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Psychological size and distance: emphasising the interpersonal relationship as a pathway to optimal teaching and learning conditions

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BACKGROUND Positive interpersonal relationships between teachers and learners increase the quality of learning. The purpose of this study was to investigate psychological size (perceived status) and psychological distance (perceived emotional connectedness) in medical teaching interactions and their impact on the teaching and learning process.

METHOD A total of 45 paediatric preceptor/resident pairs engaged in longitudinal continuity training experiences at different sites were surveyed about teaching effectiveness, satisfaction with teaching, and the psychological size and distance in the relationship between each pair.

RESULTS Both residents and preceptors perceived the resident as having a smaller psychological size compared to the preceptor. Residents perceived greater psychological distance in the relationship than did preceptors, and this distance was significantly related to both residents' satisfaction with particular preceptors and their perception of the preceptors' effectiveness.

CONCLUSIONS Psychological size and distance contribute to effective and satisfactory teaching. Investigating additional aspects of the teaching–learning relationship should help identify optimal educational conditions.

PURPOSE AND LITERATURE REVIEW

The interpersonal relationship and interaction between teacher and learner is especially pertinent within the context of a medical setting, where the one-to-one apprenticeship model is common. The teacher–learner relationship in medicine is also important because the teacher acts as a 'relationship role model', representing aspects of the interpersonal relationship that are essential for the learner to emulate in the doctor–patient relationship. When we recall a relationship we have had with a teacher or other influential person in our life, it is easy to remember the extra motivation and persistence we exerted to please that person. Educational leaders contend that the development of an interpersonal connection or relationship with learners increases their quality of learning (e.g. by encouraging greater conceptual understanding, self-esteem, flexible use of knowledge, and learning at different levels such as the affective, cognitive and skills levels) and their motivation to learn.[1,2] The teacher–learner relationship is often discounted amidst other more 'scientific' areas of research in the teaching and learning arena. However, because the interpersonal relationship both fulfils a basic human need[3] and represents a potential pathway to increasing the success of the teaching and learning process, we must pay more attention to the benefits of emphasising this aspect of the learning environment.

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Overview

What is already known on this subject

Positive interpersonal relationships between teachers and learners increase the quality of learning.

What this study adds

The study describes a unique tool for measuring aspects of interpersonal relationships between medical teachers and learners.

Psychological size and distance contribute toward effective and satisfactory teaching in medicine.

Discrepancy in psychological size within the teacher–learner relationship has implications.

The paper describes how psychological distance affects satisfaction and perceptions of preceptor effectiveness.

Suggestions for further research

Future research should examine the effectiveness of specific teaching strategies that emphasise the interpersonal teacher–learner relationship.

Further research requires the use of multiple sites.

There is a strong association between teachers who emphasise the interpersonal relationship and their effectiveness as teachers. For example, in a study of teacher behaviours mentioned in 500 nomination letters for teaching awards, Lowman found that interpersonal rapport was a distinctive category. In addition, teachers who scored highly on interpersonal rapport were rated as 'outstanding teachers' as compared to just 'good teachers'.[4] Similarly, effective clinical teachers in medicine have demonstrated skill in professional and personal interaction with learners.[5,6] In a study of nursing students' perspectives on best and worst clinical teachers, the only noteworthy difference between the best and worst teachers was seen in the category of 'interpersonal relationship'. These 'worst teachers' were less likely

to encourage mutual respect, listen attentively, show personal interest in the student, demonstrate empathy, or provide support and encouragement to students.[7]

In medicine, research regarding the importance of the interpersonal relationship between teacher and learner has been limited. The emphasis on relationship has been identified as one of concern predominantly in the doctor–patient relationship. There is some evidence that if doctors build positive relationships with their patients, positive outcomes such as greater patient satisfaction, patient compliance and fewer appointment cancellations will occur.[8–11] Hekelman and colleagues asserted that just as doctors should develop humanistic attitudes and behaviours toward patients, they also should manifest the same behaviours when interacting with learners. These humanistic attributes included availability, respect, integrity, supportiveness, compassion and competence.[12] In resident education, as in other areas of health professions education, learners acquire more than just scientific knowledge and clinical skills. They also develop qualities of self-sufficiency, identity, skill at interpersonal relationships, emotions, purpose and integrity, many of which are acquired through their one-to-one interactions with doctor role models. In a recent study of doctor role models, attending doctors who were identified as excellent role models were more likely than controls to work toward developing positive interpersonal relationships with their residents. Attending doctors developed the relationships by sharing professional experiences, talking about their personal lives, trying to learn about the lives of the house staff and organising a dinner at the end of the month.[13]

One approach to understanding and examining the specifics of dyadic relationships is through the concepts of psychological size and psychological distance.[14]

Psychological size is the perceived status one person has relative to another. Psychological distance is the degree of positive and negative emotional connectedness in a relationship. Research suggests that psychological size and psychological distance are both important factors that contribute to the quality and effectiveness of one-to-one relationships.[15–17] Knowledge of psychological size and distance in preceptor/resident pairs might allow for prior assessment of the potential success of such matches, provide opportunities to diagnose and address the underlying factors contributing to a poor pairing,

and ultimately might help educators determine whether an emphasis on relationship in the preceptor/resident pairing contributes toward an optimal learning outcome. The purpose of this study was to investigate the perceived psychological size and distance by preceptors and residents in the ongoing preceptor/resident dyad and to examine whether this focus affects the medical teaching and learning process.

METHODS

Participants

Forty-five paediatric preceptor/resident pairs (total of 90 participants) engaged in continuity training experiences (where the resident spends 1–2 afternoons per week with his or her primary preceptor for 3 years of residency training) at a large Midwestern paediatric hospital were solicited to respond to a questionnaire containing several instruments. These preceptor/resident pairs were composed of preceptors and residents in the hospital clinic, community clinics and doctors' offices. Preceptors and residents varied by gender, race or ethnic group and year of involvement in the residency programme. All preceptors and residents were personally contacted with an invitation to participate in the study and had the right to refuse participation.

Instruments

Clinical Teacher Characteristics Instrument

The Clinical Teacher Characteristics Instrument (CTCI)[18] is a measure of teaching effectiveness. It is composed of a 20-item scale that has 3 subscales: relationship with students (e.g. 'The preceptor encourages residents to feel free to ask questions or to ask for help'), professional competence (e.g. 'The preceptor relates underlying theory to medical practice'), and personal attributes (e.g. 'The preceptor is flexible when the occasion calls for it'). Each item is scored using a 1–5 Likert scale where 1 = does not meet this characteristic at all, and 5 = very effectively meets this characteristic. Residents were asked to complete the scale about their preceptors, and preceptors were asked to complete the scale about themselves.

Preceptor–Resident Relationship Inventory

The Preceptor–Resident Relationship Inventory (PRRI) is a modification of Graen's Leader–Member Exchange Scale (LMX),[19] which was used in this study to measure satisfaction in the preceptor–resident relationship. Graen's original LMX scale consisted of 7 items and was designed to measure the quality of exchange between supervisors and subordinates. An internal consistency coefficient for the LMX scale of 0.80 was reported by Graen et al. and scores have been shown to predict employee turnover.[19] Five of the original 7 items were used in the current study. The items were modified in 2 ways, by substituting the original word 'supervisor' with 'preceptor' and the original word 'employee' with 'resident', and by inverting the end-points of the 7-point Likert scale to more closely resemble the scale formats of the other instruments and avoid confusion. (Graen's original scale end-points of 1 = more negative evaluation and 7 = more positive evaluation were changed to 1 = more positive evaluation and 7 = more negative evaluation). Both preceptors and residents were asked to respond to the measure using their continuity relationship as a frame of reference. Sample items in this scale included: 'How well do you feel that your continuity preceptor understands your problems and needs?', answered on a scale of 1–7, where 1 = not at all and 7 = completely, and 'How would you characterise your working relationship with your continuity preceptor?', answered on a scale of 1–7, where 1 = extremely ineffective and 7 = extremely effective.

Grasha-Ichiyama Psychological Size and Distance Scale

The Grasha-Ichiyama Psychological Size and Distance Scale (GIPSDS)[20] was used to measure status and emotional climate in the preceptor–resident relationship. This instrument uses circle drawings and a 22-item rating scale assessing specific components of interpersonal status and affect. The drawing task orients the subject to a relationship, provides a convenient method of summarising the overall perceptions they have, and allows them, through the use of metaphors of size and distance, to express their thoughts and feelings about a given relationship. The rating scale provides a means of expressing the specific reasons for drawing the relationship in a particular way. Participants were informed that they would be asked to draw circles about their relationships with their preceptors or their residents. The circle depicting the subject was to be denoted as 'Self' while the circle for their resident or preceptor was to be denoted as 'Other'. Both residents and preceptors were instructed to use the size of the circles, where they placed the circles on the page and the distance between the circles to indicate their thoughts and feelings about their relationships.
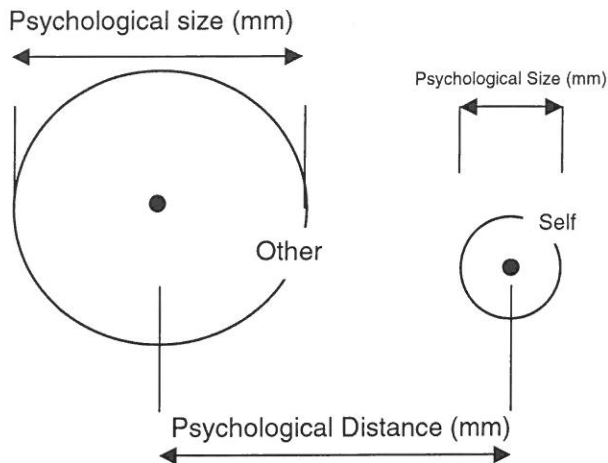
Psychological size (mm)

Figure 1 Psychological size and distance.

The GIPSDS drawing variables utilised in this study included:

1 *self size* (the diameter, in mm, of the circle depicting the participant);
2 *other size* (the perceived psychological size of the preceptor or resident);
3 *psychological size difference* (the primary measure of relative psychological size or status in the preceptor–resident relationship, computed by subtracting *self size* from *other size*), and
4 *distance* (an affect measure of psychological distance, computed by measuring the distance, in mm, between the midpoints of the 2 circles) (Fig. 1).

After completing the circle drawings, residents and preceptors were asked to complete the GIPSDS Status–Affect Rating Scale. The subscales utilised in this study included:

1 *affect* (e.g. acceptance, patience, co-operation, closeness, affection, irritability, warmth, friendliness, tension, consideration and overall amount of positive feeling); the *affect* subscale was derived by summing the 11 *affect*-related items;
2 *status* (e.g. expertise, submission, timidity, assertiveness); the *status* subscale was derived by summing the 11 *status* items and was partitioned into 2 other subscales – *dominance* and *competence*;[20,21]
3 *dominance* (e.g. passivity, submissiveness, bashfulness, compliance, aggressiveness, status, assertiveness, influence); the *dominance* subscale was derived by summing the 8 *dominance* items, and
4 *competence* (e.g. expertise, knowledge, overall competence); the *competence* subscale was derived by summing the 3 *competence* items.

Sample *affect* items included: '*Towards the other person, I feel ...*', answered on a scale of 1–9, where 1 = very unaffectionate *and* 9 = very affectionate, and '*Towards the other person, I feel ...*', answered on a scale of 1–9, where 1 = very cold *and* 9 = very warm.

Sample *status* items included: '*When interacting with the other person, I feel like I have ...*', answered on a scale of 1–9, where 1 = less expertise *and* 9 = more expertise, and '*When interacting with the other person, I am ...*', answered on a scale of 1–9, where 1 = very submissive and 9 = very dominating.

The GIPSDS has adequate levels of reliability and validity.[20] In a total sample of 240 participants, the *status* and *affect* scale scores were not correlated ($r = 0.11$, $P > 0.05$), each scale had alpha coefficients of 0.94 for *affect* and 0.86 for *status*, and the test–retest reliability of the scales over a 7-day period were $r = 0.88$ for *affect* and 0.84 for *status*. The test–retest reliability of the circle drawings over a 7-day period was $r = 0.78$ for *distance* and $r = 0.75$ for *size difference*. This scale has been used to measure a wide variety of relationships, including those of adult children of alcoholics with their parents, manager–subordinate relationships, and relationships between graduate students and professors of various disciplines.[16,21,22]

Brief demographic questionnaire

A brief demographic questionnaire was developed by the researchers. It involved 9 items that asked for relevant background information about the participants.

Data analysis

The data were analysed using SPSS, with each instrument scored accordingly. T-tests were used to compare the residents' and preceptors' psychological size and distance. Pearson correlations were used to examine the relationships of psychological size and distance to teaching satisfaction and effectiveness scores. The Wilcoxon rank–sum test was used to compare Likert scale scores. A P-value less than 0.05 was considered significant for all analyses.

RESULTS

Demographics

A total of 98% (44/45) of the preceptor/resident pairs (30% hospital clinic, 52% private office, 18%

community health clinic) completed the questionnaire. Both residents and preceptors were demographically diverse. Residents varied by gender (75% female, 25% male), level of training (PL1 = 43%, PL2 = 27%, PL3 = 30%), and race/ethnicity (68% white, 21% Asian, 11% other). The majority of the residents were 25–30 years old (84%). Preceptors varied by gender (45% female, 55% male), age (31–40 years = 53%, 41–50 years = 28%, and 51–60 years = 19%) and race or ethnicity (82% white, 14% African-American, 4% other).

Psychological size

Table 1 shows differences between residents and preceptors regarding their perceptions of the various qualities assessed by the GIPSDS. Both residents and preceptors perceived the resident as having a smaller psychological size than the preceptor (GIPSDS circle drawings). However, the differences between them were less for the preceptor (mean difference = − 7.84 mm) than for the resident (mean difference = 16.23 mm; resident differences versus preceptor differences: $t = − 7.20$, $P < 0.001$).

The discrepancy between residents and preceptors in terms of psychological size differences can also be seen when comparing the 2 groups on the psychological dimensions known to underlie perceptions of status in a relationship (GIPSDS rating scale). Differences between residents and preceptors on the *dominance* (resident mean = 40, preceptor mean = 50), *competence* (resident mean = 14, preceptor mean = 23) and *status* (resident mean = 53, preceptor mean = 73) subscales were all statistically significant (Table 1). In addition, correlations between GIPSDS subscales and *size difference* revealed that for preceptors, *status* and *dominance* were significantly related to *size difference* ($r = − 0.44$, $P < 0.004$; $r = − 0.43$, $P < 0.005$), and for residents, only *status* was significantly related to *size difference* ($r = − 0.31$, $P < 0.04$) (Table 2). There were no statistically significant relationships between *size difference* and residents' satisfaction with preceptors (PRRI) or their

Table 1 GIPSDS psychological size parameters

Psychological size parameter	Residents (n = 44) mm	(SD)	Preceptors (n = 44) mm	(SD)
GIPSDS *size difference* Mean (SD) (d.f. = 43)	16.2	(16.7)	− 7.8 $t = − 7.2*$	(11.4)
GIPSDS *dominance* Subscale (8 items; range = 8–72)	40	(8.1)	50	(6.2)*
GIPSDS *competence* Subscale (3 items; range = 3–27)	14	(3.7)	23	(2.5)*
GIPSDS *status* Subscale (11 items; range = 11–88)	53	(10.2)	73	(7.4)*
GIPSDS *affect* Subscale (8 items; range = 11–88)	79	(10.9)	81	(8.2)†

T-test for size difference and Wilcoxon rank–sum test for all subscales: * $P < 0.001$; † not significant.

Table 2 Correlations between GIPSDS size difference and status–affect subscales

Psychological size parameter	Residents (n = 44)	Preceptors (n = 44)
GIPSDS *dominance* subscale	$r = − 0.28*$	$r = − 0.43†$
GIPSDS *status* subscale	$r = − 0.31‡$	$r = − 0.44§$

Pearson correlation: * not significant; † $P < 0.005$; ‡ $P < 0.04$; § $P < 0.004$.

perceptions of the preceptors' effectiveness in terms of the preceptors' personal attributes, professional competence and relationships with learners (CTCI). The *psychological size difference* for the residents and preceptors was not statistically different for different levels of residents or locations of continuity experience. (These factors were considered in earlier analyses, but because they were not statistically significant, they were excluded from further consideration.)

Psychological distance

Both residents and preceptors perceived psychological distance in the relationship, with residents perceiving a greater distance (GIPSDS circle drawings). The mean *distance* for residents was 77.51 mm, whereas the mean *distance* for preceptors was 54.46 mm. This difference was statistically significant ($t = -3.17$, $P < 0.003$) (Table 3).

The discrepancy between residents and preceptors in terms of psychological distance can also be seen when comparing the 2 groups on psychological dimensions known to underlie perceptions of distance in a relationship (GIPSDS rating scale). Differences between residents and preceptors on the *dominance,*

competence and *status* subscales were statistically significant, as described above. In addition, correlations between GIPSDS subscales and *distance* revealed that for residents, *affect* was significantly related to psychological distance ($r = -0.48$, $P < 0.001$). Overall, residents perceived greater psychological distance in the relationship than did preceptors, and this distance was significantly related to both residents' satisfaction (PRRI) with their preceptors ($r = -0.51$, $P < 0.001$) and their perceptions of the preceptors' effectiveness (CTCI) in terms of the preceptors' personal attributes ($r = -0.50$, $P < 0.001$), professional competence ($r = -0.55$, $P < 0.001$), and relationships with learners ($r = -0.60$, $P < 0.001$) (Table 4). Psychological distance for residents and preceptors was not statistically different for different levels of residents or location of continuity experience.

DISCUSSION AND CONCLUSIONS

As expected, a traditional teacher–student status hierarchy was observed for the residents and preceptors who took part in this study. Regardless of residency training level or location of continuity experience, both residents and preceptors

Table 3 GIPSDS psychological distance

Psychological distance	Residents (n = 44) mm	(SD)	Preceptors (n = 44) mm	(SD)
GIPSDS *distance* Mean (SD)	77.5	(40.9)	54.5 $t = -3.2*$ (d.f. = 43)	(21.3)

T-test for distance difference: * $P < 0.003$.

Table 4 Correlations between GIPSDS distance and other subscales

Psychological distance parameter	Residents (n = 44)	Preceptors (n = 44)
GIPSDS *affect* subscale	$r = -0.48*$	$r = -0.22$†
PRRI (*satisfaction*)	$r = -0.51*$	$r = -0.15$†
CTCI personal attributes subscale	$r = -0.50*$	$r = -0.02$†
CTCI professional competence subscale	$r = -0.55*$	$r = 0.07$†
CTCI relationship subscale	$r = -0.60*$	$r = 0.01$†

Pearson correlation: * $P < 0.001$; † not significant.

perceived the resident as having smaller psychological size as compared to the preceptor. This perception was likewise demonstrated by and correlated with *dominance* and *status* scales on the GIPSDS. Although these size differences did not correlate directly with residents' satisfaction with preceptors or the preceptors' personal attributes, professional competence or interpersonal relationships with residents, awareness of these size discrepancies may help preceptors understand the significance of the interpersonal relationship inherent in the preceptor/resident dyad.

Both residents and preceptors also perceived psychological distance in their relationships. The most significant finding of this study was that residents perceived greater psychological distance in the relationships than did preceptors, and this distance was significantly related to both residents' satisfaction with preceptors and their perceptions of the preceptors' effectiveness in terms of the preceptors' personal attributes, professional competence and relationships with learners. This finding reiterates the importance of the teacher–learner relationship in the educational process and its contribution toward establishing optimal learning conditions. These findings are also consistent with those of other studies, in which learners have indicated that relationships with teachers represent an extremely important part of the teaching/learning process, whereas teachers emphasise other aspects.[18] The implication for medical education practice and research is that useful strategies to minimise distance in the relationships between teachers and learners should be sought.

As with all research, there are limitations to the current study. Despite the diversity in respondents, this study contains data drawn from only 1 residency programme. Future studies in this area should include multiple sites. With a larger number of participants, more focused statistical analyses could be performed, including an investigation into how gender, race/ethnicity and other demographic variables affect the relationships between teachers and learners.

Despite the limits of the current study, its findings pertaining to the value of the teacher–learner relationship in terms of psychological size and distance are essential for medical education. Researchers have demonstrated that teacher/learner pairings that are perceived as good matches in that they are rated as being highly effective and satisfactory are likely to foster growth and contribute positively to the learn-

ers' educational experiences. Pairings with the opposite characteristics (e.g. poor matches, low in effectiveness and satisfaction) can stifle growth and result in negative educational experiences.[1] Teachers who are able to capitalise on specific strategies to emphasise their interpersonal relationships with learners (i.e. by reducing the psychological size difference and distance in the relationship) can facilitate the learning process in general and simultaneously increase learners' sense of self and their professional and personal competence. Just as Clifton found that involvement in high quality, one-on-one encounters with teachers enabled undergraduate college students to feel they had more control over their educational experiences and provided unique opportunities for them to experience mastery and educational growth,[23] perhaps we can begin to determine the circumstances that will provide similar types of experience for learners in medical education.

CONTRIBUTORS

LMV conceived and designed the study, administered the study tools, collected and analysed the data, and wrote the first draft of the paper. RCB advised on the concept and design of the study and the statistics of the data analysis, edited the first draft of the paper, revised the content of the second draft and edited additional drafts, and co-responded to editor/reviewer queries.

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ETHICAL APPROVAL

Ethical approval was not required for this study.

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