulting findings, but might mean that they result from a couple dynamic that we cannot fully disentangle.

Finally, because cultural differences might affect preferred physical distance in relationships, we recommend future studies to include samples from multiple cultures. Severe sexual trauma, or trauma related to harsh upbringing, are other important factors that may influence physical distance in relationships and therefore are in need of exploration. An important strength of the present study is examination of two clearly different samples using the same strict study protocol, and measuring distance twice. Another strength was the very high reliability of our novel distance measurement method as evidenced by the excellent ICCs.

Conclusion

With the current proof of concept study we showed that adult attachment is not just a psychological construct expressed in emotions, cognitions, and verbal behaviour. Importantly, adult attachment shares with infant attachment, to some extent, basic non-verbal roots as manifested by variations in physical distance between partners. This may widen the research and clinical perspective on interpersonal processes.

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