










The 12 Fundamentals of Highly Effective Communicators: Teaching Theory-Based Professional Communication to Pharmacy Students

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Abstract: Pharmacists are increasingly expected to communicate skillfully, yet few Doctor of Pharmacy (PharmD) curricula include theoretically-derived or evidence-based communication training. The 12 Fundamentals of Highly Effective Communicators is a pedagogical tool that we developed to teach principles of communication to two consecutive cohorts of PharmD students in their second year (P2). Students were asked to reflect on which of the 12 Fundamentals they found most helpful in their pharmacy training and practice. The most frequently selected Fundamental was “There is no ‘one size fits all’ message that will work in EVERY situation.” Students provided specific examples of how they perceived that these Fundamentals could help them have effective and appropriate interactions with patients and colleagues.

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Communication is a critical aspect of providing effective health care (Foronda et al., 2016; Vermeir et al., 2015). Take, for example, the case of a 71-year-old American widow who suffered tremendous physical and psychological harm because she dutifully took her prescription medications (da Silva & Krishnamurthy, 2016). Over the course of 3 months she experienced ambulatory dysfunction, tremors, personality changes, and multiple visits to the hospital due to an error: the patient was prescribed the anti-hypertensive medication Norvasc, but instead was dispensed Navane, an antipsychotic. Health records indicated numerous missed opportunities for intervention by multiple health-care providers before the error was finally caught and corrected. Errors such as this are the result of a complex interplay of factors, but communication lies at the heart of many such instances. Pharmacists play a crucial role in caring for patients, from correcting prescriber errors to properly informing patients and caregivers on what to expect from medications; communication breakdowns can result in serious injury or even death (Hassan, 2018; Lloyd et al., 2016; Rust et al., 2020). Skillful pharmacist communication is one crucial means of improving outcomes and processes—yet there is a dearth of published best practices for teaching theoretically sound pharmacy communication.

As health-care organizations seek ways to improve patient outcomes while reducing operating costs, patient safety and satisfaction are receiving increasing attention. Meanwhile, pharmacists are increasingly expected to demonstrate skillful communication, even as observational studies from community pharmacies suggest that pharmacists struggle to perform effective patient counseling and patient-centered communication (Murad et al., 2014; Puspitasari et al., 2009). There is evidence that poor communication is associated with frustration and nonadherence in patients (Martin-Vazquez, 2016; Rickles et al., 2016) as well as burnout among pharmacists (McKinley & Perino, 2013; Wright et al., 2010). Improved communication benefits patients, professionals, and the public: Effective pharmacist communication is associated with better understanding of and proper use of medication among patients; better health outcomes for patients; and better quality of life for both patients and pharmacists (Clifford et al., 2006; Rahim & Shah, 2010). Meta-analytic work provides support for including communication education in pharmacy curricula to improve the quality of interprofessional and patient-provider interactions (Jin et al., 2018). Yet currently, only a few of the most innovative pharmacy schools even emphasize extensive experiential training in communication (Svensberg et al., 2017). Additionally, practical and professional programs tend to approach communication from a deficit-model, transactional paradigm (Manojlovich et al., 2015). These circumstances pose both a pedagogical challenge and an opportunity. As the demand for better communication in pharmacy settings increases, universities will need to respond. Communication teacher-scholars are uniquely positioned to bring theoretically-driven and evidence-based training to pharmacy programs.

The original research presented in this manuscript describes the development and evaluation of a set of theoretical principles of effective communication practices that were taught to Doctor of Pharmacy (PharmD) students to help them communicate more successfully in their current and future practice by understanding and applying foundational communication concepts. First, we establish the context for the present study and detail the origins of the theoretically-driven and empirically-supported 12 Fundamentals of Highly Effective Communicators. Then, we summarize our research methods, report the principles of effective communication our learners found most valuable, and provide examples of how students envisioned themselves translating communication theory to pharmacy practice.

Communication in Pharmacy Education

A broad and deep communication curriculum can benefit pharmacists, patients, and the health-care system. As medication dispensing becomes more automated and team-based health care becomes more common, pharmacists are increasingly providing direct patient care for preventive behaviors and chronic disease management, and coordinating regularly with fellow health-care providers to provide comprehensive care for patients and communities (Carter, 2016; Eckel, 2015; Funk et al., 2019; Pedersen et al., 2014). Yet, many individuals who self-select into a pharmacy career may not arrive with robust interpersonal communication skills (Jetha et al., 2020). To prepare pharmacists for their roles, communication training has been progressively emphasized by the field's major accrediting bodies, the American Council on Pharmaceutical Education and the Center for the Advancement of Pharmacy Education (Medina et al., 2013). The ability to communicate effectively with patients and colleagues is included among the many educational outcomes required for PharmD graduates. For example, in the domain of patient care, pharmacists are expected to be able to interview patients using an organized structure and medical terminology adapted for the audience; listen actively and ask appropriate questions to gather patient information; establish rapport and build trust; demonstrate empathy; and communicate persuasively (Medina et al., 2013).

Those and other learning objectives were the basis of a redesigned professional communication skills course in our university's college of pharmacy, led by the first, second, and last authors of the present study. Our intention was to bring communication theory to pharmacy communication, and our approach was mindful of Dannels's (2002) work on communication in the discipline that has encouraged theoretical depth and sophistication in such efforts. One of our pedagogical strategies was to distill core principles of effective communication into a format that would be accessible and meaningful to our learners, and could be used by other instructors to help connect concrete tasks to theoretical principles. We called this teaching tool "The 12 Fundamentals of Highly Effective Communicators."

The Origins of the 12 Fundamentals

The research team included scholars from the communication and pharmacy disciplines who were charged with improving the PharmD communication training program. The 12 Fundamentals of Highly Effective Communicators are theoretically-driven and evidence-based. They include assumptions from which communication teacher-scholars have operated for decades and are consistent with expert perspectives on skillful communication in health professions (e.g., Bylund, 2017). They are theoretical in themselves, as well. Rather than a set of discrete and context-dependent skills (e.g., highly effective communicators write succinct emails; highly effective communicators do not assume to know which pronouns people use), we sought to develop a set of guiding principles that cut across channels, settings, tasks, and audiences (e.g., intraprofessional, interprofessional, patient-pharmacist). These cross-cutting ideas could then be revisited throughout the semester as we integrated them in different lessons as varied as showing patients how to administer self-injections; managing conflict in the workplace; and advocating for innovative policies in pharmacy practice.

The 12 Fundamentals are also evidence-based. They derive from two banks of evidence, in particular: (1) published scholarship on effective communication strategies in interpersonal, organizational, and health contexts; and (2) our own systematic observations about the needs, values, and priorities of our learners (Donovan et al., 2018). After piloting a new version of the pharmacy communication course, we analyzed student and instructor feedback and identified the need to develop a teaching tool for subsequent

semesters that would encapsulate important enduring understandings about skillful communication. As we grew to know these learners, we saw that PharmD students, who tend to come from hard sciences such as chemistry, appreciated when information was provided via bullet points and mnemonics that facilitated memorization. They are used to learning material that is organized in numbered lists, such as the top 200 prescribed medications. We also observed that they had difficulty connecting the theoretical principles to the practical skills and struggled to generalize communication strategies more broadly from one task to another. We designed the 12 Fundamentals to help students construct a clear bridge from practical, task-oriented competencies (e.g., writing an email to a colleague) to context-spanning theoretical concepts (e.g., multiple goals theory).

The 12 Fundamentals of Effective Pharmacy Communication

We present the list of fundamentals in Table 1. Next, we elaborate to explain how the fundamentals of effective communication that we trained our future pharmacists to understand and employ are substantiated by influential texts, theories, and thought leaders in our field.

TABLE 1 The 12 Fundamentals of Highly Effective Communicators
<p><i>Highly effective communicators understand that . . .</i></p> <ol style="list-style-type: none"> 1. There is no “one size fits all” message that will work in EVERY situation. 2. Communication has both verbal and nonverbal components. 3. Communication takes place in physical and psychological contexts. 4. There are benefits to tailoring messages to different audiences. 5. Multiple, sometimes competing, goals shape interactions. 6. Communication has two dimensions, content and relationship. 7. Communication is a teachable and learnable skill set that requires ongoing practice. 8. You cannot NOT communicate. 9. Communication alone cannot solve all problems; however, it is a component of all solutions. 10. Meanings are in people (not in words). 11. Communication is irreversible. 12. Good communication is cooperative.

Theoretical Bases of the 12 Fundamentals

Several interrelated theoretical currents informed the creation of the 12 Fundamentals. For example, one is grounded firmly in communication theory and practice (#7, Communication is a teachable and learnable skill set that requires ongoing practice). We are particularly indebted to the contributors and co-editors of the text *Professional Communication Skills* (Ford et al., 2015), which lays out several of the 12 Fundamentals in our university’s basic course, to orient students to primary assumptions about how communication between people occurs, and how it can be accomplished with greater or less success. These and the other Fundamentals that we added to the Ford et al. (2015) list are based on the frameworks that we review next.

The interactional view of communication. Many contemporary theories of interpersonal communication rest on the foundations laid out by Watzlawick and colleagues (1967) in their book *Pragmatics of Human Communication*, including the concepts of digital and analog communication and ideas about the metacommunicative activities of interlocutors. The collection of observations organized in that volume is known as the interactional view of communication. Our 12 Fundamentals, for example, included the premise that “You cannot NOT communicate” (Fundamental #8), which was advanced by Watzlawick et al. to theorize that the behaviors of any interactants are subject to being interpreted, correctly or not, as communicative in nature. Fundamental #6 from our list is Watzlawick et al.’s axiom that “every communication has a content and relationship aspect” (1967, p. 54). Content involves the words and gestures themselves (the message), and relationship refers to how the words and gestures ought to be understood or are assigned meanings (the meta-message). This idea has been established previously as an important feature of communication training in medical education (Hoffman-Longtin et al., 2018). As communication scholars know, this axiom undergirds the basic idea that communication does far more than facilitate the exchange of bare, unambiguous data. Facts and opinions are embedded in situational, interpersonal, cultural, and historical contexts (Fundamental #3). This communication has both verbal and nonverbal components (Fundamental #2).

A patient picking up a prescription may say to a pharmacist, “Wow, that medicine is so much more expensive than I thought it would be.” According to the interactional view, every utterance can be analyzed in terms of its content as well as its relationship-level information, all of which are contextually situated. In this particular case, for example, the meaning of “expensive” depends on each person’s socioeconomic resources. The statement about the medication’s cost may be heard as more than a mere observation or conveyance of surprise. It may be an expression of distress or an indirect request for assistance, and the patient may be communicating relationship-level information to the pharmacist: you are someone who I believe is able and willing to help me. Meanwhile, the pharmacist may purse their lips in irritation about yet another high drug cost and a health-care system that is aggravating and failing patients. The patient may perceive that nonverbal signal as *irritation with* the patient, rather than a sign of *solidarity with* the patient. All of these cues have implications for subsequent cognitive, emotional, and behavioral reactions. Watzlawick and colleagues asserted that the ability to perceive and accommodate both the content and relational aspects of communication is “the *condition sine qua non* of successful communication” (1967, p. 53; emphasis original).

Multiple goals theories of communication. Communication is a purposeful and strategic activity that people use to accomplish their personal and social objectives. Goals theories articulate the ways that individuals pursue goals through symbolic interaction (Daly & Wiemann, 1994; Dillard, 1997), and help to illustrate how communication challenges can be recognized and overcome in health-care settings (Donovan, 2019). Primary goals define social interaction, whereas secondary goals shape, enable, and constrain the communicative strategies that people employ (Dillard et al., 1989). So, for example, the primary goal of a pharmacist may be to teach a patient how to use a corticosteroid inhaler. Because a secondary goal is to build rapport with the patient, the pharmacist listens attentively when the patient begins telling a story about his asthma flaring up while camping with his family and mentions a shared fondness for a state park nearby.

According to multiple goals approaches to interpersonal communication, competent communicators attend to the multiple task, identity, and relational demands of social situations (Clark & Delia, 1979;

Dillard, 1997). This premise leads to Fundamental #5. The task of persuading a patient to come in for a comprehensive medication review may entail the pharmacist communicating about her professional identity, “This is a part of my job that I really enjoy, even though a lot of patients don’t even realize I do it.” The patient and pharmacist who discuss the local music scene may connect in ways that benefit that consultation and any future interactions. Multiple goals perspectives also demonstrate that any given utterance is subject to a variety of interpretations, depending on the traits of the interlocutors, their relationship history, the conversational context, and so on (Goldsmith, 2004). Suggestions from a pharmacy manager may be heard as efficiently direct by one member of a care team, but unnecessarily brusque by another. Thus, the basis of Fundamental #10, which coheres with the interactional view as well.

The cooperative principle. Grice’s concept of conversational implicature (1989) rounded out our 12 Fundamentals. Grice’s theorizing about language and semantics included a set of four maxims that facilitate cooperative communication by defining ways in which people ought to contribute to conversation: Quantity (provide enough information but not too much); Quality (be truthful); Relevance (stay focused on the relevant topic of conversation); and Manner (be clear). According to Grice, when communicators adequately adhere to these guidelines for interaction, they are being cooperative and ought to achieve effective communication. The cooperative principle and its maxims are reminders that communication is an interdependent process in which interlocutors rely on each other to accomplish their goals. These ideas are core tenets of contemporary notions of communication competence (e.g., Spitzberg & Cupach, 1989).

The cooperative principle is explicit in Fundamental #12, “Good communication is cooperative,” and implicit in the fundamentals that encourage students to adapt to their audiences for the sake of being clear, on topic, honest, and brief enough without being perfunctory (the last of which dovetails with the two other theoretical frameworks). Two related fundamentals state that tailored messages are advantageous (#4, “There are benefits to tailoring messages to different audiences) because, as #1 states, “There is no ‘one size fits all’ message that will work in EVERY situation.” Finally, based on our formative research, we added Fundamental #9: “Communication alone cannot solve all problems, however, it is a component of all solutions.” This fundamental was developed to acknowledge the limits of what even the most competent communication can accomplish, particularly in health-care settings. It is true that medication errors are a persistent and preventable problem that could be minimized with better communication. On the other hand, some errors could be reduced if electronic health records flagged contraindications more reliably. We wished to acknowledge this reality in our teaching.

Research Questions

The main purpose of this study was to examine PharmD students’ perceptions of the utility of the 12 Fundamentals of Highly Effective Communicators in their training and professional practice. The theoretically-grounded 12 Fundamentals became a framework for our content delivery throughout a semester-long course on pharmacy professional communication, and they were summarized into a teaching tool to which students could refer. Two research questions were posed to help us evaluate them:

RQ1: Which of the 12 Fundamentals do PharmD students report as being most helpful?

RQ2: What opportunities do students see to translate the 12 Fundamentals into practice?

Methods

Study Design

This project was part of a larger pharmacy communication curriculum intervention study which occurred over 3 years and received IRB approval from our university. Data reported in this manuscript were collected from two sequential cohorts of second-year (P2) PharmD students at a large Southwestern university in the United States with a top-5 pharmacy school. All participants were enrolled in a required pharmacy professional communication course as part of their P2 curriculum. The first iteration of the new course was piloted in Fall 2017, after which the 12 Fundamentals were created based on insights gleaned from teaching and participant observation. They were then integrated into the course in Fall 2018 (Year 1; Y1) and Fall 2019 (Year 2; Y2) in slightly different ways. Between 2018 and 2019, the makeup of the teaching team, and thus some of the content delivery, changed after one of the primary instructors left and a new lecturer was hired. Consistent between Y1 and Y2 were the list of 12 Fundamentals themselves; the faculty member who supervised the majority of the communication skills labs where they were taught; two of the Teaching Assistants who worked with her both years; and our weekly team meetings to confer about lesson plans and assessment.

Participants

Y1. There were 122 participants in the first cohort. Available demographic information about the sample includes self-identified sex (65.2% women), race/ethnicity (34.1% Asian or Asian American; 34.1% Caucasian/White; 19.7% Hispanic or Latino/a/x; 1.5% African American/Black; 6.1% Other or Unreported), and highest earned educational degree prior to beginning the PharmD program (72% Bachelor's; 22% high school; 1.5% Master's).

Y2. There were 114 participants in the second cohort. Available demographic information includes self-identified sex (68.4% women), race/ethnicity (34.2% Asian or Asian American; 29.8% Caucasian/White; 19.3% Hispanic or Latino/a/x; 5.3% African American/Black; 11.4% Other or Unreported), and highest earned educational degree prior to beginning the PharmD program (69.3% Bachelor's; 26.3% high school; 4.4% Master's). The two cohorts were not markedly different from each other on these demographic variables.

Procedures

Communication skills labs. The communication course followed a lecture-lab format over a 15-week semester, such that the entire cohort convened for a 1-hour lecture, accompanied later that week by a 3-hour communication skills lab/discussion section of approximately 40 students each. During lab, students engaged with the material more deeply through active learning and practice. The 12 Fundamentals were taught during labs across the first 3 weeks of the course and were referred back to throughout the semester as additional lessons amplified their propositions. In this way, the 12 Fundamentals constituted a framework that lab instructors used to connect discrete communication skills (e.g., interviewing for a job in a pharmacy, advising a patient about smoking cessation) to broader theoretical principles (e.g., tailoring, contexts). Instructors supplied and solicited real-world examples of the 12 Fundamentals from students during discussions and also commented when students demonstrated them during role-plays and other active learning opportunities.

Key learning objectives for the labs included (1) discovering the relevance of communication, as teachable and learnable, to pharmacy practice; (2) developing the self-awareness necessary for continuous improvement based on an ability to summarize and critique one's own areas of expertise and areas for improvement; (3) demonstrating interpersonal competence when being observed and analyzed by peers, and when observing and analyzing one's peers; (4) producing audience-focused messages tailored to colleagues, patients, subordinates, and supervisors; and (5) performing fundamental professional communication skills such as impression management, managing uncertainty, rapport building, and active listening. The 12 Fundamentals were produced to help guide learners to achieve these five objectives while practicing concrete skills aligned with CAPE educational subdomains, such as patient interviewing, establishing rapport and building trusting relationships, and communicating empathy.

An example of a typical day in lab consisted of an interactive lecture framing communication skill(s) (e.g., week three addressed effectively providing and receiving feedback up and down the hierarchy and successfully handling workplace conflict) and concepts (e.g., week three introduced the concepts of dialectical tensions, temporality of communication, cognitive frames, and styles of conflict management) to be covered that day. Each topic was accompanied by an activity wherein the students applied and practiced what they had just learned followed by group discussion and feedback. The concept of growth mindset (Dweck, 2006) was employed throughout the course by building in opportunities to practice multiple attempts. For instance, in week three students drafted messages regarding workplace feedback (one as a pharmacy manager to a pharmacy technician about a workplace customer complaint, and another as a technician responding to a manager complaining about their workplace conduct) and completing a self-assessment of their own conflict-management style. Students were encouraged to make connections to them during the discussion to the 12 Fundamentals (e.g., "How might the Fundamental *you cannot NOT communicate* relate to your preferred style of conflict resolution?").

Y1 data collection. At the end of a lab session after the 12 Fundamentals had been taught, students were asked to complete a written reflection assignment. They were given two open-ended prompts: *What pharmacy communication knowledge or skill do you have now that you didn't have before lab today?* and *How will you utilize or implement this knowledge or skill at work or at school?* Responses were submitted electronically during the lab. Additionally, a survey was administered at the end of the 15-week course. To assess which of the 12 Fundamentals was considered most helpful, students were asked one question in the survey reflecting on this lesson: *This semester, you have learned the 12 Fundamentals of Effective Communication. Below is a list of the fundamentals. Please select the ONE that has been the most helpful for you to know.*

Y2 data collection. During Y2, the study procedures were amended slightly for two reasons. First, the changes on the teaching team meant that the content of the lectures and labs did not match the previous year's syllabus exactly, so a true comparison group was not available and the end-of-semester survey was not repeated. Second, the end-of-session reflections were no longer a consistent component of each week's lab, but instead more emphasis was placed on preparing for the capstone communication objective structured clinical exam (OSCE), during which students would interact with a trained standardized patient actor and perform their communication skills. Students were tasked with helping the patient work toward a health behavior goal. Afterward, they were asked to view the video recording of their OSCE and write a self-critique. Among the prompts was *Review the 12 Fundamentals of good communicators that we reviewed throughout the semester. Which of the 12 Fundamentals helped you during your OSCE?*

Data analysis. Data from the reflection assignment and OSCE self-critique were content analyzed for the presence of the 12 Fundamentals. Student responses were not limited to only one code, because codes were not mutually exclusive and students could mention one, some, all, or none of the fundamentals. Using the verbatim manifest content, coders noted as many fundamentals as were mentioned in each open-ended response. Acceptable intercoder reliability was reached between two independent coders/authors analyzing a random sample of 25% of the data. Because the categories were not mutually exclusive, percent agreement was used to determine intercoder reliability. Percent agreement was 90% for Y1 and 99% for Y2. The few discrepancies were discussed and resolved by the research team. The remainder of the data was divided up between the two coders for coding. Our strict content analytic techniques prevented us from interpreting and inferring too much from participants' responses; we did not want to give ourselves credit for content we believed we had taught them unless it was unambiguously evident in the data. A potential disadvantage of our coding strategy is underreporting; we may have missed content about the 12 Fundamentals that students found valuable, but paraphrased or synthesized rather than used the wording from the list we taught them.

To answer RQ1, descriptive statistics were calculated from Y1 end-of-semester survey responses and from the Y2 OSCE self-critique data. The Y1 data, provided by 55 students, yielded 55 separate mentions of the 12 Fundamentals, whereas the Y2 data yielded 182. We attribute this difference in *N*s to the fact that the Y2 data collection involved a graded assignment, whereas the Y1 survey was optional. These descriptive statistics are available in Table 2. We calculated *z* scores to test differences between the proportions with which students mentioned each fundamental between Y1 and Y2, simply for reference. However, we note again the variation in the teaching team and data collection procedures, and so we remain cautious about drawing any conclusions from those tests. The bulk of the results section describes the findings for RQ2, where we report exemplars from students' descriptions of how they had been applying the 12 Fundamentals and how they anticipated using them in their current and future pharmacy practice.

Results

Table 2 displays the frequencies with which each fundamental was mentioned in students' responses to answer RQ1. In both the Y1 and Y2 datasets, the most frequently reported fundamental was "There is no 'one size fits all' message that will work in EVERY situation."

Students' Reflections on Using the 12 Fundamentals

The second research question addressed specific ways students reported that they had used the 12 Fundamentals, or envisioned themselves using them, in their work as practicing pharmacists. When asked how the 12 Fundamentals would inform their future professional communication, students described diverse opportunities in the workplace to apply each of the fundamentals. We present some excerpts below that exemplify students' responses.

There is no "one size fits all" message that will work in EVERY situation. This was the most frequently cited fundamental in both cohorts. It reflects the fact that there is no perfect message that will work for every patient, every time. Students noted that even common messages cannot apply to all situations, as they learned to recognize times when some conventionally appropriate phrases could be misplaced: "Saying 'have a great day' every time is not appropriate" and "My go-to line is 'have a nice day' . . . today's lecture made me realize that this is not always the most appropriate means of ending a conversation."

Communication Fundamental	Y1 Frequency (%)	Y2 Frequency (%)	z Score From Difference Between Proportions Test
1. There is no "one size fits all" message that will work in EVERY situation.	14 (25.5%)	42 (23.1%)	$z = 0.36$
2. Communication has both verbal and nonverbal components.	5 (9.1%)	31 (17.0%)	$z = -1.44$
3. Communication takes place in physical and psychological contexts.	1 (1.8%)	0 (0.0%)	$z = 1.82$
4. There are benefits to tailoring messages to different audiences.	7 (12.7%)	14 (7.7%)	$z = 1.15$
5. Multiple, sometimes competing, goals shape interactions.	9 (16.4%)	7 (3.8%)	$z = 3.24^*$
6. Communication has two dimensions, content and relationship.	0	23 (12.6%)	$z = -2.77^*$
7. Communication is a teachable and learnable skill set that requires ongoing practice.	3 (5.5%)	10 (5.5%)	$z = -0.01$
8. You cannot NOT communicate.	2 (3.6%)	2 (1.1%)	$z = 1.28$
9. Communication alone cannot solve all problems, however, it is a component of all solutions.	2 (3.6%)	9 (4.9%)	$z = -0.40$
10. Meanings are in people (not in words).	8 (14.5%)	6 (3.3%)	$z = 3.10^*$
11. Communication is irreversible.	1 (1.8%)	1 (0.5%)	$z = 0.90$
12. Good communication is cooperative.	3 (5.5%)	37 (20.3%)	$z = -2.58^*$
Total codes	55	182	

Students also acknowledged that their patients are unique and require individualized care, so even if they arrive at an interaction with a general plan, they needed to be ready to adapt. One student noted, "While I did have a plan on what I wanted to approach and how I wanted to approach different topics, when I got into the OSCE room, I realized that the entire plan needed to be modified." And another stated that this fundamental helped them to remember that "each patient is different, has different problems and needs . . . this helped me listen to what the patient had to say first and minimize any bias that I may have unconsciously developed while reading the patient background." Overall, this fundamental seemed to operate as a reminder for our students that each interaction is a fresh exchange with a unique individual.

Good communication is cooperative. Several students in the Y2 cohort mentioned this fundamental when reflecting on their OSCE interaction with a standardized patient, and a few of the Y1 students wrote about it as well. The cooperative nature of communication refers to the fact that all participants can contribute to produce understanding. Students applied this fundamental by emphasizing their role and the steps they could take to improve the communication process by working together and achieving some consensus, for example:

I wanted to make sure that I gave the patient time to respond and give me feedback. Any plan wouldn't work if the patient wasn't ready to be involved. I let her talk as much as she wanted about how the past month had been going. Without her being willing to share information, we wouldn't have gotten to any sort of resolution.

This fundamental is derived from theoretical propositions about appropriate behaviors for negotiating conversational space and time appropriately. Our students also seemed to interpret it not just as “work cooperatively with your conversational partner” but as “be agreeable.”

Communication has both verbal and nonverbal components. A true fundamental of communication, this category indicates students’ understanding of the importance of nonverbal aspects of communication. They mentioned that remembering this fundamental in their work environment would help them better understand their patients: “I will look for verbal and nonverbal cues to from the patient (as well as myself) to see if it [sic] affecting our communication process and see if any latent messages are being transmitted.” They also stated that considering the verbal and nonverbal components of communication could help patients better understand their pharmacist:

I am going to try and be more present and aware of my nonverbal communications. I think it is very easy to get caught up in the pace at work and so sometimes my body language doesn’t match what I am trying to perceive [sic] to my patient.

In critiquing their OSCE video, one student who mentioned this fundamental observed that the standardized patient did most of the speaking,

but to show that I was listening and engaged . . . I nodded and smiled a lot to let her know that I was actively listening to her and that I cared . . . [both verbal and nonverbal communication] convey messages.

Several students associated the benefit of nonverbal responses with demonstrating care beyond simply showing interest in the speaker.

There are benefits to tailoring messages to different audiences. Benefits to tailoring messages refers to the importance of remembering that different messages will likely resonate more successfully with different audiences. Some Y1 students mentioned means of identifying different audiences: “Thinking about how the patient is acting, the patient’s age, the patient’s understanding, and the time constraints will help me better know how I should present information to my patient.” They also considered more nuanced indicators, such as health literacy levels. Following their OSCEs, Y2 students talked about relying on this fundamental because it enabled them to engage in problem-solving with their patients; for example: “I tailored my suggestions to Mr. Chen’s individual barriers and motivations. Every patient is different, and this fundamental helped me to connect with Mr. Chen on a personalized level to help him.” This fundamental seemed to help our students connect the dots between adapting their own expertise to match the knowledge of the individual with whom they were communicating.

Multiple, sometimes competing, goals shape interactions. With this category, students commented on the fact that people can have a variety of objectives in any communication setting which may or may not be complimentary. Students acknowledged that being aware of competing goals could help them better understand where patients are coming from: “Now that I am aware of this, I will always take the time to step back and think about what the other person wants to get out of the interaction.” They also described how they could improve patient care by recognizing and managing the competing goals they sometimes face, for instance:

Although I cannot control competing 'goals' of those that I communicate with, I can certainly try and control my own goals that may negatively impact the conversation. For example, just because I may be in a rush does not mean that I should let that impact the level of care that I give to my patients.

Thinking about competing goals seemed to provide context for misunderstandings or difficult encounters, while also creating some space for a more neutral investigation of such situations.

Communication is a teachable and learnable skill set that requires ongoing practice. In both cohorts, 5.5% of students mentioned this fundamental, which refers to the fact that good communicators are made, not born, and that communication skills can be developed and refined through time, effort, and preparation. The students seemed to find this fundamental comforting: "I thought it was good to know that communication IS a teachable and learnable skill that 'requires ongoing practice.' The last bit of the sentence makes learning proper communication seem more hopeful." They also repeatedly indicated their intention to begin practicing their skills. As one student put it:

I wasn't always a great communicator myself, and my first several attempts preparing for this OSCE made me realize how much I still needed to learn . . . while I am no expert in communication, I know I have gotten far better at those skills ever since the beginning of my pharmacy curriculum. But, this was only accomplished through constant practice . . . there is always something to be learned at the end of it that I can apply the next time.

This fundamental was also reinforced through the lab structure by providing consistent opportunities for practice, feedback, and revision.

Meanings are in people (not in words). This category is a reminder to students that the same phrase can have very different meanings for different individuals. This fundamental encouraged the students to consider the patient's perspective: "I will think more about both understanding complicated things in a pharmacist perspective and patient perspective. Being able to understand and explain complicated or nuanced things in an effective way will be key for patients." It also prompted them to think through solutions to avoid miscommunication: "I will try to give things multiple labels to help the patient identify the object of discussion and learn what other labels they may hear." The students' responses to this fundamental suggested that it helped them conceptualize how interactions between those with high and low health literacy could play out in practice.

Communication has two dimensions, content and relationship. Students mentioned this fundamental when they were remarking that what they say cannot always be taken at face value. Some students created a shorthand for this fundamental, referring to it as "two-dimensional communication." Similar to the previous category, they applied it as a lens when they were thinking about what their actions could mean to a patient, for example, explaining the reasons for a conversation about health behavior change was meant to be a friendly way to provide care, not a way of being heavy-handed. Students also seemed to interpret this fundamental as emphasizing the importance of building rapport and creating a sense of ease with patients (e.g., "I did this by introducing myself in a friendly manner").

Four remaining categories. There were four fundamentals that were mentioned by fewer than 5% of participants in either cohort of students: (1) "Communication alone cannot solve all problems, however,

it is a component of all solutions”; (2) “Communication takes place in physical and psychological contexts”; (3) “You cannot NOT communicate”; and (4) “Communication is irreversible.” Although infrequent, they were each meaningful to a handful of students. In essence, these fundamentals served as reminders to students to be intentional about their behavior, to take the other person’s perspective, and to do their best to be aware of what could complicate or facilitate their communication with patients and colleagues.

Discussion

Several contributions to literature on communication pedagogy emerged from this project. First and foremost, the 12 Fundamentals proved a useful tool that supported our teaching and our students’ learning. We anticipate that it could work for a variety of communication classrooms. Based on the findings of this study, it would appear as though pharmacists-in-training particularly valued communication principles that emphasized audience adaptation and tailoring of messages. Although such a notion is rather basic to communication teacher-scholars, it seemed to be important and newsworthy to PharmD students. The recognition that effective communicators are strategic communicators who adapt to a listener’s goals, values, and skills is highly relevant in a pharmacy setting, where pharmacists have to distill complex information (e.g., “This is how your diabetes medication works and why you need to take it every day”) and break bad news (e.g., “That prescription is no longer covered by your insurance”) to diverse patient populations. Being cognizant of the benefits of tailoring messages to their patients and colleagues should help future pharmacists be more successful, which in turn could improve patient health outcomes. Indeed, our students provided personal examples of how they envisioned themselves using their Fundamentals to provide more patient-centered care.

There were some differences in the reported usefulness of the Fundamentals, depending on whether we asked students about communication in the pharmacy practice more generally (Y1) or with respect to an acute patient consultation setting (Y2). The Y1 students tended to select Fundamentals that emphasized attending to multiple goals, tailoring for different audiences, and the unique context of each individual, while Y2 students gravitated toward reminders of the cooperative principle, nonverbal dimensions, and communication’s role in building relationships. Pharmacy is a diverse communication ecosystem which includes other pharmacists, technicians, and physicians, as well as patients. It is perhaps not surprising that when they imagined communicating, our students chose Fundamentals that helped them consider the diverse backgrounds and experiences of others. On the other hand, a patient consultation task (Y2) might prompt students to focus more on cooperative communication as an inroad to rapport building and shared decision-making. If so, this finding is encouraging, because in spite of the emphasis on shared decision-making as a health care best practice, evidence indicates that clinicians elicit patient preferences only about half the time (Covvey et al., 2019). Although our Y1–Y2 data do not permit a direct comparison, this trend in the data is worth consideration and further investigation.

A core strength of this project is that it connected theory to practice via interdisciplinary training and systematic observation. Through the process of translating ideas from communication theory alongside our pharmacy practice educators, we interlaced the 12 Fundamentals throughout the semester using real-world examples in our lectures and lessons. This collaboration enabled us to demonstrate the relevance of the fundamentals to students’ anticipated clinical and retail pharmacy contexts, lending credibility to the concepts and prompting our learners to reflect on where theoretical ideas about communication would

apply to their professional lives. We practiced what we preached, employing the principles of tailoring, multiple goals, and cooperation in our teaching. Our own communication abilities were stretched as we worked through the new challenges of conveying our knowledge to a PharmD student audience. This project in itself, then, was an example of communication across disciplines that is highlighted in the literature as one of the consistent challenges in health-care settings. Our teaching strategies also contributed to the external validity of the research study.

Practically speaking, this study provides communication teacher-scholars and those in other fields with a tool that successfully distills some foundational theories in communication and scaffolds them so that learners can connect them to applied settings. Our learners were able to see the value of abstract communication principles and demonstrate their usefulness in the field in a variety of contexts, including patient interviewing, delivering feedback, and interprofessional interactions. They began using the 12 Fundamentals as a shorthand way of reflecting on their own behavior or their classmates' communication strategies while practicing during lab. Although it was the case that most of our students wrote about the usefulness of the 12 Fundamentals in the context of patient-provider communication, this may be a matter of timing and priming, due to the fact that we surveyed them near the end of the semester when we had been focusing on patient-provider communication in preparation for their OSCE. In the lab discussions, students routinely brought up communication issues in their current internships as well as peer-to-peer interactions as instances wherein the 12 Fundamentals either helped or could help the situation.

Four main limitations of the study provide clear opportunities for replicating and triangulating these findings. First, it was our goal to weave the fundamentals in throughout the entire semester so that students had a sense of the concept mapping and progressive skill development upon which the course was based. However, the downside of this is that we cannot confirm that the 12 Fundamentals lessons themselves were exclusively responsible for students' perceptions about the most helpful fundamental at the end of the course. An experimental design with tight internal validity could help to overcome this limitation: future testing of the 12 Fundamentals might give students a more controlled and immediate communication task to minimize measurement error. A second limitation is a potential Hawthorne effect. We prompted students to reflect on the utility of the 12 Fundamentals as part of graded assignments and a survey for extra credit. Thus, the data they provided may have been biased (e.g., from social desirability). Third, the teaching team, some content delivery, and data collection shifted during Y2. Although most of the curriculum was the same and the 12 Fundamentals did not change, some contamination is to be expected. On that note, though, the consistent emergence of Fundamental #1, "There is no 'one size fits all' message that will work in EVERY situation," as the most frequently reported Fundamental, remains important. Fourth, our coding was rigid in its prioritization of manifest content. We did not allow ourselves to read too much into students' responses, and thus we may have overlooked something that they truly learned and valued, but paraphrased.

In conclusion, the 12 Fundamentals of Highly Effective Communicators adequately translated abstract ideas from communication theory to tips that PharmD students can use in pharmacy practice. Moreover, the principles communication scholar-teachers take for granted, such as the value of tailored, person-centered communication, may be new and noteworthy to practitioners in other fields. Becoming more aware of and addressing this in applied settings has the potential to improve communication in pharmacy settings, as well as a myriad of other professions that rely on effective communication for success.

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