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Authors

Li, Li
Comulada, W Scott
Lin, Chunqing
et al.

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Report on Provider–Client Interaction From 68 Methadone Maintenance Clinics in China

Li Li[a], **W. Scott Comulada**[a], **Chunqing Lin**[a], **Chiao-Wen Lan**[a], **Xiaobin Cao**[b], and **Zunyou Wu**[b]

[a]Semel Institute for Neuroscience and Human Behavior, University of California at Los Angeles

[b]National Center for AIDS/STD Control and Prevention, Chinese Centers for Disease Control and Prevention

Abstract

Provider–client interaction is an integral of clinical practice and central to the delivery of high-quality medical care. This article examines factors related to the provider–client interaction in the context of methadone maintenance treatment (MMT). Data were collected from 68 MMT clinics in China. In total, 418 service providers participated in the survey. Linear mixed effects regression models were performed to identify factors associated with provider–client interaction. It was observed that negative attitude toward drug users was associated with lower level of provider–client interaction and less time spent with each client. Other factors associated with lower level of interaction included being female, being younger, being a nurse, and fewer years in medical field. Higher provider–client interaction was associated with provider reported job satisfaction. The findings of this study call for a need to address provider negative attitudes that can impact provider–client interaction and the effectiveness of MMT. Future intervention efforts targeting MMT providers should be tailored by gender, provider type, and medical experiences.

Provider–client interaction is an integral of clinical practice and central to the delivery of high-quality medical care (Neumann et al., 2010). Literature on provider–client communication underscores that positive interaction between provider and client is associated with improved treatment outcomes, including reduced emergency department visits, control of chronic disease, and increased client satisfaction (Clack, Allen, Cooper, & Head, 2004; Matthias et al., 2010; Oetzel et al., 2015). Provider–client interaction can enhance adherence to recommended therapy through contributing to the client's understanding of illness, risks, and benefits of treatment (Diette & Rand, 2007). Studies have shown that effective provider–client interaction has the potential to regulate clients' emotions, facilitate comprehension of medical information, and allow for better identification of clients' needs, perceptions, and expectations (Bredart, Bouleuc, & Dolbeault, 2005; Platt & Keating, 2007).

CONTACT: Li Li, lililili@ucla.edu, UCLA Semel Institute, Center for Community Health, 10920 Wilshire Blvd., Suite 350, Los Angeles, CA 90024.

Factors influencing provider–client interaction

The literature has documented several factors that might play an important role in provider–client interaction (Kelly, O'Grady, Brown, Mitchell, & Schwartz, 2010; Roter & Hall, 2006). Roter and Hall found that providers' sociodemographic variables such as age, gender, and type of profession could be related to the provider–client interaction (Roter & Hall, 2006). Additionally, unfavorable organizational culture and lack of institutional support were associated with low job satisfaction (Linzer et al., 2009), leading to poorer provider–client interaction (Kelly et al., 2010). Other provider characteristics reported to be associated with the interaction with clients included duration in the field, perceived risks, and social support (Kelly et al., 2010). Furthermore, previous studies also reported that a busy work schedule, lack of time, inadequate knowledge, and negative attitude toward client could impair interactions between providers and clients (Astedt-Kurki, Paavilainen, Tammentie, & Paunonen-Ilmonen, 2001).

Provider–client interaction in drug treatment settings

Provider–client interaction is also an important issue in drug treatment research. From the existing literature, lack of communication was identified as a common cause of noncompliance (Vermeire, Hearnshaw, Van Royen, & Denekens, 2001). Studies conducted in drug treatment settings found that providers working at methadone maintenance treatment (MMT) clinics with a higher level of negative attitude toward drug users were less likely to interact with clients (Li, Wu, Cao, & Zhang, 2012). Substance abusers commonly confront stigma in their interaction with medical providers, and they are often mistrustful of the medical establishment (Chakrapani, Velayudham, Shunmugam, Newman, & Dubrow, 2014; Etesam, Assarian, Hosseini, & Ghoreishi, 2014). Such biases and negative attitudes could lead to less than optimal treatment for the clients (Kelleher, 2007). Furthermore, Joe and colleagues reported that positive provider–client relationship was associated with decreased drug use among MMT clients, and poor provider–client interaction was associated with poor treatment outcomes and increased cocaine use by MMT clients (Joe, Simpson, Dansereau, & Rowan-Szal, 2014).

Conceptual framework

A conceptual framework of one-to-one, in-person communication that occurs between a health care provider and a client is presented by Feldman-Stewart and colleagues (Feldman-Stewart, Brundage, & Tishelman, 2005). As illustrated in Figure 1, the framework consists of five main components used to represent communication that occurs within the context of a dyadic encounter (provider–client). The first component is the focus of the interaction: each participant's communication goals. The second component consists of the participants themselves, each with five key attributes that determine, in part, how they address their communication goals (i.e., needs, beliefs, values, skills, and emotions). The third component is the communication process. Finally, the fourth component is the environment in which the communication occurs, including both the immediate physical setting and the social, cultural, legal, and other external factors that affect the communication process through their impact on the participants' attributes (Feldman-Stewart et al., 2005).

Feldman-Stewart and colleagues' communication framework guides and informs the current study of provider–client interaction in drug-abuse treatment (Feldman-Stewart et al., 2005). Specifically, the current study focuses on the second component of the communication framework: participants' key attributes. First, need of a provider underlies motivation. Second, beliefs of a provider represent his or her understanding of the world, including the specifics of his or her situation and what the provider considers to be fact. Third, values include principles or standards that are fundamental to the provider's functioning, and they can be combined with beliefs to produce attitudes (Rokeach, 1973), including a provider's negative attitudes toward his or her client. Fourth, skills are the elements that underlie a provider's ability to accomplish particular goals.

Provider–client interaction and MMT program in China

Provider–client interaction has gained increasing attention in China as the relationship between provider and clients has sharply deteriorated over the past decade (Li & Liu, 2008). Violence against medical providers has become a common phenomenon in the country (Lancet, 2010, 2012). Poor provider–client communication was identified to be associated with the deteriorating relationship between provider and clients (Li, Sun, & Wang, 2009). Given that provider–client conflicts in China have reached an unprecedented level, there is an urgent need to enhance provider–client interaction in the country, including in drug treatment settings.

The Chinese government has adopted MMT as a national strategy to address the problem of drug abuse and related public health issues, aiming to curb the spread of HIV among drug users (Pang et al., 2007). Following the success in pilot clinics, the program has been rapidly scaled up in China, with expansion from the initial eight clinics in five pilot provinces in 2004 to 756 clinics across 28 Chinese provinces to serve over 380,000 drug users in 2012 (Sun et al., 2015). Despite the progress that the MMT program has made, MMT providers are facing major challenges, including lack of skills in counseling and education, stigma linked to drug use, and resistance to harm reduction (Deng, Li, Sringernyuang, & Zhang, 2007; Lin et al., 2010). Unlike patients in hospital or medical clinics, MMT clients come to clinics every day for a routine procedure (Lin & Detels, 2011). The brief and procedural nature of the provider–client interaction in MMT clinics becomes a barrier to setting up a sound provider–client relationship. Due to the heavy workload and lack of expertise, many MMT providers do not regularly conduct counseling with their clients (Lin & Detels, 2011). These challenges have resulted in inadequate provider–client communication about their treatment outcome, dosage, and risk management, leading to high client dropout rates (Yin et al., 2010) and an overall decrease in the effectiveness of clinic operations (Li, Wang, et al., 2013).

The current study

The importance of provider–client interaction has been acknowledged by professionals, patients, and researchers for more than a decade (Ha & Longnecker, 2010); however, the data on provider–client interaction in drug treatment settings are still scarce (Hogan, Hershey, & Ritchey, 2008), especially in non-Western countries such as China. The current study attempted to fill this gap in the literature. The purpose of this study was to examine the

factors associated with provider–client interaction in order to address challenges faced in MMT in China and to maximize the treatment effects from the challenges. Specifically, the research aims to evaluate whether provider demographic characteristics (e.g., gender, age) impact provider–client interaction. In addition, this research emphasizes the way career-related characteristics (e.g., years of employment in the medical field, type of provider) limit provider–client interaction in drug treatment settings. Finally, the study aims to identify whether provider beliefs and attitudes (e.g., perceived clinic support, negative attitudes toward drug users) influence provider–client interaction.

Method

Participants

The study used baseline data of a randomized intervention trial that was implemented in five provinces (Guangdong, Hunan, Jiangsu, Shaanxi, and Sichuan) in China. In total, 68 MMT clinics were randomly selected from five provinces. The data were collected from January 2012 to August 2013. In a typical MMT clinic in China, the number of service providers who provided direct services to clients usually ranged from five to seven, including doctors, nurses, and pharmacists. All such service providers were invited to participate in the study. Service providers were required to be at least 18 years old and currently working as professional staff at one of the participating MMT clinics. When recruiting service providers, our research staff followed standardized scripts to introduce the study purpose, procedures, the voluntary participation, and potential risks and benefits in detail, and obtained written informed consent before commencement of data collection. The overall response rate was 100%. In total, 418 service providers were recruited.

Measures

Provider–client interaction was measured in two 12-item scale (α = .89) assessed different ways that providers interacted with their clients, such as providing spontaneous counseling to their clients, answering clients' questions, asking clients about their concerns, finding out the reasons if their clients were missing doses, considering nit ecessary to interact with their clients other than only giving doses, and encouraging their clients when they interact with them. Likert-scale response categories ranged from (1) *not at all* to (5) *very much*. A higher score indicates a better interaction between providers and their clients (possible range = 12 to 60). The scale was developed and pilot tested in our previous study (Li, Wu, et al., 2013). The other indicator for provider–client interaction was based on providers' self-reports of average number of minutes they spent with each client per day.

Negative attitude toward drug users focused on providers' feelings of anger, disappointment, lack of concern, and blame toward drug users, using a five-item scale (α = .74) (National Centre for Education and Training on Addiction, 2006). Providers were asked to what extent they (a) consider adverse life circumstances are likely to be responsible for a person's problematic drug use, (b) feel concerned toward people using drugs, (c) feel sympathetic toward people using drugs, (d) consider people who use drugs deserve the same level of medical care as people who don't use drugs, and (e) consider people who use drugs are entitled to the same level of medical care as people who do not use drugs. Likert-scale

response categories ranged from (1) *not at all* to (5) *very much*. After some items being reverse coded, a higher score indicates a higher level of negative attitude toward drug users.

Perceived clinic support was assessed by a nine-item scale ($\alpha = .76$) that was previously used in a sample of Chinese providers, encompassing measures of personal security, adequate compensation, and continuous education (Li et al., 2007). Likert-scale response categories ranged from (1) *strongly agree* to (5) *strongly disagree*. A higher score indicates a higher level of perceived clinic support (possible range = 9 to 45).

Perceived risk at work was assessed with a five-item scale ($\alpha = .86$) adapted from the work of Bennett and colleagues and was used previously in a sample of Chinese providers (Bennett, Kelaher, & Ross, 1994; Li et al., 2007), including measures of HIV risk, risk of being attacked by clients, a low level of personal safety, risk of TB disease, and risk of hepatitis. Likert-scale response categories ranged from (1) *strongly agree* to (5) *strongly disagree*, and a higher score indicates a higher level of perceived risk at work (possible range = 5 to 25).

Job satisfaction was assessed with a 30-item job satisfaction survey ($\alpha = .94$), which consisted of four subscales including (a) motivation, (b) interaction with colleagues, (c) work–life balance, and (d) self-fulfillment (Bellingham, 2004). Cronbach's alpha values for the subscales were $\alpha = .85$, $\alpha = \alpha .84$, $= .84$, and $\alpha = .84$, respectively. Likert-scale response categories ranged from (1) *strongly agree* to (5) *strongly disagree*. A higher score indicates a higher level of job satisfaction.

Providers were also assessed on demographic and career-related characteristics that included age, gender, type of provider (e.g., doctor, nurse, pharmacist, clinic manager, and counselor), years of school completed, years of employment in the medical field, years of employment at the current hospital/clinic, years of service . First, **at** the current MMT clinic, and whether the provider had received national-level MMT training.

Procedure

The assessment was administered individually in a private office inside the MMT clinic. Providers completed the assessments using computer-assisted self-interview (CASI) method such that the providers directly keyed in their responses to laptop computers. The assessment took an average of 45 minutes to complete. A trained interviewer was available to answer questions during the assessment. The providers received 30 Chinese yuan (USD4.80) as an incentive to complete the assessment. The institutional review board at the University of California, Los Angeles, and the Chinese Center for Disease Control and Prevention approved all study documents and procedures for this study.

Data analysis

Analyses were conducted in SAS software version 9.4 (SAS Institute, Inc., Cary, NC). Linear mixed-effects regression models were fit to two continuous provider–client interaction measures: (a) provider–client interaction scale and (b) the average number of minutes a day that a provider spends with each client. Average number of minutes was positively skewed and a logarithmic transformation was applied to normalize the outcome,

prior to analyses. A base of 2 was used for the logarithmic transformation to maintain a level of interpretability. For example, the logarithm of 4 minutes equals 2 minutes. Linear mixed effects models were fitted through the PROC MIXED procedure. Random effects were included for each clinic to adjust for intraclass correlation (ICC) within clinics, and the Kenward and Roger (1997) adjustment was applied to degrees of freedom to make valid statistical inference. As a first step, separate regression models were fit to each covariate, including demographic characteristics, career-related characteristics, and scales that were expected to correlate with provider and client interaction. Regression coefficients (β) and p values for Wald tests on the β's are reported. We then fitted multivariable models for each provider–client interaction measure that included all the statistically significant covariates from the single-variable models ($p < .10$).

Results

The demographics and background characteristics of service providers in the study are presented in Table 1. Approximately one-third of the sample was men (37%). Two-thirds of the providers were doctors (36%) or nurses (29%). The average age of the providers was 39 years. Near half (48%) of the sample reported receiving national-level MMT training. On average, providers in the sample had spent 15 years in the medical field and 4 years at the current MMT clinic. They reported spending 5 minutes on average per day with each client (minimum = 1 minute, median = 3, maximum = 30). The mean score for provider–client interaction was 50.2 ($SD = 6.7$), the mean score perceived clinic support was 27.6 ($SD = 5.3$), and the mean score for perceived risk was 18.5 ($SD = 3.9$). The overall job satisfaction had a mean score of 110.5 ($SD = 13.9$). Negative attitude toward drug users was 17.3 ($SD = 3.7$).

Pearson correlation coefficients (r) between variables are shown in Table 2. Moderate to strong associations with correlations of .50 or higher were observed between job satisfaction subscales. We have also noted moderate to strong associations of perceived clinic support with interactions with colleagues ($r = .52$) and with self-fulfillment ($r = .61$). Negative associations were observed between age and the number of years in the medical field ($r = -.80$) and between provider–client interaction and negative attitudes ($r = -.57$).

Table 3 presents results from single-variable regression models for provider–client interaction and the average number of minutes spent with clients per day. Higher provider–client interaction levels were associated with male gender (β = 2.74, $p < .01$), being older (β = 0.12, $p < .01$), and having spent a greater number of years in the medical field (β = 0.11, $p < .01$). The association between higher provider–client interaction and interaction with colleagues was close to being significant (β = 0.11, $p = .08$). On average, lower levels of provider–client interaction were associated with negative attitude (β = −1.13, $p < .01$), and being a nurse versus a doctor (β = −3.06, $p < .01$) and versus another type of provider (β = −2.46, $p < .01$). In addition, spending less time with clients was associated with negative attitude (β = −0.044, $p < .01$) and lower levels of provider–client interaction (β = 0.033, $p < .01$). The ICC numbers were similar across the models, ranging from 0.14 to 0.22, suggesting that a fair amount of variation in provider responses between clinics was not accounted for by any of the covariates.

Table 4 presents results from two multivariable regression models for provider–client interaction and the average number of minutes spent with clients per day. Similar to findings from the single-variable models, lower levels of provider–client interaction were associated with negative attitude ($\beta = -1.03$, $p < .01$), motivation ($\beta = 0.37$, $p < .01$), and being a nurse versus a doctor ($\beta = -2.19$, $p < .01$) and versus another type of provider ($\beta = -2.60$, $p < .01$). In the multivariable model for log-average time spent with each client per day, provider–client interaction remained the only significant covariate. Not surprisingly, a longer length of time spent with clients was related to a higher level of provider–client interaction ($\beta = 0.030$, $p < .01$).

Two-way interactions were added to multivariable models between pairs of variables in Table 4. Statistically significant interactions were found for client–provider interaction, but not for the average number of minutes spent with clients per day. The results are illustrated in Figure 2. Significant interactions for client–provider interaction related to both age and years in the medical field. Given the high degree of correlation between age and years in the medical field ($r = .80$ in Table 2), we report three interactions with years in the medical field: interactions of years in the medical field with gender, provider type, and negative attitude. Male gender ($\beta = 2.97$, $p = .05$) and years in the medical field ($\beta = 0.081$, $p = .08$) both showed positive associations with higher levels of provider–client interaction as main effects that were not statistically significant but were counteracted by their interactions, as shown in Figure 2 ($\beta = -0.10$, $p = .03$). Main effects for being a nurse versus a doctor ($\beta = -4.33$, $p < .01$) and versus another provider type ($\beta = -8.81$, $p < .01$) were associated with lower provider–client interaction scores. A greater number of years in the medical field counteracted the effect of being a nurse versus a doctor ($\beta = 0.14$, $p = .02$) and versus another provider type ($\beta = 0.14$, $p = .03$), as shown in Figure 2; years in the medical field was not significant as a main effect ($\beta = 0.0032$, $p = .95$).

Discussion

The communication framework defines provider–client interaction as the interaction that occurs between two people, the provider and the client, to address both participants' goals. Each person's participation and goals for the communication are a function of their key attributes. The current study focused on providers' key attributes that affect provider–client interaction in drug treatment settings. In this study we observed that providers with negative attitudes toward drug users were more likely to be associated with a lower level of provider–client interaction. It can be speculated that providers' negative attitudes could impact their interactions with MMT clients, leading to less than optimal care for their clients in MMT. Providers' negative attitudes such as their presumption that clients with drug addiction are more difficult than other clients may contribute to less provider–client interaction and poorer therapeutic alliance with the client (Kondrat & Early, 2011; Tsang, Fung, & Chung, 2010). Providers are a key factor influencing treatment outcome as well as retention, and this study further highlights the need for more attention to be paid to the attitudes, beliefs, and working practices of service providers in drug treatment settings.

Cultural factors and gender norms may play a role in provider–client interaction in China. This study revealed that higher levels of provider–client interaction were associated with

male gender. The finding from this study is inconsistent with the studies conducted in the United States, where female physicians were found to engage in significantly more communication than their male colleagues (Franks & Bertakis, 2003; Roter, Hall, & Aoki, 2002). This finding across studies could imply that cultural differences in gender norms could influence provider–client interaction when there are variations in cultural norms and expectations between China and the Western countries. In China, women are expected to be submissive and comply with traditional and cultural norms. Additionally, gender concordance between a provider and a client might be important in a patriarchal society such as China (Holroyd, 2005). Since the majority of MMT clients in China were male, it was possible that the lower levels of provider–client interaction among female providers were associated with gender-discordant visits.

The results of the current study noted that provider–client interaction was associated with professional background factors, including years in the medical field and being a nurse. This phenomenon could be explained with several factors, including lack of training, perceived risk of infection, and stigma associated with drug treatment (Najavits, Crits-Christoph, & Dierberger, 2000). Experienced providers are more accepting of individuals with various medical issues and additional clinical experiences allow them to deliver standardized care, regardless of the client's background. This is consistent with the finding that being older is related to higher levels of provider–client interaction, which can be explained by older providers having greater provider–client trust, being considered to be more experienced, and being more aware of the clients' needs (Earl et al., 2013). Experience working with drug users might help providers to develop knowledge and skills that make it easier to treat such clients more effectively. In addition to years spent in the medical field, the results show that being a nurse is associated with less provider–client interaction. The possible explanation for this phenomenon may be related to the special role of nurse in MMT clinics as compared to other medical settings. Even though doctors are required to interact with the clients at MMT clinics, nurses working at the MMT clinics are mainly responsible for dispensing and administering the methadone liquid, based on physicians' orders, and documenting per local and federal regulations. This could contribute to their lower level of interaction with the clients.

Implications for research

The theoretical approach can guide thinking about empirical study results involving provider–client interaction. Theoretically guided thinking about the clinical use of provider–client interaction is still in its infancy. Details regarding the framework could be explored in future research, such as the complexities of the interactions between the five key attributes and how they influence each other during provider–client interaction, as detailed in the Feldman-Stewart et al. communication framework (Feldman-Stewart et al., 2005). Additionally, provider–client interaction should be considered at both individual and institutional levels. Even though there have been studies investigating the influence of gender on communication in the medical visits, less is known about the factors related to communication style and relationship of female providers with their clients in non-Western countries such as China. Future research on the development of a theory that combines the elements of provider–client interaction in drug treatment settings with the underlying

psychological construct and gender component is needed. Even though the literature has documented the benefits of effective provider–client interaction, there needs to be greater attention to the long-term nature of the provider–client interaction and longitudinal data sets.

Implications for practice

Strategies for developing multifaceted interventions to improve provider–client interaction would include improving the immediate physical environment and reducing the provider's negative attitudes in drug treatment settings. For example, an environment that ensures the safety of the provider, such as protective methods to reduce perceived risk of infection, can be considered part of the enabling factors for effective provider–client interaction to occur. Evaluation of those interventions should also be explored. Furthermore, communication training programs for health professionals, including practicing physicians and nurses, should include an emphasis on reducing bias or stigma against clients who used drugs. Communication skills training has been found to improve provider–client interaction (Harms et al., 2004). Previous study found that effective provider–client interaction could address the disparities among HIV-infected individuals using illicit drugs by engaging them in addiction treatment (Korthuis et al., 2011). The findings of the study imply that strategies to improve provider–client interaction have the potential to increase utilization of substance use treatment among HIV-infected persons, thus improving HIV treatment adherence and outcomes.

Limitations

This study's findings should be interpreted in light of potential limitations. First, given the cross-sectional design of the study, we were unable to draw any conclusion on causality of the observed association between provider–client interaction and providers' demographic factors and professional backgrounds. Second, the study collected self-report data, which were susceptible to social desirability bias.

Conclusions

It is important to improve provider–client interaction to ensure successful implementation of the MMT programs and other drug treatment programs. Our findings provided insights for factors influencing provider–client interaction and the need for intervention addressing negative attitudes among providers tailored by gender, provider type, and clinical experiences. Improving provider–client interaction may lead to more effective care strategies for clients who often have difficulty fighting addiction and retaining in harm-reduction programs.

Acknowledgments

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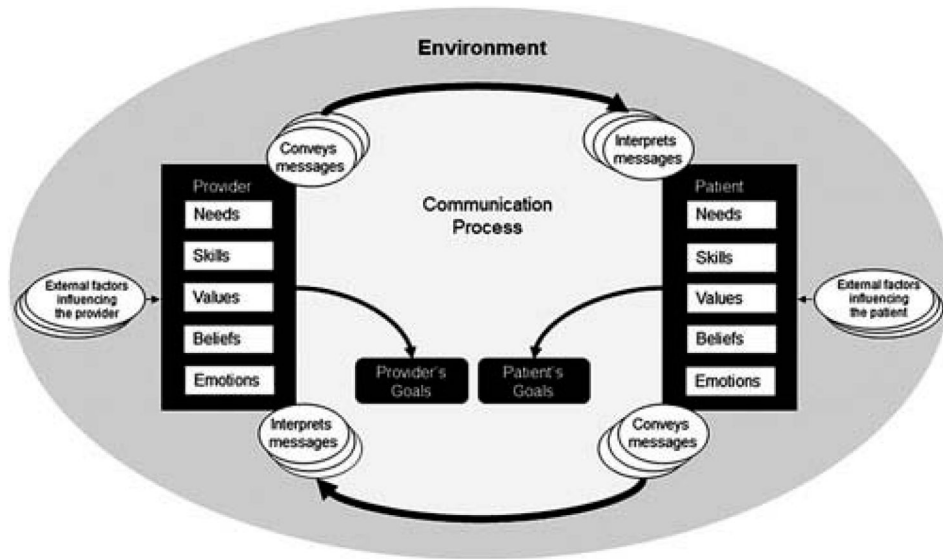
Figure 1.
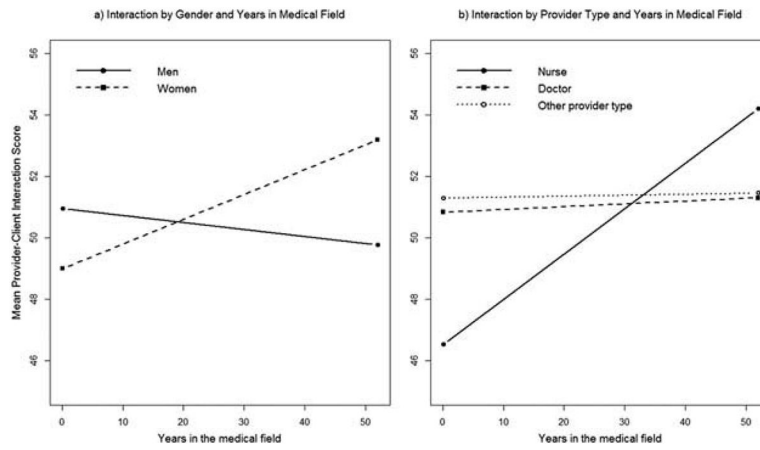Conceptual framework for provider–client communication.

Figure 2.
Interaction plots showing different mean levels of provider–client interaction for years in the medical field by (a) gender and (b) provider type. Means are estimated by mixed-effects regression models.

Table 1

Demographic and background characteristics of providers and scales related to interactions with clients (N = 418).

	n	%
Male gender	153	36.6%
Type of provider		
Doctor	151	36.1%
Nurse	120	28.7%
Clinic manager	48	11.5%
Pharmacist	48	11.5%
Counselor	17	4.1%
Other type	34	8.1%
Received national-level MMT training	201	48.1%
	Mean	SD
Age (years)	39.3	10.9
Years of school completed	14.2	2.7
Years in medical field	15.2	11.6
Years at current clinic	10.1	9.0
Years at this MMT clinic	3.8	2.9
Average daily minutes per client	4.9	4.7
Scales		
Provider–client interaction	50.2	6.7
Support	27.6	5.3
Perceived risk	18.5	3.9
Job satisfaction		
Motivation	23.3	3.3
Interaction with colleagues	41.2	5.2
Work–life balance	11.1	2.1
Self-fulfillment	31.1	5.0
Negative attitude	11.9	3.3

Table 2

Correlation coefficients of variables in regression models.

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1 Male gender	—												
2 Age	0.18**	—											
3 Doctor vs. other	0.33**	0.25**	—										
4 Nurse vs. other	−0.45**	−0.21**	−0.48**	—									
5 Years in medical field	0.12*	0.80**	0.14**	−0.04	—								
6 Support	0.03	−0.01	−0.04	−0.03	−0.03	—							
7 Perceived risk	−0.07	0.02	0.01	0.14**	0.10*	0.28**	—						
8 Motivation	−0.05	0.05	−0.11*	0.07	0.06	0.37**	−0.11*	—					
9 Interaction with colleagues	−0.0003	−0.06	−0.09	0.03	−0.06	0.52**	−0.08	−0.67**	—				
10 Work-life balance	−0.02	−0.11*	−0.08	0.07	−0.12*	0.37**	−0.27**	0.59**	0.50**	—			
11 Self-fulfillment	−0.03	−0.11*	−0.10*	0.06	−0.05	0.61**	−0.21**	0.59**	0.81**	0.48**	—		
12 Negative attitude	−0.11*	−0.11*	−0.04	0.04	−0.13**	−0.004	−0.09	−0.14**	−0.11*	−0.03	−0.10*	—	
13 Provider-client (P-C) interaction scale	0.16**	0.18**	0.10*	−0.15**	0.18**	0.02	0.07	0.18**	0.10	0.02	0.05	−0.57**	—
14 Log average minutes	0.01	0.08	0.04	−0.02	0.11*	0.05	0.04	0.05	0.002	−0.05	0.02	−0.16**	0.21**

**
$p < .01$;

*
$p < .05$

Table 3

Results of single-variable mixed-effects linear regression models for provider–client (P-C) interaction scale and the log-transformed self-reported average number of minutes spent with each client per day.

Covariate	P-C interaction scale				Ave. minutes per client			
	β	SE	ICC§		β	SE	ICC§	
Male gender	2.74	0.64	0.21	**	0.0050	0.11	0.22	
Age	0.12	0.028	0.20	**	0.0061	0.0049	0.22	
Provider type			0.21				0.22	
Doctor	0.59	0.73			0.044	0.13		
Nurse	−2.46	0.78		**	−0.0022	0.14		
Years in medical field	0.11	0.027	0.19	**	0.0073	0.0047	0.22	
Support	0.027	0.062	0.18		0.011	0.011	0.22	
Perceived risk	0.13	0.086	0.18		0.012	0.015	0.22	
Motivation	0.35	0.10	0.18	**	0.016	0.017	0.22	
Interaction with colleagues	0.11	0.063	0.18		−0.0025	0.011	0.22	*
Work–life balance	0.051	0.15	0.18		−0.018	0.026	0.22	
Self-fulfillment	0.045	0.066	0.18		0.0043	0.011	0.22	
Negative attitude	−1.13	0.082	0.14	**	−0.044	0.015	0.20	**
P-C interaction	—	—			0.033	0.0086	0.21	**

§Intraclass correlation coefficient.

*
p < .10;

**
p < .01.

Table 4

Results of multivariable mixed-effects linear regression models for provider–client (P-C) interaction scale and the log-transformed self-reported average number of minutes spent with each client per day.

Covariate	P-C interaction scale			Average minutes per client		
	β	SE		β	SE	
Male gender	0.16	0.63				
Age	0.036	0.044				
Provider type						
Doctor	-0.42	0.63				
Nurse	-2.61	0.73	**			
Years in medical field	0.033	0.040				
Motivation	0.37	0.11	**			
Interaction-colleagues	-0.12	0.069				
Negative attitude	-1.03	0.085	**	-0.011	0.020	**
P-C interaction	—	—		0.030	0.010	**
Intraclass correlation coefficient (ICC)	0.23			0.20		

**
$p < .01$.