

RICE UNIVERSITY

**Trait and Experiential Antecedents of Indian Medical Students' Prosocial Knowledge and
their Contribution to Students' Clinical Performance**

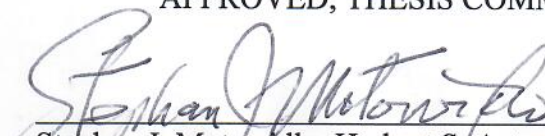
by

Kamalika Ghosh

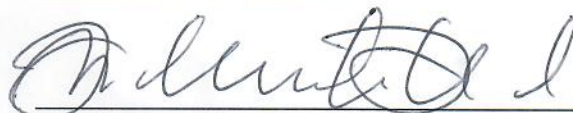
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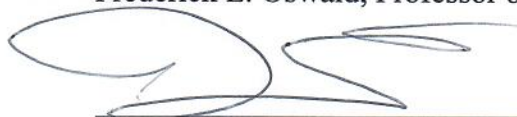
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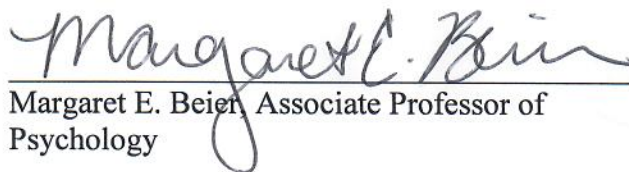
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ABSTRACT

Trait and Experiential Antecedents of Indian Medical Students' Prosocial Knowledge and their Contribution to Students' Clinical Performance

by

Kamalika Ghosh

Drawing upon Motowidlo and Beier's (2010) theoretical model, the present cross-sectional field study shows the ways in which Indian medical students' (N = 309) job specific experiential antecedent or students' perception about supervisors' prosociality contributes to their prosocial knowledge and clinical performance in a high power distance (PD) culture. It also replicates the finding (Ghosh, Motowidlo, & Nath, 2017) that prosocial knowledge mediates the effect of agreeableness on performance even in a high-stakes profession like medicine. Importantly, this study underscores the possibility that the display of supervisory prosocial conduct can facilitate students' beliefs about effectiveness of prosocial patient care irrespective of their stand on agreeableness personality trait. Contrary to the expectation, students' attribution of referent power failed to moderate the relationship between students' supervisors' prosociality and clinical performance. Practical and theoretical contributions of this study are discussed with recommendations of potential research avenues.

Chapter 1

Introduction

Existing research shows that prosocial knowledge or belief about effectiveness of prosocial behavior (Motowidlo & Beier, 2010; Motowidlo, Hooper, & Jackson, 2006a) determines the overall effectiveness of medical students' clinical performance (Ghosh, Motowidlo, & Nath, 2015; Ghosh et al., 2017; Kell, Motowidlo, Martin, Stotts, & Moreno, 2014) and agreeableness personality trait is an antecedent of this prosocial knowledge (Ghosh et al., 2017; Kell, Motowidlo, Martin, Stotts, & Moreno, 2014) in both high and low power distance (PD) cultures. Although prosocial patient care results in patients' positive health-related outcomes [e.g., better control of blood glucose and lipid levels (Hojat, Louis, Markham, Wender, Robinwitz, & Gonnella, 2011)] and can safeguard medical institutions from expensive lawsuits due to unprofessional conduct on part of physicians (e.g., Swanson, 2016), no empirical study has examined how people learn the value of prosocial behavior. In their theoretical model, Motowidlo and Beier (2010) state a possibility that people learn to value prosocial actions from their prior experiences. However, the model does not explain what kind of experiences engenders prosocial beliefs.

Medical students learn the essentials of delivering healthcare service from their observation of supervisors' interpersonal interactions with patients during the course of their medical training (Ghosh et al., 2017), which is likely to shape their beliefs about effectiveness of prosocial care. It is important to mention here that the medical student-supervisor dynamics is contingent upon the culture where the healthcare service is being delivered because of different culture-specific expectations from healthcare providers (Hojat, 2007). Since unequal distribution

of power is accepted in high PD cultures (“Clearly Cultural,” 2017), the status difference between supervisor and student warrants investigation of social power (French & Raven, 1959).

In developing the arguments, the present study draws upon three relevant streams of literature – knowledge acquisition, social learning theory, and social power and attempts to examine their interplay in a medical setting of a high PD culture. To this end, this research endeavors to test two basic premises: (1) whether medical students who observe their supervisors to frequently engage in prosocial patient care are more likely to appreciate the positive outcomes of prosocial behavior and will therefore possess more prosocial knowledge and will perform more effectively in the domains of clinical performance and (2) whether medical students’ attribution of supervisory referent power due to their high PD cultural norms will moderate the relationship between students’ clinical performance and students’ perception about their supervisors’ prosociality.

1.1 Prosocial Medical Professionalism

Prosocial Patient Care in Medicine

Medical authorities [National Board of Medical Examiners (NBME), Association of American Medical Colleges (AAMC), 2002] at large value prosocial patient care which they define as Medical Professionalism. Three behavioral categories of the Medical Professionalism literature (AAMC; NBME, 2002) explicitly endorse prosocial behaviors on part of physicians. They are *care and compassion*: Compassionately accepting patients as human beings with their unique lifestyle and beliefs and addressing patients’ idiosyncratic concerns; *respect*: respectful towards patients’ rights, dignity, and personal space and being tolerant of patients’ variety of behavior; and *responsibility and accountability*: meeting deadlines and being punctual during patient visits.

All of these aforementioned behaviors comprise of elements of cooperation, benevolence, and tact (Ghosh et al., 2015) which determine physicians' quality of interpersonal interactions directed towards their patients during medical encounters (Kell, 2011; Ong, de Hacs, Hoos, & Lammes, 1995; Stewart, 1995). This thus constitutes the prosocial aspects of clinical performance which are completely distinct from the technical aspects of clinical performance that incorporates behaviors such as tending to ill patients and carrying out medical procedures to restore patients' health. These two distinct performance elements independently determine medical students' effectiveness of developing a medical product using their technical competencies and delivering the product to patients using their prosocial service (Ghosh et al., 2015).

Effectiveness of physicians' prosocial behaviors

Prosocial behaviors encompass a wide variety of citizenship behaviors, such as volunteering, cooperating, and helping (Brief & Motowidlo, 1986). Although existing literature did not examine physicians' 'prosocial' behaviors, there exist a voluminous medical literature that examined physicians' behaviors that bear some resemblance with prosocial behavior and their positive outcomes. These behaviors entail whether physicians are (1) delivering patient-centered care or are interacting with patients as human beings and not clinical cases (Henbest & Stewart, 1989), (2) accepting and respecting patients' independent perspective (Lovet, Cox, & Abou-Saleh, 1990), (3) making patients comfortable with warm conduct (Fisher, 1971; Koos, 1955), and (4) motivating patients to open and maintain a dialog with their healthcare providers (Stewart, 1984). In summary, these behaviors incorporate the core attributes of prosocial behaviors delivered through patient-physician interactions.

Analytical studies have shown that when physicians with a higher degree of empathy provide medications and interventions compatible with their patients' lifestyle, patients are more likely to comply with their recommendations (Weinrieb, Van Horn, McLellan, Volpicelli, Calarco, & Lucey, 2001). By the same token, effective physician-patient communication has been shown to reduce patients' emotional distress (Roter & Hall, 1991), lower patients' level of anxiety (Thompson, Nanni, & Schwankovsky, 1990), and reduce patients' post-operative pain from intra-abdominal surgery (Egbert, Battit, Welch, & Bartlett, 1964).

The above mentioned positive outcomes are not solely restricted to patients' physical improvements and affective satisfaction. In the United States, one out of five physicians faces a legal malpractice suit every year, whereas this ratio is higher for obstetricians, neurosurgeons, and orthopedists [i.e., 1 lawsuit for every 2.5 practitioners (Anderson, 1997)] and average payment per paid claim is \$302, 035 [National Practitioner Databank (as cited in Statehealthfacts.org, 2009)]. Therefore, to avoid practitioners' mental trauma associated with expensive malpractice suits (File, 2001) physicians are often advised to be courteous, develop effective communication skills, and maintain a respectful relationship with patients (Brunken, 2012; Kreimer, 2013; Swanson, 2016).

1.2 Knowledge Antecedent of Physicians' Prosocial Behaviors

Prosocial knowledge or prosocial implicit trait policy (ITP)

Empirical studies have shown that prosocial knowledge or knowledge about utility of prosocial behavior (Kell et al., 2014) predicts prosocial aspects of performance (Martin-Raugh, Kell, Motowidlo, 2016; Motowidlo, Ghosh, Mendoza, Buchanon, & Lerma, 2016; Motowidlo, Martin, & Crook, 2013). Motowidlo and colleagues (Motowidlo & Beier, 2010; Motowidlo,

Hooper, & Jackson, 2006a) define prosocial knowledge in terms of implicit trait policy (ITP). According to the authors, people who are high on prosocial knowledge will have implicit beliefs about the positive outcomes of prosocial behaviors in various job situations. Supporting this proposition, Martin-Raugh et al., (2016; p. 42) add that people ‘who believe prosocial behavior is “effective” are more likely to behave prosocially than people who do not believe prosocial behavior results in positive outcomes.’ Extending this mechanism into medical context, researchers have shown that physicians, who believe that prosocial actions are necessary for effective patient care, possess knowledge about effectiveness of prosocial behavior or prosocial knowledge and behave effectively in the domains of clinical performance (Ghosh et al., 2015; Ghosh et al., 2017; Kell et al., 2014).

Physicians’ prosocial knowledge comprises of facts regarding ethical treatment of patients and colleagues, humane physician-patient interaction, effective communication skills, and display of respect and empathy in medical practice (Swick, 2000). Therefore, physicians with high prosocial knowledge are more likely to engage in the aforementioned behaviors than physicians with low prosocial knowledge. Kell et al. (2014) showed that prosocial knowledge explains 3% ($p < .01$) incremental variance in the clinical skill for American medical students, who belong to a moderate PD culture (Power Distance Index or PDI: 40) (“Clearly Cultural,” 2017), beyond the variance explained by their technical knowledge. Replicating this finding in a high PD culture (PDI: 77) (“Clearly Cultural,” 2017), Ghosh et al. (2015) documented that Indian medical students’ prosocial knowledge explains 2% ($p < .05$) incremental variance in their clinical performance, independent of their technical knowledge. From these empirical findings, it is evident that physicians’ prosocial knowledge which is required to act effectively in the prosocial aspects of clinical performance is different than their technical knowledge which is

required to act effectively in the technical aspects of clinical performance (Kell et al., 2014). Yet, prosocial knowledge determines the overall effectiveness of clinical performance (Ghosh et al., 2015; Ghosh et al., 2017).

Prosocial procedural knowledge measured by situational judgment tests (SJTs)

Prosocial knowledge is the nontechnical kind of job knowledge (Ghosh et al., 2015) that explains how to behave in situations and thus it falls under procedural knowledge (Chan & Schmitt, 2005; Motowidlo, Hooper, & Jackson, 2006a, b). Different forms of SJTs have measured medical students' and physicians' nontechnical procedural knowledge saturated with content very similar to prosocial knowledge, which has successfully predicted their performance in different clinical domains.

Lievens and Patterson (2011) measured British physicians' nontechnical knowledge and found it to be positively correlated with a composite of supervisory ratings based on dimensions of clinical effectiveness. The dimensions of physicians' clinical effectiveness consist of empathy, communication, and professional integrity. In another study with Belgian medical students, researcher (Lievens & Sackett, 2012) found that students' procedural knowledge about interpersonal behavior predicted their internship performance (7 years after admission) and job performance (9 years after admission). Students' procedural knowledge comprises of display of consideration, interest, and attention towards patients, conveying bad news, responding to patients after refusal of prescribed medication by patients, and adequate explanation of technical terminologies at the time of patients' admission.

In confluence with this stream of research measuring procedural job knowledge, Kell et al. (2014) measured American medical students' prosocial knowledge using a 40-item single-

response SJT, titled “Opinions about Physicians’ Interactions with Patients” or OPIP. Kell, Martin, and Motowidlo (2011) developed this OPIP using the Critical Incident Technique (Flanagan, 1954) and validated this OPIP on American medical students who belong to a moderate PD culture (PDI = 40) (“Clearly Cultural,” 2017) where patients expect equal status behavior from their physicians. The same OPIP successfully measured Indian medical students’ prosocial knowledge (Ghosh et al., 2015; Ghosh, 2016) in a high PD culture (PDI = 77) (“Clearly Cultural,” 2017) where patients prefer paternalistic physicians and physicians are more likely to be task oriented than people oriented (Bochner & Hesketh, 1994). However, due to time constraints associated with survey administration time, a shorter 10-item version of OPIP is created to measure Indian medical students’ prosocial knowledge for the present study. The pertinent details regarding the development and validation process of the 10-item Mini-OPIP will be discussed in the method section.

1.3 Experiential Antecedents of Prosocial Knowledge

Knowledge and its experiential antecedents

Motowidlo and Beier (2010) develop the groundwork of their model based on the knowledge acquisition literature (e.g., Beier & Ackerman, 2005; Hambrick, 2003; Van Overschelde & Healy, 2001). This model (Motowidlo & Beier, 2010) likened general domain knowledge as general aspects of information through which people learn about costs and benefits of various trait expressions. For instance, when agreeable behavior contributes to better job performance than disagreeable behavior, people with this agreeableness ITP are said to have more general domain knowledge about the benefits of agreeableness than people with disagreeableness ITP (Lievens & Motowidlo, 2015). Motowidlo and Beier (2010) likened specific job knowledge to

specific domain of information pertaining to a particular job or a class of similar jobs that people can learn from their experiences in a real job.

People acquire general domain knowledge from their life experiences and these experiences can be accumulated even before exposure to any real job. Although their theory does not explain exactly what kind of experiences lead to the development of ITPs, the authors (Motowidlo & Beier, 2010) offer a possibility in socialization processes through which people can acquire ITPs. For example, parents' behavior towards neighbors, extending help to others when they are in need of help, and looking after others are some of the very common social experiences that can teach people the utility of prosocial behavior. Conversely, social experiences, such as displaying selfish self-interest, fulfilling one's own desire at the cost of others can promote the beliefs about utility of antisocial behavior (Motowidlo & Beier, 2010).

In keeping with the idea of general domain and specific job knowledge (Motowidlo & Beier, 2010), it can be anticipated that medical students enter the medical program with a certain level of prosocial general domain knowledge that they learn from their general life experiences (e.g., parental display of prosociality, schooling). Nonetheless, medical students accumulate their job-specific prosocial knowledge or learn the utility of the prosocial interpersonal interaction with patients (Kell, 2011) largely from their supervisors from whom they receive their medical training. Thus, the present study aims to measure, with the 10-item single-response SJT, medical students' composite prosocial knowledge which constitutes general domain prosocial knowledge with which they enter medical college and specific job knowledge which they learn during their medical training.

Experiences with prosocial supervisors

As part of their practical training, every cohort of medical students is assigned into groups under different supervisors for every cohort-specific subject. For example, every 1st MBBS student works under three specific supervisors in the areas of Anatomy, Physiology, and Biochemistry for their practical training. Each group generally consists of 10 - 12 students and number of groups for a specific subject depends on the student strength and the availability of supervisors in that specific field. In addition to the non-clinical tasks (e.g., slide review, bone inspection), students assist their supervisors in tending to patients' conditions. Furthermore, supervisors put students in charge of the treatment process which supervisors observe and provide both technical and nontechnical feedback when required.

Nonetheless, a major part of the nontechnical aspect of training process depends on students' perceptions of their supervisors' different trait expressions while delivering healthcare service to patients. This process gains support in principles of ITP (Motowidlo & Beier, 2010), according to which prosocial people can behave less prosocially or antisocially if their prior experiences teach them the utility of antisocial behavior. However, the extent of the trait alteration will depend on the person's own standing on that specific trait which will ultimately increase or decrease their level of prosocial knowledge by altering their beliefs about effectiveness of prosocial trait expressions.

This experiential learning process during medical training can be better understood by Bandura's (1977, 1986) social learning theory. The social learning theory explains that people learn by attending and embracing the attitudes, values and behaviors of their *attractive* and *credible* role models, or in other words through modelling. This theory further posits that

virtually anything can be learned by observing others' behavior and its consequences (Bandura, 1986). As these supervisors are subject matter experts (SMEs) in medical field, students generally carry a strong feeling of reverence, admiration, and need of approval, possibly as a result of the supervisors' power. Therefore, this modelling process holds strong resemblance with the anticipated process of prosocial knowledge accumulation as medical students learn the utility of prosocial patient care from their supervisors' engagement in prosocial conduct while assisting and observing them deliver medical service to patients.

In this present investigation, medical students will rate the perceived frequency of their supervisors' prosocial behaviors on the basis of their experiences during medical training, especially during practical training. Subordinate perception, although subjective in nature, is an important predictor of subordinates' behavior and job satisfaction (Podsakoff & Schriesheim, 1985). Therefore, students' perception of their supervisors' frequency of prosocial encounters will serve as a proxy variable for students' job specific prosocial experience during the course of their medical training.

1.4. Supervisors' Referent Power in a High Power Distance (PD) Culture

Medical students' attribution of supervisors' referent power

French and Raven's (1959) five distinct bases of social power is one of the most widely used framework to examine the effects of perceived supervisor power on subordinate performance (e.g., Sheridan & Vredenburgh, 1978). According to the authors (French & Raven, 1959), power is the ability or potential of an agent to alter a target's behavior, intentions, attitudes, beliefs, emotions, or values. This power taxonomy in the relationship between supervisor and medical student is especially relevant here because the medical training is taking

place in a high PD culture that endorses power difference among members of a society (“Clearly Cultural,” 2017).

Among the other bases of social powers, referent power is based upon perceived attractiveness of the powerholder and pertains to the desire of identification with the power holder (French & Raven, 1959). This framework thus mirrors the dynamics between medical students and their supervisors. Extending French and Raven’s (1959) power dynamics to academic context, McCroskey and Richmond (1982) explain that referent power is based on the desire of the student, less powerful member in the dynamics, to identify with and please the teacher, the more powerful member in the dynamics. The higher the need of identification on the students’ part, the higher the teacher’s referent power. Since this study builds upon Indian medical students learning about prosocial beliefs from their expert supervisors, influence of supervisory referent power on students will be examined.

Although the present study investigates referent power in a high PD context, it does not imply that this relationship is restricted within PD cultures. Referent power in supervisor-subordinate relationships may also be a possibility in low PD cultures. Future research needs to investigate the cultural difference, if any, in the direction and magnitude of this relationship.

Because of the likeness in the attributes, referent power is often considered to be synonymous with charismatic leadership by researchers (e.g., Davis & Newstrom, 1989; Gibson, Ivancevich, & Donnelly, Jr., 1979; Griffin, 1990; Yukl, 1989). Common clinical behaviors of Indian physicians coincide with some major aspects of charismatic leadership behaviors where “followers feel trust and respect toward the leader and they are motivated to do more than they

are expected to do” (Yukl, 1989, p. 272) which ultimately bolsters the assumption about referent power in supervisor-student dynamics in medical setting.

Researchers (Calder, 1977; Raven, 1990) also argue that power is mostly attributions of people to explain events. Since it is not an objectively verified phenomenon, examining subordinates’ attribution can provide a clearer picture of the power process. In this vein, this study examines students’ attribution of supervisors’ referent power to understand the power dynamics between supervisor and student in a high PD culture. Note that although French and Raven’s (1959) theory of power applies to dyadic relationships, this study examines referent power of multiple supervisors under whom a student receives medical training to examine students’ experience of overall referent power in medical training.

This study does not imply that referent power is the only base of power that exists within medical student-supervisor dynamics. For example, supervisors may exert expert power on their students as a result of their expertise in medical field. It is important to state that the main theme of this study centers around the development of prosocial knowledge. Therefore, it is highly likely that supervisory referent power will create more changes in medical students’ nontechnical prosocial beliefs than expert power, which may create more changes in students’ technical aspects of beliefs.

The purview of this study does not require the authors to investigate medical technical knowledge. Therefore, the present study investigates whether students, who have positive feelings, as a result of supervisors’ gesture of respect, acceptance, and appreciation, attribute them to supervisors’ referent power. Subsequently, it examines whether prosocial supervisors’ students will behave more prosocially in the domains of clinical performance because they will

try to fulfill their desire to be identified with their supervisors' high referent power than students who have low attribution about their supervisors' referent power.

1.5 Trait Antecedent of Prosociality, Referent Power, and Clinical Performance

Trait antecedent of prosocial knowledge

There exists voluminous research (e.g., Ackerman, 1996; McCrae & Costa, 1996; Motowidlo & Beier, 2010) that explains why people's basic personality traits predict their behavior. However, the effects of personality on knowledge represented by ITP are based on the concept of *dispositional fit* (Motowidlo, 2003). The notion of *dispositional fit* explains that people's judgment about effective behavior reflects on their own personality traits which make them believe that the expressions of their own traits are more effective. Therefore, if a work situation warrants expression of a certain trait and the person possesses that particular trait, the person will have more knowledge about how to behave effectively in that situation and will display effective action (Motowidlo & Beier, 2010).

Empirical studies have consistently shown positive association between prosocial knowledge and agreeableness. In a sample of volunteers, Motowidlo et al. (2013) found that agreeableness is positively associated (.28, $p < .05$) with knowledge about effective and ineffective behavior. Empathy, which is a core component of prosocial knowledge (Motowidlo, Martin, & Crook, 2016), is referred as the central attribute of agreeable individuals (Graziano & Eisenberg, 1997; Graziano, Jensen-Campbell, & Hair, 1996). In their meta-analysis, Borman, Penner, Allen, and Motowidlo (2001) reported a mean correlation of .13 between agreeableness and contextual performance which constitutes the nontechnical aspects of performance in job performance literature.

Additionally, agreeableness determines quality of interpersonal interactions (Costa & McCrae, 1992) which is the backbone of prosocial behavior (Kell et al., 2014). In a sample of American medical students, Kell et al. (2014) showed that students' agreeableness is positively related (.31, $p < .01$) with their prosocial knowledge scores. Despite cultural differences, agreeableness positively correlated (.24, $p < .01$) with Indian medical students' prosocial knowledge (Ghosh et al., 2015). Present study seeks to replicate the positive association between Indian medical students' agreeableness and prosocial knowledge.

Personality traits and implicit trait policies: Role of experiences

Although ITPs are shaped in part by personality traits (Motowidlo & Beier, 2010; Motowidlo et al., 2006a, 2006b), people's experience and learning play a part in the formation of ITPs (Motowidlo et al., 2006a, 2006b). This interaction between trait and experience brings the notion of characteristic adaptations to the forefront. McCrae and Costa (1996) define characteristic adaptations as characteristics such as skills, habits, preferences, and attitudes that people learn from their experiences when their basic tendencies (e.g., personality traits) interact with environment.

The mechanism of ITP (Motowidlo & Beier, 2010) further posits that highly agreeable people are expected to demonstrate an implicit policy that weighs agreeableness more heavily when judging effectiveness of others' actions (Lievens & Motowidlo, 2015). Therefore, it is highly likely that medical students who are high on agreeableness will rate their supervisors high on prosocial behavior. Furthermore, students will learn the utility of prosocial behavior from the explicit display of prosociality from their supervisors. Present study aims to investigate these possibilities.

Brief and Motowidlo (1986) defined prosocial behavior as helping behavior and agreeableness is often discussed as the strongest predictor of prosocial behavior: volunteerism, to be more specific (Graziano, Habashi, Sheese, & Tobin, 2007; Penner, Dovidio, Piliavin, & Schroeder, 2005; Snyder & Dwyer, 2013). However, in agreement with the mechanism of trait alteration, it can be said that prosocial medical students can act antisocially if their past experiences have taught them that antisocial actions are effective in medical encounters. Thus, it gives rise to the possibility that individuals' knowledge can mediate the relationship between their personality traits and performance. In their empirical study, Martin-Raugh et al. (2016) reported that undergraduate students' prosocial knowledge mediates the relationship between their agreeableness and prosocial performance in role play simulations. Ghosh (2016) found the same relationship in a sample of Indian medical students and this study purports to replicate this relationship in the present sample.

Supervisors' prosociality and referent power and students' performance

Although the previous discussion draws upon the psychological processes about personality traits, ITPs, and prosocial behavior, medical students' job-specific prosocial experiences cannot be completely understood without students' attribution of their supervisors' referent power. The possible ways through which referent power can influence medical students' prosocial experience and prosocial aspects of performance are: (i) Supervisors' quality of interpersonal interaction reflected by value, acceptance, and importance or students' attribution of supervisors' referent power, which incorporates the central attributes of medical professionalism (AAMC, NBME, 2002), will add up to the students' perception about their supervisors' prosocial behavior in medical practice and (ii) Experience of supervisors' lack of

value, acceptance, and importance will make students believe that their prosocial patient care is not effective and that is why their supervisors are displaying negative behavior towards them.

Thus, it can be inferred that students' perception of supervisors' acceptance, respect, and value displayed towards them during medical training are expected to motivate students to follow the footsteps of their prosocial supervisors (Hinkin & Schriesheim, 1989) and perform prosocially in the different domains of clinical performance. Thus, the present study posits that agreeable medical students, who perceive their supervisors as highly prosocial, will perform effectively in different domains of clinical performance and this relationship between supervisors' prosociality and prosocial aspects of clinical performance will be moderated by supervisory referent power.

1.6 Hypotheses

Relationships between medical students' agreeableness, prosocial supervisory experiences and knowledge give rise to the following hypotheses.

H1: Students' agreeableness is positively related with students' perception about supervisors' prosociality.

H2: Students' agreeableness is positively related with students' prosocial knowledge.

H3: Students' perception about their supervisors' prosociality is positively related with their prosocial knowledge.

H4: Students' perception about their supervisors' prosociality mediates the relationship between students' agreeableness and prosocial knowledge.

H5: Students' perception of supervisors' prosociality is positively related with their clinical performance.

Students' supervisory experiences associated with prosociality and power, agreeableness trait expression, and prosocial aspects of clinical performance give rise to the final set of hypotheses.

H6: Students' prosocial knowledge is positively correlated with students' clinical performance.

H7: Students' prosocial knowledge mediates the relationship between students' agreeableness and clinical performance.

H8: Students' prosocial knowledge mediates the relationships between students' perception about their supervisors' prosociality and clinical performance.

H9: Agreeable medical students with high prosocial supervisors will perform effectively in the domains of clinical performance if they report higher attribution of supervisory referent power than students who have lower attribution of supervisory referent power.

H10: Medical students' attribution of supervisory referent power moderates the relationship between students' clinical performance and their perception about their supervisors' prosociality in such a way that students' perception have its strongest, positive correlation with their clinical performance when their attribution of supervisors' referent power is high.

The expected relationships between variables are illustrated in Figure 1.

Insert Figure 1 About Here

Chapter 2

Method

2.1 Sample and Procedure

The sample for the present study consists of 188 male and 120 female medical students ($N = 309$) from a government medical college in India. One student did not report their gender. This medical college offers admission to students through an all-India ranking system, and thus the present student sample from that particular medical college represents a national sample.

Students first signed the consent form to give permission to use their responses and retrieve their examination grades from the institution for the present study. Subsequently, they filled out the demographic information, followed by four personal characteristics questionnaires during their college class hours.

The total sample of medical students belongs to different cohorts who are in different stages of their training. Among the different cohorts, 45 students (male = 29, female = 16) were in their first semester, 42 students (male = 28, female = 14) were in their third semester, 86 students (male = 55, female = 30, no response = 1) had finished their fifth semester, 86 students (male = 42, female = 44) were finishing their sixth semester, and 50 students (male = 34, female = 16) were in their eighth semester. Students participated in this study at their will without any research credit or monetary incentive.

Because of missing data, sample sizes available for analyses are $n = 308$ for gender, $n = 309$ for semester, $n = 299$ for agreeableness, $n = 303$ for students' attribution of supervisory referent power, $n = 279$ for students' perception about supervisors' prosociality, $n = 299$ for

prosocial knowledge, and $n = 255$ for their clinical performance. It should be noted that 45 first semester students just started their medical training at the time of data collection and therefore there was no available grade for retrieval.

Details of Medical Curriculum. In India, medical students take generally four and half years to complete their Bachelor of Medicine and Bachelor of Surgery (MBBS) degree. This MBBS curriculum is divided into three sections: 1st MBBS, 2nd MBBS, and 3rd MBBS. The 3rd MBBS is further subdivided into 3rd MBBS Part I and 3rd MBBS Part II. The details regarding the subject matter, grade division, and time durations of the MBBS curriculum is presented in Table 1.

Insert Table 1 About Here

Students take two semesters to complete 1st MBBS. In this one complete year, they learn Anatomy, Physiology, and Biochemistry.

2nd MBBS requires three semesters and one and half years to complete. Medical students learn Pharmacology, Forensic Medicine, Microbiology, and Pathology.

The full 3rd MBBS takes two years to complete. Students take two semesters to complete 3rd MBBS Part I. In this one year, they learn Ophthalmology, Otorhinolaryngology (ENT), and Community Medicine. The 3rd MBBS Part II also takes one year to complete and in this one year students learn Medicine, Surgery, Pediatrics, and Gynaecology and Obstetrics.

Medical students receive both theoretical and practical training during the MBBS course-work and after the completion of each MBBS (1st, 2nd, 3rd Part I, and 3rd Part II) students undergo separate theoretical and practical examinations following subject matters of the respective MBBS. Students' interpersonal interactions with real patients gradually increase after they finish their first year of medical training. The extent of physician-patient interactions in their practical examinations reflect on the extent of their practical training in respective MBBSs.

1st MBBS students perform autopsy on corpses, do visceral examination, inspect human bones, blood samples, urine or stool, diagnose disease, and identify stage of the disease from various slides in their practical examination.

In addition to making diagnosis of disease from the slides, 2nd MBBS students review a patient's case history to diagnose the cause of death in their practical examination. They also identify the weapon that may have caused the injury. Students also examine bone sets to detect the gender and age and a sample of poison to identify its features and effects. They also give rationale for a prescribed medication, as well as how they will convince patients to take that particular medication or take an alternate medication if the patient is experiencing any side-effect.

Medical students interact with real patients in their 3rd MBBS Part I and Part II practical examinations. Students collect case history from patients, review test results, and perform some basic examination on patients' eye, ear, nose, and throat in their 3rd MBBS Part I practical examination. Students' interaction with real patients reaches its peak in their 3rd MBBS Part II practical examination. Students collect case history from patients and/or patients' family

members or care givers, prepare provisional diagnosis, and develop medical interventions for patients.

Data Collection. The data collection process took nearly six months because of medical students' cohort-specific different examination schedules which determine students' availability in class rooms for data collection. Thus, depending on the cohorts' standing on the medical program, students' respective examination grades were retrieved. First semester students just started their medical training at the time of data collection and therefore no examination grades were available to retrieve. Third semester students' grades in 1st MBBS were retrieved. For students who finished their 5th and 6th semesters, their grades in 2nd MBBS were retrieved as it was the most recent MBBS examination for them. Eighth semester students' grades in 3rd MBBS Part I were retrieved.

2.2 Measures

Personality Trait. To measure Indian medical students' personality trait, the Big Five Inventory (John & Srivastava, 1999) was administered on them. The Big Five Inventory consists of 44 items measuring five different traits: Conscientiousness, Agreeableness, Extraversion, Neuroticism, and Openness to experience. However as the scope of the present study focuses only on agreeableness, responses were collected only for nine agreeableness items. Students rated each item on a 5 point Likert scale, where 1 = Disagree strongly, 3 = Neither agree nor disagree, 5 = Agree strongly, to indicate their extent of agreement or disagreement with each of the item. The mean score in this student sample is 33.74 (SD = 4.55). High score in agreeableness dimension supports higher level of agreeableness trait. Alpha reliability of agreeableness for the present sample is .49 which doesn't meet the standard acceptable

coefficient (.70) for basic research (Nunnally & Bernstein, 1993). Thus, the agreeableness score in this study should be used with caution while interpreting its relationship with other variables because half of its variance is attributable to error than true score variance.

Prosocial Knowledge. Opinions about Physicians' Interactions with Patients or OPIP

(Motowidlo, Kell, & Martin, 2011) successfully measured Indian medical students' prosocial knowledge (Ghosh et al., 2015; Ghosh, 2016). OPIP consists of 40 interactive situations that describe physicians either acting prosocially or antisocially with their patients, patients' family, or nurses. Students rate each situation on a 7 point Likert scale where 1 = Very ineffective, 4 = Neither ineffective nor effective, 7 = Very effective. High score in this SJT confirms higher level of prosocial knowledge. Despite the consistency of the measure the administration time associated with 40-item was a great concern because of medical students' very busy schedule. To address this issue, a shorter 10-item version of OPIP was developed. The pertinent details of the Mini-OPIP are discussed below.

Development and Validation of Mini-OPIP: The development of OPIP (Motowidlo et al., 2011) started with a collection of 426 brief descriptions of physician-patient interaction from nurses which struck them as highly effective or highly ineffective. These descriptions were narrowed down to 200 interactive scenarios followed by first sorting into AAMC/NBME (2002) dimensions (Caring and Compassion, Respect, or Responsibility and Accountability) and then rating on the level of effectiveness. A 7-point Likert scale was used for the rating that ranged from 1 = Very ineffective, 4 = Neither ineffective nor effective, 7 = Very effective. Incidents sorted under the same dimension by half of the nurses and receiving extreme ratings on the effectiveness scale (e.g., 5 or more or 3 or less) were included to ensure greatest validity (Waugh & Russell, 2006). These 200 items were subsequently narrowed down to 40 items for the final

OPIP questionnaire, which consists of 20 normatively effective and ineffective items with highest correlations with a criterion in the form of clinical ratings of medical students' performance. Among the 20 effective and 20 ineffective items, 5 effective and 5 ineffective items with highest item-total correlations were selected to develop Mini-OPIP (Kell, 2011).

The OPIP ($\alpha = .87$) positively correlated with American medical students agreeableness ($.31, p < .01$), clinical skill ($.20, p < .01$), and clinical performance ($.22, p < .01$) (Kell et al., 2014). In the same sample, Mini-OPIP ($\alpha = .73$) positively correlated with medical students agreeableness ($.33, p < .01$), clinical skill ($.18, p < .01$), and clinical performance ($.20, p < .01$) (Kell et al., 2014). In a sample of Indian medical students, OPIP ($\alpha = .90$) positively correlated with students' clinical performance ($.25, p < .01$), whereas the Mini-OPIP ($\alpha = .77$) showed a correlation of $.27 (p < .01)$ with medical students' clinical performance (Ghosh et al., 2015). In another study with Indian medical students, OPIP ($\alpha = .88$) positively correlated with agreeableness ($.24, p < .01$) and clinical performance ($.21, p < .01$). On the other hand, Mini-OPIP ($\alpha = .77$) showed a positive correlation of $.23 (p < .01)$ with agreeableness ($.16, p < .05$) and with clinical performance (Ghosh, 2016).

In a sample of undergraduate students, OPIP ($\alpha = .85$) positively correlated with students' agreeableness ($.35, p < .01$) and prosocial performance ($.22, p < .01$), measured by mean performance ratings in role-play simulations under dimensions of respect and caring and compassion. In the same sample, Mini-OPIP ($\alpha = .67$) showed a positive correlation of $.34 (p < .01)$ with agreeableness and $.18 (p = .08)$ with prosocial performance, measured by the same process (Martin-Raugh, Kell, & Motowidlo, 2016). In another study with undergraduate students, OPIP ($\alpha = .86$) positively correlated with students' agreeableness ($.27, p < .01$) and prosocial performance ($.21, p < .01$), measured by mean performance ratings in role-play

simulations under dimensions of respect and caring and compassion. Likewise, the Mini-OPIP ($\alpha = .67$) showed a positive correlation with agreeableness ($.24, p < .01$) and prosocial performance ($.20, p < .01$), measured by the same process.

Thus, the analytical findings extend support to our decision of using Mini-OPIP for the present study without significant compromise of reliability or validity. Alpha reliability for this present student sample is .68. The mean score in this student sample is 57.31 ($SD = 8.41$). The Mini-OPIP appears in Appendix A.

Perception about Supervisors' Prosociality. The same 10-item Mini-OPIP will be administered to measure medical students' perception about their supervisors' prosociality. However, instead of rating on the effectiveness of situation, students rated each item following another instruction: "How frequently do your supervisors engage or you think that supervisors might engage in the stated prosocial and antisocial situations." Students rated each situation on a 7-point Likert scale where 1 = Highly unlikely, 4 = Neither likely nor unlikely, 7 = Highly likely. Alpha reliability for this present student sample is .76. The mean score in this student sample is 49.22 ($SD = 10.86$). High score in this assessment indicates higher frequency in prosocial engagement on part of the supervisor.

Attribution of Supervisors' Referent Power. Three-item under referent power dimension from Social Power Survey (Hinkin & Schriesheim, 1989) was administered on students to measure their attribution of supervisors' referent power. Students rated each item on a 5 point Likert scale, where 1 = Strongly disagree, 3 = Neither agree nor disagree, 5 = Strongly agree, to indicate their extent of agreement or disagreement with each of the item. Alpha reliability of

referent power for the present sample is .79. The mean score in this present sample is 10.95 (SD = 2.86). High score in this measure indicates higher level of supervisory referent power.

Clinical Performance. The percentage of medical students' cumulative total grade in the final exam of each MBBS, which includes their grades in both theory (technical) and practical (technical and nontechnical) examinations, served as the measure of their clinical performance.

In the practical examinations, students' grades are partly based on how respectfully they tend to handle corpses (1st MBBS), how judiciously they intervene with patients' complaints (2nd MBBS), and how responsively and compassionately they interact with real patients during their medical encounter (3rd MBBS Part I and Part II).

Third semester students' grades in 1st MBBS and eighth semester students' grade in 3rd MBBS part I were retrieved. During the six month duration of data collection, both fifth and sixth semester students' grades in 2nd MBBS were the most recent grades given their standing on the program.

Chapter 3

Results

Correlations between Medical Students' Agreeableness, Perception of Supervisors' Prosociality, Attribution of Supervisors' Referent Power, Prosocial Knowledge, and Clinical Performance are presented in Table 2.

Insert Table 2 About Here

In the total sample of medical students, agreeableness is positively related ($.18, p < .01$) with students' perception about supervisors' prosociality. However, students' perception about supervisors' prosociality ($-.15, p = .01$) showed negative correlation with their semester. Accordingly, partial correlation analysis was performed after controlling for semester. The correlation between agreeableness ($.17, p = .01$) and students' perception about supervisors' prosociality remained unaffected. Thus, H1 is supported.

Since first semester students just started their medical training, it is a possibility that they didn't receive enough opportunity to observe their supervisors' frequency in different prosocial encounters. Therefore, correlation between agreeableness and students' perception about supervisors' prosociality was computed (Table 3) excluding first semester students from the sample. Again, the positive association ($.16, p = .02$) between variables remained almost unaffected.

Insert Table 3 About Here

In the total sample of medical students, agreeableness is positively related (.14, $p = .02$) with students' prosocial knowledge. However, prosocial knowledge showed negative correlation (-.18, $p < .01$) with gender, in the direction of women scoring higher. Therefore, partial correlation analysis was performed after controlling for gender. Although the correlation between agreeableness (.12, $p = .07$) and students' prosocial knowledge remained positive, it failed to attain statistical significance. Therefore, H2 is partially supported.

In the total sample of medical students, students' perception about supervisors' prosociality is positively related (.26, $p < .01$) with students' prosocial knowledge. However, prosocial knowledge showed negative correlation (-.18, $p < .01$) with gender, in the direction of women scoring higher, and perception about supervisors' prosociality showed negative correlations (-.15, $p = .01$) with students' semester. Accordingly, partial correlation analysis was performed after controlling for semester and gender. The positive association between students' perception about supervisors' prosociality and students' prosocial knowledge inflated to .30 ($p < .01$). These results showed support for H3.

Upon considering students' opportunity to observe supervisors' prosociality, correlation between students' perception about supervisors' prosociality and students' prosocial knowledge was computed excluding first semester students from the sample. However, the positive association between variables remained unaffected (.26, $p < .01$).

Hypothesis 4 posited that students' perception about their supervisors' prosociality mediates the relationship between students' agreeableness and prosocial knowledge. To rigorously test the indirect effect of agreeableness on medical students' prosocial knowledge we used a non-parametric bootstrapping technique with bias-corrected confidence intervals (BCCI) and resampling techniques (Preacher & Hayes, 2008). To test for mediation with BCCI, we used Preacher and Hayes' (2008) macro for SPSS where k value was specified at 5000. The bootstrapping results of the indirect effect of agreeableness on medical students' clinical performance generated BCCI (95%) that does not include zero (point estimate = .08, SE = .03, BCCI [0.03, 0.17], $R^2 = .08$). Therefore, in view of this finding, we can state that supervisors' prosociality does mediate the relationship between medical students' agreeableness and prosocial knowledge. These findings support H4.

In the total sample of medical students, students' perception about supervisors' prosociality is not related ($-.05, p = .49$) with students' clinical performance. Medical students' clinical performance showed negative correlation ($-.20, p < .01$) with gender, in the direction of women scoring higher, and perception about supervisors' prosociality showed negative correlations ($-.15, p = .01$) with their semester. However, even after controlling for effects of gender and semester, the partial correlation between students' perception about supervisors' prosociality and students' clinical performance failed to reach statistical levels of significance ($-.06, p = .36$).

To investigate whether students' opportunity to observe supervisors' prosociality and extent of interaction during practical examination alters this relationship, correlation analyses were performed (i) with sample without first semester as they are very new in the program and (ii) with only eighth semester students as they interact with real patients in their practical

examination (Table 4). However, in both cases correlation between students' perception about supervisors' prosociality and students' clinical performance failed to reach statistical levels of significance. For condition (i) the correlation was $-.05$ ($p = .49$) and for condition (ii) the correlation was $-.07$ ($p = .68$). Therefore, H5 is not supported.

Insert Table 4 About Here

In the total sample of medical students, prosocial knowledge positively correlated ($.20, p < .01$) with clinical performance. Students' prosocial knowledge ($-.18, p < .01$) and clinical performance ($-.20, p < .01$) were both negatively correlated with students' gender, in the direction of women scoring higher. Accordingly, partial correlation analysis was performed after controlling for gender. The positive association between students' clinical performance and students' prosocial knowledge remained almost unaffected ($.14, p = .03$).

To examine whether the extent of interpersonal interaction influence this positive association, correlation analysis was performed on the sample of eighth semester students who interact with real patients in their practical examination. The positive association between students' clinical performance and students' prosocial knowledge inflated to $.30$ ($p = .04$). These findings support H6.

Hypothesis 7 posits that medical students' prosocial knowledge mediates the relationship between students' agreeableness and clinical performance. The bootstrapping results of the indirect effect of agreeableness on clinical performance generated BCCI (95%) that does not

include zero (point estimate = .03, SE = .02, BCCI [0.00, 0.09], $R^2 = .04$). Therefore, as predicted in H7, prosocial knowledge mediated the relationship between medical students' agreeableness and clinical performance.

Hypothesis 8 proposes that medical students' prosocial knowledge mediates the relationship between students' perception about their supervisors' prosociality and students' clinical performance. The bootstrapping results of the indirect effect of students' perception about their supervisors' prosociality on clinical performance generated BCCI (95%) that does not include zero (point estimate = .04, SE = .01, BCCI [0.02, 0.07], $R^2 = .06$). Thus, prosocial knowledge mediated the relationship between medical students' perception about their supervisors' prosociality and clinical performance and extends support to H8.

To test H9 a mediated moderation model is performed using MPlus (Version 7.4; Muthen & Muthen, 2015). In this model medical students' perception about their supervisors' prosociality was expected to mediate the relationship between students' agreeableness and clinical performance, whereas students' attribution of supervisors' referent power was expected to moderate the relationship between students' perception about their supervisors' prosociality and students' clinical performance. However, the fit of the model was not good: $\chi^2(N = 270; df = 2) = 780.06$ ($p < .01$), the root mean square error of approximation (RMSEA) = 1.2, and the confirmatory fit index (CFI) = .01. Therefore, H9 is not supported.

To test H10 moderation analysis is performed. Clinical performance is regressed with students' attribution of supervisors' referent power, students' perception about their supervisors' prosociality, and their interaction as the independent variables. The beta for the effect of students' attribution of supervisors' referent power on clinical performance is not significant (-

.17, $p = .78$). The beta for the effect of students' perception about their supervisors' prosociality on clinical performance is not significant ($-.04, p = .76$). The beta for the effect of the interaction between students' attribution of supervisors' referent power and students' perception about their supervisors' prosociality on clinical performance is not significant ($.001, p = .94$). Therefore, H10 remained unsupported.

A path analysis is conducted using MPlus (Version 7.4; Muthen & Muthen, 2015) to examine the relationship between the variables proposed in the path model (Figure 2). The path coefficients are presented in Figure 2. The fit of this model was not good: $\chi^2 (N = 270; df = 5) = 782.6$. ($p < .01$), the root mean square error of approximation (RMSEA) = .76, and the confirmatory fit index (CFI) = .042. However, it should be kept in mind that the model was not specified a priori and was meant to summarize H1 to H10.

Insert Figure 2 About Here

Chapter 4

Discussion

Theoretical contributions to knowledge acquisition and nontechnical job knowledge literature

The major contribution of this study is that it sheds some light onto the job specific experiential antecedents of job knowledge or students' perception about their supervisors' prosociality and its relationship with medical students' prosocial knowledge for the very first time. Although the cross-sectional design of this study prevents us to make any causal inference, it sets the stage for future longitudinal research. A longitudinal study with pre and post knowledge scores can confirm whether Indian medical students accumulate prosocial knowledge through the prosocial experiences associated with their supervisors. Additionally, the positive associations between agreeableness, students' perception about their supervisors' prosociality, and students' prosocial knowledge add empirical support to the personality-experience-job knowledge relationships in the theoretical models of job knowledge acquisition (e.g., Motowidlo & Beier, 2010; Motowidlo et al., 2006a, 2006b).

The association between medical students' prosocial knowledge and clinical performance affirms the predictive power of prosocial knowledge (Ghosh et al., 2015; Ghosh et al., 2017; Kell et al., 2014) which individuals can learn from their real life experiences (Motowidlo & Beier, 2010). This replication of previous work is an important strength given the abundance of inconsistent relationships between predictor and criterion in psychological literature (e.g., Pashler & Wagenmaker, 2012). On a similar note, the replication of the positive relationship between prosocial knowledge and clinical performance provides empirical support to the existing job performance models that have examined the contribution of nontechnical job knowledge in

predicting job performance (Campbell, 1990; Campbell, Gesser, & Oswald, 1996; Schmidt & Hunter, 1992). Furthermore, it underscores the importance of prosocial behavior in a high-stakes profession like medicine which requires a great extent of technical expertise.

Although the present study drew on procedural nontechnical job knowledge literature, the findings can be applied to tacit knowledge, which is a personal, subjective form of knowledge that is informal in nature (Sternberg, 1997), as the value of tacit knowledge (e.g., customer good will) is often ignored in the workplace. Two thirds of the work-related information that constitutes tacit knowledge domain is delivered through casual conversations, exchange of ideas, mentoring, internships which is an analogous process through which people can accumulate procedural prosocial knowledge. Furthermore, tacit knowledge is taught by experienced people who show less experienced people the ropes (Smith, 2001). This practice is very relevant with medical training where supervisors act as role model to teach their students the value of prosocial conduct.

Medical training and performance management in healthcare industry

The mediating role of prosocial knowledge opens up the possibility that physicians can be trained to develop prosocial knowledge or the knowledge about the effectiveness of prosocial behavior without being high on the requisite personality trait (e.g., agreeableness). It is another major implication of this study. Building upon the notion of ITP theory (Motowidlo & Beier, 2010), this study argues that physicians who are low on prosocial ITP can accumulate prosocial ITP through training (e.g., presentations, workshops) which will explicitly demonstrate them the positive outcomes of prosociality. We are optimistic that findings from this study may encourage medical authorities to implement prosocial knowledge training to facilitate physicians'

interpersonal interactions which will ultimately facilitate their clinical effectiveness and safeguard medical institutions from paying out millions of dollars in malpractice litigations (Numberof.net, 2010).

Another implication of this study is that it brings the importance of ‘acting is believing’ to the forefront as students’ perception about supervisors’ prosociality mediated the relationship between students’ agreeableness and prosocial knowledge. Instead of expensive interpersonal skill training for every medical student, educators can develop effective instructional methods for the supervisors to foster medical professionalism. It will be a parsimonious investment that can generate lucrative return on investment (e.g., goodwill, less malpractice suits, patient satisfaction).

Implications for prosocial patient care in high power distance cultures

Existing research has seldom examined physician-patient interaction in India even though India has a very basic healthcare infrastructure which suffers from lack of electronic patient medical history system (Jayaraman, 2014) and shortage of medical personnel (Mehta, 2016). Under this scenario, it is extremely important for physicians to collect pertinent information from patients to make accurate diagnosis and plan proper medical intervention. Indian patient pool, especially in government hospitals, consists of large number of rural patients who belong to very low SES and educational level (Ghosh, 2016). Therefore, physicians need to be extremely tactful with their patients to extract their detailed case history. Prosocial interactions on part of effective physicians can be extensively helpful for patient history collection in healthcare facilities with basic infrastructure.

One of the major criticisms of Indian healthcare is that it is dependent on western models and thus it fails to address the needs of Indian culture and tradition (Mehta, 2016). Although the present study attempts to address the cultural content by investigating supervisory referent power, it fails to support the anticipated moderating effect of students' attribution of supervisory referent power on other constructs. This is one of the limitations of this study. However, we cannot conclude that these relationships do not exist. Future study with multiple criteria (e.g., patients' rating on physicians' charisma which is considered to be synonymous with charismatic leadership) can provide us a clear understanding of physicians' referent power in medical setting. Existing research investigating power dynamics between faculty and students is extremely sparse (Aguinis, Nesler, Quigley, Lee, & Tedeschi, 1996), thus we ask for future studies to look into the dynamics.

Contribution to psychological assessment and selection and limitations

Indian medical students' attribution of referent power showed positive correlation with prosocial knowledge and agreeableness and showed almost no relationship with students' clinical performance. These findings show some resemblance with a recent study with American undergraduate students' prosocial knowledge and performance in role-play simulations. Motowidlo, Ghosh, Mendoza, Buchanon, and Lerma (2016) found that students' prosocial knowledge is related with students' performance in situations where others need help but not in situations where people are acting inconsiderably towards them. The items of referent power measure reflect on how students are treated (e.g., valued, appreciated) by their supervisors which raises the issue of construct deficiency because students' clinical performance only require them to extend their care and support to their patients. Examining the bandwidth issue of referent power construct and its relationship with performance can be a potential research avenue.

Inconsistent sample size across different cohorts is another drawback of this study. Since busy schedule are preventing willing medical students from participation, online survey administration can be a helpful measure to address this availability issue within and outside medical settings (e.g., lawyers, engineers).

The findings from this study also contribute to SJT literature. It has been previously established that SJTs can measure procedural knowledge of physicians and medical students. The 40-item OPIP successfully measured medical students' prosocial knowledge across culture. Nonetheless, the 10-item mini-OPIP measured Indian medical students' prosocial knowledge and predicted students' clinical performance which constitutes both technical and nontechnical aspects of performance. By lowering the questionnaire administration time, it also greatly reduced the count of incomplete responses found in the previous study (Ghosh, 2016). Thus, results associated with this mini-OPIP cautiously suggest that administering short-spanned assessment may help practitioners to increase the participation, especially in any high-stakes profession while maintaining reliability and validity of assessment.

Agreeableness is showing strong positive association with prosocial knowledge in a high power distance culture which enhances agreeableness trait's global applicability as a predictor of prosocial constructs. Given the rapid emergence of geographically diverse work groups, this finding will be relevant for I/O psychologists/practitioners to accurately select personality predictors for making selection and training decisions.

On a general note, findings related with students' prosocial knowledge are expected to contribute to medical research. It can be assumed that it will fortify the ongoing stream of research on physicians' prosocial performance or similar 'prosocial' constructs, such as empathy

(Larson & Yao, 2005; Williams et al., 2015) which will increase positive patient-related outcomes. Although the present study will be conducted in a medical setting, the scope of this research is not limited to medicine. These findings can be applicable to any profession (e.g., management, law, service industry) that requires interpersonal interactions of some sort.

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Table 1: *Detailed MBBS Curriculum*

	Grades (Theory, Practical, Internal Assessment, Oral or Viva Voce)	Total Grade	Semesters
1 st MBBS		600	1 st and 2 nd
Anatomy	200		
Physiology	200		
Biochemistry	200		
2 nd MBBS		550	3 rd , 4 th , and 5 th
Pharmacology	150		
Forensic Medicine	100		
Microbiology	150		
Pathology	150		
3 rd MBBS (Part I)		400	6 th and 7 th
Otorhinolaryngology (ENT)	100		
Ophthalmology	100		
Community Medicine	200		
3 rd MBBS (Part II)		900	8 th and 9 th
Medicine	300		
Surgery	300		
Gynaecology & Obstetrics	200		
Paediatrics	100		

Note. There might be some minor differences in the medical curriculum of different medical institutions in India. However, all medical students in the present medical institution follow the same standard curriculum.

Table 2: Means, standard deviations, and zero order correlations in the total sample of medical students ($N = 255 - 309$).

	Prosocial Knowledge	Clinical Performance	Supervisor Prosociality	Agreeableness	Referent Power	Gender	Semester
Prosocial Knowledge							
Clinical Performance	.20**						
Supervisor Prosociality	.26**	-.05					
Agreeableness	.14*	-.08	.18**				
Referent Power	.15*	-.07	.17**	.23**			
Gender	-.18**	-.20**	.05	.04	.05		
Semester	.07	-.04	-.15*	-.10	-.13*	-.03	
Mean	57.31	65.10	49.22	33.74	10.95	.61	4.91
SD	8.41	6.13	10.86	4.55	2.86	.49	2.15

Note. * $p < .05$, ** $p < .01$ (two-tailed); Coding for gender: female = 0 and male = 1.

Table 3: Means, standard deviations, and zero order correlations in the total sample of medical students except 1st semester (N = 237 - 264).

	Prosocial Knowledge	Clinical Performance	Supervisor Prosociality	Agreeablen ess	Referent Power	Gender	Sem ester
Prosocial Knowledge							
Clinical Performance	.20**						
Supervisor Prosociality	.26**	-.05					
Agreeableness	.15*	-.08	.16*				
Referent Power	.17**	-.07	.13*	.19**			
Gender	-.17**	-.20**	.09	.05	.06		
Semester	.08	-.04	-.12	.01	.06	-.02	
Mean	57.42	65.10	48.73	33.46	10.69	.60	5.58
SD	8.77	6.13	11.04	4.63	2.93	.49	1.53

Note. * $p < .05$, ** $p < .01$ (two-tailed); Coding for gender: female = 0 and male = 1.

Table 4: Means, standard deviations, and zero order correlations in the 8th semester medical students ($N = 38 - 50$).

	Prosocial Knowledge	Clinical Performance	Supervisor Prosociality	Agreeableness	Referent Power	Gender
Prosocial Knowledge						
Clinical Performance	.30*					
Supervisor Prosociality	.04	-.07				
Agreeableness	.20	.06	.15			
Referent Power	.11	-.07	.04	.30*		
Gender	-.23	-.25	-.03	.12	-.14	
Mean	58.37	63.89	50.87	34.16	10.78	.68
SD	6.18	7.06	10.49	4.32	2.99	.47

Note. * $p < .05$, ** $p < .01$ (two-tailed); Coding for gender: female = 0 and male = 1.

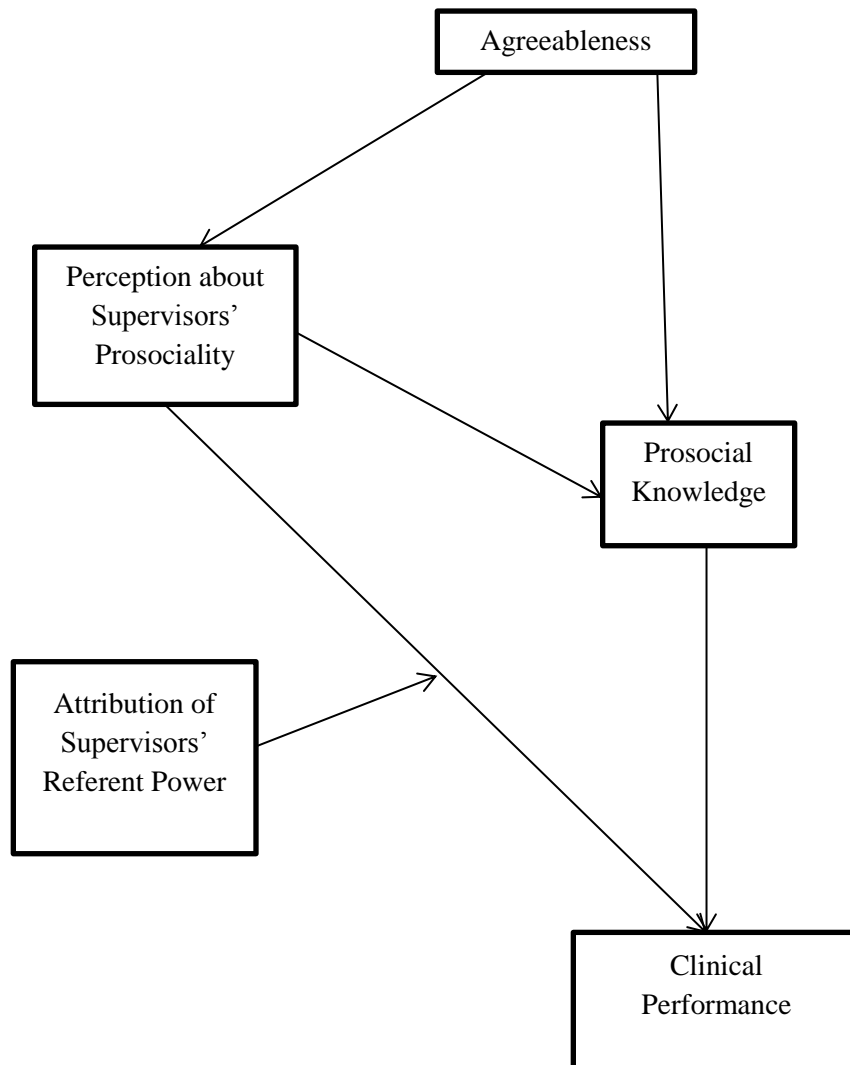


Figure 1. *Relationships between Indian Medical Students' Agreeableness, Perception of Supervisors' Prosociality, Attribution of Supervisors' Referent Power, Prosocial Knowledge, and Clinical Performance*

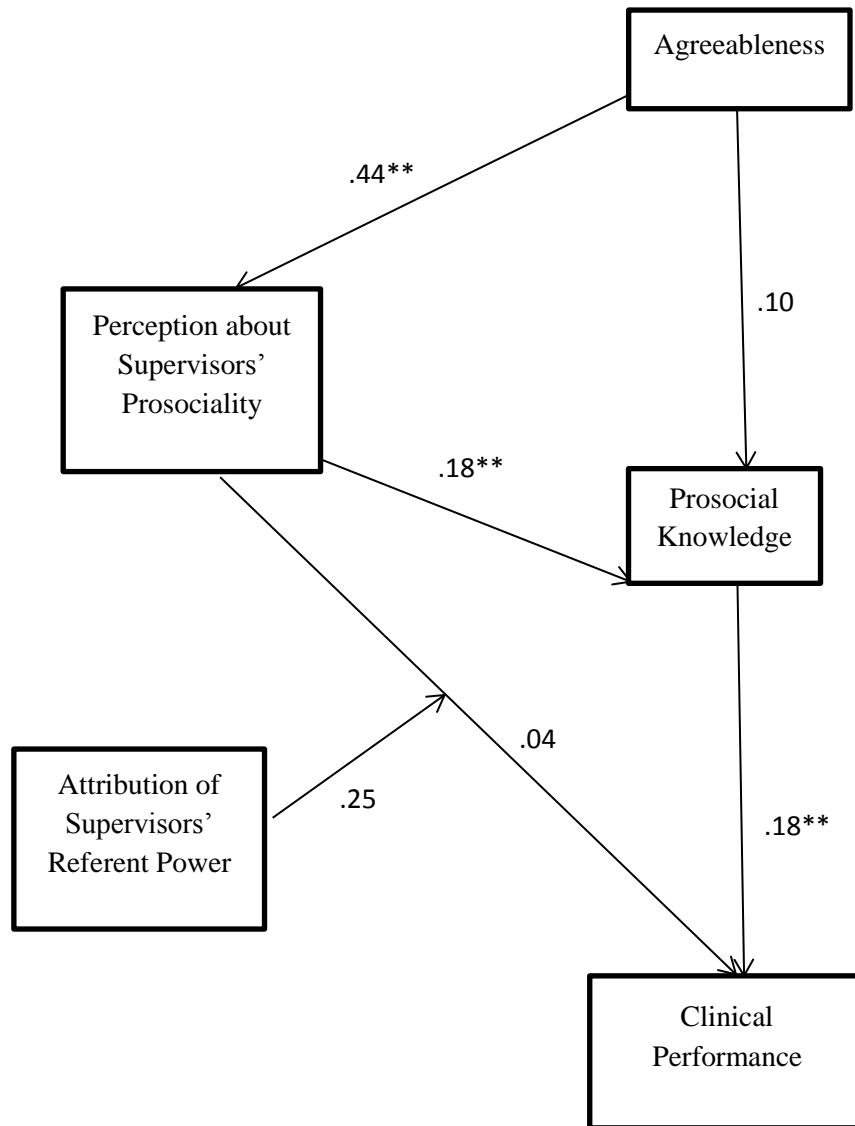


Figure 2: Path model of Indian medical students' trait and experiential antecedents of prosocial knowledge and their contribution to clinical performance (*Numbers refer to standardized path coefficients*)

APPENDICES

Appendix A

Opinions about Physicians' Interactions with Patients

This questionnaire contains a list of hypothetical behaviors that physicians might perform when interacting with patients. For each behavior, please judge how effective you think the behavior is by writing a number from 1 to 7 on the line immediately below it, where...

1 = Very Ineffective

2 = Somewhat Ineffective

3 = Slightly Ineffective

4 = Neither Effective Nor Ineffective

5 = Slightly Effective

6 = Somewhat Effective

7 = Very Effective

1 = Very Ineffective

2 = Somewhat Ineffective

3 = Slightly Ineffective

4 = Neither Effective

Nor Ineffective

5 = Slightly Effective

6 = Somewhat Effective

7 = Very Effective

1. When a patient who was admitted to the hospital feeling weak and in pain asked for a wheelchair, the attending nurse said none was available. The physician overheard the conversation, briefly examined the patient, and made sure she got one.

____ Effectiveness

2. An older man was in the hospital for 2 weeks without seeing a physician. When the physician did come to see the patient he brought a resident with him. This physician walked to the head of the bed, talked with the resident for several minutes without acknowledging the patient, and left.

____ Effectiveness

3. When he met with a patient in her 90's to tell her she could not have surgery for a torn rotator cuff, the physician explained things slowly, deliberately, and gently.

____ Effectiveness

4. An older woman thought she had a hiatal hernia and described her symptoms to the physician. The physician responded, "I'm the doctor, I'll tell you what you have."

____ Effectiveness

5. A woman in her 90s was undergoing dialysis. The physician yanked the patient's room door open while she was sleeping and threw her covers off her before trying to examine her.

____ Effectiveness

6. A patient who could not speak English well had to have a kidney removed and was very anxious about the procedure. The physician had a translator speak with the patient and delayed surgery until the patient was calm and able to deal with the situation.

____ Effectiveness

1 = Very Ineffective
2 = Somewhat Ineffective
3 = Slightly Ineffective

4 = Neither Effective
Nor Ineffective

5 = Slightly Effective
6 = Somewhat Effective
7 = Very Effective

7. A patient was in the hospital, suffering from kidney stones. The physician drew a picture of the urinary system, showed the patient where the stone was, and explained why he was in so much pain.

____ Effectiveness

8. When a cancer patient died, the physician gently informed the family members, gave them time to absorb the news, and offered them emotional support.

____ Effectiveness

9. A patient who was recovering from knee replacement surgery was having difficulty with rehabilitation exercises due to the pain. The physician scolded the patient and told her she was not trying hard enough.

____ Effectiveness

10. The physician greeted his patient by saying hello. Then he sat down at the computer with his back to the patient to examine his records. He responded to all of the patient's statements by saying, "Mmmhmmm" without making eye contact.

____ Effectiveness