Patient Deception in Health Care: Physical Therapy Education, Beliefs, and Attitudes

Drew A. Curtis
Angelo State University

Han-Hung Huang
Angelo State University

Kendra L. Nicks
Angelo State University

Follow this and additional works at: https://dc.etsu.edu/ijhse

Part of the Physical Therapy Commons

Recommended Citation

Patient Deception in Health Care: Physical Therapy Education, Beliefs, and Attitudes

Introduction

Human behavior is dynamic. Physical and psychological factors are knitted into the fabric of healthy human functioning. The primary role of physical therapists is to "restore function, improve mobility, relieve pain, and prevent or limit permanent physical disabilities in patients with injury or disease" (American Physical Therapy Association, 2017). One factor that may present a barrier to fulfilling this role is the interpersonal aspects of the patient-therapist relationship, specifically when patients are deceptive. In the clinic, patients who falsely describe their health history falsely present clinical signs and symptoms or falsely respond to physical tests and measurements may mislead therapists' clinical judgement during physical therapy (PT) assessments. In addition, patients who falsely claim to be adhering to home exercises may adversely affect the PT plan of care and the treatment outcomes. For example, if a patient is being deceptive about being compliant with their home program, the therapist may attempt to progress them too quickly thereby causing more injury. Patient deception can also hinder the therapeutic alliance, which correlates with treatment adherence and has some effects on treatment outcome (Babatunde, MacDermid, & MacIntyre, 2017; Curtis & Hart, 2015; Kelly, Kraft-Todd, Schapira, Kossowsky, & Riess, 2014; Newman & Strauss, 2003). Additionally, patient deception could lead to mismanagement of their plan of care, which could extend to other healthcare providers. For example, a patient who falsely reports being compliant with PT to their physician may lead to an inappropriate treatment. Patient deception adds unnecessary cost to the burden of health care on the nation. In 2012, the Institute of Medicine reported that the cost of fraud on the nations was $75 billion dollars (McGinnis, Saunders, Smith, Stuckhardt, 2012). They defined one aspect of this fraud as the overutilization of services that can happen as described above when a patient is deceptive regarding compliance with a less expensive treatment.

Lies and beliefs about lying behavior are found across various cultures (Global Deception Research Team, 2006). People tell an average of one to two lies per day, with a smaller group of people lying more frequently than others (DePaulo, Kashy, Kirkendol, Wyer, & Epstein, 1996; Serota, Levine, & Boster, 2010; Vrij, 2000). Motivations to lie are numerous and one theoretical framework has proposed that people lie to manage impressions (DePaulo et al., 2003). Not surprisingly, lies have been documented within various professions (see Vrij, 2008), including healthcare professions. A national survey found that 28% of Americans reported sometimes lying to their healthcare provider, which is an underestimate according to healthcare professionals (General Electric Healthymagination, 2010). Patients may lie for various reasons (Curtis, 2013) with most lies being told for self-oriented reasons (DePaulo et al., 1996). Patients may feign symptoms to receive medication (Jung & Reidenberg, 2007). Patients may also lie to mental health professionals. For example, psychotherapists have detailed accounts of a variety of discovered client deceptions (Kottler & Carlson, 2011). Clients' lies ranged in motivation and type of lie, from purposefully falsifying all information within therapy (Grzegorek, 2011) to intentionally leaving out information about dying from a terminal illness (Rochlan, 2011).

As people lie, people seek to detect those lies. For example, the most commonly held stereotype across 75 countries about liars is that they avoid eye contact (Global Deception Research Team, 2006). However, eye gaze behavior has been found to be unrelated to deception (Vrij, 2008). In fact, people are not generally very good at detecting deception, slightly greater than chance

(54%; Bond & DePaulo, 2006). Even professionals are not much more accurate (56%; Vrij, 2000). One of the reasons that people may not be accurate lie detectors is the reliance on faulty beliefs about deceptive behavior (Forrest, Feldman, & Tyler, 2004). While there is not one prominent and consistent behavior that reveals people deception (like your nose is growing when you lie), various behavioral indicators have been suggested such as decreased hand limb movements and increased latency to respond as well as pitch of voice (Akehurst, Köhnken, Vrij, & Bull, 1996; DePaulo et al., 2003; Hart, Hudson, Fillmore, & Griffith, 2006; Hart, Fillmore, & Griffith, 2010; Sporer & Schwandt, 2006; Vrij, 2000; 2008). Many of these cues are found cross-culturally, though this literature base is scant (Curtis & Hart, 2015; Taylor, Larner, Conchie, & van der Zee, 2015). However, people across various professions, including psychotherapists, nursing students, managers, and police officers, hold inaccurate beliefs about these indicators of deception (Bogaard, Meijer, Vrij, & Merckelbach, 2016; Curtis, 2015; Curtis & Hart, 2015; Hart, et al., 2006; Hart et al., 2010). In addition, people do not usually like to be lied to, nor do they think positively of liars. Within healthcare professions, Curtis and Hart (2015) recently found that psychotherapists held a number of negative attitudes toward clients who lied in psychotherapy compared to those who did not. Some of the numerous negative attitudes that psychotherapists reported toward clients who lie were that they were less likely to like them, more anger toward them, seeing them as a bad person, and thinking more negatively of them. Very similar findings were discovered when surveying nursing students' attitudes toward clients who lie (Curtis, 2015).

The implication of healthcare professionals incorrectly labeling patients as liars has been suggested to affect the professional-patient relationship including clinicians' attitude toward patients (Curtis, 2015; Curtis & Hart, 2015). Much like other healthcare professionals, PT clinicians' attitudes are equally important when considering the impact on the practice and the patient-therapist relationship. However, there is limited report about PT practitioners' beliefs about and attitudes toward patient deception. In addition, it is unclear how this topic is addressed in the current education on Doctor of Physical Therapy (DPT) students. Therefore, the objectives of this study were: (1) to investigate how the topic of patient deception is covered currently in DPT educational curriculum, (2) to explore DPT students' beliefs about and attitudes toward patient deception, and (3) to examine the effects of a pedagogical intervention on DPT students' beliefs about and attitudes toward patient deception.

Methods

Survey for Current DPT Education on Patient Deception

Two hundred seventeen surveys were sent out by email to the program directors of the accredited PT programs listed in the Commission on Accreditation in Physical Therapy Education (CAPTE) directory. The email provided the purpose of the study and contained a URL link to the study hosted through a secure online research software. The email recipients were asked to complete the brief questionnaire or kindly forward it to any faculty who are teaching courses that might cover ethics or patient deception. Upon selecting the URL link, participants were provided an informed consent. After reading and consenting to participate in the research study, the participants were asked to complete the one brief questionnaire the PT Training in Deception Questionnaire (PTTDQ, see Appendix A). The PTTDQ questionnaire was constructed by the researchers to assess the current training related to deception within PT programs.

DPT Student Participants

We recruited 17 participants through DPT program at a southwestern university. Students were informed that the researchers were interested in collecting data before and after a deception educational workshop. Students were provided informed consent and were instructed that their participation in the research aspect of the educational workshop was voluntary. Following the informed consent, students were provided with two packets of questionnaires. The first packet contained a demographic questionnaire, Detection of Deception Questionnaire (DDQ; see Appendix B), and the Attitudes Toward Patient Deception Scale (ATPDS; see Appendix C). The second packet contained the same questionnaires (DDQ and ATPDS) except for the demographics questionnaire. Students completed the forms within the first packet. Then, participants were provided the educational workshop and completed the post-workshop second packet of questionnaires. Lastly, students were provided with the debriefing form.

Detection of Deception Questionnaire (DDQ)

The DDQ was developed by Hart and colleagues (2006; 2010) and has been used in other studies examining professionals' beliefs about indicators of deception regarding patient or client deception (Curtis, 2015; Curtis & Hart, 2015). The DDQ consists of 30 items. The first item asks participants to indicate their confidence in their ability to detect deception on a 7 point Likert-type rating scale (1 = not confident at all, 7 = extremely confident) and the second item asks how often participants thought patients lie to them (1 = very rarely, 7 = very often). The remaining items asked participants to indicate whether they believed each of 28 behaviors increases, decreases, or remains the same when patients lie (1 = significant decrease in behavior, 4 = no change in behavior, 7 = significant increase in behavior).

Attitudes Toward Patient Deception Scale (ATPDS)

The ATPDS is a 24 item attitudinal scale that has been used in research investigating nursing students' attitudes toward patient deception (Curtis, 2015). The ATPDS is an adaptation of the Therapist Attitudes Towards Deception Scale (TATDS), in which the last 12 attitudinal items were adapted from studies investigating physical therapists' and physicians' attitudes (Curtis, 2013; Foster et al., 2003; Sack, Radler, Mairella, Touger-Decker, & Khan, 2009). The TATDS has shown high internal consistency reliability (Cronbach's α = .83; Curtis, 2013). The only change in the ATPDS from the TATDS is asking participants to rate patient deception rather than client deception. The ATPDS asks participants to indicate on 12 items how their attitudes would change if a patient's lie was discovered, on a 9 point Likert-type rating scale (1 = decrease, 5 = no change, 9 = increase). On the remaining items, participants are asked to indicate their attitudes toward patients who lie to physical therapists compared to those who do not lie to physical therapists, on a 7 point Likert-type rating scale (e.g., 1 = not very pleasant, 7 = very pleasant). The ATPDS demonstrated acceptable internal consistency reliability in previous research (Cronbach's α = .88; Curtis, 2015). The ATPDS for the current study demonstrated acceptable internal consistency reliability during both administrations (Cronbach's α = .79; .83).

Educational Workshop

A one-hour workshop was presented to DPT students. The workshop was conducted by a Counseling Psychology professor with expertise in human deception. The workshop provided an overview of deception from various sources of literature (DePaulo et al., 1996; Vrij, 2008). The

workshop was a lecture and discussion based presentation that covered areas of deception including the frequencies of its occurrence, types of lies, motivations for its use, deception detection, relational effects of deception, deception within professional relationships, beliefs about deception, and attitudes toward the use of deception. After discussing deception, the professor provided research resources regarding 28 indicators of deception (Akehurst et al., 1996; DePaulo et al., 2003; Hart et al., 2006; Hart et al., 2010; Sporer & Schwandt, 2006; Vrij, 2008) with accompanying handouts. The students were asked to review the indicators and then quiz each other within pairs. The quiz responses were not used in data collection. The intent of quizzing was to facilitate active learning and activate working memory to retain the correct indicators of deception. Following the indicator activity, the presenter discussed how attitudes toward patient deception may affect clinical practice, specifically aspects of PT.

Analyses
Descriptive statistics were conducted to evaluate responses on the survey for current DPT education on patient deception. Similar to other research (Curtis, 2015; Curtis & Hart, 2015) one-sample *t*-tests were applied on each of the 28 behavioral variables comparing participants' responses to a no-change anchor (= 4) to determine if behaviors were believed to change when patients lie, and the direction of behavioral change (1 = significant decrease in behavior, 4 = no change in behavior, 7 = significant increase in behavior). A Bonferroni adjustment was applied to the analyses, in order to avoid a Type I error (correction = .002). The mean of each indicator was then categorically compared to prior research of deception indicators. To examine beliefs from pre-workshop to post-workshop, categorical differences were compared.

One-sample *t*-tests were used on each of the 24 attitude items with a mid-point anchor (Items 1-12 midpoint = 5; items 13-24 midpoint = 4). Similarly, a Bonferroni adjustment was applied (= .002). To examine overall attitudes from pre-workshop to post-workshop attitudinal items were summed to derive a total attitude score for comparison and a paired samples *t*-test was conducted on total attitude scores. To examine the effect size, Cohen's d was used (Cohen, 1988).

Results

Survey for Current DPT Education on Patient Deception
Forty CAPTE accredited DPT programs responded to the survey (response rate: 18.4%). Over half of participants responded that their program length was less than 10 years and the majority responded that there were 31 to 40 students in each cohort. All participants responded that their program curriculum formally contained some information about ethics. Most participants (85.0%) stated that their program included moderate to very much information about ethics (M = 5.05, SD = 1.25). The topic of patient and therapist deception is minimally included within their program curriculum (M = 2.89, SD =1.41 and M = 3.22, SD = 1.73, respectively). However, patient and therapist deception it is seen as a moderately important area for their programs (M =3.53, SD =1.84 and M = 4.00, SD = 2.04, respectively; Table 1).

Table 1. Summary of survey results for current DPT education on patient deception

Questions	N	Mean	SD
1. How much does your current program curriculum formally include information about ethics?	37	5.05	1.25
2. How much does your current program curriculum formally include information about patient deception?	36	2.89	1.41
3. How much does your current program curriculum formally include information about therapist deception?	36	3.22	1.73
4. How important is the area of patient deception for your program?	36	3.53	1.84
5. How important is the area of therapist deception for your program?	35	4.00	2.04

Note: Likert-type scale (1 = None; 7 = Very much) were used for the question 1, 2 and 3. Likert-type scale (1 = Not at all important; 7 = Extremely important) were used for the question 4 and 5. (SD: Standard deviation)

DPT students' belief about patient deception

The participants ranged in age from 24 to 38 years old ($M = 26$, $SD = 3.48$). Participants' sex was fairly equally represented. The majority (64.7%) were Caucasian/European American and holding a Bachelor of Science Degree (94.1%). Almost every DPT student had been supervised as a volunteer in PT clinics and had participated in clinical integrations as well as one clinical practicum in acute care. Work settings of previous clinical experience varied, including hospital, private practice, rehabilitation center etc. Specialties in clinical experience also varied across participants. The participants reported very little exposure to literature on deception, training in patient deception, and training in deception detection. Confidence in detecting patient deception was moderate.

Before the educational workshop, students held accurate beliefs for 7 of the 28 indicators of deception (Table 2). The correctly identified indicators were: increased pitch of voice, decreased logical consistencies and no changes in smiles, shrugs, length of answers, descriptions of their own feelings, and descriptions of interactions with others.

Table 2. DPT students' beliefs about lying-related changes in behavior before and after the educational workshop

Behavioral indicators of deception	Identified by prior research	Students' beliefs before workshop	Mean (SD)	Sig.	Students' beliefs after workshop	Mean (SD)	Sig.
Eye contact	*No change*	Decrease	2.18 (0.64)	0.000	No change	4.12 (0.49)	0.332
Eye blinks	*No change*	Increase	5.35 (0.93)	0.000	No change	4.00 (0.00)	1.000
Head movements	*No change*	Increase	5.24 (0.66)	0.000	No change	4.00 (0.00)	1.000
Smiles	*No change*	No change	4.06 (1.03)	0.817	No change	4.00 (0.00)	1.000
Hand & finger movements	*Decrease*	Increase	5.47 (0.72)	0.000	No change	3.12 (2.06)	0.096
Arm movements	*Decrease*	No change	4.53 (1.33)	0.120	No change	3.12 (2.06)	0.096
Leg & foot movements	*Decrease*	Increase	5.24 (0.56)	0.000	No change	3.12 (2.06)	0.096
Postural Shifts	*No change*	Increase	5.82 (0.64)	0.000	No change	4.00 (0.00)	1.000
Shrugs	*No change*	No change	4.53 (1.01)	0.046	No change	4.00 (0.00)	1.000
Gestures	*No change*	Increase	5.35 (0.70)	0.000	No change	4.00 (0.00)	1.000
Number of speech interruptions (ah, um)	*No change*	Increase	5.71 (1.05)	0.000	No change	4.24 (0.75)	0.216
Number of pauses or hesitations	*No change*	Increase	5.35 (0.61)	0.000	No change	4.41 (1.23)	0.186
Latency to respond	*Increase*	No change	4.82 (1.38)	0.026	Increase	6.24 (0.66)	0.000
Hectic speech pattern	*No change*	Increase	5.29 (0.85)	0.000	No change	4.06 (0.25)	0.333
Pitch of voice	*Increase*	Increase	5.00 (0.79)	0.000	Increase	6.24 (0.66)	0.000
Length of answers	*No change*	No change	4.94 (1.75)	0.041	No change	3.18 (1.24)	0.014
Short simple sentences	*Increase*	No change	4.24 (1.35)	0.482	Increase	5.94 (1.39)	0.000
Plausible descriptions	*Decrease*	No change	4.29 (1.57)	0.452	No change	3.12 (1.73)	0.051
Logical consistencies	*Decrease*	Decrease	2.47 (0.87)	0.000	No change	2.94 (1.39)	0.006
Amount of detail in descriptions	*Decrease*	No change	4.06 (1.75)	0.891	No change	3.06 (1.52)	0.021

Unusual details in descriptions	*No change*	Increase	5.41 (0.94)	0.000	No change	3.59 (0.94)	0.090
Unnecessary details in descriptions	*No change*	Increase	5.88 (0.70)	0.000	No change	3.47 (1.01)	0.046
Descriptions of their own feelings	*No change*	No change	4.35 (1.50)	0.346	No change	3.76 (0.66)	0.163
Recounting exactly what somebody said	*Decrease*	No change	4.29 (1.45)	0.415	Decrease	2.53 (1.38)	0.000
Descriptions of interactions with others	*No change*	No change	4.12 (1.27)	0.707	No change	3.71 (1.16)	0.311
Spontaneous corrections	*Decrease*	Increase	5.71 (0.59)	0.000	Decrease	2.12 (1.05)	0.000
Claiming a lack of memory	*Decrease*	Increase	5.47 (1.07)	0.000	Decrease	2.00 (0.94)	0.000
Contradictions	*No Change*	Increase	5.94 (0.66)	0.000	No change	3.47 (1.66)	0.208

Note: The mean values in each indicator were compared to a "No change" which is rating of 4.0. The students' accurate beliefs for indicators of deception both before and after the educational workshop are highlighted in light gray. The students held more accurate beliefs for 22 of the 28 indicators after the workshop. (SD: Standard deviation)

Following the workshop, students held accurate beliefs for 22 of the 28 indicators (Table 2). Except for the decreased logical consistencies, students were able to correctly recognize 16 more indicators including increased latency to respond, increased short simple sentences, decreased recounting exactly what somebody said, decreased spontaneous corrections, decreased claiming a lack of memory and no changes in eye contact, eye blinks, head movements, postural shifts, gestures, number of speech interruption (such as ah…, um…), number of pauses or hesitations, hectic speech pattern, unusual details in descriptions, unnecessary details in descriptions, and contradictions.

DPT students' attitude toward patient deception
Before the educational workshop, students held 15 negative attitudes toward patients who lie (Table 3). For example, if students discovered that patients were lying, they tend not to like the patients, are less likely to judge them as good patients, and have less desire to interact and work with them.

After the workshop, students held only 10 negative attitudes toward patients who lie and 5 negative attitudes were resolved (Table 3). For example, students would not be that angry at or thinking negatively of the patients who lie. When compared to patients who do not lie, students would not consider patients who lie are lazy or less pleasant.

The total attitude score was compared pre- and post-workshop, revealing a statistically significant difference ($p <.001$; Cohen's $d = 1.75$), which indicates that there were less negative attitudes toward patient deception after the workshop ($M = 91.00$, $SD = 9.58$) compared to attitudes prior to the workshop ($M = 75.24$, $SD = 8.39$).

Discussion

The current findings indicate that patient and therapist deception are minimally included within formal curriculum across DPT programs. Though minimally included, program directors and faculty deem deception within PT an area that is moderately important. These results are similar to findings regarding training within other healthcare professions (Curtis, 2013, 2015; Reed, 1996). Training in deception may be minimally included in PT and other healthcare professions due to the perceived therapist role, truth-bias, and a fear of incompetence (Barnett, 2011; Curtis, 2013; Kottler & Carlson, 2011; O'Sullivan, 2003). Education on deception in PT may be neglected because the focus is on clinical skills and competencies, similar to other healthcare professionals (Curtis, 2015; Curtis & Hart, 2015). Patient deception may be viewed as a peripheral matter, which may lead to its lack of inclusion in formal training and education. Further, physical therapists may operate with a truth-bias, in that assuming patients who want to get help will present symptoms honestly. Being biased toward patient honesty may contribute to a lack of discussion about deception within curriculum. Lastly, faculty and students may be fearful to talk about patient or therapist deception due to concerns of incompetence, in not detecting deception or for admitting to deceiving a patient.

Table 3. DPT students' attitudes toward patient deception before and after the educational workshop

#	Attitudes toward patient deception	Students' attitudes before workshop	Mean (SD)	Sig.	Students' attitudes after workshop	Mean (SD)	Sig.
1	Liking the patient	Decrease	3.76 (1.09)	0.000	Decrease	4.06 (0.97)	0.001
2	Being angry at the patient*	Increase	5.88 (0.78)	0.000	No change	5.12 (0.60)	0.431
3	Patient as a bad person*	No change	5.65 (0.79)	0.004	No change	5.24 (0.75)	0.216
4	Thinking negatively of patient*	Increase	6.12 (1.05)	0.000	No change	5.18 (1.07)	0.508
5	Judging patient harshly*	Increase	5.88 (0.86)	0.001	No change	5.47 (0.62)	0.007
6	Desire to interact with patient	Decrease	3.65 (1.00)	0.000	Decrease	3.94 (0.97)	0.000
7	Enthusiasm to work with patient	Decrease	3.35 (1.00)	0.000	Decrease	3.82 (0.64)	0.000
8	Judging client as a good patient	Decrease	3.65 (0.61)	0.000	Decrease	4.12 (0.93)	0.001
9	Speaking poorly of patient*	No change	5.29 (0.99)	0.236	No change	5.35 (0.79)	0.083
10	Trusting the patient	Decrease	2.53 (1.01)	0.000	Decrease	3.38 (1.03)	0.000
11	Thinking positively about patient	Decrease	3.53 (0.94)	0.000	Decrease	4.00 (0.79)	0.000
12	Viewing patient as sincere	Decrease	2.88 (0.93)	0.000	Decrease	3.71 (0.85)	0.000
13	Successful	Decrease	2.94 (1.03)	0.001	Decrease	3.41 (0.51)	0.000
14	Pathological*	No change	3.71 (0.77)	0.136	No change	4.00 (0.61)	1.000
15	Weak*	No change	4.18 (0.64)	0.269	No change	4.12 (0.60)	0.431
16	Compliant	Decrease	2.41 (0.94)	0.000	Decrease	3.13 (0.72)	0.000
17	Predictable	No change	3.65 (1.54)	0.358	No change	3.82 (0.88)	0.422
18	Pleasant	Decrease	3.00 (0.79)	0.000	No change	3.65 (0.79)	0.083
19	Lazy*	Increase	4.94 (0.97)	0.001	No change	4.35 (0.61)	0.029
20	Awkward*	No change	4.53 (0.80)	0.015	No change	3.94 (0.83)	0.773

21	Knowledgeable	No change	3.82 (0.95)	0.455	No change	3.82 (0.64)	0.269
22	Intelligent	No change	3.82 (0.95)	0.455	No change	4.12 (0.60)	0.431
23	Likable	Decrease	3.18 (0.81)	0.001	Decrease	3.29 (0.69)	0.001
24	Adjusted	No change	3.53 (0.72)	0.016	No change	3.71 (0.59)	0.056

Note: The mean values on items 1-12 were compared to a mid-point anchor = 5. The mean values on items 13-24 were compared to a mid-point anchor = 4. The students' negative attitudes toward deception ($p < .002$) both before and after the educational workshop are highlighted in gray. Five negative attitudes were resolved after the workshop. (SD: Standard deviation; * item code was reversed

Due to minimal training in deception, it is not surprising that DPT students held a number of inaccurate beliefs about indicators of deception when first assessed. These findings are similar to research with other healthcare professionals (Curtis, 2015; Curtis & Hart, 2015). One of the reasons DPT students may have held inaccurate beliefs about deceptive behavior is that faulty beliefs are pervasive and evidenced in cross-cultural research (Global Deception Research Team, 2006). Additionally, when first surveyed, DPT students held many negative attitudes toward patients who lie. People typically do not favor being the target of deception. These findings have also been corroborated from professionals, such as psychologists and nursing students. Psychologists, psychology interns, and nursing students have reported negative attitudes toward clients or patients who lie, such as liking them less or thinking more negatively of them (Curtis, 2015; Curtis & Hart, 2015). Awareness of negative attitudes has been suggested to be important in PT practice (Sack et al., 2009).

The implementation of a deception workshop was effective in increasing accurate beliefs about indicators of deception and decreasing negative attitudes toward patients who lie. Healthcare professionals do not usually dedicate much of their education to deception (Curtis, 2015; Curtis & Hart, 2015), which may lead to relying on inaccurate beliefs developed from personal experience of observing others, media and social networks, or erroneous literature that promote liar stereotypes (Hurley, Griffin, & Stefanione, 2014; Vrij, 2008). Thus, including formal training would enhance education and practice through promoting accurate beliefs about deceptive behavior and encouraging DPT students to evaluate their attitudes toward patients, if deception is suspected. Decreasing negative attitudes toward patients who lie would serve to maintain a strong working alliance. However, it is important to note that while the workshop did resolve several negative attitudes toward patient deception, it did not resolve all negative attitudes. For example, participants held negative attitudes toward liking patients who lied pre- and post-workshop. In addition, the workshop also can be delivered to clinicians currently in practice. In doing so, DPT students and clinicians can positively affect the therapist-patient relationship and more effectively work toward patient outcomes.

There are some limitations in the current findings. First, the sample size of DPT respondents was small. The results reported on training in deception may not fully represent all DPT programs. Another limitation is that it is unclear if teaching about indicators of deception in a different format, other than the specific workshop, or by different educators, would lead to similar results. Therefore, we suggest that future research may need to focus on exploring various delivering formats for education about deception. Second, there may have been a response bias to answer in a manner that was consistent with the workshops aims to reduce negative attitudes toward patients. While not all negative attitudes were resolved, it could be beneficial to have attitudes assessed outside of the context of the workshop to eliminate potential bias. Last, it would be important to see whether the effects of these changes in beliefs and attitudes will be enduring. The current study implemented the post-test assessment following the workshop. It is unclear if the post-test results were due to acute recall or if the responses were stored into long-term memory, which would involve other mechanisms of memory (McGaugh, 2000). While we did not assess enduring attitudinal change, Cialdini, Petty, and Cacioppo (1981) discussed various routes for enduring attitudinal changes. Therefore, future research may also want to explore the longitudinal effects of this educational strategy for training DPT students. Additionally, research

may want to explore the beliefs and attitudes of PT clinicians and if continuing education enhances the effect of their clinical practices.

In conclusion, the current study explored an interpersonal phenomenon, deception, within the context of PT education. Deception in PT is deemed important and not often addressed within education. The current findings reveal that DPT students do not hold any professional advantage regarding beliefs about indicators of deception and hold a number of negative attitudes toward patients who lie. However, an education intervention corrected many inaccurate beliefs and reduced negative attitudes. Therefore, we suggest that PT educators may want to consider embedding a thread of discussion regarding patient deception and students' attitudes regarding patient deception within a current curriculum, which may enhance PT education and students' subsequent practice. This addition would not necessarily require mandatory curriculum change but instead, raise awareness throughout the curriculum about deception. The information could easily be added to discussions of the therapeutic alliance, clinical practicums, as well as case studies that already exist in the current entry-level curriculum.

References

Akehurst, L., Köhnken, G., Vrij, A., & Bull, R. (1996). Lay persons' and police officers' beliefs regarding deceptive behavior. *Applied Cognitive Psychology, 10*, 461-471. doi:10.1002/(SICI)1099-0720(199612)10:6<461::AID-ACP413>3.0.CO;2-2

American Physical Therapy Association. (2017). The role of the physical therapist in national health care reform. Retrieved from https://www.apta.org/uploadedFiles/APTAorg/Advocacy/Federal/Health_Care_Reform/APTA_Position/RoleofPTinHealthCareReform.pdf

Babatunde, F., MacDermid, J., & MacIntyre, N. (2017). Characteristics of therapeutic alliance in musculoskeletal physiotherapy and occupational therapy practice: a scoping review of the literature. *BMC Health Services Research*, *17*(1),1-23. doi:10.1186/s12913-017-2311-3

Barnett, J. E. (2011). Learning from lies at the therapist's school of hard knocks. In J. Kottler, & J. Carlson (Eds.), *Duped: Lies and deception in psychotherapy.* (pp. 121-126). New York, NY US: Routledge/Taylor & Francis Group.

Bogaard, G., Meijer, E. H., Vrij, A., & Merckelbach, H. (2016). Strong, but wrong: Lay people's and police officers' beliefs about verbal and nonverbal cues to deception. *Plos ONE*, *11*(6), 1-19. doi:10.1371/journal.pone.0156615

Bond Jr., C. F., & DePaulo, B. M. (2006). Accuracy of deception judgments. *Personality & Social Psychology Review, 10*, 214-234. doi:10.1207/s15327957pspr1003_2

Cialdini, R. B., Petty, R. E., & Cacioppo, J. T. (1981). Attitude and attitude change. *Annual Review of Psychology*, *32*(1), 357-404.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Hillsdale, N.J.: L. Erlbaum Associates.

Curtis, D. A. (2013). *Therapists' beliefs and attitudes towards client deception.* (Order No. 3579625, Texas Woman's University). *ProQuest Dissertations and Theses*, 174. Retrieved from http://ezproxy.twu.edu:2048/docview/1508454518?accountid=7102. (1508454518).

Curtis, D. A. & Hart, C. L. (2015). Does Pinocchio's nose grow in therapy? Therapists' attitudes and beliefs toward client deception. *International Journal for the Advancement of Counselling, 37*5, 279-292.

Curtis, D. A. (2015). Patient deception: Nursing professionals' beliefs and attitudes. *Nurse Educator, 40*, 254-257.

DePaulo, B. M., Kashy, D. A., Kirkendol, S. E., Wyer, M. M., & Epstein, J. A. (1996). Lying in everyday life. *Journal of Personality and Social Psychology*, 70(5): 979-995.

DePaulo, B. M., Lindsay, J. J., Malone, B. E., Muhlenbruck, L., Charlton, K., & Cooper, H. (2003). Cues to deception. *Psychological Bulletin, 129*, 74-118. doi:10.1037/0033-2909.129.1.74

Forrest, J. A., Feldman, R. S., & Tyler, J. M. (2004). When accurate beliefs lead to better lie detection. *Journal of Applied Social Psychology, 34*, 764-780. doi:10.1111/j.1559-1816.2004.tb02569.x

Foster, G. D., Wadden, T. A., Makris, A. P., Davidson, D., Sanderson, R. S., Allison, D. B., & Kessler, A. (2003). Primary care physicians' attitudes about obesity and its treatment. *Obesity Research, 11*(10), 1168-1177. Retrieved from http://search.ebscohost.com/login.aspx?direct=true&db=cmedm&AN=14569041&site=ehost-live

General Electric Healthymagination. (2010). GE better health 2010 study with Cleveland Clinic and Ochsner. Retrieved from http://www.cliohealth care.com/winners_media/2010/pr/pdf/401000353_1_supporting.pdf

Global Deception Research Team. (2006). A world of lies. *Journal of Cross-Cultural Psychology, 37,* 60–74. doi:10.1177/0022022105282295

Grzegorek, J. L. (2011). Smoke and mirrors. In J. Kottler, & J. Carlson (Eds.), *Duped: Lies and deception in psychotherapy.* (pp. 33-37). New York, NY US: Routledge/Taylor & Francis Group.

Hart, C. L., Fillmore, D. G., & Griffith, J. D. (2010). Deceptive communication in the workplace: An examination of beliefs about verbal and paraverbal cues. *Individual Differences Research, 8*, 176-183.

Hart, C. L., Hudson, L. P., Fillmore, D. G., & Griffith, J. D. (2006). Managerial beliefs about the behavioral cues of deception. *Individual Differences Research, 4*, 176-184.

Hurley, C. M., Griffin, D. J., & Stefanione, M. A. (2014). Who told you that? Uncovering the source of believed cues to deception. *International Journal of Psychological Studies, 6*, 19-32.

Jung, B., & Reidenberg, M. M. (2007). Physicians Being Deceived. *Pain Medicine*, *8*(5), 433-437. doi:10.1111/j.1526-4637.2007.00315.x

Kelly, J. M., Kraft-Todd, G., Schapira, L., Kossowsky, J., & Riess, H. (2014). The Influence of the patient-clinician relationship on healthcare outcomes: A systematic review and meta-analysis of randomized controlled trials. *Plos ONE*, *9*(4), 1-7. doi:10.1371/journal.pone.0094207

Kottler, J., & Carlson, J. (2011). *Duped: Lies and deception in psychotherapy*. New York, NY US: Routledge/Taylor & Francis Group.

McGaugh, J. L. (2000). Memory--a Century of Consolidation. *Science*, *287,* 248.

McGinnis, J., Saunders, R., Smith, M., & Stuckhardt, L. (2012). *Best care at lower cost: the path to continuously learning health care in America*. National Academies Press.

Newman, C. F., & Strauss, J. L. (2003). When clients are untruthful: Implications for the therapeutic alliance, case conceptualization, and intervention. *Journal of Cognitive Psychotherapy, 17*, 241-252. doi:10.1891/jcop.17.3.241.52534

O'Sullivan, M. (2003). The fundamental attribution error in detecting deception: The boy-who-cried-wolf effect. *Personality and Social Psychology Bulletin, 29*, 1316-1327. doi:10.1177/0146167203254610

Reed, A. (1996). Economies with 'the truth': Professional's narratives about lying and deception in mental health practice. *Journal of Psychiatric and Mental Health Nursing*, *3*, 249–256.

Rochlan, A. B. (2011). What clients talk about and what they don't. In J. Kottler, & J. Carlson (Eds.), *Duped: Lies and deception in psychotherapy.* (pp. 91-96). New York, NY US: Routledge/Taylor & Francis Group.

Sack, S., Radler, D. R., Mairella, K. K., Tougher-Decker, R., & Khan, H. (2009). Physical therapists' attitudes, knowledge, and practice approaches regarding people who are obese. *Physical Therapy*, *89*, 804-815.

Serota, K. B., Levine, T. R., & Boster, F. J. (2010). The prevalence of lying in America: Three studies of self-reported lies. *Human Communication Research*, *36*(1), 2-25.

Sporer, S. L., & Schwandt, B. (2006). Paraverbal indicators of deception: A meta-analytic synthesis. *Applied Cognitive Psychology, 20*, 421-446. doi:10.1002/acp.1190

Taylor, P. J., Larner, S., Conchie, S. M., & van der Zee, S. (2015). Cross-cultural deception detection. In P. A. Granhag, A. Vrij, B. Verschuere, P. A. Granhag, A. Vrij & B. Verschuere (Eds.), *Detecting deception: Current challenges and cognitive approaches* (pp. 175–201). Wiley-Blackwell.

Vrij, A. (2000). *Detecting lies and deceit: The psychology of lying and the implications for professional practice*. New York, NY: John Wiley & Sons, Ltd.

Vrij, A. (2008). *Detecting lies and deceit: Pitfalls and opportunities (*2nd Ed.*).* West, Sussex, England: John Wiley & Sons Ltd.

Appendix A
PT Training in Deception Questionnaire

1. How long is your program (including BS, MPT, and DPT)?
   o   Less than 10 years
   o   11 to 20 years
   o   21 to 30 years
   o   30 to 40 years
   o   More than 40 years
2. How many students are there in each cohort (in average)?
   o   Less than 20 students
   o   20 to 30 students
   o   31 to 40 students
   o   41 to 50 students
   o   More than 50 students
3. How much does your current program curriculum formally include information about ethics?

   1   2   3   4   5   6   7
   None   Very much

Please answer the following questions as best you can. If you are uncertain on what is meant by deception, please refer to this definition:
 "a successful or unsuccessful deliberate attempt, without forewarning, to create in another a belief which the communicator considers to be untrue"

4. How much does your current program curriculum formally include information about patient deception?

   1   2   3   4   5   6   7
   None   Very much

5. How much does your current program curriculum formally include information about therapist deception?

   1   2   3   4   5   6   7
   None   Very much

6. How important is the area of therapist deception for your program?

   1   2   3   4   5   6   7
   Not at   Extremely
   all important   important

7. How important is the area of patient deception for your program?

   1   2   3   4   5   6   7
   Not at   Extremely
   all important   important

Appendix B
Detection of Deception Questionnaire

For the following questions, *circle* the number that most closely corresponds with your opinions.

1. **How confident are you that you can detect when patients are deceptive to you?**

   1   2   3   4   5   6   7

   Not very   Extremely
   confident   confident

2. **How often do you think patients would be deceptive to you?**

   1   2   3   4   5   6   7

   Very   Very
   rarely   often

Please indicate whether the following behaviors increase or decrease when people lie to you.

3. **Eye contact**:

   1   2   3   4   5   6   7

   Decreases   Does not   Increases
   a lot   change   a lot

4. **Eyeblinks**:

   1   2   3   4   5   6   7

   Decrease   Do not   Increase
   a lot   change   a lot

5. **Head movements**:

   1   2   3   4   5   6   7

   Decrease   Do not   Increase
   a lot   change   a lot

6. **Smiles**:

   1   2   3   4   5   6   7

   Decrease   Do not   Increase
   a lot   change   a lot

7. **Hand and finger movements**:

   1   2   3   4   5   6   7

   Decrease   Do not   Increase
   a lot   change   a lot

8. **Arm movements**:

1	2	3	4	5	6	7

Decrease a lot   Do not change   Increase a lot

9. **Leg and foot movements**:

1	2	3	4	5	6	7

Decrease a lot   Do not change   Increase a lot

10. **Postural shifts**:

1	2	3	4	5	6	7

Decrease a lot   Do not change   Increase a lot

11. **Shrugs**:

1	2	3	4	5	6	7

Decrease a lot   Do not change   Increase a lot

12. **Gestures**:

1	2	3	4	5	6	7

Decrease a lot   Do not change   Increase a lot

13. **The number of speech interruptions such as "uh" and "um"**:

1	2	3	4	5	6	7

Decrease a lot   Do not change   Increase a lot

14. **The number of pauses or hesitations in speech**:

1	2	3	4	5	6	7

Decrease a lot   Do not change   Increase a lot

15. **The amount of time before beginning to respond to a question**:

1	2	3	4	5	6	7

Decreases a lot   Does not change   Increases a lot

16. **Hectic speech patterns**:

1	2	3	4	5	6	7

Decrease a lot   Do not change   Increase a lot

17. **Changes in the pitch of voice**:

1	2	3	4	5	6	7
Decrease			Do not			Increase
a lot			change			a lot

18. **The length of answers**:

1	2	3	4	5	6	7
Decrease			Do not			Increase
a lot			change			a lot

19. **The use of short, simple sentences in stories and explanations**:

1	2	3	4	5	6	7
Decreases			Does not			Increases
a lot			change			a lot

20. **The use of plausible descriptions in stories and explanations**:

1	2	3	4	5	6	7
Decreases			Does not			Increases
a lot			change			a lot

21. **Logically consistent stories and explanations**:

1	2	3	4	5	6	7
Decrease			Do not			Increase
a lot			change			a lot

22. **The amount of detailed descriptions in stories and explanations**:

1	2	3	4	5	6	7
Decreases			Does not			Increases
a lot			change			a lot

23. **Unusual details in descriptions**:

1	2	3	4	5	6	7
Decrease			Do not			Increase
a lot			change			a lot

24. **Unnecessary details in descriptions**:

1	2	3	4	5	6	7
Decrease			Do not			Increase
a lot			change			a lot

25. **Descriptions of their own feelings or the feeling of others**:

1	2	3	4	5	6	7
Decrease			Do not			Increase
a lot			change			a lot

26. **Recounting exactly what somebody had said in stories and explanations**:

1	2	3	4	5	6	7
Decreases a lot			Does not change			Increases a lot

27. **Descriptions of interactions with others in stories and explanations**:

1	2	3	4	5	6	7
Decrease a lot			Do not change			Increase a lot

28. **Spontaneous corrections in stories and explanations**:

1	2	3	4	5	6	7
Decrease a lot			Do not change			Increase a lot

29. **Claiming a lack of memory for certain events or information**:

1	2	3	4	5	6	7
Decreases a lot			Does not change			Increases a lot

30. **Stories with contradictions**:

1	2	3	4	5	6	7
Decrease a lot			Do not change			Increase a lot

Appendix C
Attitudes Toward Patient/Client Deception Scale

The investigators do not condone or condemn deception; rather, it is being studied scientifically and trying to learn the answers to some of the most fundamental questions about the phenomenon.

If you discovered that a patient/client was lying to you, how would that affect:

1	2	3	4	5	6	7
Significantly decrease			No change			Significantly increase

1. Liking the patient/client?

2. Being angry at the patient/client?

3. Seeing the patient/client as a bad person?

4. Thinking negatively about the patient/client?

5. Judging the patient/client harshly?

6. Desire to interact with the patient/client?

7. Enthusiasm to work with the patient/client?

8. Judging the client as a good patient/client?

9. Speaking poorly of the patient/client with others?

10. Trusting the patient/client?

11. Thinking positively about the patient/client?

12. Viewing the patient/client as sincere?

13-23. Patients/Clients who lie compared to patients/clients who do not lie are:

1	2	3	4	5	6	7
Not very successful						Very successful

1	2	3	4	5	6	7
Not very pathological						Very pathological

1	2	3	4	5	6	7
Not very weak						Very weak

1	2	3	4	5	6	7
Not very compliant						Very compliant

1	2	3	4	5	6	7
Not very pleasant						Very pleasant

1	2	3	4	5	6	7
Not very lazy						Very lazy

1	2	3	4	5	6	7
Not very awkward						Very awkward

1	2	3	4	5	6	7
Not very knowledgeable						Very knowledgeable

1	2	3	4	5	6	7
Not very intelligent						Very intelligent

1	2	3	4	5	6	7
Not very likeable						Very likeable

1	2	3	4	5	6	7
Not very adjusted						Very adjusted