Enhancing allied health clinicians' abilities to facilitate medication adherence for individuals with depressive disorders

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ENHANCING ALLIED HEALTH CLINICIANS' ABILITIES TO FACILITATE MEDICATION ADHERENCE FOR INDIVIDUALS WITH DEPRESSIVE DISORDERS.

A thesis submitted in partial fulfilment of the requirements for the award of the degree

DOCTOR OF PSYCHOLOGY (CLINICAL)

from

UNIVERSITY OF WOLLONGONG

by

DANIELLE L. FEROS
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SCHOOL OF PSYCHOLOGY
2008

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FRANK P. DEANE, PhD (SUPERVISOR)
CERTIFICATION

I, Danielle L. Feros, declare that this thesis, submitted in partial fulfilment of the requirements for the award of Doctor of Psychology (Clinical), in the School of Psychology, University of Wollongong, is wholly my own work unless otherwise referenced or acknowledged. This document has not been submitted for qualifications at any other academic institution.

Danielle L. Feros
16th January, 2008
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Danielle L. Feros

16th January, 2008
Antidepressant medications are an effective treatment option for individuals with depression. However, significantly sub-optimal adherence has been observed in up to 44% of primary care patients. Almost 40% of patients who discontinue their medication experience a return of symptoms. Adherence interventions are therefore important, but often require delivery by highly trained clinicians (e.g. physicians). In Australia adherence interventions need to have the capacity to be delivered by a variety of professionals as a diverse range of clinicians (e.g. allied health) provide services to primary care patients under a number of government funded initiatives.

However, many clinicians lack the requisite knowledge, skills, and beliefs to facilitate adherence. Addressing this need is important given that clinicians' beliefs may influence the type of treatment that patients receive, such as whether support is provided to the patient to use their medication more effectively. Researchers in Australia and the UK report successful attempts to increase clinicians' skills, knowledge, and beliefs to facilitate adherence to antipsychotic medication. Furthermore, when trained clinicians work to facilitate adherence among patients with psychosis, significant increases in adherence and reductions in psychopathology are obtained, compared with treatment as usual. There are few studies that focus on improving medication adherence skills in clinicians working with depressive disorders.

Study 1 surveyed 72 allied health clinicians working in primary care with individuals with depression. This study sought to identify clinicians' beliefs about (a) medications in general, (b) adequacy to facilitate adherence, (c) their role in facilitating adherence, as well as (d) previous training in adherence strategies, and (e)
self-reported use of use specific adherence strategies. It was hypothesised that more positive beliefs and previous training would be related to higher reported use of specific adherence strategies. The degree to which these variables predict self-reported use of adherence strategies was also explored. Results showed clinicians' beliefs about adequacy and their role in facilitating adherence predicts self-reported use of adherence strategies. Previously trained clinicians reported significantly more positive beliefs about adequacy and their role in facilitating adherence.

Study 2 evaluated the impact of a modified version of the Medication Alliance training program on the knowledge, beliefs and skills of 24 allied health clinicians working in primary care. It was hypothesised that pre- and post-training measures would demonstrate increases in clinicians' knowledge, skill, and beliefs related to enhancing adherence amongst individuals with depression. Results showed significant increases in knowledge and beliefs to facilitate adherence following training. No significant increase in skill was found. These results suggest that Medication Alliance techniques can be successfully delivered to improve the knowledge and beliefs of allied health clinicians working in primary care. The next step is to examine the impact that clinician training has on patient adherence to antidepressant medication.
Depression is a major health issue, affecting approximately 5% of the Australian population at any one time (Australian Bureau of Statistics [ABS], 2001). In 2001 approximately 800 thousand people living in Australia reported experiencing problems with mood, including depressive disorders (ABS). Worldwide, depressive disorders affect approximately 121 million people (World Health Organisation [WHO], n.d.). Depressive disorders are the leading cause of disability, and the fourth leading contributor to the global burden of disease (Murray & Lopez, 1996). In 2002, depressive disorders were the leading cause of burden of disease for females, and the fourth leading cause for males (WHO, 2003). By the year 2020, depressive disorders are expected to be the second overall leading contributor to global burden of diseases for both men and women (Murray & Lopez).

Depressive disorders are defined in the Diagnostic and Statistical Manual of Mental Disorders, 4th edition text revision (DSM IV-TR, American Psychiatric Association [APA], 2000a), as a disturbance in mood, including depressed mood or loss of interest or pleasure. They include Major Depressive Disorder (MDD), Dysthymic Disorder (DD), and Depressive Disorder Not Otherwise Specified. In MDD, a person may experience one or more Major Depressive Episodes, which are characterised by at least “2 weeks of depressed mood or loss of interest accompanied by at least four additional symptoms of depression” (APA, p. 345). DD is the experience of “2 years or more of depressed mood for more days than not, accompanied by additional depressive symptoms that do not meet criteria for a Major Depressive Episode” (APA, pp. 345). Depressive Disorder Not Otherwise Specified is
the diagnosis given when depressed mood is a focus of clinical attention but symptoms do not meet criteria for another Mood Disorder (APA).

Prevalence

Research in primary care settings has found that point prevalence rates for depressive disorders are almost double that of the prevalence in community samples, suggesting that depressive disorders are common and under-treated in primary care settings (Al-Windi, 2005; Steiner et al., 1999). In community samples, point prevalence for MDD is reported between 2% to 9% (APA, 2000a; Blazer, Kessler, McGonagle, & Swartz, 1994), while in primary care, point prevalence is reported between 5% and 20% (Al-Windi; Aragones et al., 2004; Berardi et al., 2002; Christensen, Bundgaard, & Bech, 2001; Katon & Schulberg, 1992; Means-Christensen, Arnau, Tonidandel, Bramson, & Meagher, 2005; Wittchen & Pittrow, 2002).

Twelve-month prevalence rates among community samples are comparable with that of primary care and are reported between 2.6% to 12.9% in community samples (Angst, 1992; Hasin, Goodwin, Stinson, & Grant, 2005; Kessler et al., 1994, 2003) and 8.3% in primary care samples (Wittchen & Pittrow, 2002). Lower prevalence rates have been reported for DD in comparison to MDD. The DSM IV-TR reports a point prevalence rate for DD at 3% among the general population (APA, 2000a), primary care studies reporting slightly higher rate of 4.8% (Aragones et al., 2004) and 5.1% (Steiner et al., 1999).
Course

Left untreated, the course of depressive disorders can be chronic or patients may cycle between relapse and remission. Katon et al. (1995) report that approximately 70% of patients in primary care experienced at least two or more prior depressive episodes. Up to 25% of people suffering from a depressive disorder experience a chronic course (Angst, 1997). After experiencing a single episode of depression, the risk of relapse is reported to be as high as 87% within 15 years (Keller & Boland, 1998).

DD has a chronic course, with at least a 2-year period of depressive symptoms without relief from these for more than 2 months (APA, 2000a). MDD can also have a persistent and chronic course. The DSM IV-TR states that up to 60% of people suffering from a single episode of Major Depression will experience a second (APA). This percentage increases with each episode, such that after the second episode 70% will experience a third, and after the third episode approximately 90% will experience a fourth (APA). The risk of recurrence in MDD (i.e., the occurrence of new Major Depressive Episode after a 6 month or longer period where depressive symptoms no longer meet criteria for MDD; Frank et al., 1991) is reported at around 40% (Piccinelli & Wilkinson, 1994; Ramana et al., 1995).

In a study of primary care patients, Lin et al. (1998) found 37.1% of patients experience a return of symptoms within one year or met criteria for MDD at a 19-month follow-up assessment. Shea et al. (1992) found that patients with a diagnosis of MDD experienced recurrence at a rate of between 33% and 50% over an 18-month follow-up period, dependent on treatment received. In a 3.5-year follow-up of patients with depressive disorders, it was found that 39.3% of the sample experienced the
recurrence of a Major Depressive Episode (Hoencamp, Haffmans, Griens, Huijbrechts, & Heycop ten Ham, 2001). The risk of recurrence is said to increase over time, such that after 10 years the rate of recurrence is 75% (Keller & Boland, 1998; Piccinelli & Wilkinson, 1994), and up to as high as 87% after 15 years (Keller & Boland).

A chronic course of MDD (the continuous experience of a Major Depressive Episode for at least 2 years, with symptom free periods of no longer than 2 months) is said to be experienced by between 10% to 25% of individuals (Angst, 1997; Piccinelli & Wilkinson, 1994). In a 10-year follow-up of data from the WHO, 10% of people experienced a Major Depressive Episode for at least 2 years (Thomicroft & Sartorius, 1993). Keller et al., (1992) found 12% of their sample had experienced a Major Depressive Episode over a 5-year period, while Hoencamp et al., (2001) found 36% of their sample had a chronic course.

Impact of Depressive Disorders

Individuals with depressive disorders have an increased risk of suicidal thoughts and behaviours (Nierenberg et al., 2001). The risk of death by suicide for individuals with MDD has been reported at 15% (APA, 2000a; Nierenberg et al.). The WHO estimates approximately 850 thousand suicides each year are related to MDD (WHO, n.d.). In a study of suicidal ideation among outpatients in the United States, researchers found the 50% of individuals with treatment-resistant depression (i.e. individuals with a depressive disorder that has previously not responded to antidepressant medication) reported suicidal thoughts, while one third reported significant suicidal thoughts or suicidal behaviours (Papakostas et al., 2003). The
contribution of depression to suicidal behaviour has also been assessed in Australia (Goldney, 2003). Goldney reported studies of community samples that found 39% to 47% reported suicidal ideation, and 40% of suicide attempts can be accounted for by depressive disorders.

Not surprisingly, depressive disorders have a significant impact on functioning and quality of life. Sufferers often experience significantly greater difficulty working and carrying out day to day duties, impairment in physical and social functioning, general health concerns, and utilise a greater amount of health services compared with individuals who do not meet criteria for a depressive disorder (Goldney, Fisher, Wilson, & Cheok, 2000; Hawthorne, Cheok, Goldney, & Fisher, 2003) or individuals with a chronic medical condition (Spitzer et al., 1995). Berardi et al. (2002) found that depression is associated with severe physical illness, disability, and higher rates of medical consultation among primary care patients. In Australia it is estimated that disability due to depressive disorders costs the health sector and individual patients in excess of one billion dollars (Hawthorne et al.). Given the significant impact depressive disorders have on health globally, and the economic burden they carry, the enhancement of treatment outcomes is of significant importance.
TREATING DEPRESSIVE DISORDERS

Both the United States and Australian guidelines for the treatment of depression indicate that antidepressant medication should be considered as a first-line treatment for depressive disorders, especially in severe, chronic, and relapsing disorders (APA, 2000b; Ellis & Smith, 2002). In addition, psychological therapies such as Cognitive Behavioural Therapy and Interpersonal Therapy are suggested as alternative first-line treatments in the instance of mild to moderate depression or adjunct interventions in severe depression. Reviews of the literature support the use of both antidepressant medication and psychological therapies. This combination has been reported as superior to either treatment used in isolation for effectively reducing severe depressive symptoms, keeping patients in treatment longer, and thus reducing the risk of relapse (APA; Friedman et al., 2004; Pampallona, Bollini, Tibaldi, Kupelnick, & Munizza, 2004; Thase et al., 1997). Relapse in this context has been defined as the return of symptoms that meet criteria for a Major Depressive Episode within 6 months of an initial response to antidepressant medication (Frank et al., 1991).

However, many patients with depressive disorders are treated in primary care settings where resources to provide such psychological interventions are limited (Ludman et al., 2003). In fact, the majority of individuals with depressive disorders seek treatment from their GP (ABS, 2001; Lin et al., 1998). The efficacy of psychological therapies relies heavily on the skills of the clinician delivering the therapy, and it has been suggested that psychological therapies should only be considered when an appropriately skilled clinician is available (Ellis & Smith, 2002).
Pharmacotherapy for Depression

There are many types of antidepressant medications available for the treatment of depressive disorders. Treatment guidelines state that the efficacy across different types of antidepressant medication is mostly equal, and recommends that medications be chosen on the basis of side effects, tolerability, patient preference, and cost (APA, 2000b; Ellis & Smith, 2002). Antidepressant medications recommended for the treatment of Depressive Disorders include selective serotonin reuptake inhibitors (SSRIs; e.g. fluoxetine, sertraline, paroxetine), serotonin-noradrenalin reuptake inhibitors (SNRIs; e.g. venlafaxine, nefazodone), tricyclic antidepressants (TCAs; e.g. imipramine, nortriptyline, amitryptiline), and reversible monoamine oxidase inhibitors (MAOIs; e.g. moclobemide).

Premature discontinuation of antidepressant medication can result in relapse in up to 50% of patients (Angst, 1997; Hirshfield, 2001). Therefore, recommendations have been made regarding the amount of time required to adequately treat symptoms and reduce the risk of relapse. In reviews of clinical studies, the average length of time considered appropriate for medication treatment to continue is 4 to 6 months following remission (Angst; Keller & Boland, 1998). Remission has been defined as a period, usually less than 6 months, during which an improvement in symptoms is observed (Frank et al., 1991). Ellis and Smith (2002) state that medication should continue for at least one year following an initial episode of depression, and that treatment be extended to 2 years or more if there is a history of multiple episodes. These guidelines have been supported by clinical trials which show antidepressant medications effectively treat depression, with significant reductions observed in both depressive symptoms and the risk of relapse when antidepressant medication is
maintained for at least 12 months (Keller et al., 1998; Kocsis et al., 1996). But despite these guidelines, non-adherence to antidepressant medication remains a major barrier to effective treatment of depressive disorders (Demyttenaere, 2001).
The term 'adherence' is a relatively new term for describing medication-taking behaviour. Traditionally, medication-taking behaviour has been described by the term 'compliance'. Compliance is defined as the extent to which a patient conforms to the prescription of a physician, though the use of this term has been criticised as it suggests that the patient is wrong and disobedient for not taking their medication as prescribed (Aslani & du Pasquier, 2002). The term adherence is thought to overcome this by implying greater patient involvement, empowerment, and choice in the prescription process (Aslani & du Pasquier). Adherence and compliance are often used interchangeably in the literature. The two terms are typically defined as 'the degree to which a person adheres to the prescribed treatment regimen” (Maidment, Livingston, & Katon, 2002, p. 752). Aslani and du Pasquier suggest that the definition of non-adherence broadly means that a patient takes less than the prescribed dose by missing or skipping doses. However, broader definitions can include taking too much medication or taking medications in the wrong manner (e.g., saving up medications and taking them all in the evening even though they were prescribed as three separate doses through the day).

Rates of non-adherence among patients taking antidepressant medication is high and variable. In a review by Cramer and Rosenheck (1998), estimates of non-adherence rates among patients taking antidepressant medication averaged 35%, ranging from 10% to 60% non-adherence. It is reported that approximately 25% of primary care patients do not take all of their doses of antidepressant medication over a 2-week period (Aikens, Nease, Nau, Klinkman, & Schwenk, 2005). Within the first month of treatment, between 28% and 35% of primary care patients stopped taking
antidepressant medication (Lin et al., 1995; Simon, Von Korff, Wagner, & Barlow, 1993). It was also found that 29% of patients did not fill their initial prescription (Simon et al.). After 3 months, 44% of patients were no longer taking their medication (Lin et al.).

In another primary care study, 60% of patients were found to have stopped taking antidepressant medication before completing the recommended 6 months of treatment (Katon, Von Korff, Lin, Bush, & Ormel, 1992). Maidment et al. (2002) found that approximately 19.4% of 67 older adults in primary care who had been prescribed antidepressant medication were variable in the amount to which they adhered to their medication, and a further 13.4% reported they never adhered to their antidepressant medication.

The consequences of premature discontinuation of antidepressant medication are generally negative. For example, Melfi et al. (1998) found a 77% increase in the risk of recurrence of depression amongst patients who had prematurely discontinued antidepressant medication, with one quarter of patients experiencing recurrence within a 2-year period. Hirschfeld (2001) found that depression recurred in approximately 60% of cases within 12 months of an episode when antidepressant medication was not provided. Of those treated with medication, 33% to 50% of patients relapsed after not continuing to taking medication for a recommended period of 6 to 12 months. The risk of relapse dropped to between 10% and 15% for patients who continued antidepressant medication for the recommended period (Hirschfeld).

Failure to adhere to medication regimes has been associated not only with increased psychopathology, but also increased negative psychosocial consequences such as decreased work productivity and reduced quality of life (Keller & Boland, 1998).
Factors Influencing Medication Adherence

Reasons for non-adherence are multifactorial. However, a number of studies have identified similar factors influencing adherence to antidepressant medication. In particular, a review of the barriers to antidepressant medication adherence identified four categories of influence: patient barriers, clinician barriers, clinical and policy barriers, and minority population barriers (Unuetzer, Katon, Sullivan, & Miranda, 1999). Table 1 outlines the key factors influencing adherence to antidepressant medication identified in the literature, listed as per the categories suggested by Unuetzer et al.

Theoretical Models to Explain Adherence

Dunbar-Jacob (1993) notes in psychological research there are many models of health behaviour that have been used in an attempt to understand adherence. Three of the most widely used models are the Health Belief Model (Becker, 1974; Janz & Becker, 1984; Janz, Champion, & Strecher, 2002; Rosenstock, 1974), the Theory of Reasoned Action (Ajzen & Fishbein, 1980; Fishbein, 1967) / Theory of Planned Behaviour (Ajzen, 1991), and the Common-Sense Model of Self-Regulation (Leventhal, Brissette, & Leventhal, 2003; Leventhal, Leventhal, & Contrada, 1998). The common element shared by these models is that they regard beliefs as playing a major role in predicting health behaviour (Dunbar-Jacob). DiMatteo (1991) noted that these theories do not completely explain health behaviour, but that they are useful as models for understanding and predicting behaviour. These models are thought to be highly comparable in their ability to facilitate understanding and prediction of health
<table>
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<th>Barrier</th>
<th>Examples</th>
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<tr>
<td><strong>Patient</strong></td>
<td>Being poor or older&lt;sup&gt;a&lt;/sup&gt;; lack of knowledge about treatment&lt;sup&gt;a-c&lt;/sup&gt;; sensitivity to stigma&lt;sup&gt;a&lt;/sup&gt;; fears of addiction&lt;sup&gt;a-d&lt;/sup&gt;; being male&lt;sup&gt;a&lt;/sup&gt;; medical co morbidity&lt;sup&gt;a&lt;/sup&gt;; concurrent medications&lt;sup&gt;a&lt;/sup&gt;; cognitive impairment (e.g., remembering to take medication)&lt;sup&gt;a&lt;/sup&gt;; mobility (e.g., obtaining prescriptions)&lt;sup&gt;a&lt;/sup&gt;; symptoms of depression (e.g., poor motivation)&lt;sup&gt;b&lt;/sup&gt;; side effects&lt;sup&gt;b,c,e-g&lt;/sup&gt;; feeling better&lt;sup&gt;b,e&lt;/sup&gt;; adverse life events&lt;sup&gt;b&lt;/sup&gt;; cost of medication&lt;sup&gt;c,h&lt;/sup&gt;; denial of illness&lt;sup&gt;i&lt;/sup&gt;; beliefs about medication (e.g. need for and harmfulness)&lt;sup&gt;j&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>Clinician</strong></td>
<td>Lack of awareness of illness&lt;sup&gt;a&lt;/sup&gt;; lack of skills&lt;sup&gt;a,b&lt;/sup&gt;; lack of time to spend with patients&lt;sup&gt;a&lt;/sup&gt;; not following treatment guidelines&lt;sup&gt;b&lt;/sup&gt;; clinician-patient relationship&lt;sup&gt;b,c,g,h&lt;/sup&gt;; beliefs about non-adherent patients (e.g. difficult, irresponsible)&lt;sup&gt;b,e&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>Clinical and policy</strong></td>
<td>Geographic distance from health care&lt;sup&gt;a&lt;/sup&gt;; concerns about privacy&lt;sup&gt;a&lt;/sup&gt;; confidentiality among rural communities&lt;sup&gt;a&lt;/sup&gt;; limited resources (e.g., funding for services)&lt;sup&gt;a&lt;/sup&gt;</td>
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<td><strong>Minority populations</strong></td>
<td>Low income&lt;sup&gt;a&lt;/sup&gt;; being of an ethnic background&lt;sup&gt;a&lt;/sup&gt;; cultural beliefs&lt;sup&gt;c&lt;/sup&gt;</td>
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<sup>a</sup> Unutzer et al., 1999; <sup>b</sup> Demyttenaere, 2001; <sup>c</sup> Maidment et al., 2002; <sup>d</sup> Priest, Vize, Roberts, Roberts, & Tylee, 1996; <sup>e</sup> Lin et al., 1995; <sup>f</sup> Masand, 2000; <sup>g</sup> Demyttenaere, 1997; <sup>h</sup> Delgado, 2000; <sup>i</sup> Bollini, Tibaldi, Testa, & Munizza, 2004; <sup>j</sup>Aikens et al., 2005.
behaviour (Brannon & Feist, 2000; Weinstein, 1993), the Common-Sense Model of Self-Regulation adding the benefit of considering beliefs related to medication use which contribute to patient attitudes towards taking medication (Horne, 2003).

**Health Belief Model**

The Health Belief Model (HBM) is one of the most well known psychological models of health behaviour and it has been used in the study of adherence behaviour. The model emphasizes the importance of attitudes and beliefs in decision-making. The HBM proposes that engagement in behaviour (e.g. medication adherence) is determined by weighing up the costs and the benefits of carrying out the behaviour (Brannon & Feist, 2000; DiMatteo, 1991; Janz et al., 2002).

This cost-benefit analysis involves weighing four components (or perceptions): perceived benefits, perceived susceptibility, perceived severity, and perceived barriers (see Figure 1). According to the HBM, these four perceptions influence whether an individual will engage in a particular behaviour. In an application of the HBM to adherence behaviour Hughes, Hill, and Budd (1997) state that an individual will comply with their prescribed medication regime based on the perceptions regarding the four components of the model. For example, perceived benefits relate to the benefits of treatment as perceived by the individual, or whether the individual believes that medication will relieve them of symptoms. Perceived susceptibility relates to how likely the individual believes they will continue to experience symptoms without taking medication. Perceived severity refers to how severe the individual perceives the illness is and/or will be if they do not take
medication. Perceived barriers refer to the negative consequences of taking medication, such as side effects.

The HBM model has been used to understand and predict medication adherence behaviour across a range of health conditions including depression (Adams & Scott, 2000; Maidment et al., 2002), psychosis (Adams & Scott; Budd, Hughes, & Smith, 1996; Hughes et al., 1997), and HIV/AIDS (Malcolm, Ng, Rosen, & Stone, 2003). Research data among patients with depressive disorders appears to support the HBM model in that medication adherence is more likely among patients whose perceived need for medication outweighs perceived harmfulness of medication (Aikens et al., 2005). The model is useful for informing intervention programs that aim to change health behaviour by providing an understanding of the patient’s decision making process which allows the intervention to be tailored to the identified perceptions or HBM beliefs (DiMatteo, 1991; Janz et al., 2002).

Figure 1. Health Belief Model (adapted from Janz et al., 2002, p. 52).
The Theory of Reasoned Action (TRA) and the Theory of Planned Behaviour (TPB) provide a framework for identifying the reasons that determine one’s motivation or intention to perform a particular behaviour. According to the TRA, behaviour is based on intentions to either engage or refrain from that behaviour (Brannon & Feist, 2000; DiMatteo, 1991; Montaño & Kasprzyk, 2002). The TRA was later expanded to include the influence that perceived behavioural control has on engaging in behaviour and was renamed the Theory of Planned Behaviour (TPB, Ajzen, 1991). The components of the TPB are outlined in Figure 2.

**Intentions** are based on an individual’s personal attitudes towards the behaviour, the individual’s perceptions of social pressure to engage or not engage in the behaviour (subjective norm), and a person’s perceived ability to carry out the behaviour in spite of external or environmental barriers (perceived behavioural control) (Montaño & Kasprzyk).

Personal attitudes toward behaviour are based on the perceived outcomes or consequences of the behaviour (behaviour beliefs), and the evaluation of whether the outcomes are positive or negative. For example, if an individual believes that taking medication will reduce their symptoms, and that a reduction in symptoms is a positive outcome, then they will have a positive attitude toward taking medication. Subjective norms are based on an individual’s beliefs about whether their peer group or society approve or disapprove of the behaviour (normative beliefs) and how much the individual wishes to comply with these norms. For example, if an individual believes that their peers will approve of them taking medication and the individual is
motivated to meet the expectations of their peers, then they will hold a subjective norm that is likely to facilitate medication taking behaviour.

*Perceived behavioural control* is based on the individual’s beliefs about whether or not there are barriers to performing the behaviour (*control beliefs*) and the extent to which the barriers will hinder the behaviour (*actual behavioural control*).

For example, if an individual believes that medication is too expensive based on their income, they are likely to have low perceived behavioural control. Taking all aspects of the model together, if an individual holds a positive attitude towards medication, has subjective norm beliefs that encourage medication taking, and believe that they have the ability to take medication without difficulty, then the individual is likely to have high behavioural intention to take medication, which in turn will lead to the individual taking the medication.

*Figure 2. Theory of Planned Behaviour (Ajzen & Fishbein, 2005).*
This model enables identification of beliefs that affect behaviour. Interventions designed to target individual beliefs about health behaviour can lead to positive behaviour change (Montaño & Kasprzyk, 2002). The model has been used to predict adherence behaviour in areas such as medication treatment for bipolar disorders (Cochran & Gitlin, 1988), condom use (Albarracin, Johnson, Fishbein, & Muellerleile, 2001), and sunscreen use (Martin, Jacobsen, Lucas, Branch, & Ferron, 1999), highlighting its utility in adherence intervention development.

**Common-Sense Model of Self-Regulation**

As with the HBM and the TRA/TPB, The Common-Sense Model of Self-Regulation (CSM) looks at patients' attitudes about their illness and how they influence intention and behaviour. In addition, the CSM also considers patient beliefs that contribute to attitudes as a way of understanding behaviour (Horne, 2003). Horne suggests that when health behaviour involves decisions about treatment (e.g., such as taking medication) theoretical models should incorporate patient perceptions about treatment as well as perceptions about their illness. For this reason it was proposed that the CSM be extended to include a framework for understanding patients' perceptions about treatment; specifically, perceived need for medication and perceived concerns about potential side effects (Horne, 2003; Horne & Weinman, 2002).

In Figure 3, the components of the CSM and addition of treatment perceptions are outlined. The numbered pathways show how the model can be used to explain medication taking behaviour. The model also highlights the importance of contextual
factors which influence a patient’s perception of treatment and illness. The pathways can be explained as follows: (1) the severity of a patient’s symptoms or information a patient may have about their illness (Health or Threat) will influence the patient’s perceived need for or concerns about treatment (Perceptions of treatment); (2) the processing of both the cognitive (Perceptions of treatment) and emotional aspects of treatment (Emotional response to treatment) occurs in parallel; (3) the patient strives for ‘common-sense’ coherence between their perceptions of illness and treatment, weighing up the necessity of treating the illness (Illness representation) with the
concerns of treatment (*Emotional response to illness*); (4) patient perceptions of illness and treatment, influence coping in the form of adherence (*Coping procedure*); (5) the coping procedure (adherence or non-adherence) is evaluated in terms of it’s effectiveness for the patient (*Appraisal*) which either reinforces or changes the patient’s perceptions of treatment (see Horne, 2003, p. 144-150 for further explanation).

The CSM and the extended framework for understanding perceptions of treatment, has been used to understand adherence behaviour in areas such as preventative (e.g., asthma corticosteroid inhaler) medication management (Horne & Weinman, 2002) and shows preliminary empirical support for the model in explaining adherence to highly active antiretroviral therapy (HAART) HIV treatment (Horne, Cooper, Fisher, & Buick, 2001).
Given the high rates of non-adherence to antidepressant medication and the resulting negative consequences, it is not surprising that a number of interventions have been developed over the years to enhance adherence (Katon et al., 1999, 2001; Ludman et al., 2000; Mündt, Clarke, Burroughs, Brenneman, & Griest, 2001; Vergouwen, Bakker, Burger, Verheij, & Koerselman, 2005). However, non-adherence is not limited to depressive disorders, and a number of important adherence interventions have been designed for other chronic health conditions. Key among these has been *Compliance Therapy* (Kemp, Hayward, Applewhaite, Everitt, & David, 1996). Compliance Therapy aimed to influence adherence behaviour among patients with psychotic disorders through the use of motivational interviewing and other cognitive behavioural techniques. It was one of the first attempts to systematically evaluate a medication adherence intervention. In the Kemp et al. study, 47 patients with a psychotic illness were randomly assigned to an intervention receiving 4 to 6 sessions of either Compliance Therapy or non-specific counselling. Treatment sessions were delivered by highly trained clinicians (a psychiatrist and clinical psychologist). Sessions were conducted twice a week and lasted between 20 to 60 minutes.

The content of Compliance Therapy consisted of a review and conceptualisation of the patients' illness and medication adherence problems. Next, specific discussions were conducted around issues such as side effects, the positive and negative consequences of taking medication, and the stigma of taking medication. Motivational interviewing techniques were conducted to explore ambivalence about taking medication and cognitive therapy techniques were used to challenge beliefs.
that impacted on adherence. Finally, self-efficacy was encouraged and the importance of maintenance treatment highlighted. Non-specific counselling consisted of the clinician listening to the patient’s problems without discussion of treatment.

Patients were sampled from an inpatient facility over a period of 8 months. All patients were diagnosed with a psychotic illness and all were taking antipsychotic medication. Twenty-two patients received Compliance Therapy and 22 received treatment as usual. All patients completed measures of symptom severity, insight, attitudes towards medication, social functioning, and self-reported adherence pre-intervention, immediately after intervention, and 3 and 6 months post-intervention.

Results showed that patients who received Compliance Therapy had significantly greater improvement than the non-specific supportive therapy group on measures of insight, attitude towards medication and adherence to medication after intervention and at 6 months post intervention (Kemp et al., 1996). However, Compliance Therapy showed no significant improvement in symptom severity over non-specific counselling. In a follow-up study, the effects found at 6 months post intervention were maintained over an 18-month period (Kemp, Kirov, Everitt, Hayward, & David, 1998). While Compliance Therapy improves adherence to antipsychotic medication, it is limited by the need for highly trained clinicians to deliver the intervention. Furthermore, Compliance Therapy focused on the improvement of adherence to antipsychotic medication, not antidepressant medication. There are specific factors which influence adherence to antidepressant medication (Unuetzer et al., 1999). Therefore it is unknown whether Compliance Therapy is suitable for patients with depressive disorders who are non-adherent to medication.
In an attempt to improve outcomes among primary care patients with persistent depressive symptoms, Katon et al. (1999) evaluated a collaborative care intervention using a psychiatrist and patients' primary care physician. Participants were a group of 228 primary care patients, referred by their primary care physician who had been prescribed antidepressant medication. Patients were randomly assigned to the collaborative care intervention or usual care.

Collaborative care interventions were delivered by a psychiatrist and a primary care physician. Patients met with the psychiatrist twice over a 4 week period. The first session was a 50 minutes assessment session. The second session was a 25 minute follow-up session. The need for additional sessions was determined by patient response to treatment. The initial session with the psychiatrist included a review of illness, medical and social history, medication side effects and adherence. In addition, the psychiatrist liaised closely with the patient's physician to assist in the alteration of antidepressant dosage as required. Psychiatrists encouraged patients to engage in psychotherapy if severe psychosocial stressors were present. Specific medication adherence strategies used included education about antidepressant medication and consultation with the psychiatrist. Usual care involved the patient receiving an antidepressant medication prescription and visiting their physician two or three times for follow-up over the intervention period.

Outcomes included medication adherence (based on self-report and data from prescription refills), satisfaction with care, and depression outcomes. Measurement occurred at 1, 3 and 6 months after patients were randomised to a treatment group. The intervention group showed significantly greater self-reported adherence, prescription refills, satisfaction with care, and depression outcomes, compared with the treatment as usual group (Katon et al., 1999). However, the researchers caution (1)
that despite these effects, the collaborative nature of the intervention may be hard to implement in areas where primary care and specialist services are not well integrated and (2) patients included in the study were made available through referral and diagnosis determined by their physician, reducing the generalisability of these results to other patients with a diagnosable depressive disorder that may have been misdiagnosed (Katon et al.). The second caution should also be considered in light of the finding that primary care physician do not recognise approximately 50% of people who have a diagnosable mental health condition (Hickie et al., 2001).

Ludman et al. (2000) aimed to enhance patients’ use of antidepressant medication and depression outcomes over 12 months through the delivery of an intervention program that did not rely heavily on collaboration between practitioners and patients in primary care. In this intervention, cognitive behavioural strategies were used to address unrealistic beliefs about illness and treatment, and to highlight the benefits of medication adherence. Education was provided about side effects and early warning signs, to encourage help-seeking behaviour and self-management. Motivational interviewing was used to overcome resistance to medication use and to enhance motivation to engage in long-term adherence (e.g. 12 months). Follow-up by phone and mail was used to encourage medication and adherence and monitor self-management.

Participants were primary care patients who were identified as being at high risk for relapse, based on their history. A total of 386 patients participated in the study. Of these, 194 were randomly assigned to the intervention, while other participants received usual treatment from their primary care provider. The intervention was delivered over 12 months and consisted of two 30-minute videos and a self-care book that participants received one week prior to face-to-face contact.
Face-to-face contact involved two 60-minute to 90-minute sessions, 2 to 4 weeks apart, with a depression specialist. Face-to-face consultation included the development of a relapse prevention plan, motivational interviewing, cognitive behavioural therapy, and education about antidepressant medication and depression. The depression specialist made contact (approximately seven contacts) with participants over the remainder of the intervention time every 4 to 8 weeks by phone or mail. This contact was intended to encourage medication adherence and self-management. The depression specialists were a social worker, nurse, and a psychologist, who had been trained over two half-days by a psychologist, psychiatrist, and primary care physician. Depression specialists consulted with the psychiatrist bimonthly over the course of the intervention to review patients' relapse prevention plans and medication use.

Self-report of adherence and depressive symptoms was obtained pre-intervention and during phone contact with the depression specialist. The only formal measure of assessment used was the Beck Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). Significant improvements in adherence and a reduction in depressive symptoms were obtained for the intervention group, compared with treatment as usual (Ludman et al., 2000). Ludman et al. concluded that this intervention was effective in enhancing adherence to medication and improving depression outcomes. This intervention required less direct patient contact from all practitioners involved (e.g. only by the depression specialist). However, the use of different practitioners in this study (e.g. the primary physician, psychiatrist and depression specialist) still relied heavily on extensive collaboration and communication among the highly trained providers. A final criticism is, like the Katon et al. (1999) study, the generalisability of these results to individuals with
depressive disorders remains questionable given that diagnosis of depression was 
established by patients' primary care practitioner.

Katon (2001) examined the effect of the intervention used by Ludman et al 
(2000) on a more representative sample of high-risk primary care patients with 
recurrent or chronic depression. With a focus on relapse prevention, Katon et al. 
examined adherence to medication, depressive symptoms, and risk of recurrence over 
a one-year period. Participants were randomly assigned to the intervention group or 
treatment as usual. Usual care included a prescription for antidepressant medication 
and between two to four follow-up visits with their physician. A total of 386 patients 
sampled from primary care settings were included in the study after an assessment of 
depression using the depression scales of the Structured Clinical Interview for the 
Diagnostic and Statistical Manual for Mental Disorders, 3rd edition revised (DSM-
III-R, APA, 1987) (Williams et al., 1992) and Hopkins Symptom Checklist (Derogatis, 
Rickels, Uhlenhuth, & Covi, 1974). Inclusion criteria were fewer than four symptoms 
of MDD and a history of three or more Major Depressive Episodes, which the 
researchers used to determine patients who had recovered but were at high-risk for 
recurrence.

Adherence to medication, symptom severity, and recurrence was measured at 
3, 6, 9, and 12 months. Over the year, patients in the relapse prevention group were 
more likely to refill prescriptions for antidepressant medication and reported less 
severe depressive symptoms than those receiving usual care (Katon et al., 2001). 
However, no significant difference in reduction of the risk of recurrence was obtained 
for the intervention group. Katon et al. concluded that a more intensive intervention is 
required to reduce the risk of recurrence in patients with depression who have a high-
risk of recurrence.
To provide comparison of the impact of an intensive (e.g. multi-strategy) versus a non-intensive adherence intervention Vergouwen et al. (2005) randomly assigned 211 primary care patients to either a non-intensive Follow-Up program \((n = 110)\) or an intensive Depression Care program \((n = 101)\) over 26 weeks. Follow-up involved seven regular structured visits with a GP, with no specific strategies implemented by the GP to enhance adherence. The Depression Care program involved the same regular sessions with a GP and mail out of a newsletter to participants, (prior to each session with a GP), which provided information about medication, side effects, and the importance of adherence for up to 6 months. In the Depression Care group, the GP was instructed to discuss the benefits of adherence and to challenge perceived costs of adherence. The newsletters and sessions were designed to specifically target adherence by providing education about antidepressant medication and the importance of adherence, and by addressing participants’ beliefs about treatment through discussion with the GP.

Outcome measures included adherence (pill counts) and depressive symptom outcomes, assessed during GP visits at weeks 2, 6, 10, 14, 18, 22, and 26. Risk of relapse was not specifically measured. However, rates of remission were. Results revealed that no significant differences in adherence rates, depression outcomes, or rates of remission were found between the two interventions (Vergouwen et al., 2005). Vergouwen et al. concluded that a less intensive, follow-up intervention appears to be as effective as a more intensive intervention for adherence and depression outcomes in primary care patients. However, the high frequency of visits used in these interventions is noted as a potential barrier to feasible treatment delivery in primary care (Vergouwen et al.).
In a novel attempt to eliminate the need for clinicians to deliver adherence interventions, Mündt et al. (2001) examined the effect of an education only intervention on antidepressant medication adherence. Participants were 246 patients with MDD who had been prescribed antidepressant medication by their primary care physician. Participants were randomly assigned to the intervention group or treatment as usual. A total of 122 participants were included in the intervention group. The intervention included time-phased mail outs of information about recovery from depression and antidepressants directly to participants over a 7 month period. The researchers hypothesised that the education material would provide patients with sufficient support and information to encourage medication adherence, reduce depressive symptoms, and reduce risk of relapse (Mündt et al.).

Participants completed measures of medication adherence (measured by monitoring prescriptions filled), depressive symptoms, social and work adjustment, and treatment satisfaction at 1, 3, and 7 months via telephone interviews. Results revealed no significant differences between the intervention and treatment as usual groups on measures of adherence to antidepressant medication, depression outcomes, and risk of relapse. The findings suggest that education alone as an intervention is not effective at enhancing adherence or reducing the risk of recurrence of depressive symptoms. This study highlights the need for adherence interventions that do not rely solely on education without clinical contact (Mundt et al., 2001) but instead incorporate a range of strategies to target adherence (Kemp et al., 1996).

Overall, medication adherence interventions work to improve adherence to antidepressant medication and reduce depression symptom severity over a 6 to 12 month period (Katon et al., 1999, 2001; Ludman et al., 2000; Vergouwen et al., 2005). Katon et al. (2001) suggest that more intensive interventions are required to determine
how effective adherence interventions are at reducing the risk of recurrence. The utility of many of these more complex or intensive interventions is often limited by the need for highly trained clinicians (e.g., psychiatrists and physicians) to deliver the interventions (Byrne, Deane, Coombs, & Lambert, 2004). The inclusion of such highly trained clinicians in medication adherence interventions is not surprising, given that the responsibility for enhancing medication adherence has traditionally been seen as the domain of medical professionals such as primary care physicians, psychiatrists, and even nurses (Coombs, Deane, Lambert, & Griffiths, 2003). It has been suggested that given non-adherence is a common issue for primary care patients, the best way to address non-adherence would be to educate and train a range of health professionals, including allied health professionals, who provide services to primary care patients (Haley et al., 1998; McDaniel, Belar, Schroeder, Hargrove, & Freeman, 2002). Sawyer and Aroni (2003) suggest that adherence skills should be within the repertoire of the broad cross section of health clinicians, not only clinicians specialising in the pharmacological treatment of depressive disorders such as psychiatrists and physicians. Furthermore, significant outcomes in adherence and depressive symptoms can be achieved when such health professionals deliver adherence interventions (Katon et al., 2001; Ludman et al., 2000)
EXPANDING THE SKILLS OF PRIMARY CARE CLINICIANS TO FACILITATE
MEDICATION ADHERENCE

Expanding the range of clinicians who provide adherence strategies to patients in primary care is of particular importance within an Australian context. The capacity to refer people with depression to psychological services has been expanded in Australia under a raft of new government initiatives. Examples of these include the Better Outcomes in Mental Health Care Program (2001 – 2005) and the Medicare funded initiative Enhanced Primary Care. In November 2006 the Australian Government announced funding of $538 million over 5 years to expand Medicare and improve access to psychological services for individuals with a mental illness. This enables patients to receive psychological services covered under Medicare. It is important to note that while psychologists are one of the targeted professions to provide these services, a range of allied health clinicians provide primary care services to individuals with depressive disorders in Australia. One example of this occurs in community health centres that employ a team of allied health clinicians to provide primary care services. Within the centres, the term allied health clinician often refers to psychologists, social workers, occupational therapists, and mental health nurses.

There is considerable debate about whether psychologists should provide medication-related services to patients (Walters, 2001). This is complicated by the debate regarding whether psychologists should obtain prescription rights (Walters). Overall, there is little data or commentary related to the role that allied health clinicians should assume with regard to supporting medication adherence. Westerfelt (2004) argues that allied health workers, such as social workers, should be encouraged
to facilitate patient adherence by encouraging patients to communicate with their physician about their medication use and by providing patients with information about their medication. Similarly, it has also been argued that psychologists are well equipped to provide services that assist patients in their use of medication. In a discussion of the collaboration that psychologists often have with their patients and other health professionals, Weene (2002) states that psychologists already have many skills that may be useful in facilitating medication adherence among their patients. These include the ability to; deliver psychoeducation, develop a trusting therapeutic relationship, monitor adherence, assess problems, and collaborate with other health care providers (e.g., physicians).

There is limited data available on the practices of psychologists pertaining to their involvement in the facilitation of adherence. Bascue and Zlotowski (1980) found that 10% of psychologists in their US sample ($N = 137$) did not know if their patients were taking medication, 23% stated they did not get involved in the facilitation of medication use, and 6% believed that medication should not be used as a treatment for depression. In a more recent survey, 96% of psychologists reported they were seeing at least one patient who had been prescribed medication (VandenBos & Williams, 2000). Of these psychologists, 43% of the patients on their caseloads were receiving psychotropic medication. While 99% of the psychologists indicated that they would make a referral for medication evaluation or consultation, only 73% reported that they do so routinely. Although 73% is a high rate of psychologists reporting they routinely refer patients for medication evaluation or consultation, they reported doing so for only up to 25% of their patients. Given that 43% of patients were receiving medication, it does not appear that such referrals were routine practice for the psychologists. Furthermore, 16% of psychologists said that they did not discuss
medication issues during therapy with any of their patients (VandenBos & Williams). These findings are somewhat concerning as they suggest that many psychologists do not routinely engage in strategies to facilitate patient adherence to medication and some psychologists do not get involved in facilitating adherence at all.

Clinicians' Beliefs about Medications and their Role in Facilitating Medication Adherence

In seeking to understand why clinicians don't use adherence strategies some researchers have examined the role of the clinician’s own beliefs upon their clinical behaviour. Many researchers suggest that clinician beliefs about medication treatment may influence the type of treatment the patient will receive, including whether they receive help to use their medication more effectively (Byrne, Deane, & Coombs, 2005; Farris & Schopflocher, 1999; Ramström, Afandi, Elofsson, & Petersson, 2006; Stern et al., 1999). Byrne et al. found that general beliefs about medications, as measured by the Beliefs about Medicines Questionnaire (Horne, Weinman, & Hankins, 1999), predicted how effectively nurses indicated they were able to use adherence strategies. Specifically they found that self-rated difficulty implementing specific adherence strategies was influenced by both a lack of knowledge about medication and negative beliefs about medication (Byrne et al.).

Ramström et al. (2006) found 51% of pharmacists agree that medications are overused and that this belief may be a barrier to communication with patients. Furthermore, pharmacists self-efficacy (self confidence) beliefs about their ability to facilitate patient adherence has been found to be a direct predictor of pharmacist behaviour, specifically that low confidence is a barrier to providing adequate
pharmaceutical care (Farris & Schopflocher, 1999). This is an important finding given that self-efficacy, a person’s beliefs about their ability and confidence to perform a specific behaviour (Bandura, 1977), is reported to be a consistent predictor of engagement in that behaviour (Bandura, 1977, 1997; Brannon & Feist, 2000).

Finally, Stern et al. (1999) found that 36% of psychologists and 54% of social workers in their sample considered antidepressant medication to be somewhat ineffective as a treatment option and they recommended that future research examine a possible link between beliefs about medication and subsequent referral for an appropriate medical review. Together these studies suggest clinicians’ beliefs about medication and their ability to facilitate adherence (including confidence, self-efficacy, and adequacy) may be related to the extent to which clinicians will engage in behaviours that facilitate adherence (Byrne et al., 2005; Farris & Schopflocher, 1999; Ramström et al., 2006).

Beliefs about antidepressant medication being helpful are associated with knowledge of depression and professional experience in dealing with depressive disorders (Jorm, Christensen, & Griffiths, 2005). This is demonstrated by the significant difference in beliefs among different health professionals about whether antidepressant medication is helpful for people with depressive disorders (Jorm et al., 2005; Jorm, Korten, Jacomb, Rodgers, & Pollitt, 1997). For example, Jorm et al. (1997) report that 89% of clinical psychologists identify antidepressant medications as being helpful. In comparison, a survey of the Australian public revealed that only 25% of individuals (who were not clinically trained but who identified themselves as having experience working with individuals with depressive disorders) reported antidepressant medications as being helpful (Jorm et al., 2005). The significant difference between beliefs about the effectiveness of antidepressant medication may
In more recent studies it has been found that many health clinicians do not appear to have received adequate training in adherence strategies and lack the requisite skills and knowledge, or do not hold the necessary beliefs to support adherence (Coombs et al., 2003; Byrne et al., 2004, 2005). This is despite evidence that these elements can be enhanced (Byrne et al., 2004; Gray, Wykes, & Gournay, 2003). As previously noted, it is imperative that a range of health clinicians develop the appropriate knowledge and skills in this much needed area, given that there are a diverse range of health professionals providing primary health care services to individual with depressive disorders in Australia.

Effects of Medication Adherence Training on Clinicians’ Knowledge, Skills, and Beliefs

In the UK, Gray et al. (2003) evaluated the effectiveness of *Medication Management*, a training program that enhances community mental health nurses’ (CMHN) clinical skills to a level necessary for the delivery of Compliance Therapy (Kemp et al., 1996). As previously reported, Compliance Therapy is an intervention program designed to enhance medication adherence among individuals with psychotic disorders (Kemp et al.). The Gray et al. (2003) study involved training 52 CMHNs over 10 days in areas such as individualised assessment, cognitive therapy skills, and psychopharmacology. Evaluation of the training revealed CMHNs achieved significant increases in clinical skills and knowledge. In a follow-up study, the patients of nurses who received training reported greater adherence to prescribed
medication and less psychopathology compared to patients receiving treatment as usual (Gray, Wykes, Edmonds, Leese, & Gournay, 2004). The researchers concluded that Medication Management training was an effective means of enhancing CMHNs skills and knowledge to an adequate level for potential delivery of Compliance Therapy (Gray et al., 2003) and that this training improved clinical outcomes for patients with schizophrenia (Gray et al., 2004).

The research conducted by Gray et al. (2004) is promising for expanding the skills of clinicians to facilitate adherence, but there are three issues that need to be addressed to enhance the efficacy and feasibility of training; (1) clinician beliefs need to be assessed and targeted during training, (2) a 10-day training program for clinicians is not feasible within Australian primary care settings, and (3) future studies need to be broadened to include a wider range of allied health clinicians treating people with mental health issues in Australia, not just nurses who are often assumed to have the main role in the facilitation of medication adherence (Coombs et al., 2003).

Surguldaze, Timms, and David (2002) addressed two of these issues (i.e. the length of the training program and lack of focus on clinician beliefs) by developing a shorter, 2-day version of Compliance Therapy training that specifically aimed to increase trainees’ understanding of adherence issues, skills to engage with and manage patients with a psychotic disorder, attitudes towards patients with psychosis who are non-adherent, and beliefs about the facilitation of adherence. Participants were 73 psychiatrists in training, 19 of whom received the modified Compliance Training and 54 served as a control group.

Pre- and post-training measures comprised questions about the causes of non-adherence, consequences of non-adherence, rating of skills important for building a
collaborative relationship with and managing patients with a psychotic illness, beliefs about the management of psychosis, and attitudes towards non-adherence. After training, psychiatric trainees reported a significant increase in their ability to identify the causes and consequences of non-adherence and confidence in their skills to manage patients with psychosis (Surguldaze et al., 2002). This increase was significantly higher than those reported in the control group. However, no significant increases in ratings of skills important for building a collaborative relationship with patients with a psychotic illness, beliefs about the management of psychosis, or attitudes towards non-adherence were obtained over the course of training (Surguldaze et al.). It is important that clinicians’ hold the necessary beliefs to facilitate medication adherence as such beliefs can influence whether or not clinicians will engage in strategies to facilitate medication adherence (Byrne et al., 2005; Farris & Schopflocher, 1999; Ramström et al., 2006; Stern et al., 1999).
MEDICATION ALLIANCE

In an effort to capture the essential ingredients of Medication Management (Gray et al., 2003) and Compliance Therapy (Kemp et al., 1996) while addressing their shortcomings, Byrne et al. (2004) developed Medication Alliance for delivery in Australian primary care services. Medication Alliance is a training program designed to enhance the skills, knowledge, and beliefs of clinicians working with individuals who have been prescribed medication and who are non-adherent. In its original form (Byrne et al.) it is a 3-day training program for mental health clinicians working with individuals with psychosis who are non-adherent to medication.

The program comprises several features of previous medication adherence programs (Gray et al., 2003; Kemp et al., 1996), as well as additional strategies suggested as being effective in enhancing adherence, but which were lacking in previous training programs. These core components include; developing a therapeutic alliance, individualised assessment, cognitive interventions, motivational interviewing and problem solving. It was modelled largely from Medication Management and was developed in consultation with Medication Management researchers (Gray et al.). A copy of the Medication Alliance program as used in Byrne et al. (2004) can be found on the appended CD-ROM file Medication Alliance training program topics.

Medication Alliance Core Components

Therapeutic Alliance

Horvath (2000) notes that for any form of change to occur in therapy, a
positive therapeutic alliance is vital. A strong therapeutic alliance helps to develop trust and creates an environment in which an individual can feel safe and secure enough to explore behaviour change (Horvath). As conceptualised by Bordin (1979), the therapeutic alliance describes the relationship between the therapist and patient, comprising of the development of an emotional bond and the agreement of tasks and goals in therapy. Bond is the emotional side of the alliance, comprising relational qualities such as trust, respect, and caring. The agreement of tasks within therapy involves a mutual understanding of issues related to the type of task, timing and structure of activities. Agreement of goals emphasises the necessity of a mutual agreement of the therapy goals including an agreement on the investment in and achievement of the goals.

The importance of developing a strong therapeutic alliance is well established given that regardless of other treatment variables, it is found to be a consistent predictor of positive outcomes in therapy (Ellis & Smith, 2002; Howgego, Yellowlees, Owen, Meldrum, & Dark, 2003; Martin, Garske, & Davis, 2000). Similarly, in a number of studies, the therapeutic alliance has been found to predict adherence to medication regimes. For example, therapeutic alliance was the most consistent predictor of adherence to antipsychotic medication among outpatients with psychotic disorders, compared with other variables thought to influence adherence (Weiss, Smith, Hull, Piper, & Huppert, 2002). The importance of alliance in treatment adherence is supported by numerous authors (Delgado, 2000; Demyttenaere, 1997; Frank, 1997). However, there has been a lack of focus on developing a therapeutic alliance in previous medication adherence intervention programs. In an attempt to incorporate the development of a therapeutic alliance as part of training, Surguldaze et al. (2002) measured the effects of Compliance Therapy on psychiatric trainees’
confidence in their skills to develop an alliance with their patient. No impact on psychiatric trainees’ confidence to build a therapeutic alliance was obtained over the course of training.

Medication Alliance incorporates the importance of developing a strong therapeutic alliance by focusing on the agreement of tasks and goals during therapy (Bordin, 1979). This is achieved during Medication Alliance training in the following ways (see *Medication Alliance training with people who have depressive disorders: Training manual* file on the appended CD-ROM, p.68-84, p.99-113, p.159-161);

- Normalising medication non-adherence
- Developing an understanding of what non-adherence is
- Developing an understanding of what some of the specific medication adherence issues are for individuals with depressive disorders
- Identifying the specific factors that influence adherence
- Encouraging the sharing of information about medication and non-adherence between clinician and patient
- Developing empathy among clinicians for non-adherence issues
- Setting an agenda with the patient which involves an agreement between clinician and patient about what therapy will focus on and what each individuals roles will be

*Individualised Assessment*

There are many factors that can influence an individuals’ adherence to medication. Therefore, treatments need to be tailored to the individual’s specific adherence needs. Furthermore, individualised treatment is an excellent way to foster
alliance and helps to enhance adherence to medication (Marland & Cash, 2001). In order for individualised treatment to occur, an individualised assessment needs to be conducted to identify all the possible causal variables influencing medication non-adherence (Haynes & Williams, 2003). Once the causal variables are identified, individualised treatment planning can begin.

One type of individualised assessment strategy is a functional analysis (Haynes, Leisen, & Blaine, 1997; Haynes & Williams, 2003). Functional analysis allows for the identification of the function of a specific behaviour (such as not taking medication) by gathering information about antecedents and consequences of the behaviour (Tustin, 1993). As standard treatments may not be effective for some patients with multiple problem behaviours, the functional analysis enables important causal variables of behaviour to be identified so the most effective treatment can be administered (Haynes & Williams, 2003). A causal relationship between two variables is said to occur when “(a) they co vary (i.e., when one changes, so does the other), (b) the causal variable reliably precedes the dependent variable (i.e., the problem behaviour), (c) there is a logical connection, (d) alternative explanations for covariance can be excluded” (Haynes et al., 1997, pp. 334).

A functional analysis of behaviour is essential in the conceptualisation of hypotheses regarding cause, maintenance and treatment (Truax, 2001). Conducting a functional analysis to identify the cause of non-adherence allows treatment planning to focus specifically on the cause for non-adherence. However, there is a lack of research into medication adherence programs that emphasise the need for such an individualised assessment. This is despite the fact that individualised assessment is recommended as an essential part of providing treatment (Truax).
Medication Alliance uses individualised assessment to help clinicians identify specific causes for medication non-adherence. This is achieved during Medication Alliance training in the following ways (see *Medication Alliance training with people who have depressive disorders: Training manual* file on the appended CD-ROM, p.114-122, p.164-185);

- Finding out what the medication adherence problems are through the use of an illness timeline (a structured way of reviewing with the patient times when medication was adhered to and not adhered to and identifying proximal factors that may have influenced adherence)
- Using functional analysis and case formulation to determine the most likely causal factors of medication adherence, given the information collected in the illness timeline

*Cognitive Therapy*

Cognitive therapy (Beck, 1964; Beck, 1995) is a structured psychological intervention used to identify and modify dysfunctional thoughts, beliefs and behaviours of an individual so as to produce a change in emotions and behaviour. It is goal orientated and problem focused. In its original form (Beck, 1964) cognitive therapy was designed to treat depression. Over the years, cognitive therapy has been modified and adapted for use with a range of psychopathology. However, the underlying principle of cognitive therapy remains the same. That is, “distorted or dysfunctional thinking (which influences the patient’s mood and behaviour) is common to all psychological disturbances” (Beck, 1995, pp. 1).
Dysfunctional thoughts and beliefs are first identified and then a series of different strategies are used to modify these in order to facilitate guided discovery of more helpful thoughts and beliefs to bring about emotional and behavioural change (e.g. take medications) (Beck, 1995). This is achieved by using a range of strategies to reduce the conviction with which a thought or belief is held by evaluating them, and then replacing the thought or belief with a more helpful, realistic ones (Beck, 1995). Modification of patient beliefs about taking medication is an important component in Medication Alliance training given that these beliefs have been significantly associated with medication adherence (Aikens et al., 2005; Horne & Weinman, 1999).

Brown et al. (2005) identified specific beliefs that influence antidepressant medication adherence among primary care patients by administering the Beliefs about Medicines Questionnaire (Horne et al., 1999) to a sample of 192 patients. The findings showed that 51% of patients believe antidepressant medication is overused, 27% believe doctors place too much trust in medications, 23% believe most medications are addictive, 49% are concerned about the long-term side effects of medication, and 37% worry about becoming dependant on their medication.

Cognitive therapy has been used successfully to modify patient beliefs about taking medication in previous medication adherence interventions (Gray et al., 2004; Kemp et al., 1996). In the Gray et al. (2004) study, nurses who had been trained (see Gray et al., 2003) in specific cognitive therapy interventions such as identifying patient beliefs about medication and challenging these beliefs through guided discovery, were more effective in improving patient attitudes towards antipsychotic medication and medication adherence. Kemp et al. demonstrated that through the use of cognitive strategies, patients with psychotic disorders showed significant increases in their attitudes towards antipsychotic medication, insight into their illness, and
adherence to medication. These strategies used included (adapted from Kemp et al., p. 346);

- Reviewing the patient’s illness history
- Conceptualising the problem of adherence
- Discussion about symptoms and side effects of treatment
- Processing the benefits and drawbacks of medication
- Exploring the patient’s ambivalence
- Highlighting discrepancies between the patient’s actions and beliefs
- Focusing on adaptive behaviours
- Encouraging self-efficacy
- Discussing the value of staying well and thus the need for maintenance of medication

During Medication Alliance training, cognitive therapy is used to challenge and modify patient beliefs about medication and adherence issues in order to facilitate prescribed adherence to antidepressant medication. Knowledge of specific antidepressant medication beliefs such as those reported by Horne et al. (1999) can be used to specifically tailor cognitive therapy strategies. In addition to the strategies used in the Kemp et al. (1996) study, the cognitive strategies used in Medication Alliance training include (see Medication Alliance training with people who have depressive disorders: Training manual file on the appended CD-ROM, p.202-218);

- Discussing thoughts, feelings, and beliefs that concern patients about their medication usage
- Developing an understanding of the cognitive model and how thoughts, feelings and behaviours interact
• Developing clinician ability to identify thoughts and beliefs about medication and medication adherence
• Understanding and normalising distorted thinking styles
• Increasing and assessing doubt about the validity of thoughts and beliefs
• Gathering evidence to challenge beliefs
• Identifying alternative thoughts and beliefs that are more facilitative of medication adherence

Motivational Interviewing

Motivational interviewing is a directive yet patient-centred technique for increasing problem recognition and enhancing motivation to change (Miller & Rollnick, 1991, 2002). By using interviewing strategies such as reflective listening and direct questions the clinician can help the patient to develop an awareness of the discrepancies between their current problem behaviour (e.g. not taking medication) and their values or goals (e.g. being well) (Burke, Arkowitz, & Menchola, 2003).

The goal of motivational interviewing is to enhance the patient’s perspective of the importance of changing their behaviour to reach a desired outcome (e.g. adhering to medication to reduce symptoms and the risk of relapse). To do this, it is important for the patient and not the clinician to develop reasons for change (Burke et al., 2003; Miller & Rollnick, 1991). This goal is reached by the clinician utilising five basic principles of motivational interviewing (1) expressing empathy, (2) developing discrepancies, (3) avoiding argumentation, (4) rolling with resistance, and (5) encouraging self-efficacy (Miller & Rollnick).
Motivational interviewing has been used extensively in adherence interventions and is regarded as an effective strategy for enhancing adherence (Kemp et al., 1996; Ludman et al., 2000; Rusch & Corrigan, 2002; Zygmunt, Olfson, Boyer, & Mechanic, 2002). Kemp et al. found that patients with psychosis, who had received Compliance Therapy, which has significant motivational interviewing components, demonstrated more positive attitudes towards medication, enhanced insight into illness, and increased adherence to antipsychotic medications than those treated with non-specific counselling. Specific motivational interviewing strategies used in Compliance Therapy included identifying the costs and benefits of taking medication and exploring patients’ ambivalence to take medication, and developing discrepancies between their current medication taking behaviour and their beliefs. Similarly, Ludman et al. used motivational interviewing strategies, such as rolling with resistance, exploring ambivalence, and developing discrepancies, as a significant component in their adherence intervention to significantly increase patients’ adherence to antidepressant medication.

Motivational interviewing is used in Medication Alliance training to help patients reach a point where they can understand the importance of medication adherence in reaching personally relevant goals. This is achieved during training in the following ways (see Medication Alliance training with people who have depressive disorders: Training manual file on the appended CD-ROM, p.85-98, p.186-201);

- Understanding the patient’s level of motivation to take medication and/or resistance to medication adherence (including what is resistance, how is it shown, and where does it come from)
• Developing skills to discuss medication adherence with resistant or unmotivated patients
• Exploring and building patient importance and confidence in medication adherence
• Understanding when to roll with resistance and when to encourage motivational change in order to preserve therapeutic alliance
• Exploring ambivalence, weighing up the good and bad things about medication adherence, and helping patients to ‘tip the scales’ towards medication adherence behaviour

Problem Solving

Problem solving is a technique used to assist individuals in identifying alternative ways of dealing with problems during everyday life (Chang & D’Zurilla, 1996). Chang and D’Zurilla’s problem solving outcomes are achieved through the two processes of problem orientation and problem solving proper. Problem orientation is related to how an individual thinks or conceptualises their everyday life problems and how they perceive their own problem-solving ability, while problem solving proper refers to the process of identifying alternative solutions to problems in an attempt to find a solution that is the most likely to lead to a desired outcome (Chang & D’Zurilla). Problem solving proper is often used in medication adherence interventions as a strategy to identify problems with taking medication and developing solutions to overcome barriers (Kemp et al., 1996; Miklowitz, George, Richards, Simoneau, & Suddath, 2003).
Providing patients with problem solving strategies to overcome adherence issues has been noted as an important strategy in a review of effective adherence intervention programs for people with schizophrenia (Zygmunt et al., 2002). In a randomised study of outpatient management of bipolar disorder, patients who received an intervention incorporating problem solving skills showed better medication adherence over 2 years than patients receiving a less intensive, crisis management intervention (Miklowitz et al., 2003). The specific problem solving strategies used were identifying a problem specific to treatment management, brainstorming solutions, evaluating the advantages and disadvantages of each solution, and choosing a solution to implement (Miklowitz et al.).

Problem solving is used in Medication Alliance training to help patients overcome practical problems that impede medication adherence. This is achieved during training in the following ways (see Medication Alliance training with people who have depressive disorders: Training manual file on the appended CD-ROM, p.123-143, p.219-220);

- Defining the problem; using the problems identified during individualised assessment
- Generating alternative solutions to the problem
- Looking at the disadvantages and advantages of each solution and weighing up the alternatives
- Encouraging the patient to choose the alternative that best suits them
- Helping patients to make detailed plans of how to execute the solution
- Encouraging patients to implement and evaluate the success of the alternative solution through the use of systematic homework
Clinician Outcomes from the Medication Alliance Training Program

Byrne et al. (2004) delivered the program to 23 mental health workers in Tasmania who were working with individuals with psychosis. The sample comprised 19 mental health nurses, 2 psychologists, 2 social workers, and 1 unreported professional designation. Training included both didactic and interactive teaching techniques, with time allowed for skill practice and role-plays. Measures taken pre- and post-training were used to assess changes in skills, knowledge, and beliefs over the course of training. A number of measures were developed in order to assess training outcomes. All measures were pencil-and-paper measures with the exception of the Cognitive Therapy Scale for Psychosis, which was videotaped and blind-rated.

The Medication Alliance Cognitive Therapy Scale for Psychosis (based on the Cognitive Therapy Scale for Psychosis; Haddock et al., 2001) was developed to assess video-taped segments of participants’ demonstrating skills in delivering a range of Medication Alliance strategies including agenda setting, problem solving, cognitive challenging of medication beliefs, motivational interviewing, and homework.

The Functional Analytic Case Formulation was developed to measure how effectively participants could identify causal variables of non-adherence. The measure included a vignette which described a patient who was non-adherent to antipsychotic medication. Imbedded in the vignette were a number of causal variable for non-adherence that participants had to identify.

Changes in knowledge were assessed using the Medication Alliance Clinician Knowledge Questionnaire. This is a 15-item multiple-choice questionnaire asking participants about the ways in which medication adherence can be influenced (through the use of Medication Alliance strategies).
The Medication Alliance Beliefs Questionnaire (MABQ) was used to assess participants' beliefs related to working with individuals who are non-adherent to medication. Twenty-two items are rated on a 5-point Likert scale (1 = "Strongly Disagree" to 5 = "Strongly Agree"), with higher responses indicating more positive beliefs. Subscales of the MABQ included Adequacy, Legitimacy, Motivation, Work Satisfaction, and Self Esteem.

The Elsom Therapeutic Optimism Scale (Elsom, 2002) was used to measure participants' optimism about medication as an effective treatment option for patients.

Comparison of pre- and post-training outcomes showed that Medication Alliance training significantly increased clinician knowledge about medication adherence issues and knowledge of the strategies that can be used to facilitate adherence. In addition, skills to effectively enhance medication adherence, and specific beliefs about clinicians' adequacy, work satisfaction, and optimism about working with individuals who are non-adherent were all improved (Byrne et al., 2004). The relative brevity of Medication Alliance in comparison to other medication adherence interventions (Gray et al., 2003) also increased its feasibility for delivery within Australian primary care settings.

However, the intervention focused only on clinicians who identified themselves as having a legitimate role in facilitating adherence (Coombs et al., 2003). A weakness in the Byrne et al., (2004) study is that it failed to account for clinicians for whom facilitating adherence is not a typical role. Addressing the knowledge, skills, and beliefs of a range of mental health clinicians is important, given that many clinicians (e.g. allied health clinicians) are working with individuals under primary health care initiatives in Australia (e.g. Better Outcomes in Mental Health Care and Enhanced Primary Care) who may be nonadherent. Furthermore, this training
focused on enhancing clinicians’ knowledge, skills, and beliefs, related to facilitating adherence among patients with psychosis; it is not known if this training program is effective at enhancing the knowledge, skills, and beliefs of allied health clinicians working with patients with depressive disorders who are non-adherent to antidepressant medication.

The Present Study

Patients with depressive disorders are commonly referred by primary care physicians to specialist allied health services, such as psychological services. While psychologists provide the majority of these services, a range of allied health clinicians provide primary care services to individuals with depressive disorders in Australia. As a result, allied health care providers are often in a position to support or facilitate the adherence of patients to antidepressant medication in primary care environments. However, there is a dearth of information about the current medication adherence practices of allied health clinicians in Australia who work with primary care patients with depressive disorders. Specifically, it is unclear whether allied health professionals view facilitation of medication adherence as part of their role. Furthermore, it is unclear whether a broader range of clinicians, such as allied health clinicians, can be trained in medication adherence interventions, given that previous interventions have generally required highly trained clinicians to deliver such programs (Kemp et al., 1996) or have only trained with clinicians who are perceived as having a role in facilitating adherence (Byrne et al., 2004; Gray et al., 2003).

This research sought to identify the extent to which allied health clinicians believe helping patients adhere to their medication is a role in which they should
engage and the extent to which they use specific adherence strategies (Study 1). Furthermore, this study examined the impact of a modified Medication Alliance training program on clinicians’ knowledge, skills, and beliefs related to facilitating medication adherence among individuals with depressive disorders (Study 2).
STUDY 1:
PRIMARY CARE ALLIED HEALTH CLINICIANS’ VIEWS OF THEIR ROLES IN FACILITATING ANTIDEPRESSANT MEDICATION ADHERENCE AND PREDICTORS OF ADHERENCE STRATEGY USE

It was hypothesised that beliefs about medication, beliefs about allied health professionals’ role in facilitating adherence, adequacy (self-efficacy), and previous training in specific medication adherence strategies would be related to the extent to which allied health clinicians working with primary care patients report using specific medication adherence strategies. It is expected that previous training, more positive beliefs about medication, beliefs that allied health clinicians have a role in facilitating adherence, and higher adequacy, will be associated with greater self-reported use of specific strategies to enhance adherence. The degree to which these variables predict self-reported use of specific strategies was also explored.

Method

Participants and Procedure

Participants were 72 allied health clinicians (i.e., psychologists, social workers, occupational therapists) working with primary care patients. To ensure participants were delivering services to primary care patients, specific questions about the context of their clinical work were asked. Participants who satisfied this criterion were those who indicated they were (a) working in a primary care setting such as a Division of General Practice or community health centres, and/or (b) providing
services under a primary care program (e.g., *Better Outcomes in Mental Health Care* and/or *Enhanced Primary Care*). A convenience sample of participants was accessed via mail or face-to-face delivery of surveys. Psychologists working in private practice in the South Eastern Sydney and Illawarra areas were accessed via mail from addresses listed in the Yellow Pages. Psychologists on a nation-wide mailing list held by the Australian Psychological Society were also accessed via mail. Individuals on this list had previously consented to being contacted for research distributed by the Australian Psychological Society. Primary care agencies in the South Eastern Sydney and Illawarra Area Health Service were contacted to arrange a time to visit and leave surveys for allied health clinicians to complete. In return for involvement in the study, participants were offered the opportunity to enter a draw for a book voucher. Separate reply paid envelopes were provided to return their book voucher entries to ensure that surveys remained anonymous.

A total of 212 surveys were distributed; 101 were mailed out following identification in the Yellow Pages, 61 were mailed out via the APS mailing list, and 50 were delivered directly to primary care agencies. Eighty-eight surveys were returned, giving a response rate of 41.5%. Eighteen surveys were excluded from the analysis because 14 participants did not indicate they were currently working within a primary care context, and 4 participants indicated they were non-allied health professionals (e.g. physicians or nurses). Thus, the following analyses were based on 72 participants who met entry criteria. Most participants were female (75%, \( n = 54 \)). The mean age of participants was 42.6 years (range 22 to 69 years). Participants included 54 psychologists (75%), 12 social workers (16.7%), and 6 occupational therapists (8.3%). The average length of time that participants had worked in their profession was 11.4 years (range 0 to 37 years). The majority of participants (76.4%,
(n = 55) worked 30 or more hours per week in their profession. Participants were mostly from NSW [(90.3%, n = 65, with the remainder from VIC (2.8%), QLD (2.8%), WA (1.4%), and ACT (1.4%)].

Thirty-one participants (43.1%) identified themselves as working with patients through the Better Outcomes in Mental Health Care program, while 34 (47.2%) reported that they were working with patients through the Enhanced Primary Care initiative. Of these, 16 participants (22.2%) identified themselves as working with patients through both the Better Outcomes in Mental Health Care program and Enhanced Primary Care initiative. Cognitive behavioural therapy was reported as a model of therapy used by 27 participants (37.5%), while 27 participants (37.5%) reported using eclectic or integrated models. Other models of therapy reportedly used were existential psychology, rehabilitation models and personal construct psychotherapy (13.9%). Eight participants (11.1%) did not report the type of therapy model they used. Places of work were reported as private practice (44.5%), community health centres (37.5%), community mental health centres (23.6%), hospitals (4.2%), and 'other' (2.8%). There was some overlap of places of work, with 13.9% of participants identifying themselves as working in both community based and private practices. There was missing data for the place of work for one participant (1.4%). The average number of patients on participants’ active case loads was 28 (range 1 to 100).

**Materials**

See Appendix A for a copy of the survey used in this study. The survey had four sections: (Section A) demographic and background details, (Section B) general
beliefs about medication, (Section C) general beliefs about adequacy to facilitate adherence, and (Section D) specific beliefs about facilitating adherence among individuals with depressive disorders who are non-adherent to antidepressant medication.

Section B included the 8-item *General* scale of the *Beliefs about Medicines Questionnaire* (Horne et al., 1999: BMQ). Items are rated on a 5-point Likert scale (1 = “Strongly Disagree”, 2 = “Disagree”, 3 = “Uncertain”, 4 = “Agree” to 5 = “Strongly Agree”), with higher scores indicating more negative beliefs. The items provide two subscales, *Overuse* and *Harm*. The *Overuse* subscale consists of four items (score range 4 to 20) to examine the extent to which the clinician believes doctors overuse medications (“Doctors use too many medications”, “Natural remedies are safer than medications”, “Doctors place too much trust on medications”, and “If doctors had more time with patients they would prescribe fewer medications”). The *Harm* subscale also consists of four items (score range 4 to 20) to identify the extent that the clinician believes medications are harmful or poisonous (“People who take medications should stop their treatment for a while every now and again”, “Most medications are addictive”, “Medications do more harm than good”, and “All medications are poisons”).

Horne et al. (1999) found satisfactory internal consistency (Cronbach alpha coefficients) for the *Overuse* subscale in samples of general medical inpatients ($n = 90, \alpha = .60$) asthmatic patients ($n = 78, \alpha = .74$), diabetic ($n = 99, \alpha = .80$), renal ($n = 47, \alpha = .77$), cardiac ($n = 116, \alpha = .74$), and psychiatric patients ($n = 89, \alpha = .73$). Mixed internal consistency was found for the *Harm* subscale among diabetic ($\alpha = .66$), renal ($\alpha = .83$), psychiatric ($\alpha = .70$), general medical ($\alpha = .51$), asthmatic patients ($\alpha = .47$), and cardiac patients ($\alpha = .51$). Internal consistency was improved in
later research with 600 undergraduate students, by assigning the item "Natural
remedies are safer than medications" to the Harm subscale and excluding the item
"All medications are poisons" (Horne et al., 2004). Alpha values for this modified
version were $\alpha = .72$ and $\alpha = .62$ for the Overuse and Harm subscales respectively.
Ramström et al. (2006) also used this modification in their sample of 141 pharmacy
patients and 136 pharmaceutical specialists, obtaining alpha values of $\alpha = .65$ and $\alpha = .70$ for the Overuse and Harm subscales respectively.

Using the original 4-item Overuse and 4-item Harm subscales (Horne et al.,
1999), sufficient internal consistency for research purposes was obtained in the
present study; $\alpha = .66$ (Overuse) and $\alpha = .67$ (Harm). When the changes used by
Horne et al. and Ramström et al. (2006) were applied in the present study, internal
consistency was not significantly improved; $\alpha = .70$ (Overuse) and $\alpha = .63$ (Harm).
Therefore, the original 4-item Overuse and 4-item Harm subscales (Horne et al.) were
retained. Taking the Overuse and Harm subscales as a total scale revealed higher
internal consistency ($\alpha = .76$). The Overuse and Harm subscale were used initially for
detailed analyses. The total scale was used for correlation and regression analyses.
Test-retest correlations of the Overuse and Harm scales have been reported at .60 and
.78 respectively (Horne et al.). Horne et al. report that both subscales distinguish
between the beliefs of patients attending community pharmacies and those attending
non-medical clinics. Correlation between the subscales was reported at .40 (Horne et
al.).

Section C included the 6-item Adequacy subscale from the 22-item Medication
Alliance Beliefs Questionnaire (MABQ). The MABQ explores clinician beliefs about
working with individuals who are non-adherent to medication (Byrne et al., 2004).
The questionnaire was originally adapted from the Alcohol and Alcohol Problems
Perception Questionnaire (Gorman & Cartwright, 1991) to assess clinician attitudes to working with alcohol problems. Similar adaptations of the measure have been used to assess clinician beliefs about working with individuals with psychosis (McLeod, Deane, & Hogbin, 2002). The main modification of the questionnaire involved replacing words related to “drinking or alcohol use” with “medication adherence issues” (Byrne et al.).

Items are rated on a 5-point Likert scale (1 = “Strongly Disagree”, 2 = “Disagree”, 3 = “Uncertain”, 4 = “Agree” to 5 = “Strongly Agree”), with higher responses indicating more positive beliefs. The Adequacy subscale total score ranges from 6 to 30 and reflects how effectively the clinician believes they are able to help individuals with medication adherence issues based on their knowledge and skill (e.g., “I feel that I can appropriately advise people about the use of their medications”). Cronbach alpha for the Adequacy scale has been reported at $\alpha = .83$ in a sample of 292 mental health clinicians (Byrne, Deane & Caputi, 2006). In a previous version of the Adequacy scale, Cronbach alpha was reported at .77 in a sample of 77 mental health clinicians (McLeod et al., 2002). In the present study Cronbach alpha was $\alpha = .87$.

Section D contained items specific to working with individuals with depressive disorders who are taking antidepressant medication. Items were generated by the researchers for the purposes of this study. Participants were asked to report the number of patients with depressive disorders on their caseload who are non-adherent to prescribed antidepressant medication. They were then asked to rate the question “How true is it that patients who are non-adherent to antidepressant medication occupy more of your time than those who are adherent to antidepressant
medication?". This was rated on a 10-point Likert scale (1 = "Not At All True" through to 10 = "Completely True").

The researchers developed a 3-item Effectiveness scale to assess participants’ beliefs about how effective antidepressant medication is as a treatment for depressive disorders (e.g., "Antidepressant medication is an effective treatment for depressive disorders"). Ratings were provided on a 5-point Likert scale (1 = "Strongly Disagree" to 5 = "Strongly Agree"). The total score range for the Effectiveness scale was 3 to 15, with higher scores indicating more positive beliefs about medication being an effective treatment for depressive disorders. In the present study Cronbach alpha was \( \alpha = .69 \). A 2-item Role scale was developed to assess whether participants believe that facilitating their patients’ use of antidepressant medication is an appropriate professional activity for them or not (e.g., "Helping patients adhere to antidepressant medication is an appropriate professional activity for me"). Ratings were provided on a 5-point Likert scale (1 = "Strongly Disagree" to 5 = "Strongly Agree"). The total score range for the Role scale was 2 to 10, with higher scores indicating more positive beliefs about helping with medication adherence being an appropriate professional activity. In the present study Cronbach alpha was \( \alpha = .88 \).

An 11-item Strategy Use scale was developed by the researchers from previously research (see Byrne et al., 2005) to gauge the extent to which clinicians reportedly used a variety of different strategies to help patients with their use of medication (e.g., "I ask my patients to monitor their medication adherence", "I encourage my patients to speak to their physician about medication adherence"). The 11 items on the Strategy Use scale were rated on a 5-point Likert scale (1 = "Not At All", 2 = "A Little Bit", 3 = "Sometimes", 4 = "Often", to 5 = "Almost Always"). The total score range for the Strategy Use scale was 11 to 55, with higher scores indicating
greater reported use of specific strategies to help with patient adherence. In the present study Cronbach alpha was $\alpha = .89$.

Finally, participants were asked if they had received any specific training on how to enhance medication adherence, and if so, to provide details of the training (e.g. number of hours of training, format of training).

Results

Statistical analyses were performed using the *Statistical Package for the Social Sciences (SPSS) for Windows* (v. 15.0) (SPSS Inc., 2006). Participants reported that an average of 45.7% (range 4% to 95%) of the patients on their caseload had a depressive disorder. Of these patients, 63.9% (range 3% to 100%) had been prescribed antidepressant medication, and of these 26.7% (range 0% to 80%) were non-adherent to prescribed antidepressant medication. On a scale assessing whether patients who are non-adherent to antidepressant medication occupy more time than those who are adherent, participants reported an average of 4.8 (where 1 = "Not At All True" to 10 = "Completely True"). Approximately 40% of these participants reported a score of 6 or greater.

The majority of participants (63.9%, $n = 46$) reported that they have not received any specific training on how to enhance medication adherence. Of the 26 participants (36.1%) who reported they had received training, the majority (61.5%, $n = 16$) received 8 hours or less of training. The range of training varied widely between 2 hours to 720 hours of training delivered in the format of workshops, reading, and experience gained "on the job".
Table 2

Means (M), Standard Deviations (SD,) and Ranges for the Overuse, Harm, Adequacy, Effectiveness, Role and Strategy Use Scales (N = 72)

<table>
<thead>
<tr>
<th>Scales</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overuse</td>
<td>12.29</td>
<td>2.92</td>
<td>4 – 20</td>
</tr>
<tr>
<td>Harm</td>
<td>7.49</td>
<td>2.28</td>
<td>4 – 20</td>
</tr>
<tr>
<td>Adequacy</td>
<td>21.76</td>
<td>4.15</td>
<td>6 – 30</td>
</tr>
<tr>
<td>Effectiveness</td>
<td>10.86</td>
<td>1.67</td>
<td>5 – 15</td>
</tr>
<tr>
<td>Role</td>
<td>7.67</td>
<td>1.82</td>
<td>2 – 10</td>
</tr>
<tr>
<td>Strategy Use</td>
<td>38.90</td>
<td>8.40</td>
<td>11 – 55</td>
</tr>
</tbody>
</table>

Table 2 outlines the means, standard deviations, and ranges of the variables used in the analyses (e.g., Overuse, Harm, Adequacy, Effectiveness, Role, and Strategy Use scales). Higher scores on the Overuse and Harm subscales indicate more negative beliefs about the overuse and harmfulness of antidepressant medication, respectively. Higher scores of the Adequacy subscale indicate more positive beliefs about adequacy to help individuals with medication adherence issues. Higher scores of the Effectiveness scale indicate more positive beliefs about the effectiveness of antidepressant medication as a treatment for depressive disorders. Higher scores on the Role scale indicate more positive beliefs about facilitating medication adherence being an appropriate professional activity. Higher scores on the Strategy Use scale indicate greater reported use of specific adherence strategies to help with patient adherence.
Table 3

Percentage of Responses for Items in the Overuse and Harm Subscales of the BMQ

(N = 72)

<table>
<thead>
<tr>
<th>Subscales and items</th>
<th>Disagree/ Strongly Disagree</th>
<th>Uncertain</th>
<th>Agree/ Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overuse</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“Doctors use too many medications”</td>
<td>26.8</td>
<td>18.3</td>
<td>54.9</td>
</tr>
<tr>
<td>“Natural remedies are safer than medications”</td>
<td>65.3</td>
<td>27.8</td>
<td>6.9</td>
</tr>
<tr>
<td>“Doctors place too much trust on medications”</td>
<td>21.1</td>
<td>15.5</td>
<td>63.4</td>
</tr>
<tr>
<td>“If doctors had more time with patients they would prescribe fewer medications”</td>
<td>19.7</td>
<td>28.2</td>
<td>52.1</td>
</tr>
<tr>
<td><strong>Harm</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“People who take medications should stop their treatment for a while every now and then”</td>
<td>66.2</td>
<td>25.3</td>
<td>8.5</td>
</tr>
<tr>
<td>“Most medications are addictive”</td>
<td>85.9</td>
<td>11.3</td>
<td>2.8</td>
</tr>
<tr>
<td>“Medications do more harm than good”</td>
<td>84.5</td>
<td>12.7</td>
<td>2.8</td>
</tr>
<tr>
<td>“All medications are poisons”</td>
<td>88.9</td>
<td>6.9</td>
<td>4.2</td>
</tr>
</tbody>
</table>

*Note. On a scale of 1 – 5, “Disagree/Strongly Disagree” = 1 and 2, respectively; “Uncertain” = 3; “Agree/Strongly Agree” = 4 and 5, respectively.*

Table 3 outlines participants’ responses for both the Overuse and Harm subscales of the BMQ. Response ratings presented in Table 3 were organised into three categories for descriptive purposes; those disagreeing (“Disagree” and “Strongly
Disagree''), those rating "Uncertain", and those agreeing ("Agree" and "Strongly Agree"). Overall, most participants agreed that medications are overused and disagreed that medications are harmful. Almost 50% of participants did not agree or were uncertain that doctors would prescribe less medication if they had more time with patients. Over 90% of participants disagreed with or were uncertain about the statement "Natural remedies are safer than medications". One third of participants were uncertain or agreed that people should stop their treatment for a while every now and then.

The response ratings for the Adequacy subscale of the MABQ are reported in Table 4. Response ratings presented in Table 4 were organised into three categories for descriptive purposes; those disagreeing ("Disagree" and "Strongly Disagree"), those rating "Uncertain", and those agreeing ("Agree" and "Strongly Agree"). Overall, the majority of participants believed that they could adequately facilitate medication adherence. However, approximately 50% of participants disagreed or were uncertain that they could appropriately advise patients about their medication use. Almost 50% did not agree that they knew enough about the risk factors for developing medication adherence problems. Over 30% of participants reported that they were not satisfied with the way they work with people with medication adherence issues.

Table 5 outlines the response rates for the Effectiveness and Role scales. There was missing data for two participants for the Effectiveness scale. The missing data was replaced with item means of the total remaining sample of participants (Tabachnick & Fidell, 2001). Response ratings presented in Table 5 were organised into three categories for descriptive purposes; those disagreeing ("Disagree" and "Strongly Disagree"), those rating "Uncertain", and those agreeing ("Agree" and
Table 4

Percentage of Responses for the Items in the Adequacy Subscale of the MABQ

(N = 72)

<table>
<thead>
<tr>
<th>Item</th>
<th>Disagree/Strongly Disagree</th>
<th>Uncertain</th>
<th>Agree/Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>“I feel I know enough about the reasons why people don’t use medications”</td>
<td>12.5</td>
<td>11.1</td>
<td>76.4</td>
</tr>
<tr>
<td>“I feel I know how to counsel people who have medication adherence issues over the long term”</td>
<td>11.1</td>
<td>15.3</td>
<td>73.6</td>
</tr>
<tr>
<td>“I feel that I can appropriately advise people about the use of their medications”</td>
<td>31.0</td>
<td>18.3</td>
<td>50.7</td>
</tr>
<tr>
<td>“I feel that I have a working knowledge of medication adherence issues”</td>
<td>8.4</td>
<td>8.5</td>
<td>83.1</td>
</tr>
<tr>
<td>“On the whole I am satisfied with the way I work with people who have medication adherence issues”</td>
<td>8.3</td>
<td>23.6</td>
<td>68.1</td>
</tr>
<tr>
<td>“I feel I know enough about the factors which put people at risk of developing problems with the use of their medications”</td>
<td>12.7</td>
<td>35.2</td>
<td>52.1</td>
</tr>
</tbody>
</table>

Note. On a scale of 1 – 5, “Disagree/Strongly Disagree” = 1 or 2, respectively; “Uncertain” = 3; “Agree/Strongly Agree” = 4 or 5, respectively.

“Strongly Agree”). Overall, participants agreed that antidepressant medication is an effective treatment for depressive disorders. However, almost 75% did not agree that depressed patients taking antidepressant medication will get better. While most participants indicated that facilitating adherence is an appropriate professional activity for them to engage in, 30% of participants did not agree or were uncertain.
Table 5

*Percentage of Responses for Items in the Effectiveness and Role Scales (N = 72)*

<table>
<thead>
<tr>
<th>Scale and item</th>
<th>Disagree/ Strongly Disagree</th>
<th>Uncertain</th>
<th>Agree/ Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Effectiveness</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“Antidepressant medication is an effective treatment for depressive disorders”</td>
<td>8.6</td>
<td>17.1</td>
<td>74.3</td>
</tr>
<tr>
<td>“Antidepressant medication helps to reduce the symptoms of depressive disorders”</td>
<td>0.0</td>
<td>11.4</td>
<td>88.6</td>
</tr>
<tr>
<td>“Depressed patients who take antidepressant medication will get better”</td>
<td>21.4</td>
<td>52.9</td>
<td>25.7</td>
</tr>
<tr>
<td><strong>Role</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“Helping patients adhere to antidepressant medication is an appropriate professional activity for me”</td>
<td>12.7</td>
<td>16.9</td>
<td>70.4</td>
</tr>
<tr>
<td>“It is appropriate for clinicians without medical training to assist patients with medication adherence”</td>
<td>7.0</td>
<td>15.3</td>
<td>77.9</td>
</tr>
</tbody>
</table>

*Note.* On a scale of 1 - 5, “Disagree/Strongly Disagree” = 1 or 2, respectively; “Uncertain” = 3; “Agree/Strongly Agree” = 4 or 5, respectively.

Table 6 outlines the response rates for the Strategy Use scale. Response ratings presented in Table 6 were organised into three categories for descriptive purposes; those reporting they do not regularly use adherence strategies (“Not At All” and “A Little”), those reporting they “Sometimes” use adherence strategies, and those reporting they regularly use adherence strategies (“Often” and “Almost Always”). The
Table 6

*Percentage of Responses for the Strategy Use Scale Items (N = 72)*

<table>
<thead>
<tr>
<th>Items</th>
<th>Not At All/A Little</th>
<th>Sometimes</th>
<th>Often/Almost Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>“I do not get involved with my patient’s medication adherence”</td>
<td>22.3</td>
<td>31.9</td>
<td>45.8</td>
</tr>
<tr>
<td>“I use specific interventions to enhance medication adherence”</td>
<td>30.6</td>
<td>33.3</td>
<td>36.1</td>
</tr>
<tr>
<td>“I consult with a physician about my patient’s medication adherence”</td>
<td>23.6</td>
<td>27.8</td>
<td>48.6</td>
</tr>
<tr>
<td>“I discuss medication adherence issues with my patients”</td>
<td>8.3</td>
<td>20.8</td>
<td>70.9</td>
</tr>
<tr>
<td>“I enquire about medication side effects with my patients”</td>
<td>2.8</td>
<td>8.3</td>
<td>88.9</td>
</tr>
<tr>
<td>“I ask my patients to monitor their medication adherence”</td>
<td>26.4</td>
<td>27.7</td>
<td>45.9</td>
</tr>
<tr>
<td>“I provide patients with information about medication”</td>
<td>33.3</td>
<td>20.9</td>
<td>45.8</td>
</tr>
<tr>
<td>“I assess the possible causes of my patient’s medication non-adherence”</td>
<td>20.9</td>
<td>13.8</td>
<td>65.3</td>
</tr>
<tr>
<td>“I provide motivational strategies to help my patients with adherence to medication”</td>
<td>26.4</td>
<td>22.2</td>
<td>51.4</td>
</tr>
<tr>
<td>“I encourage my patients to speak to their physician about medication adherence”</td>
<td>2.8</td>
<td>8.3</td>
<td>88.9</td>
</tr>
<tr>
<td>“I use problem solving strategies to overcome medication non-adherence”</td>
<td>22.2</td>
<td>30.5</td>
<td>47.3</td>
</tr>
</tbody>
</table>

*Note.* On a scale of 1 – 5, “Not At All/A Little” = 1 or 2, respectively; “Sometimes” = 3; “Often/Almost Always” = 4 or 5, respectively.
most common strategies reported as being used regularly by participants to facilitate medication adherence include discussing adherence issues with patients, enquiring about side effects, assessing the possible causes of non-adherence, and encouraging patients to speak to their physician about medication adherence. Only 50% of participants reported that they regularly use motivational interviewing strategies to facilitate adherence. Approximately 50% of participants report that they do not regularly (as indicated by a response of “Not At All”, “A Little” and “Sometimes”) provide information about antidepressant medication, use problem solving strategies to overcome adherence problems, or ask their patients to monitor their adherence.

Impact of Previous Training on Beliefs and Strategy Use

A series of between group t-tests were used to determine if previous training had any impact on beliefs about medication (taking the Overuse and Harm subscales as a total scale; Overuse+Harm), Adequacy, Effectiveness, Role, and Strategy Use scales. The means and standard deviations of these variables for participants who had received prior training in medication adherence strategies compared with those who had not are reported in Table 7. All assumptions for conducting t-tests were met. The results of the between group t-tests are shown in Table 7.

A total of 63.9% of participants reported that they had not received prior training in medication adherence strategies and 36.1% reported that they had. The t-test results revealed that participants who had received prior training had significantly (a) lower levels of beliefs that medications in general were overuse and harmful, (b) more positive beliefs about adequacy to facilitate adherence, (c) more positive beliefs about the effectiveness of antidepressant medication as a treatment for depressive
Table 7

Means (M), Standard Deviations (SD) and t-Test Statistics (t) for the Overuse+Harm, Adequacy, Effectiveness, Role, and Strategy Use Scales for Participants Who Had Received Prior Training Compared to Those Who Had Not (N = 72)

<table>
<thead>
<tr>
<th>Scales</th>
<th>Prior training (n = 26)</th>
<th>No prior training (n = 46)</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Overuse+Harm</td>
<td>8.87</td>
<td>2.30</td>
<td>10.47</td>
<td>2.11</td>
</tr>
<tr>
<td>Adequacy</td>
<td>23.31</td>
<td>3.60</td>
<td>20.89</td>
<td>4.23</td>
</tr>
<tr>
<td>Effectiveness</td>
<td>11.37</td>
<td>1.58</td>
<td>10.57</td>
<td>1.63</td>
</tr>
<tr>
<td>Role</td>
<td>8.54</td>
<td>1.30</td>
<td>7.17</td>
<td>1.90</td>
</tr>
<tr>
<td>Strategy Use</td>
<td>42.35</td>
<td>6.79</td>
<td>36.96</td>
<td>8.66</td>
</tr>
</tbody>
</table>

* Significant at p < .05 (1-tailed)

** Significant at p < .01 (1-tailed)

disorders, (d) more positive beliefs about facilitating medication adherence being an appropriate professional activity, and (e) higher self-reported use of specific strategies to enhance adherence, than those who had not received prior training.
Pearson's correlation was used to examine the relationship between beliefs about medication (Overuse+Harm), beliefs about Adequacy, beliefs about the Effectiveness of antidepressant medication, beliefs about facilitating medication adherence being an appropriate professional activity (Role), and the extent of self-reported use of specific strategies to enhance adherence (Strategy Use). All variables used in the analysis met the assumptions of normality. Pearson's correlations are reported in Table 8. See Table 2 for the means and standard deviations for the variables.

Results showed that the total score of the Strategy Use scale was negatively correlated with Overuse+Harm scale. This indicates that the more participants believed medications to be overused and harmful, the less they reported using strategies to facilitate adherence. Adequacy was found to correlate positively with Strategy Use, such that more positive beliefs about adequacy were associated with higher reported use of strategies to facilitate adherence. Effectiveness was found to correlate positively with Strategy Use, such that more positive beliefs about the effectiveness of antidepressant medication were associated with higher reported use of strategies to facilitate adherence. Role was found to correlate positively with Strategy Use, such that more positive beliefs about facilitating medication adherence being an appropriate professional activity were associated with higher reported use of strategies to facilitate adherence.

Role correlated negatively with the Overuse+Harm scale indicating that more positive beliefs about facilitating medication adherence being an appropriate professional activity were associated with more positive beliefs about the overuse and
Table 8

**Pearson Correlations (r) between Overuse+Harm, Adequacy, Effectiveness, Role, and Self-Reported use of Strategies (Strategy Use) to Facilitate Adherence (N = 72)**

<table>
<thead>
<tr>
<th>Scales</th>
<th>Strategy Use</th>
<th>Role</th>
<th>Effectiveness</th>
<th>Adequacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overuse+Harm</td>
<td>-.37**</td>
<td>-.47**</td>
<td>-.31*</td>
<td>-.18</td>
</tr>
<tr>
<td>Adequacy</td>
<td>.61**</td>
<td>.48**</td>
<td>.42**</td>
<td>-</td>
</tr>
<tr>
<td>Effectiveness</td>
<td>.48**</td>
<td>.52**</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Role</td>
<td>.65**</td>
<td>-</td>
<td></td>
<td>-</td>
</tr>
</tbody>
</table>

* Significant at p < .01 (1-tailed)
** Significant at p < .001 (1-tailed)

harmfulness of antidepressant medications. *Role* correlated positively with *Adequacy* indicating that more positive beliefs about facilitating medication adherence being an appropriate professional activity were associated with more positive beliefs about adequacy. *Role* also correlated positively with *Effectiveness* indicating that more positive beliefs about facilitating medication adherence being an appropriate professional activity were associated with more positive beliefs about the effectiveness of antidepressant medication.

*Effectiveness* correlated negatively with the *Overuse+Harm* scale indicating that more positive beliefs about the effectiveness of antidepressant medication were
associated with more positive beliefs about the overuse and harm of antidepressant medications. *Effectiveness* correlated positively with *Adequacy* indicating more positive beliefs about the effectiveness of antidepressant medication were associated with more positive beliefs about adequacy. No significant correlation was found between *Adequacy* and the *Overuse+Harm* scale.

*Factors Predicting Self-Reported Strategy Use*

The final analysis was a standard multiple regression to determine which factors (e.g., *Overuse+Harm*, *Adequacy*, *Effectiveness*, *Role*, and prior training) predict *Strategy Use* when all variance is accounted for. The assumptions of normality for the variables used in the multiple regression were met. Tolerance levels were not found to be excessively low. No bivariate correlations were found to be over .70. The results for the multiple regression are presented in Table 9.

Results revealed that the regression model was significant, accounting for 52% of the variance in strategy use ($F(5) = 16.39, p = .000; R^2 = .55$ and adjusted $R^2 = .52$). When all variance was accounted for, *Role* and *Adequacy* remained consistent predictors of self-reported *Strategy Use*. This suggests that clinicians’ greater perceived adequacy and more positive beliefs that facilitating medication adherence is an appropriate professional activity, predicted higher self-reported use of specific adherence strategies.
Table 9

Summary of Multiple Regression for Scales Predicting Strategy Use (N = 72)

<table>
<thead>
<tr>
<th>Scales</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overuse+Harm</td>
<td>-.35</td>
<td>.35</td>
<td>-.10</td>
<td>.162</td>
</tr>
<tr>
<td>Adequacy</td>
<td>.75</td>
<td>.20</td>
<td>.37</td>
<td>.000*</td>
</tr>
<tr>
<td>Effectiveness</td>
<td>.51</td>
<td>.51</td>
<td>.10</td>
<td>.159</td>
</tr>
<tr>
<td>Role</td>
<td>1.70</td>
<td>.52</td>
<td>.37</td>
<td>.001*</td>
</tr>
<tr>
<td>Prior Training</td>
<td>.29</td>
<td>1.58</td>
<td>.02</td>
<td>.427</td>
</tr>
</tbody>
</table>

Note. Adjusted $R^2 = .52$

** Significant at $p < .01$ (1-tailed)

Discussion

This study identified the views of primary care allied health clinicians about their role in facilitating adherence among patients with depressive disorders, and predictors of their self-reported use of adherence strategies.

Allied health clinicians in the study report a large proportion of their patients with depressive disorders are prescribed antidepressant medication (64%) and almost 27% (ranging from 0% to 80% non-adherence) of these patients are non-adherent to their prescribed antidepressant medication. This high rate of non-adherence is
comparable to the high rates of non-adherence among primary care patients reported in previous research (see Aikens et al., 2005; Lin et al., 1995; Simon et al., 1993). While most clinicians do not believe that patients with medication adherence issues take up more time in session than patients who do not have these issues, the high rates of non-adherence among patients suggests that there is a need for clinicians to spend time facilitating medication adherence among their patients.

Given this need, it is encouraging that most clinicians believe facilitating medication adherence is an appropriate professional role in which to engage and they believe that they can adequately facilitate medication adherence. However, 30% do not agree with or are unsure about whether facilitating medication adherence is an appropriate professional role in which to engage. Approximately 50% of clinicians do not agree that they can appropriately advise patients about their medication use. Almost 50% indicate that they do not know enough about the risk factors for developing medication adherence problems and over 30% are not satisfied with the way they work with people with medication adherence issues. Furthermore, it is concerning that over 60% of clinicians have not received any prior training on how to facilitate medication adherence. This lack of training has been identified in previous research, highlighting that many health clinicians do not appear to have received adequate training in medication adherence strategies (Coombs et al., 2003; Byrne et al., 2004, 2005).

A lack of previous training, disagreement about the appropriateness of facilitating adherence, and clinicians’ beliefs about their inadequacy to facilitate adherence suggests that primary care allied health clinicians should be provided with more opportunities to develop their ability to facilitate adherence. This is highlighted by the finding that clinicians who had previously received adherence training reported
more positive beliefs about medication, adequacy, effectiveness of antidepressants, and facilitating adherence being an appropriate professional activity in which to engage. This has important implications for clinical practice as greater perceived adequacy and acceptance that facilitating adherence is an appropriate professional activity predict higher self-reported use of specific adherence strategies.

There is a need for a structured approach to training as the quality of prior training appears difficult to evaluate. This is due to the diversity and inconsistency of training methods (workshops, reading, and experience gained “on the job”) and hours (between 2 hours to 720 hours) that clinicians who have had training report receiving.

Almost 75% of allied health clinicians indicated that they agree with the statement “Antidepressant medication is an effective treatment for depressive disorders”. Conversely, some scepticism was observed in 75% of clinicians disagreeing with the statement “Depressed patients who take antidepressant medication will get better”. Most clinicians believe that medications are overused but do not believe that medications are harmful. In this study, 55% of clinicians believe that medications are overused compared with reports that only 51% of patients believe that medications are overused (Brown et al., 2005). Similarly, 63% of clinicians in this study believe that doctors place too much trust in medications compared with only 27% of patients (Brown et al.). These findings suggest that allied health clinicians may be more sceptical than patients about the use of medication.

Patients who are sceptical about the use of medication demonstrate the lowest rates of adherence to antidepressants (Aikens et al. 2005) which raises the question about the potential role of clinician scepticism on the facilitation of adherence. The belief that medications are overused has been found among 51% of pharmacists and has been suggested as a barrier to effective communication between pharmacists and
patients (Ramström et al., 2006). Furthermore, clinician scepticism about the use of medication has been suggested as an influence on the type of treatment patients receive, including whether they receive support from their clinician to use their medication more effectively (Byrne et al., 2005; Ramström et al., 2006; Stern et al., 1999). The importance of ensuring that clinician’s develop facilitative beliefs about working with adherence issues is highlighted by the many useful strategies in which clinicians can engage to facilitate adherence.

Clinicians indicate that they regularly discuss adherence issues with patients, enquire about side effects, assess the possible causes of non-adherence, and encourage patients to speak to their physician about medication adherence as strategies to facilitate adherence. Interestingly, strategies that have been shown to effectively influence patient medication adherence were reported to be regularly used by only 50% of the clinicians. Such strategies include motivational interviewing (Kemp et al., 1996; Ludman et al., 2000; Rusch & Corrigan, 2002; Zygmunt et al., 2002), providing information about antidepressant medication (as part of Cognitive Therapy, see Aikens et al., 2005; Horne & Weinman, 1999), problem solving (Miklowitz et al., 2003; Zygmunt et al., 2002), and asking patients to monitor their adherence (as part of developing a therapeutic alliance, see Weiss et al., 2002; as part of individualised assessment, see Truax, 2001). This indicates that 50% of clinicians report that they do not regularly use these important strategies to facilitate adherence.

This study showed that clinicians who had previously received training in medication adherence strategies were more likely to report that they believe medications are not harmful or overused, have a higher sense of adequacy in facilitating adherence, believe antidepressant medication is an effective treatment for depressive disorders, believe that facilitating adherence is an appropriate professional
activity in which they can engage, and use more strategies to facilitate adherence.

This further supports the need for training of primary care allied health clinicians given that (a) the majority of clinicians in this study (64%) and in previous research report that they have not received previous training (Coombs et al., 2003; Byrne et al., 2004, 2005), and (b) clinicians’ beliefs can be enhanced by such training (Byrne et al., 2004).

Correlation analyses show that self-reported engagement in strategies to facilitate adherence is related to clinicians’ beliefs about medication and working with adherence issues. Clinicians were most likely to report engaging in strategies to facilitate adherence if they believed that medications were not harmful or overused, held positive beliefs about their adequacy to facilitate adherence, believed that antidepressant medication is an effective treatment for depressive disorders, and believed that facilitating adherence is an appropriate professional activity in which they can engage. Multiple regression analysis revealed that when all variance is accounted for, more positive beliefs about adequacy and facilitating adherence being an appropriate professional activity predict higher self-reported use of adherence strategies. As the results from this study and previous research show, clinicians’ beliefs about the use of medication influence the treatment that patients receive, such that more positive beliefs are associated with more regular engagement in strategies to facilitate adherence (Byrne et al., 2005; Farris & Schopflocher, 1999; Ramström et al., 2006). Furthermore, the results from this study are supported by previous findings that report clinicians’ beliefs about adequacy to facilitate adherence are a direct predictor of behaviour, such that more positive beliefs about adequacy are associated with more regular engagement in strategies to facilitate adherence (Bandura, 1997; Farris & Schopflocher, 1999). A novel finding of this study is that more positive
beliefs about whether facilitating adherence is an appropriate professional activity in which to engage is also a predictor of higher self-reported use of adherence strategies. This finding has implications for professional degree programs where clarification of professional roles around supporting medication use may need to be improved.

The generalisability of these findings to all allied health clinicians is limited given that the sample was predominately psychologists. However, these findings provide important information about the current practices of psychologists delivering services in primary care. Since being introduced, there has been an extremely high use of government funded psychological services by primary care patients. There have been a number of media releases (e.g. by the Australian Psychological Society) about the higher than expected uptake, suggesting that over time, more patients are going to be referred by primary care physicians and seen by psychologists. The proportion of other allied health professional groups working in primary care is not known and should be addressed in future research to ensure generalisability of these findings to all allied health clinicians, not just psychologists. Finally, as this study relied on self-report of clinicians’ beliefs and behaviours it is difficult to determine whether these findings are a true reflection of clinicians’ actual beliefs and work practices.

In summary, this study identified that allied health clinicians working in primary care believe that facilitating patient adherence to antidepressant medication is an appropriate professional role in which they can engage. The extent to which they engage in such strategies is influenced by their beliefs about medications, beliefs about adequacy to facilitate adherence and prior training in medication adherence strategies. The findings suggest that primary care allied health clinicians should receive structured training in facilitating medication adherence among patients with
depressive disorders to enhance their skills, knowledge, and beliefs necessary to facilitate adherence.
STUDY 2: TRAINING CLINICIANS TO FACILITATE ADHERENCE TO ANTIDEPRESSANT MEDICATION AMONG INDIVIDUALS WITH DEPRESSIVE DISORDERS

This study examined the delivery of an adapted Medication Alliance program (Byrne et al., 2004) for allied health clinicians working with individuals with depressive disorders who are non-adherent to antidepressant medication. The impact of training on clinician (1) knowledge of medication adherence issues and ways to facilitate adherence, (2) skill to use a specific medication adherence strategy (identifying causal variables for non-adherence), and (3) beliefs about working with individuals who are non-adherent and beliefs about the use of medication, was explored. Modifications to the original program (Byrne et al., 2004) included; (1) a change in training content to ensure training specifically covered the issues related to facilitating adherence among individuals with depressive disorders and, (2) a reduction in adherence training time from 3 days to 2 days for Medication Alliance training.

It was hypothesised that the modified Medication Alliance training program would significantly enhance clinician knowledge, skill and beliefs to facilitate adherence among individuals with depressive disorders. Examination of the effect of training on clinicians’ general beliefs about the use of medication was of an exploratory nature and no predictions were made.
Method

Participants

Participants were recruited for the study via poster advertisement in their places of work (primary care offices within Southern Health, Victoria’s largest metropolitan health service). The advertisement stated that the training was part of voluntary workplace training. Interested clinicians were invited to register for training (contact details were supplied on the advertisement poster). No inclusion criteria were applied. Participants were nurses and allied health clinicians involved in the Better Outcomes in Mental Health Care program, and allied health clinicians from a primary mental health team. One participant in private practice was included in the training.

A total of 24 clinicians participated in the training, and 22 provided demographic information. Eight were psychologists (36%), 6 social workers (27%), 6 nurses (27%), 1 occupational therapist (5%), and 1 research fellow (5%). Of the participants who gave demographic information, 17 were female (77%). The mean age of participants was 40.71 years (range 23 to 59 years). The average length of time working in their current profession was 13.86 years (range 1 to 40 years) and the average length of time employed in their profession specifically in a mental health setting was 10.21 years (range 1 to 26 years). Three participants (14%) stated they had not previously worked in a mental health setting.

Nineteen participants (86%) reported they had active caseloads and were all working with patients with a depressive disorder. Participants reported 91.6% (range of 30% – 100%) of their patients with depressive disorders were taking antidepressant medications. Of these patients, 23.3% (range 0% - 75%) were variable in their
medication adherence. Only four participants (18%) reported they had previously received training specifically related to medication adherence issues.

Materials and Procedure

Training consisted of a 3-day workshop facilitated by the researcher (DF) and one of the trainers from the original Medication Alliance workshops (Byrne et al., 2004). The first day of training provided participants with a review of information regarding the nature of depressive disorders and the current assessment tools and treatment options available. This was followed by two days of Medication Alliance training. An outline of the Medication Alliance workshop program (days 2 and 3) is shown in Table 10. The reduction of Medication Alliance training to two days is significant in terms of feasibility of delivery, given that the original program was delivered over three days (Byrne et al., 2004). The additional day of training (day 1) was incorporated into the program given the diverse range of health professionals involved in the training to ensure adequacy of knowledge of depressive disorders prior to Medication Alliance training. This additional information was adapted from the Mental Health Aptitudes into Practice (MAP) training programs (http://www.beyondblue.org.au) (Monash University & Beyondblue: The National Depression Initiative, 2004a,b). Material covered during day 1 of training was not assessed in the pre- or post-training evaluation.

The workshop incorporated didactic teaching, demonstration of skills and opportunity for participants to practice skills in small groups. Training was facilitated according to a series of power point slides, supported by an adapted version of the original Medication Alliance training manual (Byrne et al., 2003). An overview of the
Table 10

Overview of Medication Alliance Training Program (Days 2 and 3 of Training) for Individuals with Depressive Disorders

Medication Alliance Technology: An Introduction

*Normalising non-adherence*

*What is non-adherence?*

*What influences adherence?*

*The clinician role in medication adherence*

Engagement

*Agenda Setting, Information Sharing, Normalising Rationales, Empathy*

Assessment

*Illness Timeline, Functional Analysis & Case Formulation*

Therapy

*Motivational Interviewing strategies, Cognitive Behavioural strategies (for thoughts, feelings and concerns about medications), Problem Solving and Homework*

Evaluation

*Homework*

Integration of Core Concepts

content of the original Medication Alliance training program was elaborated earlier (pp. 36 – 49). The adapted version for this study (Byrne & Feros, 2004a, see appended CD-ROM file Medication Alliance with people who have depressive
disorders: Training manual) included content changes to ensure training material reflected issues relevant for working with individuals with depressive disorders as the original program (Byrne et al., 2003; Byrne et al., 2004) had a focus on working with individuals with psychosis. Training covered a range of techniques previously found to be effective in the enhancement of medication adherence including motivational interviewing, cognitive behavioural strategies, and problem solving skills (Gray et al., 2003; Kemp et al., 1996). Also included was a focus on variables found to consistently predict adherence including the patient-clinician relationship (Delgado, 2000; Demyttenaere, 1997), and addressing patient beliefs that are barriers to medication adherence (Aikens et al., 2005). Participants were provided with workshop booklets that included a copy of all power point slides and handouts used during the workshop to demonstrate skills (Byrne & Feros, 2004b, see appended CD-ROM file Medication Alliance with people who have depressive disorders: Trainee resource book 1, 2, and 3).

Measures

All measures were taken at the beginning of the first day of training (pre-training) and were repeated at the end of the last day of training (post-training). See Appendix B for a copy of the pre-training measures.

Knowledge

The Medication Alliance Clinical Knowledge Questionnaire is a 15-item multiple-choice questionnaire. Questions were adapted from a previous knowledge
questionnaire used in Medication Alliance training (Byrne et al., 2004). Adaptations for this study were developed from depression-specific aspects of the training material and were designed to test participant knowledge of medication adherence issues and ways to facilitate adherence. Four multiple-choice options were given for each question and participants were asked to circle the most accurate response. Scores could range from 0 to 15.

Skill

The Individualised Assessment Exercise was used for the Skill measure. It consisted of a case vignette of a patient with a depressive disorder who was variable in their adherence to antidepressant medication. Participants were asked to identify as many possible variables influencing the patient’s adherence, as well as the most likely variables influencing adherence, based on the information provided in the vignette. Most likely variables were included in the list of possible variables but were viewed as variables that implied ‘causality’ of non-adherence in the sense that they occurred immediately prior to a reduction in adherence. A total of 9 possible variables and 5 most likely variables were imbedded within the vignette.

Beliefs

Medication Alliance Beliefs Questionnaire.

The MABQ (see Study 1) is a 22-item questionnaire which explores clinician beliefs about working with individuals who are non-adherent to medication (Byrne et
al., 2004). Items are rated on a 5-point Likert scale where 1 = “Strongly Disagree” through to 5 = “Strongly Agree”. Higher responses indicate more positive beliefs with the exception of the Pessimism scale where higher responses indicate higher levels of pessimism. For data analysis and for consistency in reporting of results, the scores on the pessimism subscale were reverse scored.

The original MABQ was comprised of 5 subscales including Adequacy, Legitimacy, Motivation, Work Satisfaction, and Self Esteem (Gorman & Cartwright, 1991). Byrne et al. (2006) have since used this questionnaire with a sample of 292 mental health clinicians. Factor analysis yielded 5 subscales that were highly similar to the original version of the measure and were used in the present study: Adequacy, Empathy, Pessimism, Work Satisfaction, and Self Esteem. Cronbach alpha coefficients in the Byrne et al. study (see below for coefficients) show sufficient internal consistency for the subscales.

The Adequacy (α = .83), subscale measures how effectively the clinician believes they are able to help individuals with medication adherence issues based on their knowledge and skill level (e.g. “I feel that I can appropriately advise people about the use of their medications”). The Adequacy subscale used in this study is identical to the Adequacy subscale used in Study 1.

The Empathy subscale (α = .60) measures the clinician’s level of empathy for individuals with medication adherence issues (e.g. “I find it hard to imagine what it might be like to have medication adherence issues”).

The Pessimism subscale (α = .65) measures the level of pessimism the clinician holds towards working with individuals with medication adherence issues (e.g. “I feel that there is little that I can do to help people who have medication adherence issues”).
The Work Satisfaction subscale ($\alpha = .72$) measures the level of satisfaction the clinician believes they obtain from working with individuals with medication adherence issues (e.g. "In general, it is rewarding to work with people who have medication adherence issues").

The Self Esteem subscale ($\alpha = .63$) measures how much the clinician believes they have the personal ability to help individuals with medication adherence issues (e.g. "At times I feel I am no good at working with people who have medication adherence issues").

Beliefs about Medicines Questionnaire.

The General scale of the BMQ (see Study 1) is an 8-item questionnaire originally developed by Horne et al. (1999) to identify clinicians' beliefs about the overuse and harmfulness of medication. The scale items are rated on a 5-point Likert scale from 1 = "Strongly Disagree" to 5 = "Strongly Agree". The items provide two subscales, Overuse (e.g., "Doctors use too many medications") and Harm ("All medications are poisons").

Results

Statistical analyses were performed using the SPSS for Windows (v. 15.0) (SPSS Inc., 2006). Of 24 participants 20 completed all pre- and post-training measures, 2 completed pre-training measures, and 2 completed post-training measures only. Missing data from the 4 participants who did not complete all pre- and post-training measures was replaced with item means of the total remaining sample of
participants (Tabachnick & Fidell, 2001). Matched samples \( t \)-tests were performed to assess pre- and post-training outcomes. The assumptions of normality for \( t \)-tests were met for all variables. In an effort to control Type I error for multiple comparisons, a Bonferroni adjustment \((\alpha = .005)\) was applied. The significant effects on knowledge and beliefs about adequacy and work satisfaction (reported below) are sustained, even when the Bonferroni was applied.

**Knowledge**

Statistical analyses for the *Knowledge* measure are reported in Table 10. The post-training mean score for *Knowledge* was significantly higher than the pre-training score. A large effect size for *Knowledge* was obtained \((d = 1.51;\) Howell, 1997).

**Skill**

Interrater reliability was conducted for the *Skill* measure with raters blind to pre- and post-training conditions. Raters were two clinical psychologists who were trained to rate the skill measure in a 60 minute workshop. Training included reading through the skill measure and answers, and practicing scoring of the measure using answers generated for training purposes. Scores were based on the content of participants' answers, not the total number of answers participants provided (e.g., there were 9 specific *possible* variables and 5 specific *most likely* variables that, if written as an answer, could receive a score). Scoring criteria for content was provided to the raters. Pearson’s correlation was used to determine interrater reliability for each of the variables. The assumptions of normality for conducting the correlation were met for all variables. The correlations for the total number of variables identified as
correct for each respondent were $r = .94$ (possible variables, pre-training), $r = .93$ (possible variables, post-training), $r = .86$ (most likely variables, pre-training), and $r = .70$ (most likely variables, post-training).

Statistical data for the Skill measure can be found in Table 11. A small to moderate effect size ($d = .37$) was obtained for the increase in the number of possible variables identified from pre- to post-training. However, the increases in both the number of possible variables and most likely variables identified from pre- to post-training did not reach significance.

**Beliefs**

Table 11 shows statistical data for the subscales of the MABQ and the BMQ. For the MABQ, a significant increase in beliefs on the Adequacy and Work Satisfaction subscales was obtained. A large effect size was obtained for the increase in Adequacy beliefs ($d = 1.50$). No significant differences were found on the Pessimism, Self Esteem, and Empathy subscales, though small to moderate effect sizes ($d = .30$, $d = .42$, $d = .56$, respectively) were obtained. As the items on the Pessimism scale were reverse scored, a higher pessimism score indicates less pessimism.

Differences over training in the Self Esteem and Empathy subscales would have reached significance if the Bonferroni adjustment was not applied. For the BMQ, no significant difference in beliefs was obtained on either the Overuse or Harm subscales.
### Table 11

**Means (M), Standard Deviations (SD), t-Test Statistics, and Effect Sizes (d) for Knowledge, Skill, and Beliefs (MABQ and BMQ) (N = 24)**

<table>
<thead>
<tr>
<th>Scale/subscale</th>
<th>Score range</th>
<th>Mpre (SD)</th>
<th>Mpost (SD)</th>
<th>t</th>
<th>d</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>0 – 15</td>
<td>6.18 (2.04)</td>
<td>9.27 (1.75)</td>
<td>-5.96</td>
<td>1.51</td>
<td>.000*</td>
</tr>
<tr>
<td>Skill</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Possible</td>
<td>0 – 9</td>
<td>4.73 (2.09)</td>
<td>5.50 (2.10)</td>
<td>1.47</td>
<td>.37</td>
<td>.155</td>
</tr>
<tr>
<td>Most likely</td>
<td>0 – 5</td>
<td>.91 (1.02)</td>
<td>.95 (0.69)</td>
<td>-.21</td>
<td>.04</td>
<td>.833</td>
</tr>
<tr>
<td>MABQ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adequacy</td>
<td>6 – 30</td>
<td>18.45 (3.93)</td>
<td>24.36 (2.68)</td>
<td>-7.54</td>
<td>1.50</td>
<td>.000*</td>
</tr>
<tr>
<td>Work Satisfaction</td>
<td>3 – 15</td>
<td>10.14 (2.35)</td>
<td>11.59 (1.49)</td>
<td>-3.35</td>
<td>.62</td>
<td>.003*</td>
</tr>
<tr>
<td>Self Esteem</td>
<td>4 – 20</td>
<td>15.91 (2.95)</td>
<td>17.14 (2.09)</td>
<td>-2.68</td>
<td>.42</td>
<td>.014</td>
</tr>
<tr>
<td>Pessimism</td>
<td>3 – 15</td>
<td>13.05 (2.07)</td>
<td>13.68 (1.94)</td>
<td>-1.49</td>
<td>.30</td>
<td>.150</td>
</tr>
<tr>
<td>Empathy</td>
<td>3 – 15</td>
<td>11.36 (1.52)</td>
<td>12.27 (2.05)</td>
<td>-2.48</td>
<td>.56</td>
<td>.021</td>
</tr>
<tr>
<td>BMQ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overuse</td>
<td>4 – 20</td>
<td>11.55 (3.07)</td>
<td>12.14 (2.58)</td>
<td>-1.50</td>
<td>.19</td>
<td>.147</td>
</tr>
<tr>
<td>Harm</td>
<td>4 – 20</td>
<td>8.14 (2.31)</td>
<td>7.52 (2.33)</td>
<td>1.66</td>
<td>.27</td>
<td>.112</td>
</tr>
</tbody>
</table>

* *p < .005, Bonferroni adjusted, 1-tailed

**Discussion**

Study 2 examined the impact of a medication adherence training program on primary care allied health clinicians’ knowledge, skill, and beliefs to facilitate...
medication adherence among individuals with depressive disorders. The importance of delivering such an intervention is highlighted by the lack of such training delivered specifically to allied health clinicians working with individuals with depressive disorders. Furthermore, this research is unique in that the training program was significantly reduced from 3 (see Byrne et al., 2004) to 2 days; a modification that makes the training more appealing to an Australian primary care context.

After attending a 2-day modified version of Medication Alliance (Byrne et al., 2004), clinicians showed significant improvements in their knowledge and beliefs. On average, clinicians correctly answer three more knowledge questions out of a total of 15 post-training. Beliefs about adequacy and work satisfaction improved over the course of training. However, the 2-day modified version of Medication Alliance demonstrated no significant improvements on the skills measure. Prior to training, clinicians could identify an average of five out of nine possible variables that may influence a patient's use of antidepressant medication. At post-training, clinicians only identified an average of one extra possible variable, taking the total possible variables identified post-training to an average of six out of nine. The absolute level of achievement when identifying the most likely variables that influence adherence is one out of five pre-training. This is low and does not increase post-training.

From these results, the 2-day modified version of Medication Alliance is useful for improving allied health clinician knowledge and beliefs. The results do not significantly demonstrate it's utility for improving skill. The non-significant result for skill could be attributed to a reduction in training time, given that three days of training (see Byrne et al., 2004) has previously demonstrated significant skill improvements. Byrne et al. found a significant increase in the number of possible variables identified from four out of nine pre-training, to five out of nine post-
training. Byrne et al. also found a significant increase in the number of most likely variables identified from one out of five pre-training, to two out of five post-training. However, the results from the Byrne et al. study show only a small increase in the number of variables identified, which is not unlike the modest changes found in the current study. Medication Alliance training over 3 days (see Byrne et al.) may allow for more skills practice than the modified 2-day version used in this study. However, the significant difference in skill obtained utilising the original 3 days of training compared with the 2-day version in the current study is only a small effect to justify adding an extra day of training. Maintaining the 2-day program would help to retain the appeal that such a brief program has in an Australian primary care context. The skill based exercises during training focuses on individualised assessment and functional analysis. Therefore, devoting more of the training time to practicing these specific skills over the two days may help to improve the impact of training on the skill measure, whilst maintaining brief 2-day training. Perhaps clinicians could be asked to practice the skills covered in between days of training as homework to allow for more time with the Medication Alliance training material as opposed to adding another day of training.

Another consideration for the lack of increase in clinician skill is the moderate interrater reliability reported for the number of most likely variables identified both pre-training \( r = .86 \) and post-training \( r = .70 \). This suggests that there is only moderate agreement among raters on the content of the most likely variables identified. To address this issue, the scoring criteria of the skill measure should be revised to include more clear descriptions of correct answers and perhaps multiple examples of how such answers may be written by participants. In addition, the raters
should be trained for a longer period of time to allow for more examples of scoring to be carried out and compared.

This research demonstrates that allied health clinicians can be trained in the areas of knowledge and beliefs necessary to facilitate medication adherence in a short amount of time (e.g. 2 days). This is an important finding given that Study 1 showed that more positive beliefs are related to higher self-reported use of adherence strategies. In addition, previous research has not specifically demonstrated changes in allied health clinicians’ knowledge and beliefs necessary to facilitate adherence (Byrne et al, 2004; Gray et al., 2003). Rather, previous research has focused on enhancing the skills, knowledge, and beliefs of mental health nurses who already are assumed to have a role in facilitating adherence (Coombs et al., 2003). The importance of focusing on allied health clinicians is highlighted by the findings in Study 1 that indicate that while most clinicians believe that facilitating adherence is an appropriate professional activity in which to engage, up to 30% do not agree or were uncertain. In addition, beliefs about facilitating adherence being an appropriate professional activity predict self-reported use of specific adherence strategies.

Furthermore, training allied health clinicians is important in an Australian primary care context as a range of allied health clinicians are responsible for providing services to primary care patients with depressive disorders under a raft of government initiatives (e.g., Better Outcomes in Mental Health Care and Enhanced Primary Care).

Over the course of training, clinicians showed a significant increase in beliefs about their adequacy to facilitate adherence (Adequacy) and the satisfaction they obtain from working to facilitate adherence (Work Satisfaction). There were also indications that empathy they hold for individuals who are non-adherent (Empathy),
and their ability to help individuals who are non-adherent (Self Esteem) improved.

Medication Alliance has previously been found to influence only beliefs about adequacy and work satisfaction (Byrne et al., 2004). This suggests that the modifications made to the program for this study do not compromise the extent to which beliefs are addressed in training.

A large effect size was found for the increase in adequacy beliefs after training, suggesting that Medication Alliance training can significantly enhance these beliefs over a 2-day training period. This is a significant finding given that the beliefs that clinicians hold about their ability to facilitate adherence have been suggested to significantly influence the degree to which they work to facilitate adherence among their patients (Byrne et al., 2005; Farris & Schopflocher, 1999; Ramström et al., 2006). The importance of the relationship between adequacy beliefs and engagement in strategies to facilitate adherence was also demonstrated in Study 1. Specifically, clinicians who had more positive beliefs about their adequacy to facilitate adherence were more likely to report using strategies to facilitate adherence. This is further strengthened by the finding, in Study 1, that more positive beliefs about adequacy predict higher self-reported use of specific strategies to facilitate adherence.

Importantly then, Study 2 has shown that Medication Alliance training is able to significantly improve adequacy beliefs. A question to be addressed by future research is, does this improvement in adequacy lead to improvements in actual practice (e.g., observed use of specific adherence strategies)?

Clinicians' pessimism about working with individuals who are non-adherent to antidepressant medication did not significantly change over the course of training. This result was likely obtained due to a ceiling effect observed for the measure of
pessimism. On pre-training measures, clinicians reported very low pessimism (i.e. $M = 13.05$ out of a total of 15).

Ratings of beliefs about the use of medication suggest that clinicians, on average, do not hold strongly negative or positive beliefs about medication being harmful or overused. Rather, the data suggests that there is a degree of variation in clinicians’ general beliefs about medications being harmful or overused. Training does not appear to have a significant impact on clinicians’ general beliefs about medication. This is likely to have not changed as a result of training as the issues surrounding the overuse and harm of antidepressant medications were not specifically targeted during training. Furthermore, clinicians’ beliefs about specific medication, in this instance antidepressants, were not assessed. The BMQ assesses clinicians’ beliefs about medications in general. If the assessment of beliefs was specific to beliefs about antidepressants, the data may have more explanatory power. This may be a topic for future research. Obtaining information about general beliefs is important in this study given the influence that such beliefs can have on clinicians’ engagement in medication adherence strategies (see the results from Study 1; Byrne et al., 2005; Farris & Schopflocher, 1999; Ramström et al., 2006). The fact that this study shows clinicians’ beliefs about medication are not strongly negative, even prior to training, is a positive finding given the influence these beliefs can have on the type of treatment provided to patients by clinicians (Byrne et al., 2005; Farris & Schopflocher, 1999; Ramström et al., 2006).

The clinicians in this study report an average rate of 23% (range 0% - 75%) of their patients on antidepressant medication were non-adherent. This rate of non-adherence is slightly lower than the average rates of non-adherence reported in previous research for similar patient groups; 27% (Study 1), 35% (Cramer &
Rosenheck, 1998), 25% (Aikens et al., 2005), between 28% and 35% (Lin et al., 1995; Simon et al., 1993), and 60% (Katon et al., 1992). The difference in rates of non-adherence may be explained by different measurements of adherence (e.g. self report compared with pill counts) and the length of time patients have already been taking medication. For example, Aikens et al. report 25% non-adherence over a 2-week period and Katon et al. reports higher rates of 60% non-adherence over a 6-month period.

Only 18% of clinicians reported they had received previous training in medication adherence strategies which further reinforces previous findings that health clinicians do not appear to receive adequate training in medication adherence strategies (Coombs et al., 2003; Byrne et al., 2004, 2005). Furthermore, this lack of previous training highlights the importance of providing training, given evidence that training can improve clinicians’ skills, knowledge, and beliefs necessary to facilitate medication adherence (Byrne et al., 2004; Gray et al., 2003). In Study 1, 36% of clinicians reported that they had received previous training. The significantly lower rate of clinicians from this study who report receiving previous training may be due to different training opportunities available across Australia as clinicians from Study 1 were predominantly from New South Wales while clinicians from Study 1 were from Victoria.

Limitations

This study has a number of limitations. Firstly, it examines the impact of training on a relatively small sample without a control group for comparison. Therefore, the results should be interpreted with some degree of caution. The
inclusion of nurses in the participant sample does not make this sample a pure allied health clinician sample. Therefore degree of representation that this sample provides for allied health clinicians is limited, reducing the generalisability of the results. However, given the diversity of the participant sample, the results suggest that Medication Alliance techniques can be delivered to a wide range of mental health clinicians, an important step toward improving care for individuals with medication adherence issues (Sawyer & Aroni, 2003). A lack of follow-up of participants after training does not allow determination of whether the changes demonstrated immediately post-training are maintained over time.

There is a need for a more thorough assessment of clinician skill. For example, the study did not include a video or audiotape of actual samples of clinicians’ skills in either role plays or with actual patients. Finally, the exclusion of the Role scale (see Study 1) is a limitation. Study 1 found that clinicians who had previously received training had significantly more positive Role beliefs. In addition, clinicians’ Role beliefs predicted self-reported use of adherence strategies. It is therefore recommended that the Role subscale be included in future studies of Medication Alliance training. It may be possible that clinicians seeking Medication Alliance training may already view facilitating adherence as an appropriate professional role in which to engage. In that case, significant changes may not be observed on the Role subscale over the course of training. Nevertheless, it is worth investigating this in future studies.
CONCLUSIONS

Depression is highly prevalent among primary care patients. However, up to 44% of patients do not adhere to prescribed antidepressant medication (Lin et al., 1995). Interventions to increase patient adherence often involve highly trained clinicians such as physicians, psychiatrists, and clinical psychologists (Katon et al., 1999, 2001, 2002; Ludman et al., 2000; Mundt et al., 2001; Vergouwen et al., 2005). In Australia adherence interventions may be delivered by a range of clinicians such as allied health clinicians given the structure and funding of government health initiatives (e.g., Better Outcomes for Mental Health Care Program and Enhanced Primary Care). This research identified allied health clinicians’ views about facilitating adherence in primary care, the extent to which they engage in strategies to facilitate adherence, and the impact of a Medication Alliance training program on knowledge, skills, and beliefs, necessary to facilitate adherence.

Study 1 identified beliefs held by primary care allied health clinicians about working with patients with depressive disorders who are non-adherent to antidepressant medication. Overall, clinicians believe that antidepressant medication is an effective treatment for depressive disorders and that facilitating adherence is an appropriate role in which they can engage.

However, many clinicians had not received adequate training in medication adherence strategies. This supports previous findings that clinicians lack the skills, knowledge, and beliefs necessary to facilitate adherence (Byrne et al., 2005; Coombs et al., 2003; Gray, Wykes, Parr, Hails, & Gournay, 2001). Clinicians’ beliefs about medications, their adequacy to facilitate adherence, and their belief that facilitating adherence is an appropriate professional activity, are found to have an impact on the
extent to which they engage in strategies to facilitate adherence. Specifically, clinicians who hold more positive beliefs about medication and their adequacy to facilitate adherence, are more likely to engage in self-reported strategies to facilitate adherence than clinicians with negative beliefs. Study 1 shows that clinicians who have received prior training in medication adherence strategies are more likely to hold positive beliefs about medication and their adequacy to facilitate adherence, and report greater use of strategies to facilitate adherence than clinicians who have not received training. This highlights that there is a clear need for training in medication adherence strategies among primary allied health clinicians working with individuals with depressive disorders who are non-adherent to antidepressant medication.

In order to address the need for training among primary care allied health clinicians, a modified version of Medication Alliance (Byrne et al., 2004) training was delivered to 24 primary care allied health clinicians (Study 2). Over the course of training, clinicians demonstrated significant increases in knowledge about medication adherence issues and ways to facilitate adherence, and beliefs about working with individuals who are non-adherent to antidepressant medication. No significant increase in skill was demonstrated after training. This may be due to only moderate interrater reliability of the measure or the reduction in training time from 3 days (Byrne et al., 2004) to 2 days, compromising the amount of time for skill practice.

Overall, the results suggest the Medication Alliance training can be modified for delivery to allied health clinicians working in primary care setting with individual with depressive disorders, and still improve knowledge and adequacy beliefs. The delivery of such training to a range of health clinicians is an important step toward improving care for primary care patients (Sawyer & Aroni, 2003). The next step in this research is to examine the impact that training has on clinical practice and
whether clinicians who receive training do engage in more use of specific medication adherence strategies than clinicians who do not receive training. The development and ongoing evaluation of training programs such as Medication Alliance are important steps in improving primary health care for patients with depressive disorders.
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APPENDIX A

Allied Health Beliefs Questionnaire

Section A:
Please place a cross ☒ in the box next to the answer that is relevant for you.

1. Gender:  Male ☐  Female ☐  2. Age:  .........................

3. Profession:  Psychologist ☐  Social worker ☐  Occupational Therapist ☐  Other ☐ .................................

4. Highest degree:  PhD ☐  DPsyc ☐  Masters ☐  Honours ☐  Bachelor ☐  Other ☐ .................................

5. Years worked in your profession (question 3) since accredited:  .........................

6. Number of hours worked per week in your profession (question 3):
   0 – 10 ☐  10 – 20 ☐  20 – 30 ☐  30 – 40 ☐  40 + ☐

7. In what State do you practice:  ................................

8. What is the name of your local Division of General Practice:  .................................
   If unsure, a map of Australia wide Divisions can be found at www.gp.org.au

9. Do you work in a clinical capacity with patients with a mental illness (e.g. providing case management, assessments, treatment, conducting therapy):
   Yes ☐  No ☐  No, go to 12

10. Is any of your clinical work with patients associated with:
    Better Outcomes for Mental Health Care:  Yes ☐  No ☐
    Enhanced Primary Care program (Medicare):  Yes ☐  No ☐

11. What is your predominant theoretical model when conducting therapy with patients:  ................................

12. Which best describes the type of agency you work in:
    Community Health Centre ☐  Community Mental Health Centre ☐
    Hospital ☐  Private practice ☐  Other ☐  .................

13. How many patients do you currently have on your caseload:  .........................
**Section B**

This section includes questions about your general beliefs about medications. There are no right or wrong answers, so please provide your honest opinion. Please use the following response scale and place a cross ☒ in the box that best represents your belief.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Uncertain</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Doctors use too many medications</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>People who take medications should stop their treatment for a while every now and again</td>
<td></td>
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<tr>
<td>3</td>
<td>Most medications are addictive</td>
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<tr>
<td>4</td>
<td>Natural remedies are safer than medications</td>
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<tr>
<td>5</td>
<td>Medications do more harm than good</td>
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<tr>
<td>6</td>
<td>All medications are poisons</td>
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<tr>
<td>7</td>
<td>Doctors place too much trust on medications</td>
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<tr>
<td>8</td>
<td>If doctors had more time with patients they would prescribe fewer medications</td>
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</tr>
</tbody>
</table>

**Section C**

This section includes questions about your general beliefs about assisting patients to make effective use of their psychotropic medications. There are no right or wrong answers, so please provide your honest opinion. Place a cross ☒ in the box that best represents your belief.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Uncertain</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I feel I know enough about the reasons why people don’t use medications to carry out my role when working with people who have medication adherence issues</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>I feel I know how to counsel people who have medication adherence issues over the long term</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>I feel that I can appropriately advise people about the use of their medications</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>4</td>
<td>I feel that I have a working knowledge of medication adherence issues</td>
<td></td>
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<tr>
<td>5</td>
<td>On the whole I am satisfied with the way I work with people who have medication adherence issues</td>
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</tbody>
</table>
Section D

This section asks questions specific to your work with individuals who have *depressive disorders* and who have been *prescribed antidepressant medication*.

1. What percentage of the patients on your caseload have a depressive disorder?

2. What percentage of your patients with a depressive disorder have been prescribed antidepressant medication?

3. What percentage of you patients with a depressive disorder who have been prescribed antidepressant medication do you think are non-adherent or variable in their adherence to their medication?

4. How true is it that patients who are non-adherent or variable in their adherence to antidepressant medication occupy more of your time than those who are adherent to antidepressant medication? (Please circle a number).

5. The following questions ask about your beliefs about patients with *depressive disorders* who have been prescribed *antidepressant medication*. There are no right or wrong answers so please provide your honest opinion. Place a cross ☒ in the box that best represents your belief.

<table>
<thead>
<tr>
<th>I</th>
<th>Antidepressant medication is an effective treatment for depressive disorders</th>
</tr>
</thead>
<tbody>
<tr>
<td>II</td>
<td>Antidepressant medication helps to reduce the symptoms of depressive disorders</td>
</tr>
<tr>
<td>III</td>
<td>Depressed patients who take antidepressant medication will get better</td>
</tr>
<tr>
<td>IV</td>
<td>Helping patients adhere to antidepressant medication is an appropriate professional activity for me</td>
</tr>
</tbody>
</table>
6. The following questions ask about the extent to which you engage in the following activities in your work with patients with depressive disorders who have been prescribed antidepressant medication and are variable in their adherence to anti-depressant medication. There are no right or wrong answers so please provide your honest opinion. Place a cross \( \checkmark \) in the box that is most relevant for you.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Uncertain</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
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<tbody>
<tr>
<td>V</td>
<td>It is appropriate for clinicians without medical training to assist patients with medication adherence</td>
<td></td>
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</tbody>
</table>

I do not get involved with my patient’s medication adherence

I use specific interventions to enhance medication adherence

I consult with a physician about my patient’s medication adherence

I discuss medication adherence issues with my patients

I enquire about medication side effects with my patients

I ask my patients to monitor their medication adherence

I provide patients with information about medication

I assess the possible causes of my patient’s medication non-adherence

I provide motivational strategies to help my patients with adherence to medication

I encourage my patients to speak to their physician about medication adherence

I use problem solving strategies to overcome medication non-adherence

7. Have you received training on how to enhance medication adherence?
   Yes ☐ No ☐

8. If yes, please estimate the number of hours involved in the training: .................

9. Please briefly describe what the training involved: ..........................................................

...........................................................................................................................................

Thank you for completing this questionnaire.
Medication Alliance
With People Who Have Depressive Disorders

Better Outcomes in Mental Health Care Clinicians

Pre-training Measures Booklet

University of Wollongong
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<table>
<thead>
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<tbody>
<tr>
<td>1. Name</td>
<td>2. Date</td>
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<td>5. Profession</td>
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<tr>
<td>6. Qualifications</td>
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<td>7. Year of completion of highest qualification</td>
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<tr>
<td>8. Current position title</td>
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<tr>
<td>9. Number of years worked in profession</td>
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<tr>
<td>10. Have you ever worked in mental health services?</td>
<td>□ yes □ no</td>
</tr>
<tr>
<td>11. If yes, for how long?</td>
<td></td>
</tr>
<tr>
<td>12. Have you ever attended training related specifically to medication adherence issues?</td>
<td>□ yes □ no</td>
</tr>
<tr>
<td>13. If yes, please outline what the training involved, including an estimate of number of training hours and specific content areas (e.g., as part of a university course, as an in-service etc)</td>
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<tr>
<td>14. Have you ever attended training related specifically to mindfulness or meditation?</td>
<td>□ yes □ no</td>
</tr>
<tr>
<td>15. If yes, please outline what the training involved, including an estimate of number of training hours and specific content areas</td>
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<tr>
<td>16. How many patients do you have on your caseload?</td>
<td></td>
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<tr>
<td>17. How many of your patients have a major depressive disorder?</td>
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</tbody>
</table>
18. How many of those patients with a major depressive disorder are prescribed antidepressant medication?

19. How many of those patients prescribed antidepressant medication are non-adherent or variable in adherence to medication?

20. Of those patients on your case load who
   - have depression
   AND
   - have been prescribed antidepressant medication
   AND
   - are variable or non-adherent in their medication use

   estimate how often you consult with them (tick box)

   □ more than twice per week
   □ twice per week
   □ once per week
   □ once per fortnight
   □ once per month
   □ every three months
   □ less than quarterly

21. How true is it that patients who are non-adherent occupy more of your time than those who are adherent to antidepressant medication?

1 2 3 4 5 6 7 8 9 10
not at all true completely true
Individualised Assessment Exercise

Please read the following vignette and answer the question: “What may be influencing Angela’s use of medication?” In the first column, please list factors that may possibly be influencing Angela; and, in the second column, list those factors that are likely to be influencing her (‘causal variables’). Recording your answer in dot points is fine. Please use the answer sheet provided.

Angela is a 29-year-old single mother with one child. She studies part-time at the local university and has managed to maintain acceptable grades. She has major depressive disorder that has been well managed on antidepressant medication, although over the last month she has become increasingly variable at taking her medication, intermittently missing doses, and consequently is becoming unwell. You are wondering why this is so when she is so attached to her child and last time she stopped medication her daughter was placed in care. You therefore gathered the following information from her in order to undertake a functional analysis.

Angela had been managing quite well financially on her supporting parent benefit and the maintenance paid by the father of her child. However her former partner was sent to jail three months ago and the maintenance money he was sending her dried up. As a consequence, she started falling behind in some bills about 8 weeks ago and she has discussed with you how this worries her. On top of this, her daughter started teething last week and is cranky most of the time. Angela has said that she thinks that her daughter is more distressed than normal and believes that her local GP did not take her concerns about her daughter’s distress seriously enough when she took her to see him 10 days ago. In fact, Angela has wondered for some time if the GP even cares about her welfare at all.

Angela appears to have a positive personal life, meeting a new man 6 weeks ago for whom she cares a lot. He is a little younger than her and she says they enjoy each other’s company considerably, though sometimes Angela finds him a little too energetic. With all the increased activity with her boyfriend, she would forget her medication routine from time-to-time. Since reducing her medication and becoming unwell, Angela has not felt like seeing him as much. She is concerned that she may be losing interest in him, though she is not sure. She wonders if her reduced interest in sex may be behind her feelings for her boyfriend and believes that the medication has reduced her libido.

Angela has never received much help from her family because they don’t agree with her diagnosis. He father says that she is just an attention getter and that she puts it on. He says that is why she cut herself when she was a teenager. Her father states that if she just stopped “boozing” she wouldn’t be so down and need the medication. Angela disagrees, stating that she has been drinking to help her sleep for years and is drinking no more or less now. Nonetheless, Angela has tried to cut down on her alcohol use over the last month and this has interfered with her sleep.

USE ANSWER SHEET ON THE NEXT PAGE
### Answers for the Individualised Assessment Exercise

1. List all *possible* factors influencing Angela’s reduced use of medication

<table>
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<th>Factors</th>
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2. List the *most likely* (causal) factors influencing Angela’s reduced use of medication

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<th>Factors</th>
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Medication Alliance Beliefs Questionnaire

The following questions ask you about your general beliefs regarding assisting people to make effective use of their antidepressant medications. Please indicate how strongly you agree or disagree with these general statements by ticking the box that best represents your judgement. Use the key below to help guide your answers.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Strongly disagree</th>
<th>Strongly agree</th>
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<tbody>
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<td>9</td>
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</tr>
</tbody>
</table>

Key:

5 = strongly agree
4 = somewhat agree
3 = neither agree nor disagree
2 = somewhat disagree
1 = strongly disagree

1. I want to work with people who have medication adherence issues.
2. I feel that the best that I can personally offer people who have medication adherence issues is referral to somebody else.
3. I feel that there is little that I can do to help people who have medication adherence issues.
4. I am interested in the reasons that people have for not using their medications and the responses that can be made to them.
5. I feel I know enough about the reasons why people don’t use medications to carry out my role when working with people who have medication adherence issues.
6. In general, I feel that I can understand people who have medication adherence issues.
7. In general, one can get satisfaction from working with people who have medication adherence issues.
8. I often feel uncomfortable when working with people who have medication adherence issues.
9. I find it difficult to have empathy for people who have medication adherence issues.
<table>
<thead>
<tr>
<th></th>
<th>Strongly disagree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>I feel that I do not have much to be proud of when working with people who have medication adherence issues</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>I feel I know how to counsel people who have medication adherence issues over the long term</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>In general, it is rewarding to work with people who have medication adherence issues</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>I feel that I can appropriately advise people about the use of their medications</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>I feel that I have a working knowledge of medication adherence issues</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>I feel that the people that I work with believe that I have the right to ask them questions about their use of medications when necessary</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>I cannot understand what it is like for people who have medication non-adherence issues</td>
<td></td>
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<tr>
<td>17</td>
<td>I feel I have a clear idea of my responsibilities in helping people who have medication adherence issues</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>I feel that I have the right to ask a person with whom I am working for any information that is relevant to their use of medications</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>All in all I am inclined to feel I am a failure when working with people who have medication adherence issues</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>I feel I have the right to ask the people that I work with questions about their use of medications as necessary</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>On the whole I am satisfied with the way I work with people who have medication adherence issues</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>I feel I know enough about the factors which put people at risk of developing problems with the use of their medications to carry out my role when working with people who have medication adherence issues</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>I find it hard to imagine what it might be like to have medication adherence issues</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Strongly disagree</td>
<td>Strongly agree</td>
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</tr>
<tr>
<td>24</td>
<td>Pessimism is the most realistic attitude to take with people who have medication adherence issues</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>At times I feel I am no good at working with people who have medication adherence issues</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>I sometimes feel that I do not have the skills to manage issues related to peoples use of medications</td>
<td></td>
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<tr>
<td>27</td>
<td>It is right to persist in trying to persuade an individual to take prescribed medication if they initially refuse</td>
<td></td>
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<tr>
<td>28</td>
<td>It may be appropriate for an individual to use illicit drugs if they believe that this will help their symptoms</td>
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<tr>
<td>29</td>
<td>Medication is ineffective in reducing an individual’s symptoms</td>
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<tr>
<td>30</td>
<td>It is not appropriate for an individual to use illicit drugs even if they believe that this will help their symptoms</td>
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</tr>
<tr>
<td>31</td>
<td>Sometimes I do not have the confidence to manage medication use issues</td>
<td></td>
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<tr>
<td>32</td>
<td>I accept the medical view that depression is an illness</td>
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<tr>
<td>33</td>
<td>Medication is an essential component of any treatment plan</td>
<td></td>
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<tr>
<td>34</td>
<td>The beneficial effects of medication outweigh the side effects</td>
<td></td>
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<tr>
<td>35</td>
<td>It is important to actively involve people with major depressive disorders in making decisions about their medications</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>Taking medication prevents an individual’s symptoms of their illness returning</td>
<td></td>
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<tr>
<td>37</td>
<td>Too much discussion about medication can make people stop using their medication</td>
<td></td>
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<tr>
<td>38</td>
<td>I expect most people with a major depressive disorder to be non-adherent with their medication</td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>I can relate to the experiences of those who have medication adherence issues</td>
<td></td>
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</tbody>
</table>
Medication Alliance Clinician Knowledge Questionnaire

Please circle the most correct response to each question.

1. Resistance to taking medication should be seen as:
   a. denial – a trait characteristic requiring confrontation;
   b. needing to be met with logical argument and correction;
   c. an interpersonal behaviour pattern influenced by the therapists behaviour;
   d. an indication that the consumer is unable to comprehend the value of medication;
   e. an indication that you should try to work through the carers.

2. Sub-optimal use of prescribed medication:
   a. is a ‘normal’ behaviour;
   b. is almost always due to deficits in insight;
   c. indicates that the consumer does not want to work with you;
   d. is best responded to by the psychiatrist or treating GP;
   e. is never likely to change, no matter what you do.

3. Motivation:
   a. is usually absent in people with depression;
   b. is something that the case manager can try to influence;
   c. is a personality characteristic;
   d. cannot be changed;
   e. none of the above.

4. Case formulation involves:
   a. identifying things that happened in the patient’s developmental period that have contributed to the current problem;
   b. identifying the recent events that triggered the problem;
   c. identifying the thoughts and behaviours that maintain the problem;
   d. identifying ‘constitutional’ predisposition toward having the problem;
   e. all of the above.

5. The best way to influence medication is to:
   a. apply cognitive behavioural therapy techniques;
   b. educate the patient about their medications;
   c. enlist the support of family and friends in a collaborative approach;
   d. look for functional relationships that involve the person’s use of medication and try to influence those relationships;
   e. personally administer the medication.

6. As a general rule, most therapeutic change occurs:
   a. between sessions as the patient does their homework;
   b. during the session;
   c. after therapy has been completed, when the patients use their new skills independently;
   d. when the patient gains insight into the importance of treatment;
   e. when the consulting physician is involved.
7. An illness timeline is:
   a. a countdown to the next hospitalisation;
   b. a method of individual education about medication use;
   c. a way to explain to carers the costs of not taking medication;
   d. an estimation of the period of health given optimal medication use;
   e. a strategy for the determination of idiosyncratic predictors of mental health and ill health.

8. The most important task to undertake early in Medication Alliance Therapy is:
   a. making sure that the person understands the importance of continuing to use their medications even when they are well;
   b. establishing engagement with the person specific to their medication issues;
   c. setting homework to help identify why they are not using their medications;
   d. setting an agenda about how you will help the person use their medications;
   e. all of the above.

9. In a functional analytic approach to behaviour change, the first thing to do is:
   a. clearly define the behaviour;
   b. determine the immediate antecedents;
   c. inquire about early life experiences that might have influenced the behaviour;
   d. investigate the consequences maintaining the behaviour;
   e. ask carers what they think is causing the behaviour.

10. Homework:
    a. should almost always be included at the end of each session;
    b. should be determined by the clinician according to the therapeutic agenda;
    c. should always involve the patient recording something on paper;
    d. need not be reviewed if the session is ‘busy’;
    e. none of the above.

11. Evaluation of how well your medication-related intervention is going should:
    a. be undertaken in some way every session;
    b. be undertaken intermittently to see how things are going;
    c. always involve formal measurement;
    d. both b and c are true;
    e. none of the above is true.

12. When using the illness timeline, autobiographical memory problems mean that:
    a. consumers can never benefit from this process;
    b. only with the aid of carers/family a timeline can be completed;
    c. pictures are a better way of getting the information;
    d. the use of a vertical timeline may be more appropriate;
    e. none of the above.
13. Problem solving
   a. involves a delineation of difficulties and brainstorming strategies to resolve those difficulties;
   b. giving consumers answers to their most pressing problems;
   c. allowing consumers to make mistakes so that they have an opportunity to learn and grow and human beings;
   d. is only useful in complex cases;
   e. none of the above.

14. The stress-vulnerability model suggests that we should:
   a. identify consumers for whom little hope is possible;
   b. focus our energy on reducing both vulnerability and stressors;
   c. use psychosocial models as the primary way to manage relapse;
   d. consider the value of anxiety medication to assist the consumer to reduce stress levels;
   e. none of the above.

15. The goal of cognitive behavioural therapy is to:
   a. establish the consumer’s biological vulnerability to mental ill health;
   b. link a situation directly with the emotion that follows it;
   c. identify a consumer’s unhelpful thoughts and outline for the consumer evidence against their dysfunctional beliefs;
   d. teach consumers to tolerate and live with their irrational thoughts;
   e. teach the consumer how to identify, reality-test and correct unhelpful thoughts and beliefs.
Beliefs about Medication Questionnaire

Please answer the following questions about your views regarding medications in general. These are statements that other people have made and we would like you to indicate the extent to which you agree or disagree with them by ticking the appropriate box that best matches your opinion. Please use the following key to guide your response:

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<tr>
<th></th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Uncertain</th>
<th>Agree</th>
<th>Strongly agree</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Doctors use too many medications</td>
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<tr>
<td>2</td>
<td>People who take medications should stop their treatment for a while every now and again</td>
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<tr>
<td>3</td>
<td>Most medications are addictive</td>
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<tr>
<td>4</td>
<td>Natural remedies are safer than medications</td>
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<tr>
<td>5</td>
<td>Medications do more harm than good</td>
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<tr>
<td>6</td>
<td>All medications are poisons</td>
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<tr>
<td>7</td>
<td>Doctors place too much trust on medications</td>
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<tr>
<td>8</td>
<td>If doctors had more time with patients they would prescribe fewer medications</td>
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</tbody>
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