RUNNING HEAD: Pharmacists' and laypersons' suspicion of prescription fraud

Prescription fraud: A comparison of pharmacists' and laypersons' perceptions of suspicious
prescription presentation behaviour

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Abstract

Australia has seen an increase in the abuse of prescription drugs, including obtaining them through prescription fraud. As the gate-keepers to medications, pharmacists have the opportunity to assess the veracity of prescriptions and those presenting them. The present study investigated how pharmacists detect deception in the context of prescription fraud, and whether their experience affects their levels of suspicion compared with non-experienced laypersons. An online survey was completed by 43 pharmacists and 110 laypersons. Pharmacists reported using a variety of methods to detect fraudulent prescriptions. When faced with indicators of drug use, as well as both reliable and unreliable indicators of deception (as determined from the literature), pharmacists were generally more suspicious than laypersons of all and more suspicious than laypersons of a hypothetical person displaying 'true' indicators of deception. However, both groups were misled by unreliable deception cues, and laypersons actually demonstrated more knowledge of deception cues than pharmacists.

Keywords: prescription fraud; deception detection; pharmacists; prescription drugs

1. Introduction

Following in the footsteps of the US, Australia has been experiencing a spate of prescription drug misuse, especially opiate-based pain killers such as oxycodone, fentanyl and morphine. In the US, opioid pain killers account for more deaths than heroin and cocaine combined (Paulozzi, Jones, Mack & Rudd, 2011), while Australia has experienced recent increases in doctor shopping¹, treatment at emergency rooms for licit drug use, and also admissions into opioid treatment programs (Doneman, 2010).

Prescription fraud is the most common method for obtaining pharmaceutical drugs for illegitimate personal use and diversion onto the black market (Rodwell, Ringland, & Bradford, 2010). It has become increasingly sophisticated with the advent of professional publishing software and low cost laser printers. Offenders also alter dosage, dates and strength of medications on legitimate prescriptions. In New South Wales, Australia, requests on fraudulent prescriptions for oxycodone more than tripled from 1995 to 2007, overtaking benzodiazepines as the most sought after prescription drug (Rodwell et al., 2010).

Law enforcement agencies focus on the investigation, capture and prosecution of individuals responsible for illegally obtaining and diverting pharmaceutical medications, while the medical field focuses on minimising the risks and harms to patients who are addicted to these medications. The present study, however, focuses on pharmacists as the ‘gatekeepers’ of medications and, as such, the first point of contact for offenders when it comes to prescription fraud. It is the aim of this study to assess the techniques that pharmacists and front counter pharmacy staff use to assess the legitimacy of the presenting patient. Specifically, the study aims to assess the effect that pharmacist experience (expertise)

¹ Doctor shopping involves a patient attending multiple doctors for multiple prescriptions unwarranted by therapeutic need (Monheit, 2010). The prescriptions are genuine and legal, but the patient is receiving excessive amounts of controlled medications, usually for diversion.

has on the methods used to detect fraudulent prescriptions and the knowledge that they use to do so. While including examination of prescription-based cues to fraud, the primary focus is on the lesser-researched psychological aspects of deception detection in the context of prescription fraud. The study seeks to establish whether pharmacists' detection techniques are consistent with current psychological literature on deception detection, and whether there are specific characteristics that alert a pharmacist to a deceptive patron that differs from how an unexperienced layperson would identify a dishonest stranger. Understanding pharmacists' performance on such tasks will help to identify ways in which their role can be supported to reduce instances of prescription fraud.

1.2 Pharmacist information and practices

There is a need to strike a balance between pharmaceutical supplies to legitimate users in the community, and harm reduction. Therefore, the benefits of preventing prescription fraud extend beyond the reduction of crime, and towards improving quality of life and access for both legitimate patients and patients at risk of abuse. While prescription fraud is not a new problem, it lacks the attention of academic research. Fischer and colleagues (2010) recently studied the methods of diversion of pharmaceutical drugs in North America and found that the majority of the general population acquired the drugs for non-medical use from family and friends; with doctor shopping, prescription fraud, and forgery the major contributors to street drug markets (Fischer et al., 2010). In Australia, prescription fraud, including forgery and alteration, is the most common method of obtaining drugs for non-medical purposes (Rodwell et al., 2010). Fortunately, less than a quarter of altered and forged prescriptions from 1995-2007 were successful in obtaining the drug from a pharmacy (Rodwell et al., 2010).

The National Pharmacy Database Project surveyed over 1,100 pharmacists across Australia on a wide range of topics including prescription fraud, forgery and doctor shopping (Berbatis, Sunderland, Mills & Bulsara, 2003). In the 12 months preceding the survey, pharmacists reported detecting over 13,500 forged and fraudulent prescriptions (Berbatis et al., 2003). The findings imply that Australian pharmacists are aware of the problem and are detecting fraudulent prescriptions, or at least some proportion of them. Consideration of the mechanisms that might impact on this detection success could aid further targeted prevention.

In Australia, information is available from pharmaceutical agencies that list features of controlled drug prescriptions that should be checked before dispensing, and legislation stipulates necessary features that must appear on legitimate prescriptions. Each State and Territory has publicly accessible information that describes these features and obliges pharmacists to verify prescriptions before dispensing. While this assists prescribers and pharmacists, the information can also be accessed by offenders in an effort to improve their forgeries. Indeed, Blumenschein (1997) noted that offenders were becoming more sophisticated in their methods, and forgeries becoming harder to identify. However, Blumenschein also lists a number of features of the prescription that might suggest to pharmacists that it has been forged. Queensland Health, (2008) also warns that pharmacists should be alert to situational cues; for instance, if the patient is presenting after hours when the prescription cannot be verified, and if the patient is unconcerned with price. Pharmacists are provided with dispensing guidelines and there is available literature about situational and contextual indicators that may alert them to a possible fraudulent prescription.

1.3 Deception detection

While pharmacists have the above aids at their disposal, the present study explores the psychological component of presenting a fraudulent prescription, and assessing the

presenting patient, by drawing on the literature on deception and deception detection. While there is no universally agreed set of rules of deception detection (DePaulo, Lindsay, Malone, Muhlenbrook, Charlton, & Cooper, 2003; Feeley & Young, 1998), a number of studies have identified cues reported to be more likely associated with deception.

Through their daily lives and social interactions, people encounter various forms of deception and dishonesty. However, people continually perform poorly at detecting untruths; accuracy of deception detection in experimental settings is consistently little above chance levels (Akehurst, Kohnken, Vrij & Bull, 1996; Bond & DePaulo, 2006; Riggio, Tucker & Widaman, 1987; Stromwall & Granhag, 2003; The Global Deception Research Team, 2006). Ekman (as cited in Bond & DePaulo, 2006), suggests that poor performance is due to the psychological benefits of trust, and the socialisation we receive to have faith in people and neglect possible untruths. This produces truth bias, where people want to believe that they are being told the truth and to give others the benefit of the doubt (Riggio et al., 1987).

Worryingly, people are typically unaware of their poor ability at lie detection, with accuracy at detecting deception found to have almost zero correlation with confidence (DePaulo et al., 1997). Indeed, most people tend to overstate their ability, so when confidence exceeds accuracy, more weight is placed on unreliable indicators that the observer assumes are indicative of deception (Davis & Markus, 2006; DePaulo et al., 1997).

Research has shown overwhelmingly that both laypersons and lie detecting 'experts', such as police officers and judges, rely on indicators generally found to be unreliable and not associated with deception (DePaulo et al., 1997). Indeed, many studies report that experts at lie catching typically display little more accuracy than the layperson (Akehurst et al., 1996; Hartwig, Granhag & Strömwall, 2004; Kapardis, 2010; Vrij & Semin, 1996). Often, both experts and laypersons receive little, if any, feedback on their detection efforts in real life, and it is very difficult to master a skill such as lie detection with insufficient feedback

(Akehurst et al., 1996; DePaulo et al., 1997; Riggio et al., 1987; Stromwall & Granhag, 2003). Vrij and Semin (1996) found that prisoners are better lie detectors than professionals in the legal system as they receive more feedback on which techniques work and which do not. Hartwig, Granhag, Strömwall & Andersson (2004) similarly found prisoners to detect lies above chance levels, and better than a student comparison group, also suggesting the importance of outcome feedback.

1.3.1 Deception indicators and associated theories

The literature on deception detection suggests that most people often put too much weight on stereotypical indicators of deception. Most stereotypical beliefs have been shown to have negligible associations with actual cues to deception (Akehurst et al., 1996; Colwell, Miller, Lyons & Miller, 2006; Stromwall & Granhag, 2003; Vrij, 2001).

1.3.1.1 'Believed' indicators of deception

Emotional, or arousal, theories of deception detection assume that attempts to deceive others evoke an emotional response in the deceiver that is borne out in their behaviour. Predicted emotional responses include anxiety or nervousness at being discovered lying, or guilt and shame over lying (Akehurst et al., 1996; O'Sullivan, 2003; Vrij & Semin, 1996). Thus, indicators associated with guilt, such as gaze aversion, and with anxiety, such as increased movement/fidgeting, are consistently believed to be indicative of deception (Vrij & Semin, 1996). However, not all liars experience nervousness or guilt and, furthermore, some people can counter these indicators quite easily.

The control or countermeasures theory attempts to explain why stereotypical cues to deception are unreliable. The concept of control suggests that deceivers are aware of the stereotypical beliefs that people hold and, therefore, counter these by controlling those aspects of their behaviour (Hurley & Frank, 2011; The Global Deception Research Team,

2006; Vrij, Granhag, & Porter, 2010). For example, a simple countermeasure to the belief that gaze aversion is a deception indicator would be to control eye contact. Alongside gaze aversion, other indicators associated with guilt and anxiety that have been shown to be unreliable for deception detection include 'um' and 'uh' filled pauses in speech (Walczyk, Roper, Seemann, & Humphrey, 2003), shoulder shrugs, self-touching (Davis & Markus, 2006; Stromwall & Granhag, 2003; The Global Deception Research Team, 2006; Vrij & Semin, 1996), nervousness (The Global Deception Research Team, 2006) and smiling (Vrij & Semin, 1996).

1.3.1.2 'True' indicators of deception

There are, however, cues that have more consistently been shown to indicate deception. These include a decrease in body movements and an increase in cues related to speech, such as rate, errors, hesitations, voice pitch, response latency, as well as shorter verbal response length (Akehurst et al., 1996; Anderson et al., 1999; Boyd, 2000; DePaulo et al., 2003; Sporer & Schwandt, 2006; Stromwall & Granhag, 2003; Vrij, Edward & Bull, 2001; Vrij & Semin, 1996; Walczyk et al., 2003). Cognitive load theory posits that lying is cognitively taxing and, as such, takes mental resources away from other tasks, such as body movements (Caso, Vrij, Mann & De Leo, 2006). Therefore, while some liars can exploit stereotypical beliefs with behavioural countermeasures, it is posited that some behavioural channels are more difficult to control than others because they use more mental resources, a concept known as leakage hierarchy (Hurley & Frank, 2011). For example, Leal and Vrij (2008) found that eye blinking in liars decreases during times of cognitive load, and increases immediately afterwards. In addition, research has shown that the voice is less amenable to self-regulation (Boltz, Dyer, & Miller, 2010), and the effort to fabricate a lie results in

indicators to deception such as slower speech rate, longer response latency and more speech hesitations (Vrij & Semin, 1996). Further, Interpersonal Deception Theory (Buller & Burgoon, 1996) highlights that liars may also have to continue to monitor the lie to ensure consistency, as well as monitor and react to the behaviour of the receiver. Again, these tasks all consume mental resources that can result in reductions in movement and increase in speech errors.

1.4 Hypotheses

The question of ‘expertise’ in detecting deception is a central element of this study, with pharmacists considered to potentially have several types of expertise, including knowledge of dispensing guidelines; the experience of working in a profession where signs of drug intoxication and withdrawal can be common; and the presence of a feedback mechanism in their detection of a fraudulent prescription (for example, confirmation by the prescriber, or the offender fleeing the premises). The aim of this study is to assess the presence of this expertise among pharmacists. Particularly, the study will explore the current practices adopted by pharmacists in relation to assessment of prescriptions, as well as the extent of pharmacists’ knowledge of deception indicators as compared with that of non-pharmacists (hereafter referred to as laypersons).

First, given pharmacists’ specialist knowledge and the educational information available to pharmacists regarding symptoms of drug misuse, it is hypothesised that pharmacists will be more sensitive to cues of drug misuse than laypersons. Specifically, it is predicted that pharmacists will be significantly more suspicious of cues of drug abuse than laypersons (hypothesis one) in the context of a person presenting a prescription. Second, given pharmacists’ role as gatekeepers to medications, and therefore potential specialist

experience of being presented with (and detecting) fraudulent prescriptions, it is hypothesised that pharmacists will be more knowledgeable about which cues reliably indicate deception. Specifically, it is predicted that pharmacists will be significantly more suspicious of cues that are found to be reliable in detecting deception as compared with unreliable cues, with the reverse true for laypersons (hypothesis two). Similarly, to confirm the reasoning behind this level of suspicion, it is predicted that pharmacists will show significantly more accurate knowledge of reliable deception cues compared with laypersons (hypothesis three).

2. Method

2.1 Participants

A total of 153 people participated in the study, 43 pharmacists and 110 laypersons. Pharmacists' ages ranged from 25 to 66 years ($M = 38.05$ years, $SD = 11.27$ years), with 37% of the pharmacists female. Pharmacist experience ranged from five years to 40 years ($M = 17.86$ years, $SD = 10.66$ years). Almost a quarter (23.3%) of the respondents classified their pharmacy as a large commercial chain, 39.5% were employed in a medium size pharmacy, with 37.2% working at a small or community pharmacy.

The 110 laypersons ranged from 18 to 71 years old ($M = 36.85$ years, $SD = 13.91$ years) with 60% of laypersons female. Occupations listed by the laypersons varied widely including students, tradespeople, and professionals, encompassing a broad range of socioeconomic populations.

2.1.1 Recruitment

To be eligible to complete the survey, participants were required to be either a Queensland² pharmacist, or a Queensland resident for comparison. Laypersons were recruited through electronic mail and social media through snowball sampling.

Initial recruitment efforts for the pharmacist sample were conducted with the assistance of the Queensland Pharmacy Guild. Upon approval from the Pharmacy Guild's ethics committee, the Queensland branch distributed an invitation to complete the online survey to all registered pharmacists in Queensland via their prescription fraud alerts system. This method of recruitment only attracted a minimal number of participants. Therefore, email addresses and contact pages of 273 pharmacies throughout Queensland were individually sourced through online searches. An email advertising for participants was then constructed and sent out.

2.2 Materials

Surveys were created to measure experiences and views of prescription fraud as well as methods used for, and knowledge of, detecting deception and fraudulent prescriptions. While the surveys incorporated a number of sections, only those relevant to the present analysis will be reported here.

2.2.1 Construction of the surveys

To construct the surveys, an extensive literature review was undertaken including drug abuse research, information for pharmacists produced by regulatory agencies, and deception detection. From this literature a comprehensive list of potential indicators of deception, fraud and specifically prescription fraud was created. Each indicator was then

² Queensland is the third largest Australian state by population, over 4.5 million; and the second largest by area, 1.7 million km² (www.abs.gov.au). There are approximately 1000 pharmacies in Queensland (Pharmacy Guild correspondence).

assigned to one of the following categories: ‘true’ indicator of deception, ‘false’ indicator of deception, or indicator of drug use. Drug use indicators were pharmacy-provided indicators, including behavioural and situational characteristics of a person possibly under the influence, and person-specific drug intoxication and withdrawal symptoms. Deception indicators were assigned as true or false using the following method. Each specific indicator was scored according to the number of research papers and studies that had reported it to be a true or false indicator of deception. Only deception indicators that had appeared in three or more separate studies (ensuring studies included in meta-analyses were not counted twice) and designated in only one category (demonstrating agreement between at least three studies as to the reliability of the indicator) were used in the survey. The final list of indicators used within the survey is provided in Table 1. From these, indicators were randomly chosen for inclusion in the different survey sections to ensure a variety of coverage of types of indicators across different modes of presentation. Following the literature review, an interview was conducted with the Investigations Officer of Queensland Health’s Drugs of Dependence Unit (DDU). This was used to assist with pharmacist-specific questions and answer options in relation to prescription fraud experiences.

[Insert Table 1 here]

2.2.2. Pharmacy survey

The pharmacy survey asked for demographic information followed by two sections: ‘prescription fraud’ and ‘deception detection’.

2.2.2.1. Prescription fraud. Pharmacists were asked whether they had ever successfully detected a) a fraudulent, and b) an altered prescription to the best of their knowledge. Answer

options allowed for both sure and unsure responses ('Yes', 'No', 'I have had suspicions but they were not confirmed' and 'Unsure'). Thus, while relying on self-report, pharmacists were able to distinguish between instances where they had confirmed the case versus only having suspicion. Pharmacists were also asked to estimate the number of fraudulent/altered prescriptions they had detected, specifying that their estimate should not include suspected incidents. An ordinal range of '0-10' to '50 or more' responses was established from the DDU interview. Pharmacists were asked how they assess for fraudulent prescriptions and how they report them (categorical options were presented based upon the information gained through the DDU interview and included an 'other – please specify' option); and whether they consciously assess credibility of a presenting patient (4 point scale from 'no' to 'yes always').

Next, pharmacists rated the degree of importance they place (from 1 being 'not at all important' to 5 being 'very important') on 'a person's emotional state', 'signs of intoxication', 'signs of withdrawal' and 'physical appearance' in the context of assessing for fraud in a pharmacy setting. They then rated their degree of suspicion of the indicators shown in Table 1 (on a 5 point Likert scale from 1 'not at all suspicious' to 5 'very suspicious').

Finally, three scenarios were presented. The scenarios described a hypothetical person presenting a prescription, rather than just individual indicators. Extraneous variables, such as day and time of presentation, were controlled by keeping them constant across all three scenarios. Each scenario differed in the description of the person with the prescription. Scenario one contained three indicator behaviours of someone who was withdrawing from opioids, obtained from the literature on drug misuse. Scenario two presented three 'false' indicators of deception randomly selected from Table 1, and scenario three contained three 'true' indicators of deception randomly selected from Table 1. After each scenario,

participants were asked to rate the level of suspicion that they felt towards the person using a five point Likert scale from 1 'not at all suspicious' to 5 'very suspicious'.

2.2.2.2. Deception detection. The final section of the survey was dedicated to deception detection knowledge in general and contained 9 questions. The question format was adapted from the methodology of Vrij and Semin (1996), which presented indicators of deception in a multiple choice format. Each question focussed on one deception indicator, randomly selected from table 1, and asked participants to signify if they thought this particular indicator was 'more evident in someone who is lying', 'less evident in someone who is lying', or if there was 'no difference in this particular indicator between someone who is lying and someone who is telling the truth'. Each item had a correct answer (according to Table 1), the sum of which was used to measure accuracy in deception detection knowledge.

2.2.3 Layperson survey

The layperson survey mirrored the pharmacist survey with the exception that questions relevant only to pharmacist experience were removed. The remainder of the section on prescription fraud was included and laypersons were asked to imagine that they were pharmacists in order to answer the questions; this was to ensure as much comparability as possible between the two samples.

2.3 Procedure

The surveys were initially piloted on a sample of seven participants. This led to some minor modifications to question wording and additional instructions. The surveys were then

constructed online and distributed as outlined in the ‘recruitment’ section above. Responses were exported directly into SPSS for analysis.

3. Results

3.1 Pharmacists’ Experiences with Prescription Fraud

The purpose of this study was to explore the effect that pharmacist experience has on deception detection knowledge and practice in a pharmacy setting. To validate the use of pharmacists as an expert sample, the survey requested pharmacists to estimate how many fraudulent and altered prescriptions they had discovered in the 12 months preceding the survey as an indicator of experience. All sampled pharmacists had experienced fraudulent or altered prescriptions to some degree. Almost all reported the experience of successfully detecting an altered prescription (95.3%) with the remaining 4.7% indicating that they had experienced unconfirmed suspicions³. While this indicates exposure to fraudulent or suspicious prescriptions is high, in terms of frequency, figure 1 shows that an overwhelming majority of pharmacists had come across ten or less altered (90.7%) and fraudulent (72.1%) prescriptions within the preceding 12 months.

[Insert Figure 1 here]

Tables 2, 3 and 4 show the frequency of each answer option provided to pharmacists to measure the procedures pharmacists use to check for, and respond to, fraudulent prescriptions. All but one pharmacist, who was unsure, knew what to do when presented with a fraudulent prescription. However, as shown in Table 2, almost half of the pharmacists reported that procedures with respect to presentations of fraudulent prescriptions in their

³ No respondents chose either of the other answer options (‘no’ or ‘unsure’)

pharmacy were more ‘common knowledge’ than specific guidelines. All pharmacists indicated that they do report fraudulent prescriptions. The majority (90.7%) of pharmacists reported incidents to the police, and just over half reported to the DDU (51.2%); only 9.3% reported to the Pharmacy Guild. All those who selected ‘other’, indicated that they report suspected fraudulent prescriptions to the doctor or prescriber who appears on the prescription.

[Insert Table 2 here]

All surveyed pharmacists reported that they regularly check prescriptions for fraudulent features. Table 3 shows the most common features checked when assessing authenticity of a prescription. For the ten participants who responded ‘other’, familiarity with prescriber, whether a patient was local, the prescriber’s signature, patient history, DDU alerts, and type of specialty doctor were all given as answers. Pharmacists also indicated the strategies they use to assess prescriptions when they are believed to be suspicious. Table 4 shows the majority reported to check the prescription details with the prescriber and check the prescription itself.

[Insert Table 3 here]

[Insert Table 4 here]

Perceived credibility of a person presenting a prescription is important, therefore pharmacists were asked if they consciously assess credibility and with what frequency. Less than half (44.2%) of the pharmacists reported that they always consciously assessed credibility. Both pharmacists and laypersons were asked to rate the degree of importance they would place on four relevant elements of presentation of the person if assessing credibility:

physical appearance, any obvious signs of emotional state such as nervousness, signs of drug intoxication, and signs of drug withdrawal. Table 5 shows that pharmacists reported that they would place the most importance on obvious signs of emotional state ($M = 4.26$, $SD = 1.00$), whereas laypersons would place more importance on signs of drug intoxication ($M = 4.56$, $SD = .91$). Both groups believed that physical appearance was the least important. Independent samples t-tests showed no significant differences between pharmacists and laypersons on the degree of importance placed on each element.

[Insert Table 5 here]

3.2 Suspicion of drug use indicators: Hypothesis 1

Hypothesis 1 predicted that pharmacists would be more suspicious than laypersons of signs of drug use. A between subjects design was used to assess the effect of experience (with two levels: pharmacists and laypersons) on the dependent variable of suspicion (on a scale) of a number of items representing indicators of deception and drug use. Mean suspicion ratings for both pharmacists and laypersons are provided in Table 6. As single indicators, pharmacists found agitation (drug use indicator) the most suspicious indicator ($M = 4.1$, $SD = .61$), and smiling (false indicator of deception) the least suspicious ($M = 1.79$, $SD = .91$). Laypersons found dilated pupils (drug use indicator) the most suspicious ($M = 3.71$, $SD = 1.06$), and agreed with pharmacists that smiling (false indicator of deception) was the least suspicious ($M = 1.76$, $SD = 1.05$). Thus, both pharmacists and laypersons were the most suspicious of a drug use indicator and the least suspicious of a false indicator of deception.

[Insert Table 6 here]

Regarding hypothesis 1, pharmacists rated all drug use indicators as more suspicious than did laypersons. However, the difference was significant at the .05 level for only three of the six drug use indicators and, when using the Bonferroni correction for multiple comparisons, only one indicator remained significantly different: agitation ($t(151) = -3.91, p < .001, d = .64$). Indeed, when examining the differences in suspicion ratings across the remainder of the indicators, there was no evidence that the difference between pharmacists and laypersons was limited to drug use indicators (or any particular type of indicator). Pharmacists consistently rated every item higher than did laypersons, indicating more suspicion in general. However, independent samples t-tests with Bonferroni adjustment ($p < .004$) found significant differences for only two further indicators. Pharmacists were significantly more suspicious than laypersons of short message duration ($t(151) = -4.2, p < .001, d = .68$) – a true indicator of deception – and gaze aversion ($t(151) = -3.39, p < .001, d = .55$) – a false indicator of deception. Overall, hypothesis 1 was only partially supported at the single indicator level.

3.3. Suspicion of deception in hypothetical scenarios: Hypothesis 2

To further explore the differences between pharmacists and laypersons, and address hypothesis 2, their ratings of combinations of indicators in three hypothetical scenarios were tested. The Scenarios provide a more realistic assessment situation than just a list of individual characteristics. Scenario one described a person displaying drug use indicators, scenario two contained false indicators of deception, and scenario three contained true indicators of deception. For each scenario, participants were asked to rate their level of suspicion, results are shown in Table 7. Both pharmacists ($M = 3.98, SD = .89$) and

laypersons ($M = 3.75$, $SD = 1.03$) were most suspicious of the person in scenario two (false indicators).

[Insert Table 7 here]

A 2 x 3 mixed between-within subjects ANOVA tested the differences between the two groups (pharmacists and laypersons) on scores of suspicion of the person in the three different scenarios (exhibiting drug use indicators, false indicators and true indicators), as well as the interaction effect. Levene's test revealed the need to transform the data for the ANOVA. Mauchly's test for sphericity was also significant, so Huynh-Feldt corrected degrees of freedom and significance are reported.

The main effect of group was significant, $F(1, 151) = 7.57$, $p = .007$, $\eta_p^2 = .05$. Thus, regardless of the scenario, pharmacists and laypersons differed in their ratings of suspicion. There was also a large main within-groups effect of scenario, $F(1.87, 283.01) = 32.73$, $p < .001$, $\eta_p^2 = .18$ indicating that suspiciousness ratings across the three scenarios differed significantly regardless of group. Follow up t-tests explored these effects. Pharmacists were not more suspicious than laypersons of scenario one (drug use indicators), $t(151) = .9$, $p = .37$, $d = .15$, showing no support for hypothesis 1. Pharmacists were, however, more suspicious than laypersons of scenario three (true deception indicators), $t(151) = 4.8$, $p < .001$, $d = .78$, showing partial support for hypothesis 2.

There was a significant interaction effect between group and scenario with a large effect size, $F(1.87, 283.01) = 17.32$, $p < .001$, $\eta_p^2 = .10$. Therefore, the suspicion ratings of the three scenarios differed significantly for pharmacists and laypersons (see Figure 2). While both groups found false indicators to be the most suspicious, they differ in their assessment of which is the least suspicious. Hypothesis 2 predicted that pharmacists would perform better than laypersons, with pharmacists scoring higher on suspicion for scenario three (true

indicators) than scenario two (false indicators), and laypersons predicted to show the opposite (scoring higher on scenario two than scenario three). Only the latter was confirmed ($t(109) = 10.16, p < .001, d = 1.2$). In fact, both groups were strongly drawn (incorrectly) to the false indicators of deception; pharmacists, too, showed significantly higher suspicion of false indicators than true indicators, $t(42) = 2.52, p = .015, d = .43$.

[Insert Figure 2 here]

3.4. The effect of pharmacist experience on deception knowledge: Hypothesis 3

To explain the effects found above for hypothesis two (that pharmacists are not more suspicious of reliable deception cues than unreliable ones) this section further looks at deception detection knowledge. Hypothesis 3 predicted that pharmacists would be more knowledgeable than laypersons regarding deception detection indicators. Participants were presented with nine multiple choice questions with only one correct answer per question. Figure 3 shows the comparison of correct answers between pharmacists and laypersons. Pharmacists averaged 1.35 correct ($SD\ 1.39$) while laypersons averaged 2.07 correct ($SD\ 1.31$). While both groups' scores were poor out of a possible nine, laypersons were significantly more accurate than pharmacists, $t(1,151) = -3.015, p = .003, d = .53$. This difference was in the opposite direction expected, failing to support hypothesis 3, but explains the higher suspicion accorded to unreliable indicators in the results above.

[Insert Figure 3 here]

4. Discussion

The aim of this study was to investigate how pharmacists detect prescription fraud and whether experienced pharmacists are any more knowledgeable regarding deception detection than non-experienced laypersons. Overall, pharmacists were more suspicious than laypersons of all types of behavioural indicators (true deception, false deception, and drug use indicators). Regarding ability to detect deception, the results were contradictory, with laypersons more accurate on multiple choice questions and pharmacists somewhat more accurate on scenarios, which are to some extent more representative of real world situations. Overall though, the results showed that pharmacists do not have more accurate knowledge of deception detection techniques and, while they may be attending to cues suggested in the pharmacy literature, this may be complicated by beliefs in incorrect stereotypical deception indicators.

Almost half of the pharmacists reported that they always assessed the credibility of a person presenting a prescription. This finding is interesting given the pharmacy literature, in which the guidelines refer to the prescription itself (Blumenschein, 1997; Pharmaceutical Society of Australia, 2010), and situational elements (DDU, 2010), rather than physical and behavioural characteristics of the person presenting the prescription. There is likely a variety of people who present fraudulent prescriptions at pharmacies, such as addicts who may display nervous behaviour, or habituated offenders who operate within organised criminal networks. The credibility and behavioural cues could differ greatly across these groups and impact feedback mechanisms and indicators used by pharmacists beyond situational and prescription cues.

Hypothesis 1 suggested that, given pharmacists' expert knowledge and training, they would be suspicious of cues that are associated with drug use more so than laypersons. It was not supported. While there was an overall tendency for pharmacists to be more suspicious than laypersons, this was not unique to drug use indicators, therefore showing no specific

effect of knowledge in this area. Further, while three drug use indicators did appear in the pharmacists' top five most suspicious, pharmacists were actually more likely to find deception indicators suspicious (both correct and incorrect) than drug use indicators.

There are a number of possible explanations for this finding. First, perhaps indicators of deception, true or false, are linked to signs of drug use. This would not be surprising considering that many of the stereotypical indicators of deception, such as gaze aversion and nervousness, could also be indicative of someone who is under the influence of drugs. Second, the fact that pharmacists indicated a preference for a different type of indicator when the indicators were presented in a real world scenario to when they were presented singularly, could be due to the real world consequences that pharmacists face should they get it wrong. This latter explanation is underpinned by the fact that, regardless of indicator type, an overall theme throughout the results is that pharmacists were more suspicious than laypersons in most circumstances. It could be argued that pharmacists as a group are naturally more suspicious due to the nature of their work. However, another explanation is that pharmacists who were more suspicious in general felt compelled to complete the survey more so than pharmacists who do not believe prescription fraud is an issue.

Hypothesis 2 was not supported, but the findings mirror the results of myriad previous studies, that experts are generally no better at detecting deception than laypersons (Akehurst et al., 1996; Vrij & Semin, 1996; Kapardis, 2010). Pharmacists and laypersons both found false indicators of deception to be more suspicious than reliable indicators. This suggests that both groups hold stereotypical beliefs shown in the literature, such as gaze aversion and restlessness (Davis & Markus, 2006; Sporer & Schwandt, 2007; The Global Deception Research Team, 2006; Vrij & Semin, 1996), and that their expertise in the field does not equate to avoidance of incorrect indicators. Indeed, pharmacists actually held slightly more

stereotypical beliefs than did laypersons, as evidenced by the failure to support hypothesis 3; with laypersons exhibiting more accurate deception detection knowledge than pharmacists.

4.1 Practical implications and further research

As the literature review revealed, the research on deception detection and the indicators that are considered reliable can be contradictory. Although there are several cues that are consistently found to be reliable indicators of deception, and some found to be unreliable indicators, it would conceivably serve best to educate pharmacists on the underlying assumptions and theories of lie detection so that they can judge for themselves contextually. While this form of education may not be entirely practical, further research into why pharmacists are using person attributes more so than, or as much as, the contextual and situational factors provided to them in the literature is necessary in order to adapt and improve current procedures.

Particularly helpful would be further research on indicators that are unreliable in a pharmacy setting, given the results of this study as well as the contention surrounding ‘true indicators’ in the field of deception detection. In contrast to the current problem where pharmacists are accepting fraudulent prescription as genuine, resulting in false negatives; a foreseeable problem with hyper-vigilance is false positives. As the results show, pharmacists are alert to cues of intoxication and withdrawal including agitation and anxiety, and these cues have been shown as not reliably associated with deception. This potential for being over-alert can have consequences for discrimination against legitimate patients.

The current findings are promising when compared to the National study conducted in 2003 (Berbatis et al., 2003), in which pharmacists indicated that they knew very little of their obligations to assess and report prescription fraud. Nevertheless, only one-fifth of pharmacists indicated that their pharmacy had specific guidelines on what to do in the event

of a fraudulent prescription. This could grossly affect the statistics on prescription fraud and hence the regulatory agencies' response to the problem and allocation of appropriate resources.

Further, within the overarching problem of prescription drug abusers, it would be helpful to assess whether malingerers and doctor shoppers display similar deception indicators as the literature would suggest; or if, again, there are differences between the types of cues that prescribers find indicative of someone trying to fraudulently obtain a prescription as compared to a layperson. Assessing which indicators prescribers rely on could shed more light on the connection between experience and ability in this field.

4.2 Limitations

It is important to note that, although pharmacists are considered experts in this study, there are no known studies of lie detection that use pharmacists in this way. However, pharmacists have a wealth of information at their disposal regarding the characteristics to look for when assessing for fraudulent prescriptions that they are obliged to follow. The sample size of pharmacists limited the study with respect to statistical power, as the low sample size may have prevented some significant results, particularly with the use of the Bonferroni correction. However, other studies in the deception detection field have used similarly sized samples of experts (see Vrij, Mann, Robbins & Robinson, 2006; Vrij & Mann, 2001; Lakhani & Taylor, 2002). There was also the possibility of selection effects, whereby the most proactive and interested pharmacists took the time to complete the survey. However, selection effects are a criticism of any study that recruits volunteers. Further, this study is the first of its kind to use pharmacists in this way, illustrating the escalating problem of prescription fraud and the, thus-far, lack of academic attention.

4.3 Conclusion

Consistent with the literature on deception detection, this study has shown that pharmacists are not better at detecting deception than laypersons as measured by traditional indicators of deception. It is clear that pharmacists are in contact with fraudulent prescriptions and they are aware of the problem. What may be needed is further support of their role with the provision of more information on detecting prescription fraud through interpersonal, prescription related, and situational characteristics that may alert a pharmacist to a possible deceiver.

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Tables

Table 1

Indicators Designated as True and False Deception Indicators, and Drug Use Indicators, Used in the Construction of the Surveys

Type	Indicator	Details of source of indicator		How indicator is used in current survey		
		Total number of studies to support	Range of sample sizes in studies	Rated for suspicion	Included in scenario	Multiple choice
True	Higher pitch voice	12	32-218			*
	More hesitant speech	11	26-218	*		
	Increase in response latency	6	44-212	*	S3	*
	Shorter message duration	7	60-212	*	S3	*
	Decrease in illustrators	7	60-218	*	S3	*
	Decrease in foot movements	3	120-212			*
False	Gaze aversion	5	120-2520	*	S2	*
	Postural shifts	6	120-2520			*
	Self-manipulation (Fidgeting)	4	120-2520	*	S2	*
	Smiling	3	120-212	*		*
	Increase in movement	3	73-212		S2	
Drug use#	Agitation			*	S1	
	Slurred speech			*		
	Dilated pupils			*		
	Lack Coordination			*		
	Watering eyes			*	S1	
	Yawning			*	S1	

Indicators taken from literature/guidelines produced by regulatory agencies for pharmacies, not academic studies. S1 = Scenario 1; S2 = Scenario 2; S3 = Scenario 3.

Table 2: Prescription fraud procedures

Question/responses	Frequency	Percent
<i>Procedures in Place for Dealing with Prescription Fraud?</i>		
Yes but it is more so common knowledge	21	48.8%
No but staff are aware through other avenues	11	25.6%
Yes there is guideline protocol in place	9	20.9%
Unsure whether guidelines exist	1	2.3%
No most staff are unsure of what to do	1	2.3%
<i>To Whom Pharmacists Report Fraudulent Prescriptions</i>		
Police	39	90.7%
DDU	22	51.2%
Other staff	21	48.8%
Other	15	34.9%
Management	13	30.2%
Pharmacy Guild	4	9.3%
Do not report	1	2.3%

Table 3: What characteristics of a prescription do pharmacists regularly check for authenticity?

	Frequency	Percentage
Handwriting	27	62.8%
Type of drug	27	62.8%
Valid prescriber details	25	58.1%
Formatting	24	55.8%
Age of prescription	24	55.8%
Amount of drug	24	55.8%
Language	23	53.5%
Number of drugs on a single prescription	22	51.2%
Prescription itself; photocopy marks or colouring	19	44.2%
Number of repeats	17	39.5%
<i>All of the above</i>	16	37.2%
<i>Other</i>	10	23.3%
<i>Do not regularly assess</i>	0	0

Table 4: What Strategies Pharmacists Use in Order to Check Authenticity

	Frequency	Percentage
Check details of prescription with prescriber	42	97.7%
Check the prescription itself with any of methods above	36	83.7%
ID unknown prescribers	28	65.1%
Timing of presentation of prescription; after hours	26	60.5%
Ensure patient knows about prescribed medication	26	60.5%
Compare date of prescription to date of presentation	24	55.8%
ID other medications the patient is using	23	53.5%
ID unknown patients	21	48.8%

Table 5: Importance Placed on Each Element of Presentation for Both Pharmacists and Laypersons

	Pharmacists <i>M (SD)</i>	Layperson <i>M (SD)</i>	<i>t</i>	<i>p</i>
Obvious emotional state	4.26 (1.00)	4.14 (.86)	-.735	.463
Signs of intoxication	4.19 (1.12)	4.56 (.92)	1.972	.053
Signs of withdrawal	4.07 (1.03)	4.39 (.87)	1.947	.053
Physical appearance	3.56 (1.01)	3.40 (1.13)	-.803	.423

Table 6

Relative Amount of Suspicion Elicited by Each Indicator for Both Groups

	Pharmacist <i>M (SD)</i>	Layperson <i>M (SD)</i>	<i>t</i>	<i>p</i>	<i>CI</i>		<i>d</i>
					Lower	Upper	
<i>True deception indicators</i>							
Frequent speech hesitations	3.49 (.88)	3.25 (1.02)	-1.37	.17	-.11	.59	.22
Short message duration	3.40 (1.14)	2.55 (1.12)	-4.20***	<.001	.45	.25	.68
Response latency	3.37 (1.02)	3.00 (1.10)	-1.92	.06	-.01	.76	.31
<i>False deception indicators</i>							
Gaze aversion	3.93 (.96)	3.30 (1.20)	-3.39***	<.001	.26	.10	.55
Increased illustrators	3.72 (.77)	3.27 (1.07)	-2.89**	.01	.14	.76	.47
Fidgeting	3.70 (.96)	3.36 (.98)	-1.90	.06	-.01	.68	.31
Smiling	1.79 (.91)	1.76 (1.05)	-.149	.89	-.33	.39	.02
<i>Indicators of drug use</i>							
Agitation	4.09 (.61)	3.55 (1.06)	-3.91***	<.001	.27	.81	.64
Slurred speech	4.05 (1.05)	3.65 (1.09)	-2.03*	.05	.01	.77	.33
Dilated pupils	3.81 (.958)	3.71 (1.09)	-.55	.58	-.27	.48	.01
Lack Coordination	3.63 (1.07)	3.15 (1.17)	-2.34*	.02	.08	.89	.38
Watering eyes	2.30 (.99)	2.22 (1.09)	-.44	.66	-.29	.46	.07
Yawning	2.07 (.96)	1.87 (1.02)	-1.09	.28	-.16	.56	.18

* Sig $p < .05$, ** Sig $p < .01$, ***Bonferroni $p < .004$

Table 7

Mean Level of Suspicion of the Person in Each Scenario Reported by pharmacists and Laypersons

Scenario	Suspiciousness	
	Pharmacist (<i>M, SD</i>)	Layperson (<i>M, SD</i>)
1. <i>Drug use indicators</i>	3.12 (.96)	3.27 (.95)
2. <i>False indicators</i>	3.98 (.89)	3.75 (1.03)
3. <i>True indicators</i>	3.53 (1.20)	2.47 (1.10)

Figure captions

Figure 1. Number of altered and fraudulent prescriptions pharmacists had detected in the 12 months preceding the survey.

Figure 2. Mean level of suspicion reported by pharmacists and laypersons for each scenario.

Figure 3. Percentage of pharmacists and laypersons who received each score (out of a possible nine correct answers).

Figures

Figure 1.

Figure 2.

Figure 3.