

**CULTURAL FACTORS INFLUENCING CONTENT  
OF DELUSIONS AMONG SCHIZOPHRENIC  
PATIENTS IN SAUDI ARABIA**

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**Abstract:**

The present study aimed to investigate the influences of socio-cultural context on content of delusions within schizophrenic patients among three different geographical areas in Saudi Arabia and to estimate the prevalence of schizotypal personality within the non-clinical Saudi population. *Methods:* 148 patients meeting DSM-IV criteria of schizophrenia were drawn from in-patient sections of mental health hospitals in three areas of study (Riyadh, Jeddah, and the Eastern Province), and 364 participants were recruited for comparison groups from Saudi universities and general medical practices in the same areas. The study utilized the following instruments: Scale for the Assessment of Positive Symptoms (SAPS), Scale for the Assessment of Negative Symptoms (SANS), the MacArthur-Maudsley Delusions Assessment Schedule (MMDAS), the World Health Organization (WHO) Life Events Schedule, the Aetiological Beliefs Questionnaire (ABQ), and the Schizotypal-Personality Questionnaire (SPQ). *Results:* Firstly: there were significant main effects of residence and sex on the three dependent SPQ scales, and females and Riyadh area residents scored higher on all dependent SPQ scales especially on the cognitive scale. Secondly: persecutory delusions were the most common delusions among schizophrenic patients followed by delusions of being controlled, and the frequency of persecutory delusions was significantly higher in females and in the Riyadh area. Thirdly: only delusions of jealousy were specifically associated with violent behaviours among schizophrenic patients. Finally: ABQ showed that both supernatural and psychological explanations of illness were common among both control and clinical groups. Qualitative analysis of the content of delusions revealed socio-cultural and gender-related issues that were strongly reflected in the themes and content of delusions. *Conclusion:* Content analysis of delusions in a Saudi schizophrenic sample showed strong effects of the socio-cultural context and stress points such as racism and gender inequality, and gender and regional culture affected both the frequency with which persecutory delusions were observed, and the mean scores of schizotypal personality in a non-clinical sample.

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# Chapter 1: Schizophrenia and Delusions

Chapter One presents an introduction to schizophrenia as the current study field and to general views on the schizotypal personality. The present research will seek to understand the prevalence of schizotypal personality in non-clinical Saudi samples and its relationship to delusions in diagnosed schizophrenic samples. The second part of this chapter will review theoretical explanations of delusions (the current study field) in order to frame appropriate explanations of delusion formation in the current study and samples.

## *Schizophrenia and delusions: a review of the literature.*

### **Schizophrenia:**

Schizophrenia is arguably the most severe mental disorder, since it is associated with cognitive deficits, deficits in social functioning, and high levels of distress; it has an extended time course, and there is a significant risk of suicide or self-harm. In the Diagnostic and Statistical Manual of Mental Disorders, (DSM, IV: American Psychiatric Association, 1994) schizophrenia is defined according to symptoms and these symptoms can either be positive (the presence of abnormal behaviours and cognitions) or negative (the absence of normal behaviours and cognitions). In schizophrenia, these symptoms cannot be explained as a result of any known underlying medical or physiological condition, and the abnormal behaviours and cognitions themselves constitute the diagnostic criteria for schizophrenia. The lack of identifiable pathology was a key part of the claim by Thomas Szasz (1960) to assert that mental illness is a myth (Szasz, 1960). The characteristic symptoms which are required to diagnose schizophrenia are: two or more of the following: 1- Delusions. 2- Hallucinations. 3- Disorganised speech. 4- Grossly disorganised or catatonic behaviour and 5- negative symptoms such as alogia (poverty of speech) or affective flattening. Moreover, there is an important dimension of severity: schizophrenia can be diagnosed as when delusions or hallucinations are bizarre and have an effect on patient's behaviour and thoughts generally (APA. 1994).

Schizophrenia typically emerges in late adolescence and young adulthood. Approximately 70% of people diagnosed with schizophrenia are aged between 15 and 40 years, and the prevalence rate usually is estimated at 0.5 - 1% of the adult population (APA, 1994). Therefore, this disorder affects the development of society and its productivity. It also creates economic problems, because schizophrenic patients are frequently unable to work, and schizophrenia represents a considerable burden on the psychological, social and health services of a country. For instance in the USA the overall cost of schizophrenia during the year 2002 was estimated to be about \$62.7 billion (Wu, et al., 2005), of which: \$ 22.7 billion was the cost of direct health care divided into the care of schizophrenic patients in different mental care centres on both inpatients and outpatients and on medicines of schizophrenia; \$7.6 billion was the cost of direct non-health care and the care of schizophrenic patients outside healthcare centres to provide them accommodation and help them with living arrangements; and finally \$32.4 billion was the indirect excess cost of schizophrenia resulting from the fact that schizophrenia affects its people and generates unemployment and jobless problems. Schizophrenia has been estimated as the most costly mental disorder, especially in indirect excess costs. It severely impacts on the overall U.S.A economy (Wu, et al., 2005).

Untreated, people with schizophrenia can easily become homeless or involved in (usually low-level) crime: it is estimated that 9% of male and 13% of female prisoners in the UK have a schizophrenic or delusional disorder (Singleton et al. 1998). It has been estimated that the proportion of schizophrenic patients in the in-patient wards of mental hospitals in America is between 60-70% (Andreasen, 1995). In Saudi Arabia the proportion of schizophrenic patients in the in-patient section was estimated between 40-50% (Alkhani, Bebbington, Watson, & House, 1986). In another study the proportion of schizophrenic patients was put at 85% (Al-Shamy, 1981).

Most recently, an attempt is underway to combine information from the whole human genome with neuroimaging and neurodevelopmental studies to seek an understanding of the genetic and environmental causes of schizophrenia (Gur, 2011). However despite

the power of these technologies, no easy solutions are expected. Schizophrenia has been described as a complex disorder: and understanding schizophrenia will depend on social sciences and psychology as well as on genetics and neuroscience.

Psychological research in the last two decades has moved towards an experiential, symptom-oriented, and cognitive-developmental model of schizophrenia, as being more valid and useful than the traditional mental illness model (Bentall, et al. 2007). The reasons for this change in emphasis are twofold. First, it allows a psychological, rather than a medical / psychiatric approach, so that the conceptual and therapeutic tools and perspectives developed by psychologists can be fully utilised. Second, since the concept of schizophrenia as a disease category is disputed, a modern psychological approach focused on specific symptoms (such as persecutory delusions) adopts a neutral position about the coherence and validity of schizophrenia as a diagnostic category, and allows for new approaches to the problem, for example cognitive, neuropsychological, person-centred or phenomenological (Ruppin, Reggia & Hoen, 1996). By taking seriously the experiences of patients themselves, it promotes a more humane approach to therapy. Also, some studies have gone further in claiming that by paying more attention to the content of symptoms, this might aid in reaching a good level of understanding patients' difficulties, and improving the therapeutic relationship (Aschebrack, Gavey, McCreanor & Tippett, 2003). Other studies have investigated schizophrenic symptoms with relationship to social, emotional, cultural and environmental variables (Kala & Wig, 1982; Nedetei & Vadher, 1985; Sher, 1997, Suhail, 2003). Symptom-oriented research has also focused on the consequences of schizophrenic and psychotic symptoms on the patients or their families (Miller & Catabtier, 1987, 1989; Jungiger, 1996; Cheung et al. 1997). Finally, a few studies have raised critical and controversial issues regarding the importance of studying psychotic symptoms (Aschebrack et al. 2003).

### **Schizotypal personality**

The concept of a schizotypal trait was first proposed by Paul Meehl (1962) in his paper "Schizotaxia, schizotypy, schizophrenia". He used the term 'schizotaxia' to refer to the genetically determined disposition to disorder, in the other words, what is inherited is a vulnerability to the illness rather than the illness itself. Schizotaxia refers to a defect of neural integration in the CNS, and an individual with schizotaxia will exhibit

schizotypy, that is, they will display cognitive impairments such as losing association, magical thinking, odd beliefs and behaviours, but perhaps to a mild degree and level as might appear within the general population. A person who has schizophrenic characteristics (schizotypy) without schizophrenia disorder may become schizophrenic only if exposed to some serious kind of stress (Meehl, 1962, Lenzenweger, 2006). This account is an example of a diathesis-stress model of disorder (Walker & Diforio, 1997). Kety, et al. (1975) cited in Bentall (2004) argued that biological relatives of schizophrenic patients showed specific personality characteristics which shared or similar to schizophrenic symptoms and they called this schizophrenic spectrum disorder. Subsequently, the idea of a schizotypal personality disorder was introduced by Robert Spitzer based on Kety's and Rosenthal's concept of a spectrum of schizophrenic disorders (Spitzer, Eudicott and Gibbon, 1979, cited in Bentall, 2004). Schizotypal personality disorder can be found in the Diagnostic and Statistical Manual of Mental Disorder (DSM-IV, 1994) and is defined as "a pervasive pattern of social and interpersonal deficits marked by acute discomfort with, and reduced capacity for, close relationships as well as by cognitive or perceptual distortions and eccentricities of behaviour, beginning by early adulthood and present in a variety of contexts, as indicated by five (or more) of following:

- 1-Ideas of reference (excluding delusions of reference).
- 2-Odd beliefs or magical thinking that influences behaviours.
- 3-Unusual perceptual experiences.
- 4-Suspiciousness or paranoid ideation.
- 5-Inappropriate affect.
- 6-Odd thinking and speech.
- 7- Behaviour or appearance that is odd.
- 8- Lack of close friends or relationships." (American Psychiatric Association, 1994, p 209).

According to both Meehl's and Spitzer's ideas, schizotaxia is a psychosis-proneness: an inherited or genetic disposition and the theory predicts that schizotypic traits should

exist on a continuum or spectrum in the normal population, and these traits should also indicate a degree of proneness to psychosis. Subsequently, many scales or questionnaires have been designed to measure schizotypy among the general population (Chapman, Champan, & Kwapil, 1995).

One of the first issues to be addressed using these scales was whether males and females differ in schizotypy. Many studies have been conducted on gender differences using the Schizotypal Personality Questionnaire (Raine 1991), but the results have been mixed. Some of the studies, reviewed by Raine (2006), indicated that females scored higher on positive subscales of SPQ, whereas males had high scores on negative subscales of SPQ. Others showed that males did not differ from females on positive and negative subscales of SPQ. Moreover, gender differences in SPQ varied across different cultures, indicating the importance of the socio-cultural environment, in addition to the proposed genetic factors underlying schizotypy (Raine, 2006).

Furthermore Raine (2006), who developed the SPQ, pointed out that the original normative sample from University of Los Angeles showed higher scores in SPQ compared with the English sample in Hall & Habbits (1996) study. Raine (2006) suggested that the high schizotypy score found in Californian society might reflect the cultural milieu of Los Angeles, which encourages and provides a means of expression for magical thinking, odd behaviours and beliefs, and unusual ideas. Thus the research context, culture and local sub-culture might affect SPQ scores significantly (Raine, 1991). Guo, Colline, Subramaniam and Chong (2011) reported that Asian results regarding SPQ conflicted with Western studies, in that males in Asian studies showed higher scores on all SPQ scales in both positive and negative traits whereas the males in Western studies tended to have high scores on negative traits and females tended to have high scores on positive traits. Guo, et al. interpreted this difference as being due to cultural influences on SPQ besides genetic effects.

For schizophrenia itself, early studies emphasised the similarity in incidence across different cultures and in men and women. However, a recent review (McGrath, 2006) of 158 studies in different countries has concluded that the incidence of schizophrenia varied widely, between 7.7 and 43 per 100,000: that the overall male: female risk ratio was 1.4:1 (higher risk in males), that those born in or living in cities carry a higher risk,

that migrants have fivefold increased risk, and that the incidence of schizophrenia can change over time.

Thus, according to Diathesis-Stress models of schizophrenia and other mental disorders, socio-cultural factors can influence the incidence of schizophrenia or other mental disorders. They can also influence schizotypy scores in non-clinical populations, and there is some evidence to support this. I shall now discuss whether there is any evidence that socio-cultural factors specific to Saudi Arabia can influence mental health.

### **Possible socio-cultural influences on mental health in Saudi Arabia**

Douki, Ben Zineb, Nacef & Halberich (2007) showed that some cultures in the Arab and Islamic world have specific characteristics that mean that women in these countries are at greater risk of developing mental illness and mental symptoms than men, not because of genetic reasons but due to cultural factors like gender inequality in all life affairs (e.g. education, marriage and work). In other words, cultural-related risk factors aid in generating and maintaining mental and psychological disorders and problems in females in such cultures. Douki et al. (2007, fig.1) analysed previous studies by Srairi (1995) in Tunisia and Ghubash (2001) in United Arab Emirates (UAE) that used a similar methodology to measure the prevalence of major depression and schizophrenia in the general population. They found that women in Tunisia were twice as likely as men to suffer from major depression, whereas in UAE women were six times more likely than men to suffer from major depressions. Douki et al. (2007) interpret the differences in depression prevalence to greater levels of discrimination against women in UAE compared with Tunisia. However, for schizophrenia, there were no differences in prevalence for males and females (Douki, et al. 2007). This is in agreement with reviews of published epidemiological studies which tend to show incidence (risk of developing schizophrenia) is higher in males but prevalence (proportion of the population affected) is similar in males and females (Saha, et al. 2005), thus this statistic may mask a situation where schizophrenic episodes in women are longer-lasting.

Al-Kathami and Ogbiede (2010) found that up to 1/3 of patients in primary care (GP surgery) in Saudi Arabia had mental health problems as assessed by the Rahim anxiety-

depression scale. Prevalence of minor mental illness was significantly higher in women (22.2%) than men (13.7%).

Several studies have examined the relationship between cultural conservatism and personal needs for structure, and cognitive rigidity, (Neuberg & Newsom, 1993; Crowson, Thoma, & Hestevold, 2005; Tam, Leung & Chin, 2008; cited in Crowson, 2009). Their evaluation indicated that people who came from culturally conservative societies showed a higher tendency to be aggressive against others who differ from them, more rigid and restricted in their thinking, and more dogmatic in their beliefs. Crowson (2009) reported also that people who came from culturally conservative societies have particular ideological characteristics such as fear of death, dogmatic thinking, and a great need for certainty of knowledge or beliefs.

Against this view, Dwairy, et al. (2006) argued that an authoritarian parenting style within an authoritarian culture does not lead to mental health difficulties, unlike authoritarian parenting in a liberal Western culture.

One study (Wilson and Barrett, 1985) has proposed a link between social conservatism and paranoid ideation in schizophrenia in that both are based on defensive styles of thinking: they found a greater endorsement of conservative attitudes in a sample of Dutch schizophrenic patients compared with non-schizophrenic patient controls. However a literature search has revealed no other research on the relationship between conservatism and schizophrenia or schizotypy.

On the other hand, studies reviewed by Maltby & Day (2002) on the relationship between religiosity and schizotypal personality showed that people with extrinsic religiosity (people who seek social status, protection and consolation through religion) scored higher in schizotypal personality or have high level of schizotypy compared with people with intrinsic religiosity (people who seek to live their religious beliefs). White, Joseph & Neil, (1995); Diduca & Joseph, (1997); and Jackson, (1997) found that religiosity is positively correlated with schizotypy traits (cited in Maltby & Day, 2002). However, Johnstone and Tilopoulos (2008), in an international Muslim sample, found a weak negative relationship between religiosity and schizotypy. Also Wulff (1997) cited in Maltby & Day (2002) proposed that where there is a positive relationship between schizophrenia and religiosity, schizophrenics may be attracted to religious experiences



to understand the overwhelming sensory stimulation, to add meaning on unusual imagery generated from schizophrenia, and to overcome delusional fears.

To conclude this section, there is strong evidence for a link between the unequal social position and discrimination faced by women in many Arab societies, and both minor mental illness and major depression. Also, Saudi Arabia, as a culturally conservative society that also presumably shows high levels of extrinsic religiosity compared with other Islamic countries (Al Rasheed, 2002), might provide a social context that plays an important role in affecting the prevalence of schizotypal personality. However, there is insufficient evidence from the existing literature for a link between conservative religious culture and schizotypy, as it might apply in a specific case such as Saudi Arabia.

### **Problems with the definition of delusions**

Delusions are arguably the most elusive phenomena in the field of psychopathology and psychiatry (Maher & Spitzer, 1993). On the other hand, delusions are one of the key symptoms required for diagnosing schizophrenia and they are considered as typical of the positive symptoms of schizophrenia. However, delusions are not exclusively reported in schizophrenia, Manschreck (1979) cited in Maher & Spitzer (1993) indicated that delusions are noted within 75 disorders and only five of them were the major psychotic disorders such as schizophrenia, delusional disorder (paranoia), and major depression. Moreover, according to DSM IV delusions accompany many neurological, physiological and medical conditions (APA, 1994).

The classical definitions of delusions have faced considerable criticism and controversy from a variety of dissenting points of view.

Firstly, there is a difficulty of defining any criteria for normal beliefs which can actually separate normal beliefs from delusional ideas. Also it is often difficult to make a decision whether that belief is false or not, particularly when the content of delusions is reasonable or not bizarre (Maher & Spitzer, 1993). John and Os (2001) reviewed the evidence for the distribution of psychotic experiences across the general population, and concluded that any normal person may hold delusional ideas in some degree. In

addition, people in a non-clinical sample may be arranged on a continuum of psychotic symptomatology. However, psychotic symptoms do seem to differ quantitatively from normal experiences (John & Os, 2001). Cox and Cowling (1989) reported that beliefs meeting the classical definitions of delusional ideas were common in the general public, according to their survey which was conducted on 60,000 British adults. 50% of the participants showed a belief in thought transfer, 25% reported that they believed in ghosts or supernatural spirits, and 25% mentioned that they believed in reincarnation. Eaton, Romanoski, Anthony and Nestadt (1991) found that bizarre delusions were prevalent in approximately 2% in normal people, and about 4-8% showed the typical paranoid delusion of having a special power.

A second criticism is that the judgment and criteria of what constitutes a delusion may differ according to cultural context and norms (Maher & Spitzer, 1993). This issue will be discussed in detail in a later section.

Thirdly, there is a problem of consistency. Studies which have examined the phenomena of delusions have used different methods and approaches and are based on different conceptions of delusions (Maher & Spitzer, 1993). Currently, most clinical assessment and practice depend on the definitions given by the Diagnostic and Statistical Manual of Mental Disorder (DSM-IV, 1994). According to DSM-IV a delusion can be defined as "a false personal belief based on incorrect inference about external reality and firmly sustained in spite of what almost everyone else believed, and in spite of what constitutes incontrovertible and obvious proof or evidence to the contrary. The belief is not one ordinarily accepted by other members of the person's culture or subculture, when a false belief involved an extreme value judgment. It is regarded as a delusion only, when the judgment is so extreme as to defy credibility." (APA, 1994, p765)

This classical definition has faced some criticisms, firstly: how can one practically determine the meaning of the term falsity (Maher & Spitzer, 1993)? Secondly: some evidence conflicts with the emphasis on the firmness of delusion and its resistance to change. Appelbaum, Robbins and Vesselinov (2004) examined the hypothesis of stability of delusion over time and its resistance to change in a sample of 1,136 schizophrenic patients with delusional beliefs, drawn from in-patients in mental hospitals in the United States of America. They re-interviewed patients at 10 week

intervals during one year. The authors used an interview schedule which included a series of 17 questions about delusional ideas, and then they applied the definition of delusions of DSM-III-R to a structured interview. Further data were collected by reviewing the medical records for each patient to verify that the patient had confirmed or possible delusions, and to determine delusion-type and content. Furthermore, they utilized the MacArthur-Maudsley Delusions Assessment Schedule (MMDAS) to identify the predominant delusion in a patient's life, and any violent actions related to the content of delusions. They also measured any changes in delusions or their content during the period of study. The results showed that patients with persecutory delusions appeared to be more stable and persistent in their content, in comparison to patients with delusions of broadcasting which showed more variation. Also, most patients showed variability in the content of their primary delusions. Thus delusions in this respect were revealed to be flexible, contrary to suggestions in the classical definitions. In addition, the results showed that age and marital status were related to persistence of delusions; in other words, the content of delusions in patients with schizophrenia who were older and unmarried was more persistent and stable.

Despite these theoretical problems of definition, this does not mean that the study and understanding of delusions is intractable. As will be shown in this thesis, delusions can be defined operationally as well as clinically, and most importantly, they can be understood, both in terms of their personal and cultural meaning, and in terms of their likely causes.

## **The explanation of delusions**

Delusions have attracted a great deal of attention in recent and current studies. Delusions are represented as one of the important manifestations of disturbances in content and control of thinking in schizophrenic patients.

In order to understand the origin and pathogenesis of delusions, there have been serious endeavours to interpret delusional development from different perspectives. The main approaches in the current literature will be reviewed in this section.

## **1-Social Attribution Explanations of delusions:**

Attribution theory concentrates on social perception. It refers to the process whereby the individual ascribes characteristics (e.g. emotion, motivation and trait) to him / herself or to others (Reber & Reber, 2008). The roots of attribution theory can be traced in the ideas of Gestalt psychology. However, according to Maher and Spitzer (1993), modern attribution theory which refers to attribution of causality is based on Heider's (1944) and later on Kelly's (1967) observations and attempts to explain how people attribute motives, emotions and traits to other people in social situations. Thus, attribution depends on either internal causes, or on environmental factors, or on a combination of both causes (Reber & Reber, 2008). Attribution research also focuses on the fundamental attribution error. This means the tendency of people to explain the other's behaviours and activities according to internal motives or traits which might reflect their attitudes directed toward external situations. The fundamental attribution error tends to ignore the pressures of environment and circumstantial burdens which may be imposed on a person. Kaney and Bentall (1989) suggested that delusions may be generated as a result of a social attribution processes. Furthermore, persecutory delusions might arise due to the fundamental attribution error (Maher & Spitzer, 1993).

Blackwood, Howard, Bentall and Murray (2001) have reviewed the evidence for attributional bias in people with delusions. They reported that people with persecutory delusions are prone to attribute the causes of positive events to the self (internal attribution) whereas they attribute the causes of negative events to external persons and circumstances (external attribution). In this respect, deluded patients with persecutory delusions (PD) do not differ qualitatively from normal subjects in their attributional style. Rather, people with PD have an extreme tendency to attribute negative events to others and to malevolent entities. They tend to use external personal attribution more than external situational attribution. The authors concluded that these exaggerations in attribution bias can serve self-esteem by reducing the negative impact of negative events. When the person attributes negative events to others, this might lead inevitably to blaming others in order to protect self-esteem. This may protect self-esteem from the conflict between the actual-self (a person's idea about him / herself as viewed in reality) and the ideal-self (the self which the person aspires to be). The proposal that persecutory delusions are a defense also predicts that PD might coexist with normal levels of overt or explicit self-esteem. On the one hand, cross-sectional studies

(Blackwood, et al. 2001) have shown that people with PD have normal or high level of overt self-esteem, and on the other hand they have low levels of covert self-esteem. These results support the assumption that PD is associated with normal or high levels of overt self-esteem. However, a longitudinal study (Freeman, Garety, Fowler, Kuipers, Dunn, Bebbington, & Hadley, 1998) cited in Blackwood, et al. (2001) revealed that most people with PD had low level of overt self-esteem. Also, people with PD who have normal levels of overt self-esteem showed firmly sustained delusional beliefs. Overall, there are conflicting findings on overt self-esteem in PD, but covert self-esteem seems to be low.

Bell, Halligan and Ellis (2006) have also concluded that people with delusions have a greater tendency towards external attribution and externalizing bias (EB) than non-delusional patients. In addition, they found that people with paranoia were prone to make more external personal attributions for negative events compared with other psychotic patients.

Mizrahi, Addington, Remington and Kapur (2008) measured the changes in AT in patients while on a course of antipsychotic drug therapy. The authors conducted two studies, the first, was a cross-sectional study to investigate the relationship between AT style and psychotic symptoms. The second was a longitudinal study to assess the changes in AT during the first 6 weeks of therapy. In the cross-sectional study, the sample consisted of 86 patients who were diagnosed as schizophrenic, schizophrenic form, or schizo-affective according to DSM-IV criteria (APA, 1994). In the longitudinal study, the authors recruited 17 patients who were antipsychotic drug-free, and who were willing to start the antipsychotic drug therapy. They used, the Mini-International Neuropsychiatric Interview (MINI) to classify the patients into diagnostic categories. The Positive and Negative Syndrome Scale (PANSS) was used to measure severity of symptoms. Finally, the Internal Personal and Situational Questionnaire (IPSQ) was used to evaluate attribution style. This provides two attribution bias scores. Externalizing bias, EB = internal attributions for positive events minus internal attributions for negative events. A positive bias refers to self-serving bias or defensive attribution. Personalizing bias (PB) indicates the individual's tendency to use personal rather than situational attribution for negative events. PB = personal attribution (personal + situational attribution) for negative events. Results showed that the patients with internalized attribution who had a tendency to self-blame had more severe symptoms

and a poorer response to antipsychotic therapy. Moreover, the results revealed the externalizing bias changed early in the therapy course. On the other hand, the personalizing bias did not change along the antipsychotic treatment path. The expected relationship between delusions and suspiciousness items and EB and PB was absent. These findings disagreed with previous reports that persecutory delusions were associated with personalizers and externalizers. However, the authors suggested that PANSS may not have enough sensitivity to measure delusions.

Freeman (2007) reviewed studies on attribution theory, most of which used the Attributional Style Questionnaire (ASQ) or the Internal, Personal and Situational Attribution (IPSA). Both questionnaires were based on a similar design which focuses on hypothetical events to assess the attribution style participants. Three studies of ASQ (Fear et al., 1996; Kretev et al., 1999; & Lyon et al., 1994) showed that people with PD were different from control groups in that people with PD have greater external attribution of negative events compared with non-clinical group, in other words people with PD have externalising bias for negative events, whereas none of four IPSA studies found differences between people with PD and non-clinical samples in externalising bias. Freeman (2007) however noted that some studies using both attribution scales showed that people with PD differed from non-clinical groups and therefore concluded that people with PD have a greater tendency to make an excessive and unconvincing external attribution for negative events.

## **2-Two-factor models**

Bell, et al. (2006) reviewed models which focused on abnormal cognitive processes to investigate delusion formation. The attribution/self-representation model showed how persecutory delusions could have arisen as a result of external-personal attributions; by using defensive attribution, people with persecutory delusions are attempting to protect their self-esteem. Conversely, neurocognitive models propose that persecutory delusions might be generated by the abnormal experiences which are produced by biological or psychological stresses. These abnormal experiences are elaborated into delusions via excessive cognitive biases or maladaptive beliefs. Moreover, Bell et al. argue that people with persecutory delusions do have cognitive biases; they select the evidence which supports their beliefs and they avoid the evidence to the contrary. These models indicate that delusions originate either from 'intrusions into awareness' or as

errors of interpretations: forms of interpretation that are unacceptable in the cultural context (Bell, et al., 2006).

Langdon & Coltheart (2000) cited in Bell et al., (2006) argued that theories of delusions must explain both the content of delusions, and why delusions occur at all. Davies, et al. (2001) cited in Bell et al. (2006) attempted to meet this criterion with a 2-factor model that drew on evidence from neuropsychological studies of delusions following brain-injury. Thus 2-factor models can produce either normal beliefs or delusions. The 2-factor models suggest that the perceptual distortion is the first factor and it an essential element for producing bizarre delusions. The second factor is an additional deficiency, which is required to explain how perceptual distortion might lead to the development of delusions. Moreover, these 2-factors models emphasize that abnormal beliefs could arise in two possible ways: the first, by producing abnormal interpretations for anomalous experiences that are experienced as abnormal, and the second by delusions happening as a result of acceptance of the pathological perception and corresponding modification of belief. The second factor is needed in both cases to explain why people with delusions did not reject these abnormal beliefs. Bell et al., (2006) conclude from the evidence they review that abnormal perceptual experiences could be a supportive factor but it is not a necessary factor, also some reports showed that the second factor would need a cognitive deficit or bias to produce the abnormal belief.

### **3- Anomalous experiences and anxiety**

Anxiety may be at the core of the generation of delusions. Emotional experiences of anxiety, anger and depression can certainly affect the content of delusions, and might also contribute to the generation and persistence of delusions. Conversely, the content of delusions can clearly affect emotional experiences (Freeman & Garety, 2003).

Freeman (2007) proposed a relationship between anxious thoughts, anomalous experiences and persecutory delusions, since it appeared that both anxious and paranoid thoughts relate to the same fears of physical, social and psychological harms. Also, both anxious and paranoid thoughts concentrate on expectation of threat and danger. Furthermore, a review of anxiety studies showed that anxiety may originally create the content of paranoid ideas. It also can help these paranoid thoughts to remain associated

with the anomalous experiences. Reviewing recent studies, Freeman found confirmation of the relationship between anxiety and paranoid thoughts and many clear examples of evidence supporting the reasonable link between both. That relationship was derived from anxiety-anticipating experiences which may lead to the occurrence of paranoid thoughts and maintenance of persecutory delusions. This can appear also in non-clinical groups, in that paranoid thoughts may develop from interpersonal worries and anxious situations. Particularly, common suspiciousness could emerge from social anxiety or personal themes especially emotional matters. This suggestion also explains the origin of ideas of reference as result of the similar worried situation, and as related to interpersonal anxiety with faulty attribution of significance. Also, paranoid thoughts were associated with type of thinking style; the evidence showed that two thirds of people with persecutory delusions have anxious thinking style (Freeman, 2007).

Empirical studies have also shown that anomalous experiences are associated with the appearance of delusions of many types (Maher & Spitzer, 1993). The evidence indicated that odd and unusual internal personal experiences can lead to the generation of odd thoughts and ideas, consistent with 2-factor theories reviewed in the previous section. Moreover, the ambiguous personal experience might affect delusion formation more strongly than external events (Maher & Spitzer, 1993).

Freeman and Garety (2003) concluded that delusions may appear as a personal endeavour to give sense and meaning to ambiguous internal experience, or odd internal anomalous events. These unusual experiences typically correlate with a person's emotions and views towards the external world in threatening situations such as earlier adverse experiences might cause anxiety about the rejection from others, and the world.

There is considerable evidence that paranoid thoughts or ideation within non-clinical groups is generated from common interpersonal anxieties (Freeman, Garety, Bebbington, Slater, et al., 2005; Freeman, Slater, et al., 2003; Freeman, Garety, Bebbington & Smith, et al. 2005, cited in Freeman, 2007) The most common types of paranoid ideation or suspiciousness were regarding social and interpersonal anxieties themes such as reference ideation which was generated upon the social or interpersonal threat of being harmed was increased. Moreover, paranoid or persecutory ideation and anxious thought within both clinical and non-clinical groups often concern the expectation of threat or harm. Salkovskis (1991) cited in Freeman (2007) reported that



patients with PD always choose safety behaviour to avoid the ambiguous situations, in other words, people with PD always have worry, ruminative thinking and suspiciousness, which develops from the feelings of threat, and at the same time they have strong beliefs that they have been exposed to catastrophic situations and they survived by their own safety behaviours, for example ' I did not suffer harm because I left that place at the perfect time' (Freeman, 2007).

#### **4- Delusions as a result of depression and low self-esteem and as a defensive mechanism:**

The idea of a relationship between delusions and self-esteem is not new. Early studies by Adler (1927); Colby (1975); Tolle (1987) cited in Maher & Spitzer (1993) emphasised the role of low-self-esteem and loss of self-esteem in developing delusions. More recently Kinderman & Bentall (1997) suggested that delusions might be a defence against depression. Fear, Sharp and Heley (1996) studied the relationship between suicide attempts and the content of delusions, and from this they concluded that delusions could be a defence against depression and negative emotions in patients who suffered from them. Freeman and Garety (2003) concluded that depression and low self-esteem might create a sensation in patients of becoming as a target of others' aggression, which would generate paranoid delusions as a defensive mechanism.

McCarthy (1997) argued that delusions have several necessary preconditions. Thus, they manifest themselves as a consequence of false interpretation based on inadequate information. Furthermore, McCarthy argued that delusions occur as a reference to the unsatisfied emotional needs of the individual. The author also examined the content of delusions and was able to show that delusions play defensive roles in a mental patient's life to protect the self against primary anxiety which appears in fear of unusual and ambiguous situations and fear of becoming sense-less (losing awareness or competence). The author also analyzed fears and primary anxiety among delusional patients with bizarre content. Primary anxiety in psychoanalytic theories refers to the fear of separation, and fear of loss the integrity of ego. Therefore, people with these primary fears and anxiety may develop paranoid thoughts as a defence mechanism, which may in turn lead to delusions with odd and bizarre content. For instance, in the case of demoniac delusions, people with these delusions showed strong convictions, and full submission to their delusional thoughts, allowing them to eliminate their primary

anxiety by resorting unconsciously to supernatural power. McCarthy (1997) identified the basis of primary anxiety in the fear of death, and such fears are the stage which precedes the development of persecution anxiety.

On this view, delusions are examples of the development of defence mechanisms, whose function is to avoid anxiety sources, to avoid self-reproach and project the reproach on the others. In addition, delusions are not different from other defence mechanisms, except in that delusions become more destructive of normal adaptation (Maher & Spitzer, 1993).

Hingley (1997) presented a case study of grandiose delusions treated by using psychodynamic therapy. The author reported that the patient's fundamental problem was defined by the feeling of threat of losing identity, and the fear of feeling himself. The patient had severe and acute anxiety about his identity; he also had ideas about someone else inserting his thoughts, and some other delusional thoughts. The author suggested that there are potential defensive roles of both persecutory and grandiose delusions. Persecutory delusions may allow the patient to avoid experiencing negative affects like anger, jealousy and guilt. They may also lead to avoidance of interaction with others, and ultimately, this reduces the risk of experiencing negative affects resulting from others. On the other hand, the delusions of grandeur allow the patient to avoid the realities of life circumstances, to avoid or replace one's own uncertain identity, to avoid experiencing negative affects, and to avoid interaction with others. Consequently, delusions might serve to support self-esteem, especially when the self avoids exposure to negative emotions such as anger, jealousy and guilt. Finally, delusions can lead to reinforcement of self-esteem, and all these factors can play a part in the formation of delusions (Hingley, 1997).

Bowins and Shugar (1998) examined the assumption that content of delusions and hallucinations may reflect different aspects of self-esteem and self-regard. The authors supposed first that the content of delusions is influenced directly by self-esteem and self-regard. Thus, when the patient's view regarding him or herself is negative, or he/she has low self-esteem, this would be reflected by negative delusional content, and the opposite is true with higher self-esteem. On the other hand, the content of hallucinations can serve as a defence to preserve self-esteem and self-regard. For instance, when self-esteem is low the proposal is that the content of hallucinations

would create more enjoyable themes. The participants in Bowins and Shugar's study were 40 patients from two in-patient units at the Clarke Institute of Psychiatry, Canada. A structured interview based on Present State Examination (PSE) was used to reveal the psychotic symptoms. The authors also used the Coopersmith Self-Esteem Inventory (SEI), the Self-Rating Scale (SRS), and five other scales which were designed for their own study to assess the positive and negative effect of the self-esteem and self-regard on the content of delusions and hallucinations. Altogether 154 delusions were reported by the 40 patients, and the most common delusions were delusions of reference, then delusions of persecution and grandeur, then delusions of control respectively. The findings showed that global self-esteem positively related with content of delusions, in the other words, content of delusions reflects the patients' level of global self-esteem either high or low and patients with high global self-esteem their content of delusions was more comfortable and enhancing than patients with low global self-esteem; in contrast, there was no significant correlation between content of hallucinations and self-esteem. The authors concluded that content of delusions reflected self-esteem and self-regard, corresponding with patients' views towards themselves. Hence, this can explain the relationship between self-esteem and delusion formation and can help the clinician to assess the self-esteem and self-regard by assessing the level of patient's comfort and enhancement with their delusions.

Green, Garety, Freeman, Fowler, Bebbington, Dunn and Kuipers (2006) examined the role of affective and emotional distress and self-esteem in persecutory delusion formation, and investigated the role of affect in determining the content of delusions. A total of 70 patients with persecutory delusions were evaluated by using the Scale for the Assessment of Positive Symptoms (SAPS) and Freeman & Garety's criteria for persecutory delusions. The content of persecutory delusions was categorised according to the type of persecutor (e.g. single vs. multiple; and human vs. non-human...), type of persecution (e.g. physical; social; and psychological...), time of persecution, reason of persecution, and the pervasiveness. Emotional disturbances were assessed using DSM-IV criteria for affective disorders and by Beck-Depression Inventory (BDI-II). The results showed that the majority of responses identified the persecutors as multiple agents conspiring together against the patient (e.g. neighbours; devil; police; and government...). Half of responses specified the persecutors as known persons (e.g. family; friends; and colleagues.), whereas fewer responses showed supernatural

persecutors (e.g. God; devil; aliens; and spirits.): these were more prevalent among black patients than other groups. Depression and anxiety were moderate in patients with persecutory delusions, whilst the self-esteem was low in that group. Most of the deluded patients significantly appeared to show affective distress resulting from their delusions, in addition, a high level of depression was observed among the patients who believed that persecution was a punishment and that they deserved it compared with other groups. It was concluded that emotional distress and low self-esteem may have serious role in delusion formation, and because the content of delusions was associated with affective distress this might reflect the degree of underlying affective disturbance (Green, et al. 2006).

Freeman (2007) reviewed some evidence supporting the generation of persecutory delusions as a defence against negative emotional processes, depression and low self-esteem. However, from other evidence it appeared that persecutory delusions are a direct reflection of that emotional disturbance, and on this view, there is no association between defence mechanisms and the formation of persecutory delusions. If delusions of persecution are developed as a result of low-self esteem the defence mechanism theory becomes reasonable, but the observed results regarding the level of self-esteem in paranoid patients are mixed, some studies reporting low self-esteem and others normal levels of self-esteem (Freeman, 2007). Also, the relationship between content of delusions and defence mechanisms is still unclear and elusive. The current studies on non-clinical populations concerning the relationship between low self-esteem, depression and paranoia generally show that paranoia correlates with lower self-esteem and higher depression.

## **5- Delusions as a result of trauma and childhood abuse**

Read, Os, Morrison and Ross (2005) reviewed the literature concerning the relationship between childhood trauma, childhood abuse and psychotic symptoms and schizophrenia covering the period between 1872 and 2004. The authors utilized a computer literature search to identify the relevant studies and papers which related to this issue. The review showed that the interest in studying this issue considerably increased after the identification of Post Traumatic Stress Disorder (PTSD) as a diagnostic category. The early interest was about the relationship between trauma and neurotic disorders (e.g. anxiety and eating disorder), whereas the relationship between psychosis and childhood

abuse and trauma was neglected. The more recent research indicated that there is a relationship between both Child Sexual Abuse (CSA) and Child Physical Abuse (CPA), and early onset of disorders, frequent hospitalization, dosage of medication, high risk of suicidal attempts and self-mutilation. The review by Read, et al. (2005) focused on specifically on schizophrenia, and the generation and occurrence of positive psychotic symptoms, especially, delusions and hallucinations. Also, it concentrated on abuse in adulthood as a mediating factor between childhood trauma and psychosis. The literature review showed that most psychiatric patients suffered from physical or sexual assaults in adulthood from their partners or from out-side home. According to these results, the majority of female patients have been sexually assaulted. A significant majority of those with psychotic symptoms who suffered from sexual assaults were diagnosed as schizophrenic, and the females who suffered from physical assaults were diagnosed significantly more often with non- manic psychotic disorders. A causal relationship between childhood trauma and psychosis was proposed in many previous reports that showed the high rates of child abuse among in-patients, in particular in females.

In addition, child abuse was associated with severity of disorders, and it related to schizophrenia more strongly than any other psychotic disorders. There is a positive correlation in these studies between positive symptoms and child abuse, either CSA or CPA. Read, et al. (2005) emphasised that people with schizophrenia who suffered from child abuse more likely to develop positive symptoms compared with schizophrenic patients without history of child abuse. Furthermore, the positive symptoms which have been found to have a significant relationship with child abuse were voice commentary, ideas of reference, thought insertion, paranoid ideas, reading others minds, and visual hallucinations. The relationship between delusions and child abuse was strong but less than that between hallucinations and child abuse. Janssen, Krabbendam, Bak, et al., (2004) cited in Read, et al. (2005) reported that people who have a history of sexual abuse developed sexual delusions, and there is a relationship between negligence, harshness and persecutory delusions which was found among homeless adolescents. Also, Lysaker, Meyer, Evans, Clements & Marks (2001), cited in Read, et al. (2005), showed that there was a relationship between the cognitive component of the Positive and Negative Syndrome Scale (PANSS) and thought disorder and child sexual abuse in people with schizophrenia. Regarding the content of hallucinations and delusions, content related to child abuse appeared to be more symbolic and reminiscent of

traumatic experiences, and concrete delusions were reminiscent of abuse episodes. Ultimately, the trauma and childhood abuse might have a role in the emergence of positive symptoms particularly, delusions. Binder (2006) has illustrated two case studies which emphasised that trauma either in the past or present can affect both the form and content of psychiatric symptoms. In addition, the emotional context of the abuse incident and anxiety surrounding it can give the meaning-making of delusions and hallucinations. Also, some evidence showed high proportions of people with schizophrenia had experienced child abuse, either sexual or physical. Moreover, some studies reported that a high incidence of sexual delusions was found in females with history of childhood incest. It is thought that childhood experiences may have some direct neuropsychological effects (e.g. on dopamine level and activity) as a result of maltreatment, abuse, negligence, and refusal or rejection in childhood (Binder, 2006).

Mason, Brett, Colling, Curr & Rhodes (2009) studied the relationship between childhood abuse especially sexual abuse (CSA) and the positive symptoms representative of delusions. Beck & Kolk (1987); Goff, Brotman, Kindlon, Waites & Amico (1991); and Read & Argyle (1999) cited in Mason, et al. (2009) that a high proportion of schizophrenic patients who had a previous history of child abuse, regardless of the kind of abuse (sexual or physical), developed persecutory delusions compared with schizophrenic patients without a history of abuse. Also, people with delusions of possession, reference and evil were more likely to have previous history of sexual abuse. Approximately, 50% of positive symptoms which were examined in-patients unit showed a direct association to child abuse. Their study was based on a sample of 39 participants (23 males and 16 females) who were diagnosed with psychotic disorders according to DSM-IV criteria (APA, 1994). They were aged between 19 and 60, and they came from different ethnic groups. The instruments used were Childhood Trauma Questionnaire (CTQ) and the Schedule for Clinical-Assessment in Neuropsychiatry (SCAN) to reveal the delusions and other positive symptoms. The results confirmed those previous studies in that patients with positive symptoms in particular delusions commonly experienced history of both CSA and CPA and negligence.

Trauma and abuse theories of delusions are consistent with many of the other theories reviewed above, since the source of anxiety, emotional distress, or low self-esteem, and of defence mechanisms, could be traced to the abusive experiences.

## **6- Delusions as a result of a cognitive defect**

### **Cognitive Bias**

In contrast to trauma and defence theories, cognitive deficit theories assume that delusions arise from faulty cognitive processes. Rossell, Shapleske & David (1998) have investigated semantic memory in schizophrenia, and the relationship between cognitive bias in semantic memory and the formation of delusions. The sample was 63 patients who were diagnosed with schizophrenic or schizo-affective disorder according to DSM-IV criteria (APA, 1994). They were drawn from in-patients and out-patients from mental hospitals. Patients were allocated to two groups based on existence of delusions, 48 were deluded patients and 15 were not currently deluded. Also 66 non-clinical participants comprised a healthy control group. The authors used the Schedule for the Assessment of Negative symptoms (SANS) and the Schedule for the Assessment of Positive Symptoms (SAPS) to identify delusions and other symptoms of schizophrenia. The Sentence Verification Task was used (SVT) to measure semantic memory. It consists of 143 sentences regarding different conceptions of things and the world, which were divided into three types true, unlikely, and nonsense. The participants were required to find grammatical errors, and to decide if sentences are true or false. The results showed that participants in all groups made no mistakes in their responses to the true sentences. However, significant differences were found in nonsense sentences in both patient groups, in sentences with persecutory, grandiose, religious and somatic contents. The non-clinical group made relatively more mistakes in persecutory and somatic sentences, whereas schizophrenic patients had relatively higher errors in grandiose and religious sentences. Clinical groups made similar mistakes in the emotional sentences regardless of whether they were corresponding with their delusions or not. Also, patients made numerous mistakes on their responses to unlikely sentences on content or themes that did not correspond with their delusions. However, the greatest number of incorrect answers on the nonsense sentences occurred on content which was congruent with their delusions. Overall, patients with current delusions made more mistakes which correlated to their delusions, compared with non-deluded patients or control group. The finding revealed a cognitive bias in processing sentences with association to their delusions. They were especially prone to accept ambiguous and emotional sentences which corresponded with their delusional ideas; however their inability to identify unlikely sentences might suggest a susceptibility to delusional

beliefs. The authors concluded that a cognitive bias in semantic memory towards certain themes with high personal emotional significance may constitute the basis of formation of delusions.

### **Reasoning Bias (Jumping to conclusion JTC)**

It appears that people with delusions have a tendency to make decisions and rapidly accept beliefs without supportive evidence or data. Some research shows that probabilistic reasoning or jumping to conclusions (JTC) might contribute to the emergence of delusions, particularly delusions of persecution (Freeman, 2007).

Blackwood et al. (2001) has reviewed explanations of delusions based on probabilistic reasoning or jump- to- conclusions (JTC). This is based on the idea that people with delusions have a deficit in logical reasoning. They make decisions more hastily, judge with insufficient information, and draw firm conclusions without sufficient evidence. People with PD are also prone to make decisions with great confidence in a short time, in which they did not examine all the evidence: nor do they change their judgments when they receive new information or evidence. This suggests that people with delusions have a data-gathering bias, which means they have the tendency to judge hastily with less information, rather than a probabilistic reasoning bias, because deluded subjects can collect appropriate data, identify hypotheses, and test them. The emotional salience of material affects the data-gathering bias, and also the willingness to incorporate new material. In important emotional situations, people with PD often do have a willingness to change their explanation when they receive a new data or information, and are prone to incorporate this new information. This willingness can aid in cognitive behavioural therapy. However, the tendency to judge hastily, avoid gathering information, and avoid evaluating information can occur especially when its content relates to important emotional situations. This can lead to incorrect inference which in turn helps in the formation of PD.

Bell et al. (2006) also have reviewed models of delusions based on cognitive dysfunction and bias, such as biases in probabilistic reasoning or jump-to-conclusions. They argued that the evidence shows that JTC is not exclusive to people with delusions, and that the tendency to judge hastily exists in different psychotic categories such as



non-delusional patients with schizophrenia, and patients with previous delusional experiences. Also, the relationship between the JTC and delusions remains ambiguous and not yet clear.

Corcoran et al. (2008) have examined two assumptions about the cognitive difficulties which may stand behind the formation of persecutory delusions across several diagnostic categories (schizophrenia, delusional disorder and psychotic depression). Firstly, that people with PD have the tendency to judge hastily (JTC). Secondly, that they have difficulties in their way of thinking regarding the other's beliefs and behaviours (Theory of Mind). 115 patients were divided into four groups according to their diagnosis and presence of PD. The fifth group including 33 non-clinical participants served as a control group. The authors used four measures to investigate the hypotheses. Two tasks were used to examine JTC, they were the beads in a jar tasks, and a social version of the beads in the jar (a survey including positive and negative comments about person). The other measures were used to examine Theory of Mind (ToM), the first, was comprised of six ToM stories and cartoon pictures to assess the participants' way of thinking. The second was a false-belief picture sequencing task (non-verbal). The results showed that people with current PD had tendency to JTC in both tasks regardless of their diagnosis. The findings concerning ToM revealed some differences compared with JTC. The ToM stories tasks results showed that participants with current PD appeared to have significant difficulties in their responses on this task. The results also confirmed that people with current PD make incorrect inferences about external reality in general, and about other people's beliefs and intentions in particular, irrespective of the diagnosis. The result of the non-verbal task was different, it showed more influence of diagnosis regardless of the current existence of PD. Overall, the results indicated that the tendency to JTC and difficulties in ToM in the people with current PD were the same whether in schizophrenic context or in psychotic depressive context.

Diez-Alegria, Vazquez and Hernandez-Lioreda (2008) investigated whether patients with persecutory delusions show a covariation bias. This refers to the process of gathering and judging information or data either covarying with or associating to events. A person with covariation bias shows that bias when processing the stimuli related to social threat and emotionally threatening verbal stimuli. The sample was 65 patients drawn from in-patients sections, and they were divided into 40 patients with current

persecutory delusions, and 25 patients with past delusions. 36 participants were the non-clinical control group, drawn from university students and hospital staff. The clinical groups were evaluated by using the Present State Examination (PSE), DSM-IV-TR (APA, 2000) and the Brief Psychiatric Rating Scale (BPRS). Covariation bias was assessed by covariation tasks which were divided into three different conditions. The first condition was other-referent sentences which were based on neutral activities such as eating. The second condition was other-referent sentences which were based on both negative and positive psychological traits like honesty and laziness. Finally, the third condition was self and other-referent sentences which were based on both positive and negative social stimuli, thus each sentence refers to the participant or to a third person. The results showed that participants in all groups did not show any significant covariation bias regarding other-referent sentences or in first and second conditions in other words in neutral stimuli. However, the analysis of third condition (self and other-referent sentences) which refer to social interaction, all participants were prone to attribute the positive social sentences to themselves. Furthermore, patients with current persecutory delusions showed more of a tendency to covariation bias concerning social-threat sentences compared with other groups. Diez-Alegria et al. (2008) concluded that the results did not reveal any significant differences between patient groups in covariation bias related to social-threat stimuli. However, some results supported the previous idea in that patients with persecutory delusions have a bias in collection of information associated with their delusional beliefs.

### **Theory of Mind (ToM):**

Frith and Corcoran (1996) investigated whether the way of thinking in schizophrenia is related to a deficit in ToM. Their sample consisted of 55 patients who were diagnosed as schizophrenic according to DSM-III-R criteria. These patients were divided into four groups depending on their current symptoms:

- 1- Behavioural signs group: 12 patients with either positive or negative behavioural signs (e.g. poverty of speech...).
- 2- Paranoid symptoms group: 24 patients with delusions of reference, persecution, and third person auditory hallucinations.

3- Passivity phenomena group: 10 patients with positive symptoms particularly delusions of control or influence, thought insertion and thought withdrawal.

4- Remission group: 9 patients without symptoms for at least two weeks.

Twenty-five control participants were allocated to two groups, 13 neurotic patients in the out-patients unit and 22 normal participants. The ToM task was based on six stories that reflect the ability of subjects to assess other's beliefs and intentions. The purpose of these stories was to measure the subject's comprehension regarding the first order story (false beliefs concerning the world) and the second order story (false beliefs about others). The results showed that people with persecutory or paranoid delusions and patients with behavioural signs have impairment in appreciating other's mental states. The authors indicated that impairment was not due to a deficit in memory. Moreover, the other clinical groups did not differ from the non-clinical groups in ToM ability. Ultimately, the findings are consistent with assumption that there is a relationship between positive symptoms in schizophrenia and the impairment in appreciating others' mental states.

Blackwood et al. (2001) showed that people with PD have impairments in ToM particularly in the second order task (which asks to infer about others' intentions). They performed poorly compared with other psychotic patients and normal subjects. The ToM defect in PD is a state not trait deficit, because this defect appears in patients when they are acutely ill and disappears in remission. However, rather than having a causal role in generating PD, the performance on ToM tasks is associated with current IQ and memory. The results of Blackwood, et al. (2001) concerning the ToM defect showed that the impairment in ToM is related to negative symptoms whereas thought disorders are a consequence of general cognitive deficiency. This result conflicts with earlier results of Frith and Corcoran (1994) in which the impairment in ToM was associated specifically with positive symptoms. Also, ToM defects were associated with reality distortion more than with behavioural disorganization or psychomotor poverty (Blackwood, et al. 2001).

Abdel-Hamid, et al. (2009), explored whether weakness in ToM performance might be associated with other cognitive difficulties and whether it could differ according to the patient's symptoms. The authors aimed to resolve differences and contradictions in previous studies concerning the relationship between ToM deficits and individual

symptoms, and ambiguities regarding the association between positive symptoms and poor ToM performance. In their own study fifty patients were diagnosed as schizophrenic and schizoaffective according to (DSM IV, 1994) criteria and 29 healthy participants were used as a control sample. To examine the hypothesis the authors utilized non-social cognitive tasks which included various subtests to measure different cognitive aspects (previous I.Q, executive functioning, cognitive flexibility and formation of hypotheses). Also they used a social cognitive task to test incorrect inference about other's beliefs, intentions and mental states. This was a ToM task which was based on ToM stories and cartoon pictures. They used behavioural measures, a novel five factor model of the Positive and Negative Syndrome Scale (PNSS), to measure the relationship between ToM deficits and the patient's symptoms. The findings showed that the patient groups were significantly lower in previous I.Q. compared with the control group. Also patient groups had significantly the highest scores in PNSS dimensions (positive, negative, disorganization, excitement and affective). In addition, patients revealed significantly less ability in planning skills in executive functioning tasks and made more mistakes with comparison to the control group and they showed poor ToM performance. These results showed that ToM deficits appeared significantly in schizophrenic patients in association with disorganization symptoms and also in association with emotional symptoms. This finding also confirmed recent studies that found ToM deficits associated with depression. On the other hand, the predicted relationship between positive symptoms and weakness of ToM performance did not exist or was absent. Furthermore, the study failed to find any correlation between ToM deficits and individual positive symptoms like delusions. The authors qualified that result because they did not examine separately persecutory delusions in particular and delusions in general.

Frith (1992) and Frith and Corcoran, (1996) concluded that the impairment in ToM could give rise to positive symptoms, including delusions. Another important theoretical point made by Frith, (1992) concerns the similarities and differences between schizophrenia and autism in ToM deficits. Both schizophrenic adults and autistic children and adults have difficulties in social cognition. However people with schizophrenia have previous experiences concerning others' mental states whereas those with autism do not. Thus people with schizophrenia know that other people have mental states, but are no longer able to deduce reasonably or reliably what those states might

be. Furthermore, when the link between the previous knowledge or experiences and the mechanism which operates them breaks down or is damaged, Frith argued that it can lead to delusions and hallucinations. Conversely, previous knowledge about others' mental states does not exist in the autistic child, and delusions and hallucinations are not a feature of autism.

McCabe (2004) also reviewed the previous empirical studies which tested ToM deficits. These studies concentrated on the association between the impairment in ToM and the development of schizophrenic symptoms. The findings revealed that there were conflicts in the literature regarding the relationship between ToM deficits and positive symptoms. Some results indicated that people with negative symptoms performed more poorly in ToM tasks than people with positive symptoms, and people with more severe symptoms performed worse than people with less severe symptoms. McCabe (2004) criticised the tests which were utilized to assess ToM in previous researches, in that ToM tasks which are based on ToM stories and the classic false-belief task, as approaches to examine a person's ability to appreciate others' mental states, failed in evaluating ToM deficits in schizophrenics. According to McCabe, the failure of schizophrenic patients on these tasks does not result from impairment in ToM, it is related to the nature of tasks which require more concentration and attention. Therefore, the patients with acute symptoms failed due to their impairments in the concentration and attention. Furthermore, these studies showed that the ToM deficit is a state- rather than a trait- characteristic and it is related to acute cases, and when the patients are in remission, the apparent impairment and deficit on the task might disappear.

McCabe (2004) proposed an alternative explanation of schizophrenic symptoms which is based on the idea that in order to further understand how people with schizophrenia manage their own and others' mental states, researchers should study and analyze their social interactions, and their mental conversations. To examine this idea a naturalistic social interaction study was conducted. A conversation-analytic technique was used to analyze conversations between the schizophrenic patients and their psychiatrists and their behavioural therapists. The subjects were chronic patients with both positive and negative symptoms. The results emphasized that the patients used ToM significantly and adequately in their social interaction. The results also showed that the patients did not have problems with respect to their appreciation of others' mental states. The findings instead suggested that the patients had communicative problems. These

problems tend to arise as a result of their failure to provide convincing proof or evidence to justify their delusional claims, and to persuade others. At the same time, the patients held persistently to their delusional claims, and they refused to change their beliefs, and they also resisted such changes. Consequently, the patients become confused or distracted when they failed to convince others about their delusional claims. McCabe (2004) reported that the patients must therefore have recognized others' mental states and intentions, and they were also able to reflect on these mental states. Moreover, the patients recognized that people disagreed with them about their own delusional claims. They felt and often expressed some annoyance. McCabe (2004) argued that this naturalistic study conflicted with previous experimental studies in demonstrating that people with schizophrenia can indeed reflect on their own and others' mental states, intentions, feelings and wishes in their social interactions. Finally, McCabe (2004) concluded that the problem with schizophrenic patients is not ToM deficits or failure in appreciating others' mental states. The problem arises when people with schizophrenia attempt to persuade others about their rejected delusional claims, and despite feeling the negative consequences of these rejections and failures, they do not change their beliefs. Thus, people with schizophrenia have a cognitive bias or confirmation bias. They select the evidence which support their beliefs, and they avoid the evidence to the contrary. This tendency is known to be strong in people with delusional beliefs, and can also appear on JTC tasks (McCabe, 2004).

### **Attentional Bias**

Blackwood et al. (2001) explored a possible explanation of delusions based on attentional bias. They pointed out that people usually attend to important stimuli for example, dangerous and threatening stimuli. People with PD however have an exaggerated and selective tendency to attend to threatening stimuli, and they also preferentially remember and encode threatening events. This tendency might support their delusional beliefs. Blackwood, et al. tested whether patients with acute delusional states have an attention bias. This bias was measured by visual scan path which is defined the direction and duration of individual's gaze when the stimuli are displayed. This experiment involved displays of different views, neutral, threatening, and ambiguous social views. Schizophrenic patients with PD quickly identified the most

threatening stimuli and spent less time compared with schizophrenic patients without PD and normal sample in re-appraising other, potentially threatening elements of the pictures. The appearance of bias thus hinges on a delusional state, and delusions appear in the acute cases owing to the fact that patients in acute states have an attention disorder, in that they show an attentional bias towards the threatening stimuli. This study supports previous reports, which showed that people with PD tend to select the threatening data from the environment, and they have a deficit in reappraising likely threatening stimuli due to a tendency to jump to conclusions.

Attention problems may form the basis of a variety of cognitive and metacognitive deficits. With regard to attention and metacognition models, Bentall, et al., (2001); and Gray & Snowden (2005), cited in Bell et al., (2006), state that the patients with persecutory delusions have a behavioural bias to attend to threatening stimuli: people with acute psychosis have a disruption of latent inhibition, which can also be thought of as an attention problem. Also, impairments in source monitoring -the ability to discriminate between internally and externally generated experiences- were found in patients with both chronic and acute delusions, and this too can be considered as a kind of selective attention deficit.

### **Cognitive neuropsychological explanations**

Brain imaging studies have identified many correlations between abnormal mental states and activity in specific brain regions, leading to theoretical explanations of anomalous states such as delusions as disturbances in neural systems. Research suggesting neuropsychological explanations of delusions has been reviewed by Blackwood et al., (2001). Liddle (1987) and Thompson & Meltzer (1993), cited in Blackwood et al., (2001), carried out correlational imaging studies that measured the relationship between regional cerebral blood flow (rCBF) and reality distortion symptoms – with delusions and hallucination as an independent variable. Thus rCBF approaches can help in identifying brain areas where activity is correlated with the presence of delusional processes. A positron emission tomography (PET) study conducted on chronic schizophrenic patients and untreated schizophrenic patients found that reality distortion was associated with (rCBF) in the left frontal, ventral striatal and temporal areas. There also was a significant association between reality distortion and

left-sided temporal activity (Liddle et al., 1992; Kaplan et al., 1993, cited in Blackwood et al., 2001).

Many functional imaging studies of ToM tasks concur that the medial prefrontal cortex, temporoparietal junction and lateral inferior frontal cortex are salient areas of a mentalizing neural network (Goel et al., 1995; Brunet et al., 2000; and Frith & Frith, 1999; cited in Blackwood et al., 2001). Activity in these areas reflects mental states concerning the self and others. Regarding attentional bias and the selection of threatening events, selective attention manifests as increased activation in the left lateral inferior frontal cortex, ventral striatum and anterior-cingulate areas (Blackwood et al. 2001). In tasks where subjects make attributions that are *not* self-serving, the left precentral gyrus is activated. Maguire, et al., 1998; and Kanwisher, McDermott & Chun; 1997 cited in Blackwood, et al., 2001) indicated this area of the brain is involved with response inhibition. Thus, self-serving attributional bias such as is seen in delusions may be due to lower activity in this area.

Social cognition studies (Adolphs, 1999; Morris et al., 1996; Adolphs, Tranel & Damasio 1998; Adolphs et al., 1997, cited in Blackwood et al., 2001) have revealed that there are many brain areas where activation is related to formation of normal and anomalous social beliefs. Adolphs, Tranel & Damasio (1998); and Adolphs et al., (1997), cited in Blackwood, et al., (2001), showed that the amygdala may have a major role in the encoding and remembering of important emotional social data. This leads to the idea that the extreme activation of the amygdala can lead to the emergence of the attentional bias to threatening stimuli, which in turn is related to PD. Damasio (1994); and Damasio (1996) cited in Blackwood, et al., (2001) showed that the ventromedial prefrontal cortex area might have a salient role in social reasoning and decision making. This likewise leads to the idea that the extreme activation of the ventromedial prefrontal cortex area could lead to a distorted response to social information.

Blackwood, et al., (2001) also reviewed neurocomputational models of delusions. These neurocomputational models are based on the idea that cognitive processes emerge from the computational processing of neural information, for example, important aspects of sensorimotor, experiences, and environment are processed via transformational maps. Spitzer, (1999); and Spitzer (1995) cited in Blackwood, et al., (2001) suggested that the formation of PD might related to the self-schema which may be regarded as a



systematic map which relates data regarding the self-to relationship with others and social events-. This could be modelled as a self-organizing feature map – which is based on the changes observed in cortical and neural network maps according to the important experiences and frequent stimuli, this is an example of neuroplasticity. Laruelle, et al., (1999) cited in Blackwood, et al.,(2001) propose that neuromodulation is responsible for detailed changes in the characteristics of the maps according to the needs of the moment, therefore, the self-schema model could explain acute PD as a result of a neuromodulation disturbance which involves an increase in the dopamine transmission in the self-schema neural map. An increase of the dopamine is noted in schizophrenic patients in the course of disorder. The self-schema map theory highlights that the excessive increase of dopamine may cause excessive processing of annoying social stimuli. Consequently, it can increase the feeling of self-threat, and the person may feel that their self-silence is the only response to a possible threatening environmental stimulus, due to a decrease in the effectiveness of alternative assumptions regarding interpretation of environmental events. This can reinforce the persecutory interpretation of annoying events. Blackwood, et al. (2001) summarise the cognitive and affective processes associated with the formation and maintenance of PD. They also emphasized that this area needs further research to explain how cognitive processes interact with functional of neuroanatomical levels, and that it needs more longitudinal research (Blackwood et al. 2001).

### **Neurologically – inspired theories**

Coltheart, Langdon & McKay (2007) aimed to investigate the factors which lead to monothematic delusions like Capgras delusion. The authors also tried to place Capgras delusion in a schizophrenic context. The previous reports indicated that the monothematic delusions which are based on a single delusional belief or a few beliefs referring to a single theme could be found in a variety of different disorders, such as schizophrenia, head trauma, epilepsy and Alzheimer's disease. Capgras delusion is based on the idea that the spouse or partner is an impostor who just looks like her/his real spouse. The authors also discussed the somatoparaphrenia delusion which means that a person believes that he or she has strange body organs belonging to someone else; or else he or she believes that some part of her or his body has changed. The authors

suggested that people with Capgras delusion have a neuropsychological abnormality; in support of this explanation, it was found that they failed to recognize familiar faces and showed abnormal responses to familiar faces when they have been examined by Skin Conductance Responses (SCRs). Their explanation explains the faulty autonomic responsiveness to familiar faces as a disconnection between an intact face recognition system and an intact autonomic nervous system, and proposes this disconnection as an underlying cause of Capgras delusion. The authors argued that such causes are plausible for some specific delusions like Capgras delusion. However, these reasons may be necessary but they are not sufficient, because some people who have the same neuropsychological deficits did not develop delusions. The authors therefore proposed a two-factor theory to explain the differences between delusional patients and non-delusional patients. The two-factor theory is based on the idea that two abnormalities must be present to produce monothematic delusions. The first abnormality prompts these delusions and is responsible for their content; also this abnormality differs with each type of delusion. The second abnormality refers to the causes which make the belief firm and prevent the person from rejecting that belief despite strong evidence to the contrary. This is assumed to be a component of all subtypes of monothematic delusions, and it may come about as a result of damage to a belief evaluation system associated with the right frontal cortex. Regarding the relationship between Capgras delusion and schizophrenia, the authors pointed out that some people with schizophrenia showed Capgras delusion. Moreover, they argued that the cognitive and neuropsychological causes were similar in schizophrenia and Capgras delusion. Finally, the authors suggested that their own 2- deficit theory of monothematic delusions, which they related to the 2- factor theory of schizophrenia, could aid in treatment of delusions. Furthermore, they believed that people with monothematic delusions have a defective not a destroyed belief evaluation system or they have impairment in their belief evaluation system. Also this analysis suggests that patients with these delusions would be able to produce a suitable response if they are provided with sufficiently obvious proof or evidence. The authors stated that this approach is essentially that of cognitive behavioural therapy, and this treatment might be effective in these delusional beliefs even if these delusions come in a psychotic context (Coltheart, et al. 2007).

To conclude, the formation of delusions implies a cognitive or metacognitive deficit, and much research has been devoted to identifying the mechanism of this deficit.

Disorders of social perception, source monitoring, theory of mind, semantic memory and reasoning, and evaluation of the social environment have all been implicated. A general theme seems to be that the affective content of delusional states is important in affecting cognitive biases and faulty cognition.

### **The effects of content of delusions on the patient's life**

Delusions, as false personal beliefs, can affect a patient's behaviour, emotions and actions. Some evidence suggests that most of the violent behaviour which appears in mental patients is not random; it is initiated by psychotic symptoms like delusions and hallucinations (Junggier, 1996). Some recent studies (DePauw & Szulecka, 1988; and Mullen, 1997; cited in Mullen, Pathe & Purcell, 2001) have confirmed an association between mental illness and violence but the nature of this relationship cannot be defined yet. Moreover, the results of these studies indicated that the themes of delusions and hallucinations often play a major role in generating affect in psychotic patients and in prompting them to violent actions. Also, these studies identified that such violent behaviour is not confined to patients who may become at risk to commit that violence, but it extends to include the people who are a target for these possible violent ideas.

Cheung, Schweitzer, Crowley & Tuckwell (1997) have studied the phenomenology of hallucinations and delusions with relationship to violent behaviour in schizophrenic patients. Their sample was 62 patients divided into two groups, 31 patients who were defined as a violent group and 31 patients in a non-violent group. Patients in both groups were matched in the age of first admission, and gender. The sample was drawn from mental hospitals in Victoria district, Australia, by using a comprehensive survey over 8 weeks of established individual violence observation. Patients who had two or more incidents of physical violence, or aggression against people or property during the survey, were recruited for this experiment. Further assessment was applied by reviewing patients' medical records and interviewing patients using a structured interview based on DSM-III-R. Also, the Positive and Negative Syndromes Scales (PANSS) was used to assess psychotic symptoms. Patients with delusions and hallucinations were asked questions regarding the content of their beliefs by using the Maudsley Assessment of Delusions Scale (MADS). The hallucinations were assessed using the Mental Health Research Institute Unusual Perceptions Schedule (MHUPS). The findings showed that

the violent behaviours in schizophrenic patients correlated with the negative emotions (anger, anxiety and sadness) that are generated by auditory hallucinations. In contrast, absence of violent behaviour was associated with the positive emotions which derive from hallucinations. Also, the results found that aggressive behaviour in people with schizophrenia was related with the negative emotions which were produced by delusions. Specifically, persecutory delusions correlated with violent behaviour, and grandiose delusions were more common among the non-violent group. Overall, the authors emphasised that content of delusions and hallucinations had a significant positive or negative correlation with violence, depending on the positive or negative emotions which may derive from them. The results agreed with Junggier (1996) in that delusional themes often influence the psychotic patient's behaviour and may incite them to violent behaviour. Furthermore, persecutory delusions were often associated with suicidal behaviour, whereas a combination of persecutory and grandiose delusions may also lead to other forms of violent behaviour.

Appelbaum, Robbins & Roth (1999) investigated the relationships between types of delusions adopting a dimensional approach to delusions. 1,136 actual psychotic hospitalized patients were interviewed to identify whether they were "definitely or possibly" delusional using a questionnaire derived from the diagnostic interview schedule. Later, deluded patients were given the McArthur-Mudely Delusions Assessment Schedule (MMDAS). Patients were also interviewed using the check list of DSM-III-R to classify patients according to their delusions type and diagnoses. The results showed that a total of 328 (29%) were recorded as definitely or possibly delusional. The patients with schizophrenia appeared to have more intensive delusions with comparison to other psychotic categories. Regarding type of delusions, the result showed that generally, grandiose and religious delusions were held with strong conviction. On the other hand, the persecutory delusions had the greatest negative effects on patient's life, and held patients to act consistently with the negative feelings they generate. The authors concluded that research confirms the relationship between violence and delusions, especially, with persecutory delusions when patients' delusional beliefs may be experienced as a threat their life, then they may act aggressively according to that threatening content.

Some evidence showed that a relatively high proportion of murderer victims suffered from schizophrenia. The increases in the possibility of the risk of becoming a victim of

killing or other violent crimes may depend on the content of positive symptoms, delusions and hallucinations (Gupta, Black, Arndt, Hubbard & Andreasen, 1998).

Concerning the relationship between suicide attempts and content of delusions, Miller & Chabrier (1987-1988) aimed to answer the essential question of whether the content and type of delusions is associated with a high risk of dangerous suicide attempts. They reviewed the medical records of 45 in-patients at psychiatric clinic centre in America, who were diagnosed with unipolar or major depression according to DSM-III-R criteria. Patients who had a history of serious suicide attempts were chosen (27% males and 73% females). The patients were varied in their ethnicity, socio-economic backgrounds. Delusions were classified in this study into three categories: somatic delusions including delusions of bodily disease or damage, delusions of guilt, sinfulness, worthless and deserved punishment and finally, delusions of persecution. The results of this review showed that some patients had more than one type of delusions. The serious suicide attempts were specified as follows: injury as a result of gunshot, a hanging, jumping from a roof or a window, a knife wound to the chest or of abdomen, an overdose or poisoning leading to hospitalization in intensive care, and a group of different actions related to possibility of death. The findings of the first study indicated that depressive patients with persecutory delusions were more likely to make serious suicide attempts compared with patients with other single delusions, or any other combinations of delusions except delusions of guilt, persecution and sinfulness. The results of second study showed that depressive patients with somatic delusions were less likely than patients with delusions of persecution and guilt to make serious suicide attempts, in that delusions of guilt and persecution put the self in the centre of conflict and perceived risk of being killed may push the patient to suicide. The authors concluded that people with depression and with delusions of persecution and guilt were more dangerous to themselves than those with any other delusion.

## **Chapter 2: influence of cultural context and demographic variables effects on psychotic symptoms**

This chapter discusses the influences of cultural context and demographic variables such as sex differences on psychotic symptoms like delusions (the current study field), reviewing both cross-cultural studies and studies of sub-cultural differences within national or cultural groups. Some studies have shown that the subtypes of schizophrenia may differ inter-culturally. Also, an important reason to study the social context and functions of some psychotic symptoms such as delusions and hallucinations, and the way those symptoms are manifested rather than the presence or absence of particular symptoms, is that there are great differences between societies in beliefs, and different societies distinguish between normal and bizarre beliefs according to cultural norms (Murphy, 1985). Accordingly, this chapter will conclude with a sociocultural and historical overview of the Kingdom of Saudi Arabia in general and of three different parts of Saudi Arabia (Riyadh, Jeddah and the Eastern Province) in particular. This will introduce the present study areas, and provide both an overall view of some social and cultural aspects of Saudi society and some comparisons between the three areas in order to identify similarities and differences between the study areas which may aid later in interpreting the results.

### **The effects of cultural and social factors on mental illness**

Epidemiological studies that classify disease distribution have been combined with cross-cultural studies to investigate the effects of cultural and social variables in the onset and incidence of schizophrenia (Cockerban, 2000). It is found that there are significant variations between societies in the symptom pattern, and in the average occurrence and prevalence of disorders (Tseng, 2003).

Culture can be defined as follows: "culture refers to the unique behaviour and life style shared by a group of people, and includes customs, habits, beliefs, and values that shape emotions, behaviour and life pattern" (Tseng, 2003. p1).

Socio-cultural and cultural psychiatry studies aim to assess the influence of ethnic and cultural elements and factors on the individual's behaviour and emotions among either

across cultures or across sub-cultures, and specifically, to assess the relationship between cultural factors and the generation of mental illness. These studies focus on the person's behaviour and personality as result of combinations of social process (e.g. family role, socialization process, marital system and life style.). They seek to enhance clinical therapy and knowledge by understanding the effect of social and cultural roles on patients' lives and through their families (Cockerban, 2000; Tseng, 2003).

Some cross-cultural studies have focused on social class, because they believe that social class may influence emerging cultural differences between sub-groups within the same cultural context. In other words, each class has specific values, life style, customs and traditions. Therefore, social class might also determine the beliefs of the people who belong to it (Brown & Harris, 1993).

Every culture has effects on individuals and groups by means of fundamental implicit concepts regarding ideal personality or acceptable personality, which are based on social norms. This means that culture can assist in the formatting of an individual's personality by its norms and values. Consequently, a majority of people in one culture may aspire to become the ideal person as defined by their culture's ideology, according to common socio-cultural criteria (Tseng, 2003). Cultural psychiatry studies aim to pay great attention to cultural effects on patient personalities, and the reflections of cultural stresses, norms and values on a patient's symptoms (Pfiffer, 1985). Cultural and social factors have a powerful and strong effect on all psychiatric disorders. It might be supposed that the effects of culture appear most distinctly among neurotic disorders. However, the effect of culture also significantly appears in fundamental psychotic illness (Jilek, 2001). The content of psychotic symptoms (e.g. delusions and hallucinations) can clearly reflect and identify the problems and conflicts which may exist in a specific culture (Pfiffer, 1985).

Furthermore, socio-cultural studies have shown that culture has major effects on the course and prognosis or outcome of mental illness. Comparative studies on the prognosis of schizophrenia between Western societies and non-Western societies showed that prognosis of Western schizophrenic patients was often negative compared with non-Western patients. These studies indicated that this difference may arise from the nature of Western cultures, and may be a reflection of the Western family system and a pattern which is composed of nuclear families. Therefore, patients lack a wider

network of social support, and may also lack support from within the nuclear family (Murphy, 1985; Jilek, 2001).

Some socio-cultural studies have focused on the influence of differences in ethnicity and gender. These studies emphasised the role of differences in ethnic backgrounds on psychotic and schizophrenic symptoms whether across-cultures or within the same culture (Jilek, 2001). Earlier reports (between 1956 and 1970) showed that women show a higher incidence of both psychotic and neurotic mental illness. However, men have a higher incidence of brain syndromes and disorganized personality disorders. These reports tended to explain findings regarding sex differences in terms of the effects of social life and the distribution of social roles between males and females (Murphy, 1985). On the other hand, these reports showed that the different rates of mental illness between male and female may be affected by mediating or moderating factors such as age and marital status. Some comparative studies between girls and boys aged between 6 and 19 showed that males are prone to higher rates of mental illness compared with females in childhood. Also, the studies on marital status showed that generally unmarried males have higher rates of mental illness; on the other hand, married females have a higher rate of psychiatric disorders compared with married males (Alissa, 1985). Thus, when studying differences in psychiatric disorders between societies, it is important to take into account both the possible demographic differences (e.g. in gender, marital and socioeconomic status) and the cultural meanings associated with those differences.

### **The effects of cultural and social factors on schizophrenia symptoms**

Some studies of inter-cultural differences in schizophrenia address the question of whether the pattern of symptoms varies between cultural groups. For example, Cetingok, Chu & Park (1990) investigated sex differences in symptomatology of schizophrenic patients in a cross-cultural study. Their sample consisted of a total of 369 patients who were diagnosed as schizophrenic based on DSM-III-R criteria. 275 were from United States of America (USA) and were from different ethnic backgrounds (Black and Caucasian) and 94 patients were from Turkey. The patients and their families were interviewed by a medical team with a structured interview schedule including specific questions about the patient's life and history. They also conducted the



Brief Psychiatric Rating Scale (BPRS) and Litl-Keskiner Psychopathological Rating Scale to assess the schizophrenic symptoms. The results showed that culture did not have an effect on sex differences, age at onset, age on the first admission, or age at the first therapy. Generally, both Turkish and American males were younger than females in age at onset, age at first admission, age at first diagnoses and age at the first therapy attempt. Males also, tended to be single or unmarried.

However, the effect of culture appeared in relation to marital status in that the proportion of single American females was double that of single Turkish females, and also, the proportion of married Turkish females was double that of married American females. The percentage of unmarried American (separated and divorced) males also was double of unmarried Turkish males. In terms of their symptoms, both Turkish males and females had more negative symptoms (e.g. flatness, ambivalence and inappropriate behaviour). They also tended to have more flight of ideas and thought paucity than both American males and females. Irrelevant thoughts and stereotyped behaviour were more severe or intensive among Turkish males and American females. Symptoms were also influenced by culture according to marital status, in that single Turkish females were higher in the intensity of muteness. Married Turkish females and unmarried Turkish males were more disoriented compared with other groups. The results emphasised that there were cultural differences in relation to sex and age in schizophrenia. The results thus showed that the influence of sex and marital status on the frequency of positive and negative symptoms is itself dependent on the cultural context.

Even when there are few quantitative differences, there may be differences in the qualitative nature of the symptoms expressed. Maslowski, Jansen, Ransburg & Mthoko (1998) evaluated the differences in schizophrenic symptoms among patients from two different ethnic groups in South Africa. A total of 113 schizophrenic patients (68 male and 55 female) were studied, consisting of 57 coloured patients from Cape Town and 56 black patients from Windhoek. Maslowski, et al. used the Present State Examination (PSE) and Landmark's Manual for the assessment of schizophrenia symptoms. The results showed that in both groups, frequencies of many schizophrenic symptoms (delusions of persecution, religious delusions, social withdrawal, thoughts spoken aloud and self-neglect) were equal. The coloured group experienced significantly more depression symptoms and primary delusions, whereas the black group showed

significant more persecutory delusions and paranormal or supernatural ideas (e.g. magical ideas and influence by witches). Moreover, the content of delusions and hallucinations revealed marked symptom differences between the two groups which reflected cultural differences. The content of auditory hallucinations among the black group showed the influence of traditional beliefs, whereas content of hallucinations in the coloured group focused on voice commentary from non-traditional sources e.g. hearing the voice of the President of South Africa. Content of delusions also reflected the cultural differences. Content of persecutory delusions in coloured patients was about fear of black tribes, whereas the content of black patients was about fears of coloured and white people. The content of grandiose delusions in both groups was about having power, such as to be police officer or famous politician. Other contents of delusions found in both groups were somatic impairments, being a God or saint and loss of part of the body. The conclusion was drawn that differences in the amount and severity of symptoms as a result of different ethnic backgrounds were not quantitatively significant. However, most differences between ethnic groups were qualitative; that is, they concerned the cultural differences evident in the content of delusions and hallucinations.

Similar conclusions were reached by Yamada et al. (2006) who assessed the influence of ethnic differences on the content of psychiatric symptoms in adult patients in the USA. A total of 133 patients were divided into three ethnic groups, 31 African-American, 50 Latinos and 52 Euro- Americans who were all diagnosed with acute psychiatric disorders. A structured check list of symptoms, a semi-structured clinical interview, and a rating scale of psychiatric symptoms were administered to elicit the content of psychiatric symptoms. The findings showed that 122 patients experienced one or more types of delusions. Grandiose delusions were more prevalent among Euro-American group than other groups. Persecutory delusions with general paranoid content were more common in both African-American and Euro-American groups. The most frequent themes of persecution (fears of harm, death and injury) were found in the Latino group. Latinos and Euro-Americans had more themes concerning affairs of family and relatives than African-Americans. In addition, the results showed that the Latino group reflected more culture-specific aspects in their content compared with other groups. The authors concluded that a good understanding of the influence of differences in ethnicity on content of psychiatric symptoms may help in improving

effective therapy of psychosis. This study also found that the main cultural differences concerned delusional content rather than psychiatric symptoms generally.

### **The cultural influence on content of delusions**

Differences in the forms of psychiatric symptoms are manifest from one culture to another, and furthermore, what can appear as unusual behaviour in one culture may appear as appropriate behaviour in the other. Therefore, the diagnostic manuals of psychiatric disorders have increasingly emphasised the importance of culture and social context, and the need to take them into consideration during the process of diagnosis (APA, 1994). For example, certain cultures encourage specific kinds of beliefs like ideas of reference, and deal with these ideas as normal beliefs according to their culture's norms (Murphy, 1985).

The content of delusions evidently differs between cultures and across historical periods; it was and still is a mirror of culture. For example, according to Maher and Spitzer (1993) delusions of evil were more common in Europe before the 20<sup>th</sup> century. Nowadays, technological themes have replaced those of the earlier times. The frequency of technological themes in delusions has increased from 12% in 1900 to 31% in 1960 which reflects a major change in content attributable to the interaction between content of delusions and its cultural context (Maher & Spitzer, 1993). Schizophrenic patients thus appear to change in the content of their delusions as a result of cultural and social impacts. However, Jilek (2001) concluded that magical ideas and supernatural delusions remain available and firmly sustained in both Western and non Western societies. The dominant sources of influence on the content of delusion have nevertheless changed somewhat away from traditional magical and supernatural sources towards the "magic of technology" that is, sources of influence like radio, computers and lasers. The content of religious delusions and delusion of reference has changed as well from God, Napoleon and Saints to secret agents and political organizations. The relative frequency of some types of delusions has also changed over the time, for example religious delusions, and delusions of persecution, in the light of changes in cultural context (Sims, 1995).

Skodar, Dernovsek & Kocmur (2008) have investigated the influence of social, political, scientific and technical changes on content of delusions in people with schizophrenia over more than a century (1881-2000) in Slovenia. From a total of 120

cases that were recorded on first admission to hospital as schizophrenic in the relevant period, the records were chosen randomly of 10 cases (5 male and 5 female) to represent each 10 year interval. A special schedule was designed to measure the frequency of delusions and their themes during the different periods. The results showed that firstly, there was a marked increase in two types of delusional contents (persecution and self-reference) after the change of political regime in the period 1940-2000 in Slovenia. Secondly, after the spread of technical development (radio and television) in the period of 1920s-1950s there were significant increases in delusions of outside influence and control based on technical themes. Interestingly, there was a significant increase in persecutory delusions over the time regardless of civil and social developments. The religious and magical thoughts were decreasing throughout the period 1881-1980, however, they returned to increase in the period 1981-2000. The results confirmed that changes over the course of history in philosophical, religious, moral, socio-political, scientific, and technical developments have apparent influences on content and frequencies of delusions in schizophrenic patients. These results emphasise the importance of cultural impacts on symptoms and psychopathology.

Drinnan and Lavender (2006) examined religious delusions in relationship to the prevalent religious beliefs in patients' lives. They also analyzed the content qualitatively in order to assess the influence of those beliefs. The sample was composed of seven participants who experienced religious delusions, and came from different religious backgrounds. The patients were asked about their religious history; their families' religious backgrounds; and their religious behaviours. Semi-structured interviews were conducted, and in addition self-report was used to elicit the religious experiences over time (childhood; adolescence; and specific life-events; psychological problems and difficulties). The results showed that most of the patients suffered from social and psychological difficulties in one or more of their life periods, and this was influential in generating the religious beliefs, and later in developing religious delusions and mental problems. These difficulties and problems were categorized into family difficulties, relationship difficulties and life events. Family difficulties reflected that most of patients had experienced a major conflict between their parents such as divorce on one hand, and between parent and patient on the other hand; for example rejection. Moreover, the religious status of patients' parents showed that in most cases either one of their parents or both were extremely religious, and insistent on observance of

religious activities like prayer or an attendance of religious meetings. Relationships were described by most of patients as negative and this led to an increase in their feeling of rejection. Life events that were triggers of psychological difficulties obviously correlated with both family and relationship experiences, and they also related to the problems in different life situations such as in work and study.

The results showed also that the combination of these factors was crucial for the construction of personal-identity and religious-identity. Furthermore, the religious-identity was shaped over time either by a family background which focused on religious behaviours, or by patients' responses to the problems and difficulties which met them in different life periods. In addition, the patients coped with the help of religion to preserve their strong faith throughout their psychological problem periods; in other words, the religion gave them the power to overcome their difficulties. Some patients thereafter depended on religious-identity as an attributional style to give meaning to their unusual experiences and in order to understand and explain their ambiguous ideas. The conclusion of Drinnan and Lavender's study was that the interaction process between religious background and delusional beliefs highlighted that the effects of early experiences and familial factors in childhood may lead to the emergence both of religious beliefs and of religious delusions. Also, the results showed the important role of religious delusions in patients' lives in giving sense to their unusual experiences; and how patients may come to define their identity according to these delusions (Drinnan & Lavender, 2006).

Sher (1997, 2000) studied the impact of major political events and social matters on content of delusions by analysis of media content and patient interviews. The results showed that patients with delusions can understand current social and political events as in some ambiguous way congruent with their delusional beliefs and that events had clear effects on their delusional content. For instance, in summer 1994, the American mass media announced that North Korea had been developing nuclear weapons and subsequently some patients reported in their interviews that they have fears of a Korean attack. In the second study the author classified events into two groups, firstly, stressful events that may have an effect on anyone like earthquakes and wars. Secondly, general events in the mass media, which are not necessarily stressful events like, elections. The result showed that social and political events, as well as scientific and technical developments may change the content of delusions and affect patients' behaviour. The

author concluded that current social and political events were clearly manifested in the content of patients' delusions during the last 20 years. It was argued that clinicians should have a clinical sensitivity for the current social and political events during the diagnostic process of delusions.

### **Studies on variation in the content of delusions across culture**

Most published cross-cultural studies of the content of delusions concentrate on a comparison between two, or at the most three different cultures.

Kim et al. (1993, 2001 and 2006) aimed in their three studies to identify the features of differences in content of delusions between three cultural groups: Korean; Korean-Chinese; and Chinese. They also attempted to understand whether the social and cultural situations for each group may affect their content of delusions or cause differences between them. The first study was conducted on 771 patients who were diagnosed as schizophrenic according to DSM-III-R criteria. They were allocated into three groups according to their ethnic backgrounds: 370 Koreans; 225 Korean-Chinese; and 176 Chinese. The method used was repeated interview, and the delusions were classified into nine categories: delusions of persecution, grandeur, control, jealousy, reference, guilt, poverty, religious delusions, somatic delusions and nihilistic delusions. The content analysis identified 22 themes (e.g. family, love affairs, supernatural power, spy, political, somatic, extracting brain and poison). The results showed that delusions of grandeur and persecution and jealousy were more frequently found in Korean patients, were the least evident in Chinese patients and were intermediate in Korean-Chinese patients. Delusions of guilt were also more common in Korean patients compared with other groups. No differences between groups in other types of delusions were found.

Regarding the content of delusions, 17 themes differed significantly in their frequencies among the three groups. The family themes were more common and prevalent in Korean patients, least in Chinese sample, and intermediate in Korean-Chinese group. Having a large number of siblings and blood-relatives was more common among Korean-Chinese group than both Korean and Chinese patients. Content about family members being killed was more frequently found in the Chinese group. The Korean

sample had a high rate of content about love affairs, religious, supernatural power and possession themes. Korean-Chinese had more frequent content concerning political affairs, being a member of political and royal families and family affairs. Chinese patients had more frequent content of blood sucking and extraction of brain or viscera. They also differed in the nature of persecution and in persecutor sources. In the Korean-Chinese group the persecution concentrated on secret agents, police and army, while Korean patients were concerned about spy, supernatural and religious leaders. The Chinese sample was more frequently concerned with ghosts, teachers and medical teams as persecutors than the other groups. The second study was conducted on 650 schizophrenic patients, who comprised 240 Korean patients, 255 Chinese patients and 155 Korean-Chinese patients. The method used was a structured interview. The results were consistent with the first study in that delusions of grandeur, guilt and jealousy were more common among Korean sample compared with other groups.

No group differences were found in the frequency of the other main types of delusions, and the findings showed fewer differences concerning the content of delusions compared with the first study. Korean patients reported more frequent themes of love, sex, spy, somatic and religion. The most common content in Korean-Chinese was about religion, the supernatural, possession, money and mass media. The predominant themes among Chinese patients were poison and being a member of the royal family. The third study was conducted on 396 schizophrenic patients, of whom 182 were Chinese and Korean-Chinese patients and 214 were Korean patients. The results showed that patients did not differ in type of hallucinations but they were different in their content of hallucinations. The authors concluded that there is a similarity between content of delusions and hallucinations: if the cultural and social factors affect the content of delusions, they also affect content of hallucinations. The general conclusion of these three studies is that the differences in content of delusions between cultural groups reflect the differences in socio-cultural and political situations existing in each group. Furthermore, the content of delusions was most sensitive to those socio-cultural and political factors which reflect the reality of social and political life in each area.

Kent & Wahass (1996) conducted a cross-cultural study comparing Saudi Arabian patients with United Kingdom patients in content of auditory hallucinations. The sample consisted of 75 patients who were diagnosed as schizophrenic according to ICD-10 criteria, of whom 40 were Saudi patients and 35 British patients. All were drawn from

in-patient and out-patient departments of mental institutions in Riyadh in Saudi Arabia and Sheffield in the UK. The methods used were structured interview, and self-report questionnaire about content of hallucinations. The data analysis focuses on the gender of voice, frequency, the intensity, and the effects of the auditory hallucinations on patient's emotions and life. The results showed that few differences were found between the two groups. The characteristics of voice hallucinations were similar in both groups: the voice could be male, female or both, and known or unknown to the patient. There were no differences between groups in the effects of hallucinations on the patient's life, but regarding clarity of voice hearing, the UK patients reported a clearly audible voice more often than Saudi patients. In both groups, all patients experienced hearing a second-person voice, that is, a voice addressing the hearer. The content of hallucinations in Saudi patients was predominantly about religious and supernatural themes, whereas the UK patients reported higher frequencies of educational and "running commentary" themes. The authors concluded that content of hallucinations may reflect differences between cultures. Regarding the prevalence of religious content among Saudi patients, this reflects the major impacts of religious concerns in one of the most religious countries in the Islamic world. On the other hand, the UK patients' hallucinations reflected social and educational affairs, which again refer to the most important aspects in their culture.

Stompe et al. (1999) compared the content of delusions between Austrian patients and Pakistani patients diagnosed with schizophrenia. Their sample consisted of a total of 234 patients who were allocated to two groups, 126 Austrian and 108 Pakistani, all of whom were diagnosed as schizophrenic according to DSM-III-R criteria. The instruments used were Schedule for Affective Disorders and Schizophrenia: life time (SADS-L) and a half-open questionnaire to elicit content of delusions. The demographic findings regarding marital status showed that more Pakistani patients especially females remained married compared with Austrian patients. Also, Pakistani patients were likely to maintain integrated with their family, whereas approximately half of Austrian patients live alone. Persecutory delusions were common in both groups. Grandiose delusions, delusions of guilt and religious delusions were more prevalent in Austrian group. Significant differences were also found in the nature of persecution and the type of persecutor, although both groups reported that they had a fear of poison and physical or brain injury. Pakistani patients indentified specific fears of their neighbours and



relatives as persecutors, while Austrian patients did not define their persecutors. The authors emphasised that, as in most cross-cultural studies, persecutory delusions were noted as the most common theme of delusions. They also reported that sex differences appeared to interact with cultural differences in determining the prevalence and content of delusions among males and females in both groups. Pakistani female patients reported that the persecutor always was a member of their family and relative, which may reflect the strong social ties in Pakistani society. Overall, cultural and religious factors had a distinct influence on formation and shaping of content of delusions.

Suhail and Cochrane (2002) assessed the effects of culture and current environment on the content of delusions and hallucinations in a cross-cultural study comparing British and Pakistani patients. The sample consisted of 201 psychiatric patients who were diagnosed with schizophrenia schizo-affective disorder or paranoid disorder, and consisting of three groups, 98 Pakistani patients in Pakistan, 53 Pakistani patients in Britain and 50 white British patients. The content of delusions and hallucinations was elicited by the Present State Examination (PSE) and by reviewing medical records and reports of patients. Patients in both Pakistani groups (British Pakistani and Pakistan Pakistani) were more often married than white British patients. Delusions of control and themes of thought broadcasting thought insertion and being controlled were more frequently found in the white British group compared with the Pakistani groups. Delusions of reference and delusional content concerning spying, observation of others comments, T.V. or radio talk about patient and being observed were more common in both British groups (white British and British Pakistani). This result revealed that both British groups were equal in the frequency of delusions of reference and in reference themes. Persecutory delusions were common in all groups; however, differences between groups were found in the content of persecutory delusions in that the Pakistan Pakistani group had fear of harm by their relatives. These results were consistent with previous reports. Grandiose and religious delusions were found in all groups, but the content of grandiose and religious delusions in the Pakistan Pakistani group was about being famous or being God or Prophet Mohammed, whereas these delusions were less common in the other two groups. Generally, The British Pakistani and white British tended to be more similar to each other than to the Pakistan Pakistani group. The results about the content of hallucinations were consistent with those on the content of delusions. The results revealed that content of delusions and hallucinations may reflect

both the place and time that person lives in, and the surrounding milieu of patients. The findings illustrate the major effect of the current environment in the formation and pathology of delusions, in addition to the great importance of religious and cultural background.

### **Studies on content of delusions within cultures and subcultures**

Studies will be grouped according to the place of research:

#### **1: Studies in the UK**

Lucas, Sainsbury & Collins (1962) aimed to evaluate the influence of social, familial, cultural and demographic variables (age and sex) on content of delusions among schizophrenic patients in England. A total of 405 schizophrenic patients, 196 male and 209 female were studied. Delusion descriptions were elicited by reviewing the daily notes and reports from in-patients sections, and by asking the clinical team about the delusions of their patients. Also, the authors interviewed patients to obtain first-hand accounts of their delusions. Delusions were classified as religious and supernatural, grandiose, paranoid, sexual, somatic, delusions of guilt and mixed delusions. Most of the patients had more than one type of delusion. Social and familial data were obtained by reviewing social reports of patients and records, also, a comprehensive survey was sent to patients' relatives including place of birth, education history, religion, and death and separation events in family. The percentages of delusions in the sample were respectively: paranoid delusions, 71%; grandiose and sexual, 44%; religious, 21%; somatic, 20%; delusions of guilt, 12%; and mixed delusions, 8%. Paranoid delusions were found to be more prevalent in schizophrenic patients with late onset. The findings also showed that females were more often deluded (71%) than males (65%). Also, the number of delusions reported among females were higher (381) than the number of delusions reported among males (254). In both males and females paranoid delusions were equally common, sexual delusions were more frequent in females (55%) compared with males (30%), while delusions of guilt were more common in males (16%) than females (9%). The unusual or bizarre content was common in the female sample. 35% of deluded patients were ever-married compared with 13% non-deluded patients. Paranoid delusions were more common in ever-married than in single patients, and the

authors indicated that the high percentage of paranoid delusions within ever-married patients may be due to the later age of onset in this group compared with the single group, whilst religious delusions and delusions of guilt were more frequently found in the single group. Delusions of guilt were more marked among single males than married females. Religious, grandiose delusions and delusions of guilt were more common in upper class patients than in lower, whereas delusions of guilt more commonly occurred in lower class patients. Patients with higher educational levels experienced distinct religious and grandiose delusions more frequently than patients in the lower educational levels. Thus, marital status, educational level, class and sex all had influences on the frequency of delusions of different types. The analysis of content of delusions showed that the most common themes of grandiose delusions were about having a special power or ability, wealth and authority, and male patients reported content about power and authority more frequently than females. The content of paranoid delusions sometimes focused on the identity of persecutors, but most of the patients defined their persecutors as people without names, whereas others identified social groups and organisations such as colleges, neighbours and police. The results illustrated the nature of the interaction between social factors and the pattern of content of delusions, and indicated that these variables may also affect both the form and content of other psychiatric symptoms. The authors concluded that cross-cultural and sub-cultural research has become a useful way to investigate the influence of such factors on mental illness, thereby enhancing the therapeutic process.

Ndetei and Vadher (1985) examined the influence of differences of cultural backgrounds in the UK on the content of grandiose delusions. Content of delusions was evaluated among 593 psychiatric in-patients who came from various ethnic backgrounds (English, black African, Jamaican, English speaking non-European, Indian; Middle Eastern; Far Eastern; and Caribbean). Data was collected by analysing all available information from case notes regarding grandiose delusions according to the diagnostic manual of Wing et al. (1974). The results showed that differences in cultural backgrounds did not appear to cause any significant differences in content of grandiose delusions. Religious content was the most common content in all cultural groups in general, and in black African and Jamaican groups in particular. However grandiose delusions concerning wealth, royalty, identity and ability were less frequently found among all groups. The authors indicated that religious content had a special position in

African and Jamaican groups which related to their specific cultural backgrounds. This refers to their firmly held cultural beliefs about God, demons, ghosts and spirits and their dominant influence on an individual's health and illness. However, the similarity in the results between groups could not be explained.

## **2: Studies in the USA**

Cothran and Harvey (1986) evaluated the influence of religious orientations, beliefs and demographic variables on delusional content among psychiatric patients in the USA diagnosed with schizophrenia or mania. A total of 51 patients were allocated to three groups according to the existence or otherwise of delusions as assessed with the Affective Disorders Schedule (SADS). The first group was non-deluded patients (9 mania and 8 schizophrenia). The second group was deluded patients without religious content (11 mania and 6 schizophrenia). The third group was deluded patients with religious content (13 mania and 4 schizophrenia). In addition, a control group consisted of 53 persons. The measures used were a personal values questionnaire to measure religious interests and activates, also a self-report scale which was conducted on patient groups. The results showed that delusions with religious content were equally represented across patients groups, despite a prediction from Bleuler (1950) cited in Cothran and Harvey (1986) that religious delusions arise from affective disturbances. However, the findings within the patients groups showed that deluded patients with religious content had high religious values, but they reported less faith and support for those religious beliefs compared with non-deluded patients and control groups, thus the relationship between religious background and religious delusions is complex. Regarding demographic variables and their relationship with content of delusions, they were not significant particularly with regards to sexual and doctrine or credo. The authors concluded that the results did not show any differences in demographic factors but this may be due to the limitations of their own study.

Weisman, et al., (2000) compared ten psychotic symptoms, assessed using semi-structured interview (PSE) and Psychiatric Assessment Scale (PAS) in a sample of 116 schizophrenic patients drawn from out-patients of public mental health services

agencies in Los Angeles. The sample comprised 63 Anglo-Americans and 53 Mexican-Americans who were diagnosed as schizophrenic based on DSM-IV criteria. The results showed that Mexican-American patients experienced fewer symptom types compared with Anglo-American patients. Anglo-American patients tended to experience significantly more somatic symptoms of nervous tension than Mexican-American patients. However, Mexican-American patients had higher rates of hypochondria symptoms in general. The findings about delusions and hallucinations showed that there were no significant differences between groups in frequency of auditory hallucinations, persecutory delusions or religious delusions. However, Anglo-American patients had more scientific and supernatural content in their delusions than Mexican-American patients. Moreover, the Anglo-American group had more negative symptoms (self-neglect and blunted affect), with comparison to Mexican-American group. The authors emphasised that their results corresponded with cultural assumptions about the two groups, and concluded that social and cultural factors can affect psychiatric symptoms and may shape them.

Whaley & Hall (2009) investigated the relationship between cultural background and expression of psychotic symptoms particularly delusions and hallucinations among African-American patients in the USA. A total of 156 psychotic patients (69% male and 31% female) with delusions and hallucinations were studied. The researchers used a structured-interview based on DSM-IV. Delusions were classified into the following categories: reference; persecutory; grandiose; somatic; religious; being controlled; broadcast; bizarre; and other. Hallucinations were also categorized as: auditory; visual; tactile; and other. In order to identify the effects of cultural background on delusions and hallucinations a content analysis was made. The analysis showed two types of race-related content, the first was general racial content, and the second was racism-related content. The results showed generally that both types of race-related content reflected patients' racial problems and experience of discrimination. The cultural effects appeared most distinctly in persecutory delusions, especially, race-related themes, while religious content manifested in other types of delusions and hallucinations. Moreover, the race-related content was associated more with delusions than with hallucinations. Whaley and Hall concluded that their results shed some light on the cultural influences on the expression of psychotic symptoms, and they recommended that observational scales are important to elicit such data in combination with self-report measures.

### **3: Studies in Saudi Arabia**

Zarroug (1975) measured the frequency of visual hallucinations in schizophrenia in Saudi patients. The sample consisted of 69 schizophrenic patients, 52 male and 17 female. Interviews were conducted to elicit reports of visual hallucinations. The results showed that 62% of patients had visual hallucinations. The analysis of content of visual hallucinations revealed that among 29 male patients reported that the object of their hallucinations to be within their ordinary visual range, three reported that the location of their visual hallucinations was centred on their bodies, and three mentioned that locations were somewhere near, or in far place in town out of their sensory range. Females reported that the place of their visual hallucinations were either in their near sensory range or beyond it. The types of content identified in these visual hallucinations were: bizarre, supernatural spirit (Jinni, half human), religious, and family members. Verbal activities in response to visual hallucinations were common among patients. The author noted that visual hallucinations in schizophrenic patients were rare, according to the literature. However, they were common in Saudi Arabia, for unclear reasons, which may reflect the role of culture in this matter. The author also emphasised the important need for more investigation due to the rapid socio-economic developments in this part of the world, and the increases of immigration and increased contact with people from different ethnic and cultural backgrounds. Thus, such factors may play a great role in generating social stresses which they argue has led to an increase the rate of schizophrenia in Saudi Arabia, where approximately 85% of psychiatric in-patients were schizophrenic.

Qureshi, et al., (2001) presented a case study of seven Saudi females who had delusions of pregnancy, five of whom had a diagnosis of schizophrenia and two a diagnosis of mood disorder. Cases were aged between 29 and 56 years old, they were illiterate, and their marital status was either unmarried (single or divorced), or married. All the women reported delusions of pregnancy and experienced the false physical changes corresponding to their false beliefs. Some of them experienced more than one type of delusion, like delusions of nihilism, persecutory delusions and delusions of thought insertion. The authors indicated that religion in Saudi Arabia is an important ruling principle which organizes the relationship between males and females, marital life and

love affairs among Saudi society. Furthermore, as a male-dominated, closed culture, and a conservatively religious society, these factors are particularly concerned to regulate the behaviour of women, and this may develop distress in Saudi females. Hence, most of the observed symptoms among Saudi females were somatic symptoms, and delusions of pregnancy are one of those symptoms. Some of the female patients ascribed these symptoms to psychological and others to supernatural factors. The case study also showed that all patients suffered from social and environmental stresses, marital problems, poverty and illiteracy problems. The authors argued that delusions of pregnancy may serve a psychological function in seeming to solve the patient's social and marital problems, and attracting more positive attention from their families. Furthermore, delusions of pregnancy in Saudi female patients may reflect cultural anxieties. The delusion of pregnancy might result from the anxiety of Saudi females to seek males' satisfaction, and to fulfil males' wish to have a lot of children according to the norms of a male-dominated culture. Also, female patients may resort to this delusion unconsciously as an attempt to keep their husbands, and to prevent them from marrying second, or third, or fourth wives according to Islamic rules which give a male the right to marry four wives. These delusions often contain sexual content which might give patients some satisfactory sexual feelings for whom seeking for love and sex in their locked society. Moreover, supernatural (magical pregnancy by evil eye, or spirit- Jinni), and religious content were more common among Saudi female patients.

#### **4: Studies in south and south-east Asia**

Kala & Wig (1982) evaluated delusions in Indian patients, to assess the effects of cultural, social and demographic variables on content of delusions. A total of 200 patients were studied, comprising 190 patients diagnosed as schizophrenic and 10 patients diagnosed as paranoid based on ICD-8 criteria. The method used was a semi-structured interview based on the Present State Examination Schedule (PSE). The delusions were classified into 12 categories. Delusions of persecution and delusions of reference were the two most commonly recorded types among all patients. Bodily control delusions, and delusions of poisoning of food came the next in frequency. The prevalence of delusions was estimated according to demographic variables (sex, age, marital status, rural and urban, family type, educational status and socio-economic

status). Delusions of infidelity were significantly more common among females, whereas grandiose delusions and delusions of thought reading were more prevalent in males. Delusions of thought reading and sexual delusions were more frequently found among the youngest patients, those under 30 years, whereas religious delusions and delusions of infidelity were common in the older patients group. Delusions of thought reading, depressive, and sexual delusions had higher frequency among single patients, whilst, delusions of infidelity and delusions of poisoning were more common in married patients, reflecting the source of fears and anxieties amongst single (loneliness, guilt about sexual desires) and married (harm from spouse). In the urban group the most frequent delusions were delusions of reference, sexual delusions and delusions of thought reading. Concerning birth order, delusions of grandiosity, infidelity and depressive delusions more commonly occurred in patients who were the first born, whereas delusions of persecution, bodily control and delusions of reference were significantly more common in last born. However, results regarding intermediate born did not show any significant differences. In extended families the most frequent delusions were delusions of reference, poisoning and sexual delusions. Delusions of bodily control, infidelity, somatic and religious delusions more commonly appeared in illiterate patients, while delusions of grandeur, persecution, reference, thought reading and sexual delusions were more frequently found among the educated group. Finally, delusions of thought reading, reference and depressive delusions occurred more frequently in upper socio-economic class patients, while delusions of bodily control were the commonest delusions in lower socio-economic class patients. The conclusion was drawn that social and cultural factors affect the predominance and content of persecutory delusions among psychotic patients. Moreover, the authors argued that relationship between persecutory delusions and violence as a reaction to these delusions should receive more attention. The authors reported that many of these results are consistent with previous studies in other countries, for example, delusions of infidelity were more common among females in this study and consistent with Taiwanese data on that point. It was concluded that differences in the frequency of different types of delusions according to demographic variables reflected the differing social roles and social expectations of different demographic groups within the same culture.



Azhar, Varma & Hakim (1995) conducted a comparative study between two different ethnic and cultural groups (Malay and Chinese) in two locations in Malaysia (Penang and Kelantan). Also, they assessed the influence of cultural and ethnic factors on some schizophrenic symptoms and on the content of delusions. A total of 270 schizophrenic patients were recruited, consisting of two groups, 166 in Penang group and 104 in Kota. The authors applied a semi-structured questionnaire about the illness history and psychiatric symptoms, and patients were interviewed by using PSE. The results showed that persecutory delusions were the most common delusions in all groups. Grandiose delusions were less common in the Chinese group in Kota culture, whereas delusions of guilt and religious delusions were more distinctly presented in the Malay group in Kota culture. Delusions of reference were equal across all groups, but sexual delusions were more frequent in the Penang groups whereas nihilistic delusions were more commonly found in the Kelantan groups. Regarding the content of delusions in Malay patients, in Kelantan culture, these were expressed frequently in religious and supernatural themes (e.g., special power and skill, having ability to tell others about future and being possessed by spiritual power). The content of delusions among Kota groups was similar and religious and supernatural themes were also common in these groups (e.g. chosen by God, being God or prophet of God, having special power and abilities were given by God). On the other hand, the content of grandiose delusions in both Penang groups was about belonging to a high social class. The analysis of persecutors in persecutory delusions revealed that 25% of patients specified their persecutor as a member of their families, 35% of patients believed that their persecutors were either neighbours, colleagues or workmates, but 30% of patients overall and 40% of Malay patients in both locations did not define their persecutors. Moreover 22% of Penang Malay patients and 33% of Penang Chinese patients believed that the reason for their persecution was their high social class. 33% of Kelantan Malay patients believed that the reason behind their persecution was wealth. The results reflected considerable differences between cultural groups in Malaysia. Overall, content of delusions differed consistently with the differences between groups in their cultural values. The Penang area is more developed than Kelantan. Thus, people of Penang were more sophisticated and they had more Western influences in their life style. Also, the people in Kelantan were more religious and they appeared to cling more tenaciously to their old culture.

Suhail (2003) assessed content of delusions among schizophrenic patients in Pakistan, and explored the role of sex differences and social class. Their sample consisted of 98 patients, 48 male and 50 female, who were diagnosed as schizophrenic according to DSM-IV criteria. The sample was drawn from two psychiatric units in Pakistan. The instrument was a semi-structured interview based on the Present State Examination PSE. The results revealed that persecutory delusions were the most common type in both groups, then grandiose delusions. However, a further analysis was established based on sex and social class. The results showed that there were two subgroups with no significant differences in overall frequency of delusions, but major differences in the content of delusions. The first subgroup was male and wealthy and the second subgroup was female and poor. The most common content of delusions among the male-wealthy group concentrated on having power, being powerful, being a famous star and other grandiose themes. However, the most common content of delusions in female-poor group was delusions of influence, magical, supernatural and persecutory themes. The results confirmed that content of delusions can differ between socio-cultural groups in a way that reflects their social roles, and social and traditional values, norms and rules.

Yip (2003) assessed the influence of Chinese traditional religious and supernatural beliefs on the content of delusions and hallucinations in a case study of schizophrenic patients. The author demonstrated the influence of the most important and common religious and supernatural beliefs in Chinese culture (e.g. the Taoist gods, fortune telling and the Buddhist gods.). The sample was 4 schizophrenic patients, 2 male and 2 female. These cases were studied by establishing three interviews for each patient to collect information about family history, to elicit delusions and hallucinations, and to elicit traditional Chinese religious and supernatural beliefs which were embedded in content of delusion of patient. The results showed that traditional Chinese religious and supernatural beliefs had important effects on the formation and content of delusion and hallucinations, and the special experiences of patients. These beliefs may contribute in the constituting of daily behaviour according to the predominant experiences' and beliefs in patient's environments and culture. In addition, patients might constitute themselves as characters in the narrative content of delusions, and then they become part of these beliefs and develop stories based on those beliefs. The details of daily religious practices, religious beliefs, religious stories regarding these religious beliefs and superstitions, and worship were reflected in the context of delusional content,

therefore, the details of those beliefs became the details of patients' delusions. These religious beliefs also have given the delusions meaning from patient's view, and they may help the patient in resolving their inappropriate emotional behaviours, distress and failure by projecting a religious theme on their delusions details.

Finally, it is concluded from the studies reviewed that the content of delusions can best be understood within a cultural context: their manifestation varies across-cultures and within the same cultures across subcultures and according to demographic variables. Also the content of delusions is strongly influenced by culturally salient events (Ndeti & Vadher, 1985; Suhail, 2003; Skodlar et al., 2008) Moreover, it was shown that although the persecutory content was the most common type of content in many different cultures, it comes very strongly from the literature review that the delusional source of persecution is likely to depend on culturally prevalent threats or beliefs about malevolent influence. Likewise delusions of grandeur may refer to prevalent cultural beliefs about supernatural or social power and status. Therefore to understand a patient's delusions it is necessary to understand the cultural and sub-cultural context for the delusional beliefs, and this is also very relevant to clinical practice (Kala & Wig, 1982; Kim & et al. 1993, 2001, 2006; Azhar & et al. 1995; Suhail & Cochrance, 2002).

## **The Cultural Background for the Research**

### **General overview of geography and history of the Kingdom of Saudi Arabia**

Geographically, the Kingdom of Saudi Arabia is located in the southwest of Asia, bounded to the west by the Red sea, by Jordan, Kuwait, and Iraq to the north, in the south by Yemen and the Sultanate of Oman, and in the east by the Arabian Gulf, Qatar, Bahrain and United Arab Emirates. The Kingdom occupies the major part of the Arabian Peninsula; it extends on land area approximately 2.3 million square kilometres. It comprises several different cities and districts which are divided into five large regions: the Western region which is called Al Hejaz and which includes the holy cities Makkah and Madina; the Northern region which is nearby Jordan and Iraq; the Southern region which is close to Yemen; the central region which is called Najd area including

the capital of the Kingdom, Riyadh; and the Eastern Province which contains the Saudi oil fields and industries (Mead, 2007).

### **1- The Central region (Najd)**

Najd lies in the middle of a sand desert in the heart of the Arabian Peninsula. Its location led in former time to lack of attraction for foreign people to settle and live on it (Al Rasheed, 2002). However, today Riyadh is considered to be one of the most modern cities in the Middle East. This development of Najd in all life domains led it to attract many people from different countries and from other Saudi provinces seeking jobs and education (Mead, 2007; Menoret, 2005). However, Najd is considered to be one of the most traditional, extreme and conservative societies in Saudi Arabia (Buchele, 2009). The conservative traditions in this area are related to its geographical, historical and climatic circumstances. Its indigenous population comprises of some of the most famous Arab tribes, who established tribal societies, and a tribal confederation or tribal regime was enabled to administer different tribes' affairs (Al Rasheed, 2002; Menoret, 2005). The Najd area was and remains the most religiously conservative region in Saudi Arabia and this relates back to the earliest days of the Saudi state which was established in this area in combination with the Wahhbian movement (a religious movement). Moreover, men in that region were called *Mutawwaa* and *ulama* (religious men and religious scholars), which was a reference of Islamic science in Arabian Peninsula (which means the original authority of Islamic religion) and those men had the responsibility of teaching people the proper Islamic customs and law or the *Sharia* (Al Rasheed, 2002). Nowadays, Saudi Arabia follows officially the *Hanbali* doctrine, which is considered to be the most extreme and rigid doctrine in Islam in comparison with the other Islamic doctrines, and this came about because the *Hanbali* doctrine was the official doctrine of the first Saudi state (Al Rasheed, 2002; Menoret, 2005; Yamani, 2008). Most *Najdi* people take pride because they uphold Arabic and tribal customs, and they consider their ethnicity to reflect pure Arab descent (Yamani, 2008).

### **2- The Western region (Hejaz)**

Geographically, Hejaz is located in the Red sea area. Previously and presently, it has developed as a commercial region due to its location in the centre of the old trade roads, between the journey to the north *AlSham* (Syria) and the journey to the south *Al Yaman* (Yemen) (Mead, 2007; Yamani, 2008). Jeddah is located in the Western region and it is the biggest city in Hejaz. Historically, as a result of its location and association with the holy cities in Islam, it has acquired a special reputation from Muslims around the Islamic world. It also became a target for foreign capture, and was for many years part of the Ottoman Empire, from 1517 until 1926, (Al Rasheed, 2002; Yamani, 2008). The *Hejazi* society comprises Bedouin and urban *Badow* and *Haddar*, and its population differs from Najd area in that it has a greater diversity in people's backgrounds. The Hejaz region contains famous Arab Tribes which are linked with other Arab tribes in the Arabian Peninsula by descent and blood relationships (Al Rasheed, 2002; Menoret, 2005). These tribes thus share their customs with the other tribes in different Saudi regions. They have the same tribal regime and tribal fanaticism or tribalism. On the other hand, the urban society includes different ethnic groups which represent Muslims who settled from different Muslim countries, such as Turkey, Africa, India, Iran and Asia, when they came to perform *Hajj* (pilgrimage). For hundreds of years, this region was under Ottoman rule and this affected the inhabitants' life style (Al Rasheed, 2002; Yamani, 2008). The Ottoman rulers spread their own customs, traditions, doctrines, religious background, fashions, and their own architecture and methods of construction. These effects can still be noted in people's life style generation after generation. Nowadays, one can observe the sharp distinction between Najd and Hejaz in their customs and traditions (Al Rasheed, 2002). Moreover, *Hejazi* people prefer to follow an earlier doctrine which refers to the period of the Ottoman state, it is called *Shaffei* doctrine. It can be described as a compromise between *Hanbali* doctrine and other Islamic doctrines (Yamani, 2008). Today, although officially Saudi Arabia follows the *Hanbali* doctrine, most of *Hejazi* people remain followers of their earlier unofficial doctrine, and this creates a sharp divergence between these two regions (Al Rasheed, 2002; Menoret, 2005; Yamani, 2008).

### **3- The Eastern Province**

The Eastern Province lies on the coasts of Arabian Gulf, and it contains the biggest oil fields in the world. It is considered as the capital of industry in the Kingdom. Therefore, in earlier decades, (1930s) it attracted famous American industrial companies These

companies established a small village in the heart of this province with Arabian contributions, called Aramco (Facey, 2000; Robins, 2009; Mead, 2005). Historically, this area also was under the authority of the Ottoman Empire (from 1817 until 1913) (Al Rasheed, 2002). Furthermore, it differs from the other Saudi regions in that it combines two distinctively different ethnic groups, of Nomads and settlers (Facey, 2000). The Bedouin in this area represent similar tribal customs to those found in the other Saudi regions and other Arabian Gulf countries such as Kuwait, Qatar, and Bahrain. The tribes in The Eastern Province have ancestryties with the other Arabian tribes in the Gulf area (Facey, 2000). On the other hand, Eastern Province contains a different religious background group which is called *Shiia* (Shiite creed). *Shiia* represents approximately 60% of population of this area, but represents a minority group in Saudi Arabia as a whole (Facey, 2000; Mead, 2005). This group has suffered from discrimination both because of their situation as a religious minority, and because of their ethnic background which refers to “unknown tribes”, or in other words, to non- Arab origins (Al Rasheed, 2002). As a result of this discrimination these groups prefer to live in isolation with others who belong to the same creed and hold to the same traditions and customs. Moreover, these *Shiia* groups try to maintain their own religious creed (Al Rasheed, 2002; Menoret, 2005).

As mentioned above, both Jeddah and the Eastern Province are considered to be more liberal and less religious and conservative societies compared with the Riyadh area. Moreover, because of Jeddah’s position which is near to the holy city in Islam (Makka), many Muslims from different Islamic countries prefer to settle down and live in this area, which affected and is reflected in the natives' customs and culture (Yamani, 2008). The situation in the Eastern Province is also more open to foreign influences than Riyadh, in that this area has big effects from American culture on the inhabitants’ life style. Also, the Persian influence is reflected in the Eastern Province by the prevalence of the Shiite creed in this area which has wide effects on the socio-cultural context (Facey, 2000). In Riyadh, the situation is different because this area did not have any foreign influences nor does it have a rich diversity of backgrounds and different ethnic groups' such as are found both in Jeddah and the Eastern Province. Therefore, the comparison between these three areas in terms of the differences in content of delusions and schizotypal personality may shed light on the importance of socio-cultural effects

on psychotic symptoms and differences in degree of religiosity between these areas may be one of the most important cultural aspects.

## **Cultural differences between Saudi regions**

### **1- Family system, women's role and socialization**

Generally, most Saudi families are extended, in accordance with tribal customs which try to maintain all their members close and knowing each other, particularly in the Najd area (Buchele, 2009). However, with the appearance of development in different life domains in the Kingdom such as education, commercialisation, and urbanisation, most families prefer to live independently and this has contributed to the emergence of nuclear families in all Saudi regions especially in Hejaz area (Buchele, 2009; Yamani, 2008). Nevertheless, the extended family remains intact and available in Saudi society even if each nuclear family lives at a single house. This is exemplified in the architecture of the modern compound, which is created as compromise to give each young family its right to live independently and at the same time it maintains proximity across generations. These compounds are more popular in Najd and the Eastern Province than Hejaz area (Buchele, 2009; Yamani, 2008).

Regarding the role of women, in Islam the woman has a great position in the family and in different social and cultural contexts (Hasna, 2003). Islam gives women legal rights in different social and economic spheres, beginning with her right to marry the man who she desires even if her parents do not agree, her right to education, and her right to participate in making decisions in most life domains (Hasna, 2003). However, the tribal customs and traditions, which have the power of compulsion, have made a wide gap between on the one hand, Islamic policies and law, and on the other hand, man's applications of these policies in a patriarchal society in which the predominance is for males. This can be seen to be true in the Saudi society which is a mixture between a Muslim society and a tribal confederation (Hasna, 2003; Al Rasheed, 2002; Yamani, 2008). This discrimination in applying Islamic law unequally between males and females appears early on in the socialization process of males and females. It also appears in parents' preference of boy then girl when they make a wish to have a child, in the distribution of social roles, and in the lack of equivalence of opportunities

(Buchele, 2009). Interestingly, in tribal custom, it is considered to bring shame on a man if people in a public places know his mother's, sister's and wife's names. For example, if man wants to call his wife in an open and public place, he should call *Um* (mother of) then followed by his son's name and if he does not have children yet, he follows *Um* by his father's name rather than call her wife's name. This custom is common in Saudi society particularly in people with tribal backgrounds in Najd (Buchele, 2009). Another surprising custom, that is not common in all tribal societies, but is confined to just one *Najdi* tribe, is that women should cover their faces from everyone, even from their husband; also even their children did not know their mother's face (Buchele, 2009).

## **2. Marriage and polygamy in Saudi society**

The most common form of marriage is a marriage of relatives including first cousins or nearest friends (Buchele, 2009). According to the tribal customs and traditions in all Saudi tribes, often the marriage occurs within the same tribe or with another tribe which has a kinship with them. The male members of the tribe are enabled to make marriage decisions rather than females, and they have authority to refuse any marriage outside their tribe or related tribes particularly those who are considered to have low descent, or those with unknown origins (Al Rasheed, 2002). For example, in Najd there is a common implicit classification of society members into status groups (Weber, 1947) according to their origins and descents, *Qabali* – a person who belongs to one of the Arabic tribes, and *Khudairi*- a person who has unknown tribal origin or unknown descent (Al Rasheed, 2002). Hence, any one belongs to the *Khudairi* should not marry from the *Qabali*, according to tribal custom, whereas Islamic policies refuse this sort of discrimination because all people are human regardless of their origins (Yamani, 2008). This issue is common in Najd area; its population also refuses to marry people from other Saudi regions particularly those areas which combine non-Arab Muslim tribes like Hejaz, therefore those people suffered from the prejudice of *Najdi* tribes who reject their desires of marriage into *Najdi* families (Yamani, 2008).

Concerning polygamy in Saudi society, some evidence shows that within the Saudi cultural context there are some distinct differences between areas in the prevalence of polygamous marriage. Historically, in the nineteenth century, women in Hejaz region



had a right to contract their own marriage with the blessing of their parents; on the other hand, the women in Najd region in the same period were required to have male guardians to contract and accept their marriage. Therefore, even in the present day, the marital status may differ between Hejaz and Najd in marriage and divorce matters (Yamani, 2008). Generally, polygamy was and remains more common in tribal societies particularly in Najd area more than in Hejaz. Consequently the stigma which results from divorce is more common in Hejaz than Najd as a result of prevalence of polygamous marriage in Najd area, which means that a divorced woman can have more opportunity to establish a new marriage in comparison with *Hejazi* woman (Yamani, 2008). Research on polygamy and monogamy in Saudi Arabia also suggests that there have been significant changes in the Saudi marriage patterns and those changes were common in all Saudi provinces particularly in Hejaz and Najd regions. These studies show a distinct decrease in polygamous marriage rates in both areas, with a relationship with level of education and urban living, in other words, the adoption of a city life style, in which monogamous marriages are regarded as the natural, common and standard social pattern of marriage. However, in the Bedouin section of the population, polygamy is still regarded as the common and natural social pattern of marriage (Yamani, 2008). Moreover, those people in Hejaz who prefer the polygamous marriage are either from the Bedouin section or have worked with the *Najdi* and been affected by the *Najdi* way of life (Al Rasheed, 2002; Yamani, 2008).

### **3- Privacy**

Saudi society maintains a high level of privacy which manifests in life style and accommodation. In general, it therefore is reflected in the design of accommodation with high walls, and Saudi people enclose their outdoor or gardens by high steel extensions to protect the residence especially female members from spying from their neighbours or strangers. Furthermore, each house often includes at least two dining rooms, and two living rooms due to the excessive separation between males and females (Buchele, 2009; Menoret, 2005). This is more common in Najd area and the Eastern province where their accommodation is similar and have been influenced by the Arabian Gulf countries (Facey, 2000). This separation also manifests in the shopping malls, recreation centres and restaurants which have private sections for males and

others for families and females (Buchele, 2009; Menoret, 2005). Another aspect of privacy in life style manifests in recreation and entertainment: Saudis prefer to have contact with their relatives and nearest friends. Their social network is often confined to family or close friends. They also prefer to spend their time at social occasions rather than entertainment (Buchele, 2009).

#### **4- Etiological beliefs concerning illness**

As a Muslim society, Saudis believe that all bad and good things, circumstances and events are subject to the will of *Allah* (God). Therefore, in Najd area it has been observed that most people interpret diseases and disasters as a result of their destiny (Al Khani et al., 1986). Belief in religious, magical and supernatural causes of disease, particularly in psychological disorders is also common in Saudi society. However, according to a study which has been conducted on Saudi patients and non-patients in the Southern region of Saudi Arabia (Alqahtani and Salmon, 2008) most Saudi patients believed that their symptoms were a test or punishment from *Allah*, whereas belief in supernatural forces (evil/Jin, evil eye, magic) was less common. Surprisingly, psychological causes and beliefs were as common as religious beliefs, in contrast to earlier reports which showed that in Arabic cultures the psychological interpretations of symptoms were absent as a result of a difference in conceptions of psychological disorders from those of Western cultures (Alqahtani and Salmon, 2008).

Finally, today Saudi people have an opportunity to discuss social and cultural issues since they have gained the right of freedom of speech in mass media (television and newspapers) (Buchele, 2009). The mass media in Saudi Arabia has raised a variety of hot topics and issues such as unemployment, homosexuality, poverty, child abuse, polygamous marriage and the new pattern of marriage, the prevalence of divorce and religious rigidity. It begins to shed more light on the hidden issues and matters which may affect Saudi society (Menoret, 2005).

#### **The study questions**

The study problem can be defined as follows:

1. Firstly, as Raine (2006) indicated, studies testing schizotypal personality among general population may highlight the both genetic and environmental risk for schizophrenia among general population. Due to the cultural differences described above between three sample areas, it was predicted that there would be higher schizotypy scores in Riyadh than other two areas. Therefore, the current study aims to investigate schizotypy in the general population of the study locations, and to answer following questions:
  - 1.1. Are schizotypy scores high among a Saudi comparison sample (drawn from the general population)?
  - 1.2. Do the means of schizotypal personality scores in males and females in the Riyadh area differ from the corresponding scores in Jeddah and the Eastern Province?
  
2. Do cultural variations influence the content of delusions in schizophrenic patients? The researcher is intending to conduct a cross sectional study to compare delusions among patients in different regions of Saudi Arabia (in Riyadh, Jeddah, and the Eastern Province where the major psychological services are provided and different backgrounds). Therefore, the following questions can be formulated: This main question can be divided into the following questions:
  - 2.1. What are the most common delusions among people with schizophrenia in Saudi Arabia?
    - 2.1.1. What are the most common delusions according to demographic variables (gender, social status, marital status and educational status) among the people with schizophrenia in Saudi Arabia?
  - 2.2. What are the most common delusions among people with schizophrenia in each area?
    - 2.2.1. Are there any differences in the content of delusions according to the demographic variables in each area?
  - 2.3. How are their culture and sub- culture reflected in the content of their delusions?
  
3. Thirdly, as shown in the literature review, some types of delusions correlate with violence, such as persecutory delusions (e.g. Mullen, 1997; Cheung, Schweitzer,

Crowley & Tuckwell, 1997; Appelbaum, Robbins & Roth 1999). The current study will examine the most common types of delusions and their relationship to violence among schizophrenic patients in each area, and answer the following question:

3.1. What are the most common types of delusions which might correlate with violence among schizophrenic patients in each area in Saudi Arabia?

4. Fourthly, according to Alqahtani and Salmon (2008) General Practice patients (GP) in the Southern Province of Saudi Arabia hold psychological, religious and supernatural explanations or beliefs regarding their symptoms. Hence, the present study aims to test and compare between General Practice patients (GP) as control group and schizophrenic patients as clinical group to compare their etiological beliefs concerning their symptoms, which may aid in the qualitative analysis of content of delusions later and also aid in explaining cultural influence on content of delusions. Also to answer following question:

4.1. Do General Practice patients (GP) differ from schizophrenic patients in their etiological beliefs of their symptoms among Saudi sample according to the areas of study?

4.2. What are the most common explanations or etiological beliefs according to the areas of study?

### **The study importance and aims**

The aim of the present study is to investigate and evaluate the content of delusions, and its relationship to the cultural and social background of schizophrenic patients in Saudi Arabia, and to assess the influence of environmental variables on the content.

Potential importance of the research is both theoretical and practical. If it can be understood how the cultural and social variables affect the content of delusions, and the formation of symptoms in the patient, this would represent an advance in understanding the dynamics of schizophrenia, Ashebrok et al. (2003) have argued that the study of the content of delusions is essential also for psychotherapy. “While delusions and hallucinations may assist diagnosis, treatment decisions and formulation of risk assessment/management plans are determined by a content analysis of illness. No competent care can proceed without it.” (Aschebrok & et al. 2003, p308).

Studying the content of delusions has attracted a great deal of attention in cross-cultural psychiatry. Many studies have been conducted around the world (i.e. Kala & Wig, 1982; Ndeti & Vadher, 1985; Sher, 1997; Kim & et al. 1993, 2001, 2006; and Suhail, 2003) and other studies that aimed to analyze the content of delusions in different cultures. However, it is quite rare to find similar studies in Arab societies in general and in the Saudi society in particular. Inter-cultural studies emphasize the influence of environmental complexities in the development of schizophrenic delusions, and differentiate their contents from one culture to the other. All these attest to the cultural and social nature of the delusions. Therefore, the results that a particular study finds in a given society cannot be generalized to other societies. In that context, it can be asserted the Arab culture and the Arabic societies in general, and the Saudi society in particular that have cultural peculiarity that needs to be investigated.

## **Chapter 3: Methods**

### **The participants**

Ethics committee approval was given for this research and each participant was asked to give written consent to participate. All patients who were selected also have given their verbal consents to participate, and the written consents have been obtained by the nurses who were in charge of them. A total of 611 participants were recruited for the study consisting of two groups, firstly, a clinical group (73 males, aged 20-61 and 75 females, aged 19-58) drawn from in-patient sections at the mental health hospitals in the areas of study (Riyadh, Jeddah, and the Eastern Province) in Saudi Arabia. The quota sample for each area consisted of a total of 25 males, and 25 females, but in the Eastern Province, only 23 males were recruited (Table 3-1). The patients were selected from those diagnosed as schizophrenic according to DSM-IV criteria (APA, 1994). They were selected by the psychiatrists who supervised them, as meeting the criteria of study in that they were schizophrenic patients with active delusions, and Saudi citizens. Secondly, a sample of 364 participants was recruited for comparison and control groups (171 males, aged 18-56, and 193 females, aged 18-60). Some were drawn from students and staff in Saudi universities in the areas of study (King Saud University in Riyadh, King Abdul-Aziz University in Jeddah, and King Faisal University in the Eastern Province) from the social science and medical schools. Additionally, some participants were drawn from the patients in general practice (GP) clinics attached to these universities. These were recruited because non-schizophrenic patients with predominantly physical symptoms were needed as a comparison group to explore lay explanations of illness using The Aetiological Belief's Questionnaire (ABQ). The control group was selected randomly to represent the adult population of these areas, and to achieve quotas for age and numbers of male and female participants. The process of collecting data started in Riyadh area from 15-11-2009 with the control group and from 1-12-2009 with the patients group until 26-1-2010. In the Eastern Province, the data collection was completed in the period between 28-1-2010 and 18-3-2010. Finally, collection of data was completed in the area of Jeddah in the period between 20-3-2010 and 5-5-2010. The numbers of participants tested on the various instruments in the three areas of study are presented in Table 3.1.

Table 3.1: Distribution of participant samples across study areas and instruments

Area	Riyadh				Jeddah				Eastern Province				Total
	Clinical		Control		Clinical		Control		Clinical		Control		
Gender	M	F	M	F	M	F	M	F	M	F	M	F	
SAPS	25	25	---	---	25	25	---	---	23	25	---	---	148
SANS	25	25	---	---	25	25	---	---	23	25	---	---	148
MMDAS	25	25	---	---	25	25	---	---	23	25	---	---	148
ABQ	25	25	22	25	25	25	26	28	23	25	22	28	299
SPQ	---	---	39	34	---	---	35	33	---	---	38	34	213
Life-Events	25	20	25	18	23	17	13	12	23	20	17	13	226
Total	25	25	86	77	25	25	74	73	23	25	77	74	

## The instruments

### 1- The World Health Organization (WHO) Life Events Schedule:

For the purpose of the current study, the WHO instrument can meet the following requirements: Firstly, it is a suitable scale for a study of the association between culture and life events (AlKhani, 1983), it can therefore be expected to reflect the differences in life events between sub-cultural groups in each area of the current study because the WHO life events schedule was designed for use across different cultures. Secondly, this is an appropriate instrument for using with both patient and control groups because it is designed for collecting data from different categories, for example: patients, both those who are currently ill and those in remissions; non-patients, and the relatives of those patients; and any other key informants who may provide information for which an investigation is required. Therefore, it can aid in interpreting and understanding the differences in the results between sub-cultural groups particularly, patients groups in whom differences in the content of delusions may be found later. Thirdly, it is adapted from the original Life Events interview and assessment procedure developed by Brown and Harris (1978) that was based on an open-ended interview. The WHO Life Events schedule (1978) is an unpublished structured interview schedule derived from the Brown and Harris instrument, consequently, the current study will use the WHO schedule rather than the Brown and Harris interview because it is based on classical

research but specifically adapted for cross-cultural work. Finally, the only previous published study of life events which has been conducted in Saudi society with a schizophrenic sample (AlKhani, 1983, AlKhani, Bebbington, Watson, and House, 1986) utilized the WHO interview. AlKhani indicated that the open-ended approach had failed to reveal or elicit the information from Saudi subjects and was not effective with Saudi subjects. Moreover, the WHO schedule is a compromise instrument between an open-ended interview and the highly structured approaches of life events inventories (AlKhani et al. 1986).

Regarding the validity and reliability of the WHO schedule in the Arabic version (AlKhani, 1983), this was developed by Dr AlKhani with the help of Dr AlHamad, a Saudi psychiatrist who adapted the WHO for a Saudi sample by translating the questions and back-translation (which is some guarantee of face- and content-validity). Then the author and his assistant estimated the inter-rater reliability of the rating of life events, the reliability of scoring the severity of impact, and the reliability of scoring the independence of the events. They found respectively, 98% agreement on presence of events, 94% agreement on the independence of the events, and 86% agreement on the severity of impact. These results revealed that the inter-rate reliability was extremely good and it demonstrated adequate reliability for using this instrument in a Saudi cultural context (AlKhani, et al. 1986). Regarding validity, AlKhani (1983) assessed content validity by comparing between the WHO life event schedule in the Arabic version and the original instrument of Brown and Harris (1978). Predictive validity is demonstrated by the correlation of life events from the WHO scale with measures of onset and relapse of schizophrenic episodes in the Najd region study (AlKhani, et al., 1986). The main differences between Al Khani's derivative instrument and the original schedule was that the derivative instruments was more structured than the original, it also concentrated on the specific date of each event with extended details. Finally, AlKhani added additional questions during the interview situation based on the cultural context and background of Najd area (AlKhani, 1983).

Thus, the current study will depend on these results as an indication of reliability and validity. For the current study the original instrument items were translated into Arabic (using forward and backward translation) and sent to a panel of four experts in this field (two psychiatrists in Al-Amal hospital for psychological health in Riyadh and two psychiatrists in the Eastern province mental illness hospital) to comment on each item's



appropriateness and acceptability and to identify additional items that may be suitable for Saudi culture. The researcher received two of four back-translations with panels' comments. Some modifications were made in the light of the panel's recommendations.

The WHO life-events manual comprises four sections: introduction, collecting and rating life events data, types of life events (including the questions), and glossary. It aims to present a general framework to the investigators and full information about how it is used, also explaining how the investigators can collect, record, assess and rate the life events data. It also provides a detailed description of the terms, and a set of rating criteria which are defined for the possible life events. Finally, it provides the investigators with instructions for assessing the life events items with relevance to the research for example, date, impact, and relationship to the disorder.

The WHO life-events schedule is divided into two separate parts. The first part is based on a structured interview schedule which contains 70 items, and the table (3.2) below summarises each section.

Table 3.2: Description of sections of WHO life-events interview

NO	Name of Section	Content	No. of Items
1	The personal	It covers: the subject's life, life history, relocation, health, education, and criminal history	7
2	The livelihood	It covers: the employment, job, and financial issues.	15
3	The family/household	It is divided into three subsidiaries: the family of procreation; the family of orientation; and the current household.	34
4	Social network	It covers: the subject's romantic, general, and social relationships	9
5	The additional section	It covers: the subject's achievements or fulfilments, forecasts of any changes, surprising events, and any other important events which are not mentioned before	5

These items provide the investigator with a logically and reasonably comprehensive review of the changes occurring in the subject's life during the relevant period (3 months before onset). These questions were asked in the same order, and all of them were administered. Moreover, during the interview the investigator collected important information concerning date of occurring, and the association between the reported life events and the patient's illness. Furthermore, the first part provided a time frame for the interview, defined by a relevant period.

The second part was completed after the investigator collected the information from the interview. It is composed of two separate pages. The first page is used for recording all reported life events with full details concerning the surrounding circumstances, and all dates of life events which occurred in the relevant period chronologically, using a narrative account style. The narrative accounts were recorded in as complete and coherent a manner as possible. The second page is a summary sheet which was prepared to assess and identify the related life events which have been found in the narrative accounts. These related life events were recorded in chronological order separately for each event. Furthermore, in the summary sheet it was possible to characterize the miscellaneous events which refer to very unusual borderline, or culturally particular life events that manifested in the course of the interview, which were not mentioned in the first part of schedule. The miscellaneous events were recorded and assessed in the same manner of others events, but in the specialized place of miscellaneous events in the summary sheet (AlKhani, 1983).

#### Procedure for administering the WHO Life Events Schedule

The relevant period in the current study was 9 months before the date of collecting data. A structured interview based on the WHO schedule was conducted on both study groups (patients and control). Concerning the control group, the sample was drawn from students and staff after distributing announcements which asked for participants willing to participate in the current study with some general information about the study aims. Announcements were posted in classrooms and in the main entrances of social and medical schools, and verbal announcements were made during lunch time, and in particular classes after the supervising teacher's approval had been given. Because Saudi culture separates males and females, the researcher could not enter the male sections in those universities. Therefore, the researcher sought the help of a male

assistant from the psychology department in each university. The male assistants were trained on administration of the instruments of the present study before they applied them; they also followed the same procedures for sampling and collecting data which were followed by the researcher in female sections to avoid any effects on results. The participants who have given their informed consent were interviewed in a private room. Each interview took approximately between 45 minutes to one hour, with encouragement of participants to be honest, and with persistent confirmation of the confidentiality of the information which would be used only for scientific purposes. Moreover, the confirmation that their identities will be anonymous was presented to give them a free atmosphere for speaking and interacting. Some participants did not give enough information which related to their private life, many also did not cooperate with the sort of question which requires much detail and a long answer. Most of them preferred to answer questions by yes and no, and when the details were requested they refused to give them. Unfortunately, most male and female participants were not comfortable enough to talk freely, particularly with providing specific information about their personal and emotional affairs, which may reflect the influence of the rigid privacy of Saudi culture. In the current study in Saudi culture, the WHO schedule failed to elicit such information as related to private personal life. Regarding the patients group, the researcher interviewed and collected data from both males and females. The interviews were conducted as part of the overall process of collecting data for the present study from in-patients sections, and each patient was interviewed between 4 to 6 times to complete all instruments and each interview taking approximately 30 to 35 minutes.

The WHO information was compiled from different sources: most of the patients had long-term mental health problems and most of them had spent more than one year in hospital. Therefore, most of them had no current or recent life events which related to the relevant period (9 months before the interview situation). The interview data was therefore supplemented with additional material collected, from medical reports, social investigations, and daily notes recorded in the wards. Some patients did not have any life-events related to the relevant period. However, some patients had recordable life-events, even though they were hospitalized, obtained from social follow-up reports with their families (e.g. some patients had traumatic events such as death of one of their parents during relevant period). The complete data of WHO schedule was recorded

chronologically according to the most important life-event impact on participants' life by using the narrative style. There was a proportion of missing data on the life-events interview because of non-responders (see Table 3-1).

## 2- Scale for the Assessment of Positive Symptoms (SAPS), and Scale for the Assessment of Negative Symptoms (SANS)

The current study will use SAPS & SANS instruments to elicit the content and classify the type of delusions among people with schizophrenia. Furthermore, the SAPS and SANS interviews are considered to be a reliable information source concerning delusions and hallucinations; if the patient is able to communicate clearly, then he/she will respond to interview (Andreasen, 1984).

These scales were developed by Nancy C. Andreasen (1984). They are based on a clinical interview, whose purpose is to evaluate the positive and negative symptoms which substantially appear in schizophrenia. The SAPS is designed to complement the SANS, but on the other hand, each of these scales can be used separately. These instruments are normally prepared to cover the last month before the current interview. Moreover, these scales can be used in psycho-pharmacological researches, which aim to assess the effectiveness and response to medication. The interviewer is required to establish other sources beside these instruments such as observation, family, clinicians' reports, and patients' self-report, particularly to assess the bizarre behaviour, and positive formal thought disorder (Andreasen, 1984).

The SAPS is composed of 34 items, which are divided into: hallucinations (e.g. auditory, voices commenting), delusions (e.g. persecutory delusions, religious delusions), bizarre behaviour (e.g. clothing and appearance, social and sexual behaviour), and positive formal thought disorder (e.g. derailment). Finally, each dimension in both scales has a global rating of severity and intensity. The SANS is composed of 25 items which are divided into: affective flattening or blunting (e.g. poor eye contact), alogia (e.g. poverty of speech), avolition-apathy (e.g. in grooming and hygiene), anhedonia-asociality (e.g. in recreational interests and activities), and attention (e.g. social inattentiveness). Each symptom has questions about the specific symptom which help the interviewer to evaluate that symptom. The responses are: none=0, questionable=1, mild=2, moderate=3, marked=4 and severe=5. For example, hallucinations are divided into auditory hallucinations, voices commenting, voices

conversing, somatic or tactile hallucinations, olfactory hallucinations, visual hallucinations and global rating of severity of hallucinations and to evaluate auditory hallucination there are two questions (1- Have you ever heard voices or other sounds when no one is around? 2- what did they say?) The responses are assessed as: none, questionable, mild: subject hears noise or single words; they occur only occasionally, moderate: clear evidence of voices; they have occurred at least weekly, marked: clear evidence of voices which occur almost every day, and severe: voices occur often every day (Andreasen, 1984; Andreasen, Carpenter, Kane, Lasser, Marder, and Weinberger, 2005).

The author of these scales has indicated that the reliability of the SANS and SAPS was between good and excellent for most items: these results were based on information that came from the research of nurses who are rating symptoms weekly using these scales, the primary physician reports, and the clinical assistants who interviewed the patients. Their reports showed that the SANS and SAPS rating reflected the severity of symptoms of schizophrenia (O'Leary, Flaum, Kesler, Flashman, Arndt, and Andreasen, 2000). Andreasen (1984) declared that SANS have well-documented reliability and some external validity, such as correlation with premorbid functioning, ventricle-brain ratio, and cognitive impairment. The scale has good internal consistency (Andreasen, 1985). According to Andreasen and Flaum (1991) the development of more objective definitions and extensive description of negative symptoms has led to improvement in the reliability of SANS. There is some evidence which confirms that SANS has an adequate inter-rater reliability coefficient for negative symptoms in five different cultural settings. These studies showed that objective definitions lead to good-to-excellent reliability for most negative symptoms, and global rating coefficients are consistently above 0.6 in all studies. Regarding SAPS, generally, the results showed that the inter-rater reliability coefficients for positive symptoms were higher in later studies (Andreasen and Flaum, 1991). The validity of the SAPS and SANS has been estimated by factor analysis, which reflected three dimensions: negative symptoms (affective flattening, alogia, avolition-apathy, and anhedonia-asociality), psychoticism (hallucinations and delusions), and disorganization (inappropriate affect, bizarre behaviour, and formal thought disorder). The construct validity was supported by studies which demonstrated a relationship between negative and positive dimensions and neuropsychological tests. Thus, O'Leary's, et al. (2000) results showed that

negative symptoms are distinctly associated with cognitive dysfunction (O'Leary, et al. 2000).

Consequently, the current study will depend on these results of reliability and validity as an indication of the suitability of SANS and SAPS. For the current study the researcher has conducted translation of the SAPS and SANS from English to Arabic, and they have been sent to four Saudi experts in psychiatry (two psychiatrists in Al-Amal hospital for psychological health in Riyadh and two psychiatrists in the Eastern province mental illness hospital) to do back-translation, and to check the appropriateness and acceptability of these questions for Saudi culture and participants, and to check the maintenance of same meaning in original instrument. The researcher received two out of four back-translations with panels' comments. Some modifications were made in light of the panels' recommendations.

The procedure for administering the scale for the Assessment of Positive Symptoms (SAPS), and Scale for the Assessment of Negative Symptoms (SANS) was as follows. Interviews were conducted on in-patients groups. Generally, the researcher reviewed all relevant case notes of each patient to collect the demographic variables and other essential information before the interview situation. All interviews were conducted in a private room, and started by taking the verbal and written informed consents from patients and the attendant nurse in the interview situations. The nurse usually attended for first 10 minutes to allow for patients to be more comfortable with the researcher. At some points of the interview, the delusional beliefs were allowed to appear by using specific conversations about patient's beliefs concerning some situations and circumstances which presented themselves during the interview situations. These specific conversations gave patients the opportunity to talk about beliefs which may have been unbelievable to others. The patients were given a chance to convince the researcher about their beliefs which led to elicit more delusional ideas and bizarre content. Some of the SAPS and SANS items were based on observations made by the researcher in different situations. Due to the fact that SAPS and SANS require the rater to incorporate evidence from different sources, the current study used direct observation both during the interview situation and in different situations while the researcher was available in the in-patient section. Furthermore, the researcher reviewed the clinician's views and observations concerning every patient.

### 3-The MacArthur-Maudsley Delusions Assessment Schedule (MMDAS)

In the current study, the MMDAS instrument can meet the following requirements:

Firstly, the MMDAS instrument will be applied after the delusion types and delusional content are identified by the standardised questionnaire the Scale for the Assessment of Positive Symptoms (SAPS). The aim of MMDAS is to elicit the impact of delusional beliefs on a patient's life and behaviour, particularly the negative effects of these beliefs, specifically violent behaviour, directed at the patients themselves, or on any other object which may become a violence target, i.e. people, animals, or things (Appelbaum, Robbins, and Vesselinov, 2004). For the purposes of the present study, MMDAS can determine if there any differences between groups of patients in the effects of delusions on a patient's life. Secondly, The MMDAS can also present a practical means of evaluating and rating the dimensions of delusional beliefs. It is stated that the reliability of this instrument is likely to be increased by using large sample (Appelbaum, Robbins, and Roth, 1999). Therefore, the researcher tried to obtain a sufficient sample to get acceptable reliability in the current study.

The original version of this instrument, the Maudsley Delusions Assessment Schedule (MDAS), was designed and developed by Taylor, Garety, Buchanan, Reed, Wessely, Dunn, and Grubin (1994). The (MDAS) is a standardised interview schedule which assesses eight dimensions of delusional beliefs. These dimensions reflect (1) the degree of conviction that is, whether the belief is stable, and whether the belief is firmly sustained or is merely a mild unusual belief. (2) It assesses the negative emotions which result from the chosen delusional belief. (3) It also evaluates the effects of delusional belief in preventing the subject from acting. (4) Also, it reflects the effect of the delusional beliefs as represented by the subject's acting according to the delusional belief, such as violent behaviour. These assessed dimensions also reflect the degree of pre-occupation (5), systematisation (6), and the level of patient's insight concerning the miscellaneous delusional and bizarre beliefs (7). Finally, it assesses the pervasiveness of delusional belief in patient's experiences (8) (Cheung, Schweitzer, Crowley, and Tuckwell, 1997; Fear, Sharp, and Healy, 1996).

The MMDAS is a revision of the MDAS, as modified by Appelbaum, Roth, and Robbins (1999). The MMDAS was created for use in the MacArthur Violence Risk Assessment research programme, from which has been derived the name of the new

instrument. The MMDAS is considered to be an appropriate instrument to probe and describe the delusional beliefs, especially, predominant delusions, in particular the delusion which has recently had the greatest or a major impact in patient's life. It is based on a standardised interview which is divided into two parts. The first part is focused on the dominant delusion and its effect. The second part is completed if the delusional belief relates to or contains any violent content or beliefs. It is composed of seven different dimensions: conviction; negative affect relating to belief; acting on belief; refraining from acting because of belief; preoccupation with belief; pervasiveness of belief; and finally the interviewer rating which is based on the global impression (fluidity). Specific questions are asked for the four dimensions (conviction, negative impact, acting on belief, and, the refraining from acting), and the last three dimensions are rated by the interviewer with a dependence on all data which is collected during the interview situation and the interviewer's overall impression. Moreover, before the interviewer uses this instrument, the type and content of delusions should be identified by another clinical interview (therefore, in the current study will use the SAPS to identify the types and content of delusion). The interviewer should also specify if the current delusion is the same dominant delusion as found in the previous assessment, or whether there are any substantial changes. All this important information should be recorded in full detail.

In general, the reliability of the scoring of this instrument was reported to be quite good (Appelbaum et al., 2004). The reliability of this instrument was estimated by using the inter-class correlation coefficients (ICCs) of interview items. Appelbaum, et al. (ibid.) assessed the reliability of interviews by reviewing a video tape of interviews of five patients with delusions from a total of 15 patients, which had been conducted by three clinicians from total of 19 interviewers. Then, all 19 of the interviewers reviewed the tapes independently and completed the MMDAS ratings. The result showed that there was only one poor correlation, that for "fluidity" (which reflects the interviewer's impression); therefore, this item was excluded from later analysis. For other dimensions of the MMDAS the ICCs were in the acceptable range ( $> 0.83$ ), with an exception for the pervasiveness dimension (ICC = 0.46). Furthermore, the reliability of classification of types of delusions was re-evaluated by the first author because some of the delusions were not rated reliably by interviewers. Thus, the author rescored at least one type of delusion, often by adding additional description, in 172 cases from the total of 328 cases



(Appelbaum et al, 1999). It was difficult to establish comparisons to assess convergent validity between MMDAS and other dimensional scales because they differ in their dimensions (Appelbaum, et al. 1999).

In the current study, the researcher translated the MMDAS into Arabic, and it was sent to a panel of four experts in this field (two psychiatrists in Al-Amal hospital for psychological health in Riyadh and two psychiatrists in the Eastern province mental illness hospital) to do back-translation, and to check the appropriateness and acceptability of these questions for Saudi culture and participants, and to maintain the same meaning as the original instrument. The researcher received two out of four back-translations with panels' comments. Some modifications were made in light of panels' recommendations to adapt this instrument to Saudi society.

Regarding the validity and reliability of the instrument in Saudi society, the back-translation process ensures some level of face and content validity. For other aspects of reliability and validity, the current study will depend on the predictive validity and reliability of the original instrument, and additionally the researcher will estimate validity (predictive) and reliability (inter-rater) in the current sample.

The procedure for administering the MMDAS was as follows. It was used with patient groups only. The researcher interviewed patients after the SAPS and SANS interviews situations were completed. The pre-information for the MMDAS was collected from different sources; patients records including any history of violence, and nurses' daily reports. The objective observations were conducted on patients in daily situations, and in their interaction with others, to record any violent incidents, and to assess any negative effects of delusions on each patient's behaviour. The MMDAS interviews were conducted after the pre- information notes were completed. The patients completed the interviews in one to two sessions depending in part on their educational status. This instrument was difficult for patients to understand; therefore the researcher gave extra explanations of each question which took a lot of time. Generally, male patients were more cooperative in all interviews and scales. They also welcomed the opportunity to give more details, even unnecessary details, compared with females who usually refused to talk or to spend a long time in the interview situation. This observation may relate to their educational status or it might reflect the effects of social roles of both male and

female in Saudi culture which encourages males to participate more in social life than females (Yamani, 2008).

#### 4- The Aetiological Beliefs Questionnaire (ABQ)

The ABQ was developed by Salmon, Woloshynowych and Valori (1996) to assess patients' beliefs regarding the causes of their symptoms. The original version consisted of 50 items which were divided into different factors and subscales based on the perceived common causes of groups of symptoms, e.g. stress, wearing out, environment, internal functional causes, and life style causes. The reliability of BAQ in the original version was estimated from internal consistency of subscales by using standardized Cronbach  $\alpha$  reliability coefficient. It had a satisfactory internal consistency (Salmon, et al. 1996).

The Arabic version was derived from the original version by Alqahtani (2008). Alqhatani made the translation and back-translation of the questionnaire and sent it to Saudi staff in King Khalid University in the Southern area of Saudi Arabia to assess the appropriateness and acceptability of translated items. The validity of the Arabic version was estimated by confirming the face-validity among the patients, who were interviewed in order to examine the face validity of the original items and to elicit the additional items and beliefs. The Arabic version the ABQ is composed of 37 items including 34 items of the original version, and four cultural items which were added for their relevance to Saudi culture and to reflect prevalent supernatural and religious beliefs (evil, evil eye, magical ideation, and test or punishment of Allah). The 37 items were grouped into seven sub-scales (weakness 7 items, invasion 5 items, emotion 5 items, serious disease 6 items, digestion 4 items, supernatural 4 items and lifestyle 6 items). The answer to each question is scored as a number on a three-point scale, and the score for each subscale is probably the sum or mean of the responses. The responses divided into three choices (probably has not =0, uncertain=1, and probably has=2).(Alqahtani, and Salmon, 2008).

The present study used the Arabic version of ABQ (Alqahtani, and Salmon, 2008) which was developed for use on the Saudi population. The ABQ was administered to both patients and control groups in order to compare them in their aetiological beliefs and the given reasons for their symptoms. This questionnaire may also aid in identifying cultural effects on the way that patients define the reasons and causes of their symptoms

in the Saudi population. Furthermore, it can help in understanding the prevalent explanations of symptoms among Saudi culture which may have an effect on content of delusions of schizophrenic patients.

Procedure for administering the ABQ in both groups:

Due to the nature of this questionnaire which asks about symptoms, the control group was recruited from the General Practice clinics (GP) which were attached to medical school hospitals in all chosen universities in study areas. The sample also was selected by using announcements about the need for volunteers who have any sort of symptoms such as allergy, hair loss, or any psychological problems, and also have the willingness to participate. The announcements were distributed in all waiting areas of both males and females. Those who agreed were interviewed and asked to complete the ABQ before consultation in a private room in waiting area, while waiting for their consultations. For patients who were illiterate, the questionnaire was read out by the researcher for both male and female patients. The participants were asked to answer the ABQ based on their beliefs about what caused the main symptom for which they were seeking treatment. Also, more explanations were added to make sure that their answers represented their own beliefs about the causes, not the doctors' explanations. Regarding the patients group, the ABQ was given in the same interview situation as other scales, and patients were asked to complete the questionnaire. The researcher again read the questionnaire for illiterate patients and recorded their answers.

#### 5- Schizotypal- Personality Questionnaire (SPQ)

The SPQ was designed by Raine (1991) and it is designed to measure three components of schizotypal personality as confirmed by factor analysis: (1) cognitive-perceptual, which was based on assessing ideas of reference, odd beliefs, magical thinking, unusual perceptual experiences, and paranoid ideation. (2) Interpersonal, which was based on evaluating social anxiety, no close friends, constructed affects, and paranoid ideation. (3) Disorganized, this assesses odd behaviours, and odd speech. The SPQ is composed of 74 items that were grouped into nine sub-scales (ideas of reference: 9 items, excessive social anxiety: 8 items, odd beliefs or magical thinking: 7 items, unusual perceptual experiences: 9 items, no close friends: 9 items, odd speech: 9 items, odd behaviour: 7 items, constricted affect: 8 items, and suspiciousness: 8 items) responses

are either Yes (1) or No (0) total score can therefore range from 0 to 74. The score on each of the three factors described above can be derived from the raw scores of these sub-scales which relate to each component. The SPQ was also designed to be appropriate to utilize both with normal populations and psychiatric patients. The original norms of the SPQ were derived from undergraduate students in California. The norms were as: sample 1 (n= 302): M =26.9, SD =11.0 range = 0-.58, and sample 2 (n=220) M = 26.3, SD=11.4, range =1-.57. Raine reported that the SPQ may be affected by the research context and local sub-culture; in fact the original sample with which the SPQ was developed showed a high level of schizotypal scores that were attributed to cultural effects. Hence, the author recommended that researchers can define their own high-low cut-off by using 10% high-low cut-off from their sample scores depending on the derivative data of their sample. The reliability of the SPQ was measured by two methods, the first was internal reliability, and the second was, test-retest reliability over two months (Raine 1995). Both kinds showed significant correlations between 0.90 and 0.82. The validity was examined by using convergent validity with schizophrenia scales, discriminant validity with scales of psychosis-proneness, and criterion validity with the DSM-III-R criteria for clinical diagnosis of schizotypal personality. All validity correlation coefficients were significant between  $r=0.18-0.37$  (Raine, 1995).

In the current study the SPQ was administered to the comparison group only, for the purpose of measuring the level of schizotypy among the Saudi population. Also it was used in order to investigate and understand the relationship between the mean scores of schizotypal personality and delusional ideas in non-clinical Saudi populations, and the relationship of schizotypal personality to predominant delusional themes in Saudi schizophrenic patients. Thus the results of the SPQ may reflect the cultural and social context (Raine 1995).

For the present study, the original questionnaire items were translated into Arabic (using forward and backward translation) and sent to a panel of ten experts in this field (two psychiatrists in Al-Amal hospital for psychological health in Riyadh, two psychiatrists in the Eastern province mental illness hospital, two academic staff in the department of psychology at King Saud University in Riyadh, two academic staff in the department of psychology at King Abdul Aziz University in Jeddah, and two academic staff in the department of psychology at King Faisal University in the Eastern Province). The

experts were asked to comment on each item's appropriateness and acceptability, to identify additional items that may be suitable for Saudi culture, and to ensure that the translated elements maintain the same meaning as in the original instrument. The researcher has received eight out of ten back-translations with panels' comments. The modifications were made on light of panel, recommendations on how to adapt this instrument to Saudi society.

Regarding the validity and reliability of the instrument in Saudi society, the back-translation process ensures some level of face and content validity. For other aspects of reliability and validity, the current study will rely on the construct validity and reliability of original instrument, and additionally the researcher will estimate the construct validity and alpha reliability (Chronbach's) with the current sample.

Procedure: The SPQ was administered to students and staff who were recruited from Saudi universities in the study areas, after the ethical approvals were obtained for the current study. The sample was selected by choosing classroom numbers randomly in social and medical schools, according to a random numbers table. Then the researcher and her assistants in male sections asked for volunteers who have the willingness to participate in the current study. Full information was given about the aims of study and the promises of confidentiality were also given before conducting the SPQ. Also, the announcements were distributed among the schools. The participants who agreed to participate in current study were asked to give their written consents. Each participant spent approximately between 30-40 minutes to complete the questionnaire.

## **Chapter 4: Study 1 the influence of residence area and sex on Schizotypy scores in the Comparison group**

### **Introduction**

Meehl (1962) suggested the term schizotaxia to refer to the proneness to develop schizophrenic symptoms (e.g. magical thinking, cognitive defects), and that schizotypal personality characteristics associated with schizotaxia were widespread in the normal population, and thus schizotypy also may be associated with the disposition to develop the disorder or the vulnerability to the disorder. Accordingly, schizotypy questionnaires were developed both in the USA by Chapman and collaborators (Chapman, Chapman, & Raulin, 1976), and in the UK by Claridge and collaborators (Claridge & Brocks, 1984). The supposition was that the prevalence of schizotaxia features might be tested by using schizotypy questionnaires among general populations (Chapman, Chapman, Kwapil, Eckblad, & Zinser, 1994).

The purpose of the first study was to identify possible effects of demographic and sociocultural differences in the samples from three areas of Saudi Arabia, on scores on a Schizotypal personality questionnaire. The idea of schizotypy is that there is a continuum of psychotic symptomatology in the normal population, as proposed by Claridge, 1990, with “schizophrenia” being merely the extreme end of this continuum (Cited in Bentall, 2004, p. 107). Also, it has been asserted that schizotypy scores are indicative of psychosis-proneness (Bentall, 2004): and that environmental factors as well as genetic factors can contribute to psychosis-proneness (MacDonald, et al. 2001). Thus it is possible that variations between regions in schizotypy are indicative of sociocultural risk factors in the environment of the participants to the survey.

As a result of the cultural differences, described in Chapter 2, between the three sample areas, it was predicted that there would be higher schizotypy scores in Riyadh than in Jeddah, and that scores in Eastern Province would lie between the two. However, it is possible that any differences observed between residency groups might be due to demographic rather than cultural differences. Therefore, demographic differences between samples were measured, and taken into account in the design through analysis of covariance.

## **Method**

### **Design**

The independent variables are place of *residence* (Riyadh, Jeddah, and Eastern Province) and *sex* (male, female) the dependent variables are the three sub-scales of SPQ, *cognitive, interpersonal and disorganised*. Other demographic variables (educational level, economic status, marital status, age) are co-variables in the design.

### **Participants**

For the analysis of schizotypal personality, students, teaching and non-teaching staff were recruited from universities in the three regions by making announcements for volunteers. A semi-stratified sample was obtained – it was attempted to find participants representing a full range of educational and economic levels. Thus despite being a university sample, many were of a lower educational and economic level because it included non-teaching staff (manual and service sector workers).

The sample of students and staff was selected semi-randomly from within each organization by choosing numbers of classrooms in social and medical schools, which matched the chosen random numbers in the random numbers table. In female sections a total of 101 participants (71 student and 30 staff) were recruited, whereas in the male sections a total of 112 participants (79 student and 33 staff) were recruited. The student samples were selected randomly from the fourth year of school; the year has been also selected randomly by writing all years on piece of papers and put them in basket than choose one piece of paper which will represent the year of classroom. Students in all three areas and in both male and female were selected from the fourth year. Then the researcher and their assistants in male sections asked verbally for volunteers who have the willingness to participate in the current study. Also, the written announcements were distributed among the schools to obtain the employees and staff samples. Full information was given about the aims of study and the promises of confidentiality were also given before conducting the SPQ. The number of students that were selected in this way and the population of classes from which the sample of classes was selected are shown in table 4.1.

Table 4.1 student samples

	Riyadh		Jeddah		Eastern Province	
Sex	Female	Male	Female	Male	Female	Male
The total number of student samples in chosen classes	24	29	21	30	26	20
Population of classes	80	90	75	82	65	70
Percentage	30%	32%	28%	36.6%	40%	28.6%

### **Materials**

In the current study the Schizotypal Personality Questionnaire (SPQ) (Raine, 1991) was administered on a non-clinical sample. Full details about the SPQ are shown in Chapter 3.

### **Procedure**

The participants who agreed to participate in current study were asked to give their written consent. Each participant then spent approximately between 30-40 minutes to complete the questionnaire. Questionnaires were administered individually and in groups. The researcher administered questionnaires to female groups, and a male assistant administered them to male groups.

### **Reliability analysis**

As tested on this sample the alpha reliability for the nine-item scale was high (0.91). An alpha reliability of 0.7 is considered satisfactory.



## Results

### a) Demographic characteristics of the sample:

A total of 213 participants were tested using the SPQ in three different sample areas (Riyadh, Jeddah, and the Eastern Province) in Saudi Arabia.

Approximately equal numbers of male and female participants were recruited in the three residence areas, as shown in Table 4.2.

Table 4.2: Sex

Residence	Male	Female
Riyadh	39	34
Jeddah	35	33
Eastern province	38	34
Total	112	101

Table 4.3: Age in years

Residence	Male	Female
Riyadh	Mean 22.67, SD 2.88	Mean 31.26, SD 10.46
Jeddah	Mean 27.71, SD 8.91	Mean 27.00, SD 9.26
Eastern province	Mean 28.84, SD 8.46	Mean 22.53, SD 4.76

The mean and standard deviation of the ages of male and female participants is shown in Table 4-3. It was not possible to exactly balance the age of participants in the different sub-samples. Regarding, age and residence, the participants who live in Jeddah were on average older than other participants in other two areas of study. The significance of differences in age amongst the major categories of the sample was tested using univariate ANOVA with age as the dependent variable. The results showed that the differences between groups in age according to sex and residence, the sex\*residence

interaction was significant,  $F(2,207) = 16.62$ ,  $p < .005$ . The mean age of the male group in the Eastern Province was significantly older than other male groups in the remaining residence areas by Mean 28.84, SD 8.46. Also, the female group in Riyadh was significantly older than the other female groups in the other residence areas of study by Mean 31.26, SD 10.46.

Differences in frequencies for marital status are shown in Table 4.4 for all three residence areas, using a crosstabulation.

Chi-square showed that 6 cells had expected count less than 5, and more than one cell had an expected frequency less than 1 therefore the analysis was repeated leaving out the ever-married groups. The frequencies differed across gender, residence and marital status,  $\chi^2(6, N=208) = 25.367$ ,  $p < 0.0005$ . The difference in frequencies for marital status for all residences in male groups was significant  $\chi^2(2, N=111) = 16.978$ ,  $p < 0.001$ . Also, it was significant with female groups in  $\chi^2(2, N=97) = 7.659$ ,  $p < 0.05$ . The results showed that the male sample from Riyadh were more frequently (92%) single in comparison with the other two residence areas, whereas, the male participants in the Eastern Province were more frequently (50%) married compared to other residence areas. Just one case showed to be ever-married in male groups, and it appeared in Jeddah. Only 2% of the entire sample were ever-married, so it not possible to assess whether any regional differences exist for this category.

Table 4.4: Marital status frequencies, with corresponding percentages of the total male sample and total female sample

	Marital status	Riyadh	Jeddah	Eastern Province	Row totals
Male	Single	36 (92%)	21 (60%)	19 (50%)	76 (68%)
	Married	3 (8%)	13 (37%)	19 (50%)	35 (31%)
	Ever-married	0 (0%)	1 (3%)	0 (0%)	1 (1%)
	Total	39 (100%)	35 (100%)	38 (100%)	112 (100%)
Female	Single	20 (59%)	19 (58%)	30 (88%)	69 (68%)
	Married	11 (32%)	13 (39%)	4 (12%)	28 (28%)
	Ever-married	3 (9%)	1 (3%)	0 (0%)	4 (4%)
	Total	34 (100%)	33 (100%)	34 (100%)	101 (100%)

Because economic and educational status are ordinal level variables, a Mann-Whitney U test was conducted with independent variable (sex) to examine differences between two samples, and nonparametric one-way ANOVA (Kruskal-Wallis) was employed with independent variable (residence) in order to test differences between groups in economic and educational status.

Differences in Mean rank for economic status are shown in Table 4.5 according to sex, using Mann-Whitney.

Sex	N	Mean Rank
Male	112	92.41
Female	101	123.18

There was a significant difference between males and females in economic status ( $U = 4022.00$ ,  $N_1 = 112$ ,  $N_2 = 101$ ,  $p < .0005$ , two tailed). Thus males have a significantly higher economic status than females.

Differences in Mean rank for economic status are shown in Table 4-6 for both male and female combined according to residence, using Kruskal-Wallis.

Residence	N	Mean Rank
Riyadh	73	101.92
Jeddah	68	120.13
Eastern Province	72	99.74

There was a significant difference between the three residence areas in economic status:  $\chi^2 (2, N=213) = 6.987$ ,  $p = .030$ . Economic status was highest in the Eastern Province: Post-hoc tests (Mann Whitney) showed that Jeddah was significantly lower in economic status than both the Eastern Province,  $Z = -2.686$ ,  $p < .01$ , and Riyadh,  $Z = 1.98$ ,  $p < .05$ .

Differences in Mean rank for educational status are shown in Table 4.7 for all three residence areas combined according to sex, using Mann-Whitney.

Sex	N	Mean Rank
Male	112	99.51
Female	101	115.30

There was a significant difference between males and females in educational status ( $U = 4817.500$ ,  $N_1 = 112$ ,  $N_2 = 101$ ,  $p = .018$ , two tailed). Males were higher in educational status than females.

Differences in Mean rank for educational status are shown in Table 4.8 for both male and female combined according to residence, using Kruskal-Wallis.

Residence	N	Mean Rank
Riyadh	73	115.16
Jeddah	68	111.88
Eastern Province	72	94.13

There was a significant difference between the three residence areas in educational status:  $\chi^2(2, N=213) = 7.756$ ,  $p = .021$ . Educational status was highest in the Eastern Province: Post-hoc tests (Mann Whitney) showed that Riyadh was significantly lower in educational status than both the Eastern Province,  $Z = -2.643$ ,  $p < .01$ , and Jeddah,  $Z = -2.205$ ,  $p < .05$ .

Table 4.9: relationship between residence and region of origin frequencies, with corresponding percentages of the total of each residence area sample

	Residence			
Region of origin:	Riyadh	Jeddah	Eastern province	Row total
Southern province	5 (7%)	13 (19%)	29 (40%)	47 (22%)
Western province	6 (8%)	33 (49%)	12 (17%)	51 (24%)
Middle	61 (84%)	5 (7%)	15 (21%)	81 (38%)
Others	1 (1%)	17 (25%)	16 (22%)	34 (16%)
Total	73 (100%)	68 (100%)	72 (100%)	213 (100%)

The population in the three residence regions also differs according to their region of origin. Most residents of Riyadh originate from the middle region, that is, in and around Riyadh itself (Table 4-9). By contrast, most residents of Eastern province do not originate locally, but have moved to Eastern Province from other areas of Saudi Arabia. Thus Riyadh is mostly a stable local population, and Eastern province is populated by internal migrants. Jeddah is in between. Chi-square after recoding the variables of region of origin, shows that these differences are significant:  $\chi^2 (6, N=213) = 122.26, p < .0001$ .

#### b) Factor analysis of SPQ

The three factors of SPQ utilised above were identified on a Western sample, and therefore factor analysis was performed in order to see whether the factor structure would replicate on a Saudi sample. All data requirements for factor analysis were met. There were 9 variables and 213 participants, that is, more than 23 participants per variable. Principal axis factoring with varimax rotation was specified, but the analysis revealed only a single factor with eigenvalue  $>1$ , suggesting that the individual items were more strongly intercorrelated than in the Western sample, with all items loading on the principal factor at  $> 0.517$ . This factor accounted for 53.7% of the overall

variance. The strongest weightings were on ideas of reference (0.80) and suspiciousness (0.79). The values of the correlation coefficients of the 9 variables with the single factor which has been existed from the factor analysis are shown in the Table 4-10. A re-run of the factor analysis with a forced 3-factor solution and Varimax rotation retrieved factors that approximated to those of Raine (1991). The highest loading on factor 1 was .847 for “no close friends” (interpersonal), on factor 2, .646 for “unusual perceptual experiences” (cognitive) and on factor 3, .765 for “odd or unusual behavior” (disorganized).

Table 4.10: Factor Matrix (a)

Variable	Factor
	1
ideas of reference	.800
social anxiety	.701
odd beliefs or magical thinking	.517
unusual perceptual experiences	.775
odd or eccentric behaviour	.684
no close friends	.781
odd speech	.777
constricted affect	.730
suspiciousness	.785

c) Variation in schizotypy scores

The participants have been examined to identify mean scores of schizotypal symptoms in nonclinical populations in Saudi Arabia, and test for differences in schizotypy scores between three sub-cultural areas.

The significance of effects of residence area and sex on SPQ scores was tested by using MANOVA with three dependent variables, corresponding to the three SPQ subscales: cognitive, interpersonal and disorganised symptom types. The main independent variables, in order to test the hypotheses were residence and sex. In order to control for demographic variables in the sample, those which showed significant differences were



entered into the design as covariates. The covariates in the design were economic status (ordinal, three levels), educational status (ordinal, two levels) and marital status. Marital status, being categorical, was coded as a dummy variable with 1 = single, 2 = married or ever-married.

The MANCOVA showed also there was a significant effect of residence on the dependent variables, overall, Pillai's  $F(6,404) = 4.58$ ,  $p < 0.00005$ , partial  $\eta^2 = 0.064$ . There was also a significant effect of sex on the three dependent variables, Pillai's  $F(3,201) = 3.36$ ,  $p < 0.05$ , partial  $\eta^2 = 0.048$ . The sex\*residence interaction was not significant.

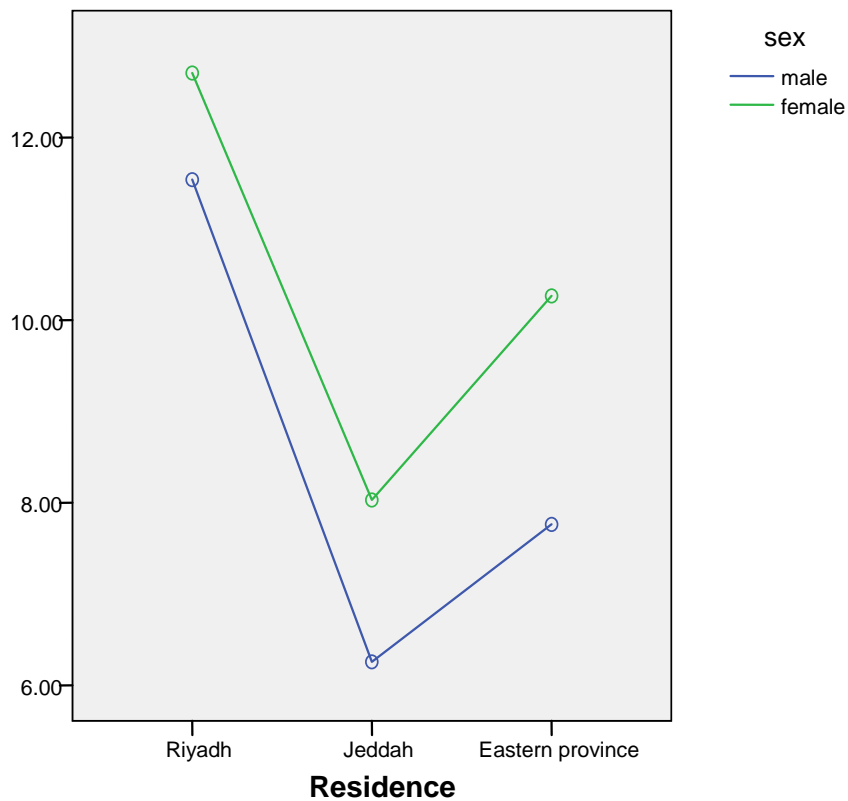
Each dependent variable was subjected to a separate ANOVA to determine the effect of residence and sex on each. There was an overall significant effect of residence on the *cognitive* Pillai's  $F(2,203) = 8.05$ ,  $p < 0.00005$ , partial  $\eta^2 = 0.073$ ; on *interpersonal*, Pillai's  $F(2,203) = 4.17$ ,  $p < 0.00005$ , partial  $\eta^2 = 0.039$ ; and on *disorganised*, Pillai's  $F(2,203) = 10.65$ ,  $p < 0.00005$ , partial  $\eta^2 = 0.095$ . Simple contrasts showed that there was a significant difference between scores in the Riyadh group and the other two groups, for all three subscales. For Riyadh vs. Jeddah, simple contrasts were significant for cognitive  $p < .0005$ , interpersonal  $p < .05$  and disorganized  $p < .005$  subscales. For Riyadh vs. Eastern Province, simple contrasts were significant for cognitive  $p < .005$ , interpersonal,  $p < .05$  and disorganized subscales; There was a significant effect of sex only on the *cognitive* score Pillai's  $F(1,203) = 6.18$ ,  $p < 0.05$ , partial  $\eta^2 = 0.030$ . There was no significant effect of sex on the interpersonal and on disorganized scores. There was no significant effect of sex\*residence interaction on the cognitive, interpersonal and disorganized scores.

Regarding the demographic variables entered as covariates, there was a significant effect only of economic status on disorganised symptoms. Pillai's  $F(1,203) = 4.17$ ,  $p < 0.05$ , partial  $\eta^2 = 0.020$ . The other demographic variables did not show any significant effect on the three dependent variables. These results confirmed the strong effect of interdependent variables (sex and residence) on the three dependent variables symptoms.

Table 4.11: effects of residence and sex on schizotypy subscales

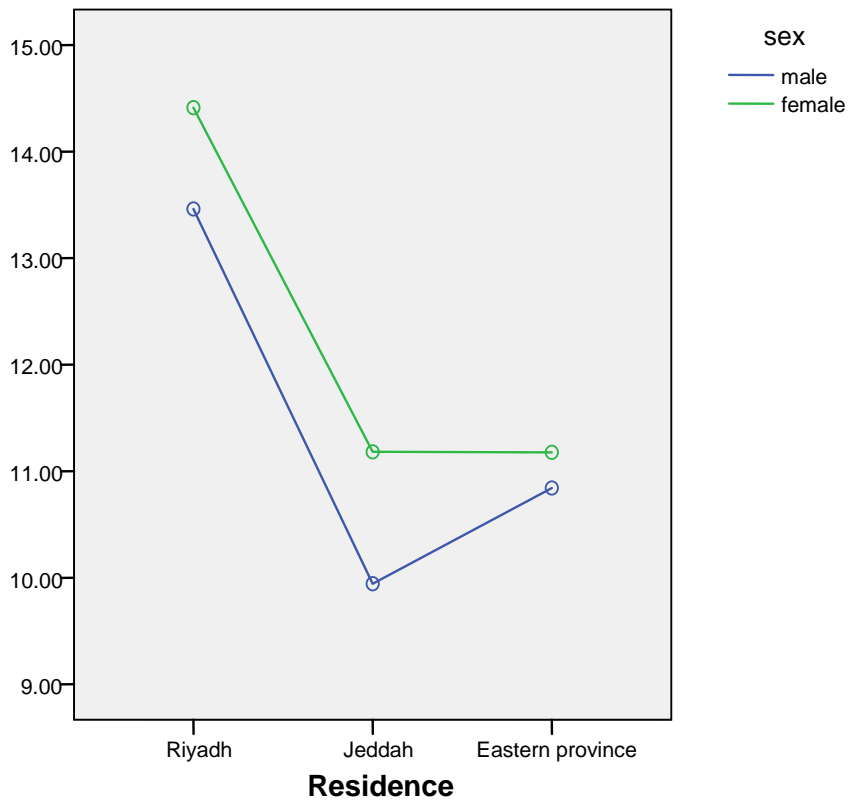
Dep. variables	Sex	Riyadh	Jeddah	Eastern province
Cognitive	Male	Mean 11.54 SD 6.11	Mean 6.26 SD 7.11	Mean 7.76 SD 6.61
	Female	Mean 12.71 SD 6.51	Mean 8.03 SD 6.48	Mean 10.26 SD 6.32
Interpersonal	Male	Mean 13.46 SD 6.97	Mean 9.94 SD 6.92	Mean 10.84 SD 7.10
	Female	Mean 14.41 SD 7.00	Mean 11.18 SD 7.34	Mean 11.18 SD 6.20
Disorganised	Male	Mean 6.23 SD 3.80	Mean 3.31 SD 3.79	Mean 3.82 SD 3.82
	Female	Mean 5.85 SD 4.34	Mean 2.72 SD 2.58	Mean 3.82 SD 3.36

Figure 4-1 shows the mean scores on the cognitive subscale according to sex and residence



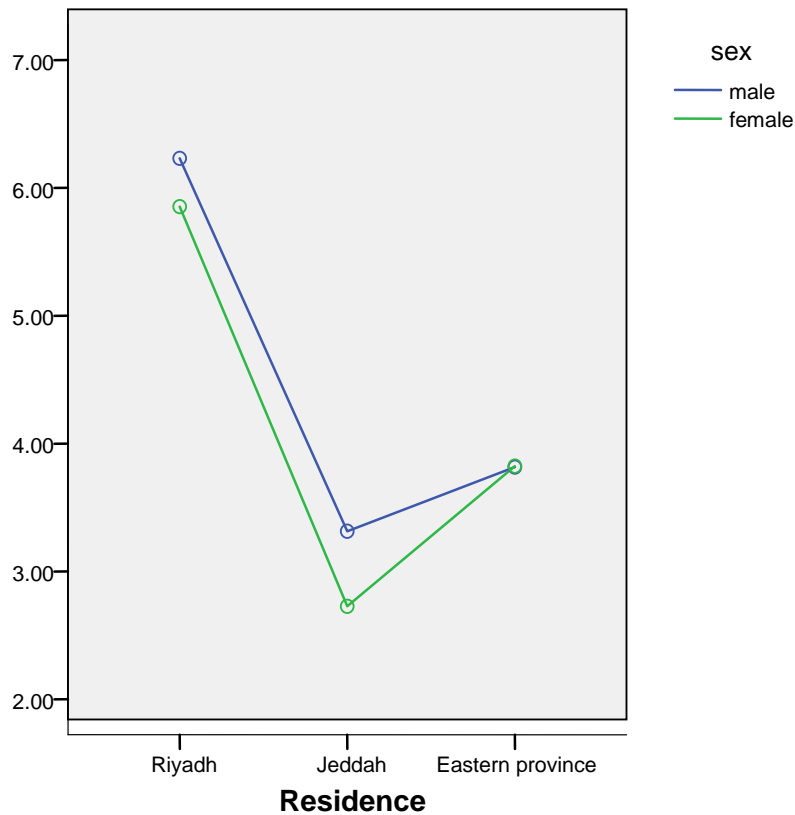
The descriptive statistics for the cognitive subscale among male and female groups showed that higher mean scores appeared in the female groups with an overall mean of 10.36, and SD 6.65 with comparison to the male groups in the three residence areas whose overall mean was 8.61, and SD 6.91. Furthermore, the strongest effects on the cognitive variable appeared in the Riyadh area (Mean as 12.08, and SD 8.77)

Figure 4.2 shows the mean scores on the interpersonal subscale as a function of sex and residence



Females had higher scores than males on the interpersonal variable across all three residence areas (overall Mean 12.27, and SD 6.96). The graph (Figure 3) also showed that the strongest effect on the interpersonal variable among the three residence areas was also found in Riyadh both for male and female participants, in comparison with the Eastern Province and Jeddah respectively.

Figure 4.3 shows the mean scores on the disorganised subscale for male and female participants, in the three residence areas



The graph showed that higher mean scores on the disorganised variable were found in male groups regardless of their residence areas (overall Mean 4.5, and SD 3.98). The highest scores in both males and females were found in the Riyadh area, then Eastern Province, finally Jeddah.

To conclude, the highest schizotypy scores on all three subscales or symptoms types appeared in participants from the Riyadh area. Sex had effects regardless of the area of residence two of the dependent variables (cognitive and interpersonal) showed higher scores in female groups in all three areas of study, just one variable (disorganised subscale) showed a higher score in the male group.

## Discussion

The results showed significant effects of residence on the three dependent SPQ scales, cognitive, interpersonal and disorganised. The strongest effects were found on the cognitive variable which assesses e.g. ideas of reference, odd beliefs, magical thinking and paranoid ideation. However the factor analysis showed that these three variables are correlated for the Saudi sample, and that we should therefore concentrate on the overall MANOVA model rather than over-interpreting the minor differences between scales.

Overall, females showed higher scores across all the dependent variables of the schizotypal questionnaire. However, the individual analysis of the three scales revealed that only the score on the cognitive variable was significantly higher in females.

In order to interpret current results and to identify whether these findings can be considered normal or not, some comparisons have been made between the present results and some previous studies used SPQ in Western and Asian countries. Firstly, a Los Angeles' study was conducted on 103 males and female adults recruited from a nonclinical population. The scores in three factors of SPQ were as follows: 1- Cognitive-perceptual (Mean 11.1, SD 7.4) 2- Interpersonal (Mean 9.7, SD 6.8) 3- Disorgnized (Mean 6.0, SD 4.5) (Raine, 1994).

Secondly, a Mauritian study was conducted on 1201 males and females from the general population. The results for the three factors of SPQ were as following: 1- Cognitive-perceptual (Mean 11.1, SD6.1) 2- Interpersonal (Mean 12.4, SD6.7) 3- Disorganized (Mean 4.6, SD3.9) (Reynolds, 2000).

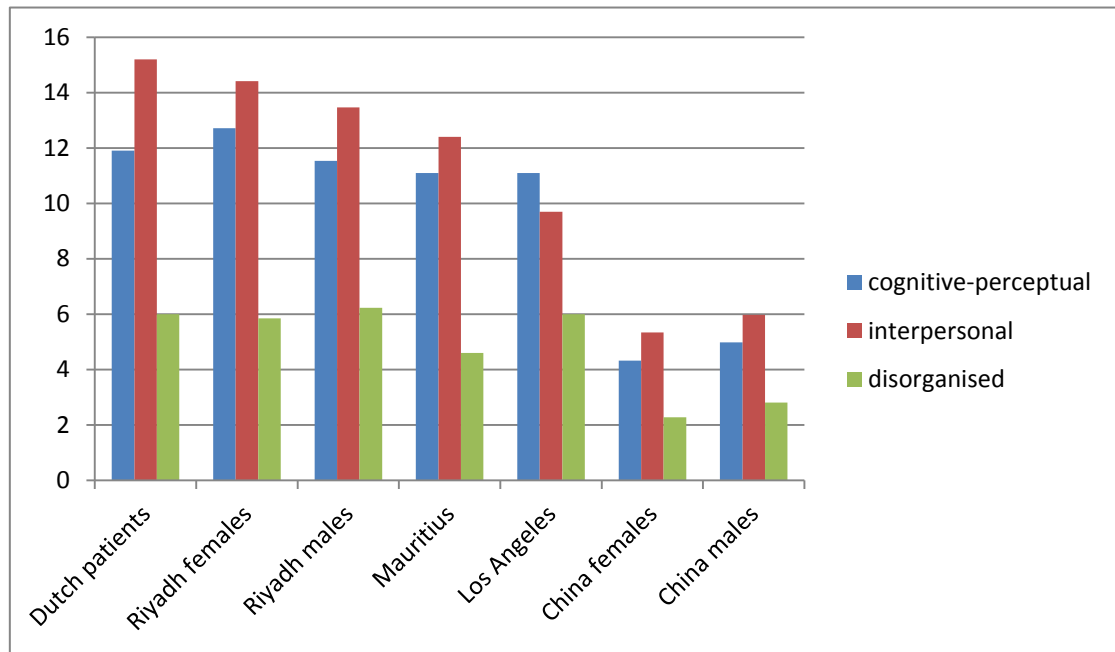
Thirdly, a Dutch study was conducted on 168 patients and their relatives, of whom 51 were schizophrenic patients, and this showed for three factors of SPQ that the patients' scores were as follows: Cognitive-perceptual (Mean 11.9, SD8.5) Interpersonal (Mean 15.2, SD10.3) and Disorganized (Mean 6.0,SD5.1) (Vollema, Siskoorn, Appels, & Kahn, 2002).

Fourthly, a study based in China was conducted on 538 males and females from the general Chinese population, and this showed results on the three factors of SPQ as follows: in males Cognitive-perceptual (Mean 4.98, SD4.30) Interpersonal (Mean 6.81,

SD5.98) and Disorganized (Mean 2.81, SD2.86), and in females Cognitive-perceptual (Mean 4.32, SD4.08) Interpersonal (Mean 5.34, SD4.79) and Disorganized (Mean 2.28, SD2.59) (Guo, et al. 2011).

Therefore, these studies allow a comparison with present results according to sex and residence variables. It appeared in general that the female group, in the Riyadh area, was higher in cognitive-perceptual scores than both clinical and non-clinical samples in previous reports with (Mean 12.71, SD6.51). On the other hand, the scores of the male group, in the Riyadh area, were slightly higher than the studies in Los Angeles and Mauritius and somewhat lower than the patients in the Dutch study with (Mean 11.54, SD6.11). On the interpersonal factor also, both male and female groups in Riyadh area scored higher than the non-clinical samples in previous reports, however, for the female group in the Riyadh area the results were close to the Dutch clinical sample with Mean =.41, SD = 7.00). In other study areas (Jeddah and the Eastern Province) scores were located in the normal sample range reported in previous Western studies but higher than that in the Asian (China) study. On the disorganized factor, the male group in Riyadh scored somewhat higher than the non-clinical sample in Los Angeles and the clinical sample in the Dutch study with Mean = 6.23, SD = 3.80). Overall, these results showed that residents of the Riyadh area and females in particular were located in the high scoring range of schizotypal personality.

Figure 4.4 shows the comparison in mean scores on the three SPQ subscale between present results and some previous studies used SPQ in Western and Asian countries



According to Meehl's ideas (Meehl, 1962) higher schizotypy scores reflect an inherited greater risk of schizophrenic disorders. Raine, et al, (1992) cited in Raine (2006) reported that females scored higher in positive symptoms and cognitive sub-scales than males, whereas, males had high scores in negative symptoms. Miller and Burns (1995) cited also in Raine (2006) indicated that males had higher scores in negative symptoms, but females scored no higher than males in positive symptoms. Guo, Colline, Subramaniam, and Chong (2001) showed that males obtained higher scores than females on all sub-scales among Asian populations. Guo, et al. (2011) reported also that their results were in conflict with previous Western studies. Moreover, Chen, Hsiao, and Lin (1997) cited in Guo, et al., (2011) suggested that the differences in Western and Asian results might reflect cultural effects and influences. Guo, et al, (2011) also showed in a Chinese sample that there was a relationship between demographic variables (marital status, and educational level) and high scores in sub-scales of (SPQ), in that unmarried people scored higher in interpersonal and cognitive symptoms than married people, and people with a lower education level also had high scores in negative symptoms. Guo, et al, (2011) concluded that schizotypal personality scores



may differ across cultures which might reflect the influence and role of culture among Asian population at the same time with genetic factors.

Likewise, the present results might indicate that female groups in Saudi Arabia and especially in Riyadh have an inherited disposition to display schizotypal personality characteristics compared to male groups. However, more plausibly, the results might reflect the role of culture regarding traditional sex roles and their distribution according to social and religious factors (Qureshi et al, 2001). Also, Maltby & Day (2002) found that schizotypal personality was positively correlated with religious orientation and religiosity and their results suggested that there was a significant relationship between religiosity and schizotypy traits and this also related to sex in that women showed higher scores in both schizotypy and religious measures. Moreover, in Islamic countries, especially Arab countries, females are at high risk of developing other mental and psychological disorders such as depression, anxiety, and eating disorders and are more likely to ask for mental health treatments. This is plausibly due to social factors (gender inequality, unequal right to education and work, and unequal rights of marriage) and the risk to mental health has been linked to the subordinate position of females in their society (Douki, Ben Zineb, Nacef, and Halberich, 2007). Moreover, since the cultural and psychological situations among Arab countries create and remain a threat to women's mental and psychological health, then the protection of women's mental health in Arab countries is more than just medical challenge; it is also cultural one (Douki, et al., 2007). Thus, the present finding highlights the possibility of an elevated risk of mental disorder, and schizophrenia in particular, among women in current Saudi culture. The generally lower scores in males may reflect cultural factors which allow to man to behave and act freely more than woman according to the rules of Islamic *Sharia* (Al Rasheed, 2002).

The highest mean scores on schizotypy measures were apparent in the Riyadh area in comparison to the remaining regions. These results may reveal that the Riyadh sample is somewhat more at risk of developing schizophrenic symptoms or more likely to exhibit a schizotypal personality compared to other two regions in Saudi Arabia.

Higher rates of psychotic symptomatology have frequently been reported for immigrant populations: e.g. African-Caribbean immigrants to Britain (Harrison, et al. 1988),

migrants to the Netherlands (Selten, et al. 2001), Sweden (Zolkowska, et al. 2001), and Germany (Haasen, 1998, cited in Bentall, 2004, p.474). Thus migration may be a stressor that contributes to the development of psychotic symptomatology. However, this cannot explain the present results: the three research locations differ markedly in terms of the proportion of internal migrants in the sample, but Riyadh, with the most stable local population, shows the highest schizotypy scores.

These results are however consistent with other studies of the regional culture and history reported in the literature review (chapter 1), in that Najd is considered as one of the most traditional, extreme, and conservative societies in Saudi Arabia (Buchele, 2009). Furthermore, the Najd area was and remains the most religiously conservative region in Saudi Arabia (Al Rasheed, 2002).

As reviewed in the Introduction of this thesis, although there is no direct evidence, there may be a relationship between schizotypy and cultural conservatism, in terms of certain cognitive styles and ways of thinking.

The observed pattern of results and link to culture might also be argued from different theoretical perspectives. It can be explained by the double bind theory (Bateson, 1962) which is an interesting classical theory, though not currently influential. This is described as being based on the conflict generated from (a) a primary negative injunction – “do not do x or you will be punished” – where x in the current context could be a practice forbidden by custom and tribal tradition, but consistent with Islamic law and (b) a secondary injunction conflicting with the first but at a more abstract level, e.g. “follow Islam” and (c) a tertiary negative injunction that prevents escape from the situation – which may become internalised (Bateson, et al. 1956, Bateson, 1972). These conflicting messages may be given in the same time from different sources; so that whatever a person does they are in some sense a victim. It may lead to loss of the ability to differentiate distinctly between important information from different sources. (Sutker, & Adams, 1993) This can be explained the confusion in Saudi society as both a Muslim and a tribal society, that may appear as a big gap between Islamic laws and the people’s applications of them particularly the executive authorities in Saudi society (Hasna, 2003). For example Islam gives women the right to make their own decision to choose her husband, education, and work: but the tribal law as *human law* and as applied by men deals with women strictly as a subordinate and marginal group. Therefore, women

became marginalized from effective daily decisions as a result of men's extreme application of their tribal or traditional law (Hasna, 2003). It might be suggested that this sort of social stress in Saudi people, especially in females, can contribute to the emergence of schizotypal personality on the weakest rung of social life (Johns & Os, 2001).

Furthermore, there is another suggestion to explain the levels of schizotypy in the Saudi sample, in that Saudi society is one of the most enclosed communities in the world, and most Saudis prefer privacy in all of their life domains, which appears for instance in their architecture, and patterns of recreation. They prefer to spend their leisure time within their families and in the enclosed areas (Buchele, 2009). These tendencies are greatest in the Riyadh region. The continuous endeavours from Saudis to protect their privacy in one hand, combined with some of Islamic conceptions about envy and evil-eye may contribute to difficulties in understanding the intentions of others, particularly strangers, and result in paranoia about others' and strangers' intentions (Freeman, & Garety, 2003).

To sum up, the differences between regions and gender in the current results of the current study may be considered as indexes to the huge impact of cultural context on its population. It also might be considered as indicators to reveal the most areas and groups which more likely to be at risk of developing psychotic symptoms, especially schizophrenic symptoms or abnormal personality. This finding may indicate the high scores of schizotaxia features such as paranoid ideation, and magical thinking among general population in Saudi culture; therefore, it can shed light on the common abnormal beliefs or delusional ideation. The results might also aid in interpreting the differences between patients in different areas, to be analysed in later chapters of this thesis, and it can improve the understanding of these differences in light of the current results on comparison groups about the cultural effects.

# **Chapter 5: Study 2 Analysis of delusion types and other symptoms in the Clinical group, and variations with sex and residence area**

## **Introduction**

Epidemiological studies that classify disease distributions and their relationships with cultural and social variables through cross-cultural comparisons have stimulated concern about the effects of cultural variables in the onset and spread of schizophrenia (Eaton and Weil, 1955). Though these studies are open to criticism, it is found that there are significant variations between societies in the symptoms pattern and in the average of occurrence and prevalence of the disorder (Issa, 1985). Also, it is clear that content that can be considered delusional in one culture (i.e. heresy and magic) might be quite ordinary and familiar in another (APA, 1994). Therefore, there have been fewer studies about the prevalence of delusions because of the difficulty of distinguishing between either delusional beliefs or inherited cultural norms or traditions (Bentall, 2004).

It is clear from the literature review in Chapter 2 that content of delusions, as schizophrenic symptoms, has a cultural context. Its manifestation varies across cultures and within the same culture across sub-cultures according to demographic variables. Moreover, content of delusions is influenced by different societal incidents (Kala & Wig, 1982).

The purpose of the second study was to identify and measure the content, types and severity of delusions in Saudi Arabian clinical samples, and test differences between the three sample areas. It is hypothesised that variation between regions in content of delusions may reflect the effects of socio-cultural and demographic variables on the formation and content of schizophrenic symptoms such as delusions.

## **Method**

### **Design**

The independent variables are place of *residence* (Riyadh, Jeddah, and the Eastern Province) and *sex* (male, female); the dependent variables are firstly, the 12 sub types of

delusions in SAPS scale, and secondly, the global rating of the positive and negative symptoms in SAPS, and SANS. Other demographic variables (educational level, economic status, marital status, age) are co-variables in the design.

### **Participants**

The sample was drawn from in-patient sections at the hospitals of mental health in the three areas of study in Saudi Arabia. Those patients who were diagnosed as schizophrenic according to DSM-IV (APA, 1994), and had current and remaining delusions took part in this study. They were selected by the psychiatrists who supervised them, and according to the inclusion criteria of the current study: those schizophrenic patients with active delusions and who are Saudi citizens.

### **Materials**

In the current study the Scale for the Assessment of Positive Symptoms (SAPS), and the Scale for the Assessment of Negative Symptoms (SANS) (Andreasen, 1984) were conducted on a clinical sample. Full details about the SAPS, and SANS are shown in Chapter 3.

### **Procedure**

All patients who were selected have given their witnessed verbal consents to participate, and the written consents have been obtained by the nurses who were in charge of them. The relevant case notes and other documents of each patient were reviewed to collect the demographic data and other essential information before the interview situations took place. All interviews of SAPS and SANS were conducted in a private room. The nurse usually attended for the first 10 minutes to allow for patients to be more comfortable at the interview situation.

## **Results**

### **a) Demographic characteristics of the sample**

A total of 148 patients were interviewed using the SAPS and SANS drawn from three different areas (Riyadh, Jeddah, and the Eastern Province) in Saudi Arabia.

Equal numbers of male and female patients were recruited in the three residence areas, except that 23 male patients were recruited from Eastern Province, because these were all of the schizophrenic patients who met the study criteria, as shown in Table 5.1.

Table 5.1: Sex

Residence	Male	Female
Riyadh	25	25
Jeddah	25	25
Eastern province	23	25
Total	73	75

Table 5.2: Age in years

Residence	Male	Female
Riyadh	Mean 35.76, SD 9.47	Mean 38.96, SD 9.56
Jeddah	Mean 34.60, SD 9.49	Mean 34.96, SD 8.68
Eastern province	Mean 42.65, SD 9.64	Mean 37.16, SD 11.46

The means and standard deviations of the ages of male and female patients are shown in Table 5.2. It was not possible to exactly balance the age of participants in the different sub-samples. Regarding age and residence, the patients who live in the Eastern Province were on average older than other patients in other two areas of study. The significance of differences in age amongst the major categories of the sample was tested using univariate ANOVA with age as the dependent variable. The results showed that the differences between groups in age according to residence were significant,  $F(2,142) = 3.38$ ,  $p < .005$ , employing the (Tukey) Post-hoc test, showed significant differences arising in the comparison between Eastern Province and Jeddah ( $p = .032$ ). There were no significant differences between Riyadh and Jeddah or between Riyadh and the Eastern Province. The mean age of the both male and female groups in the Eastern

Province was significantly older than other patient groups in the remaining residence areas by Mean 39.79, SD 10.87. However, the differences between groups according to sex were not significant. The interaction between sex and residence was also not significant.

Differences in frequencies for marital status are shown in Table 5.3 for all three residence areas, using a crosstabulation.

Table 5.3: Marital status with corresponding percentages of the total male sample and total female sample

	Marital status	Riyadh	Jeddah	Eastern Province	Row totals
Male	Single	21 (84%)	18 (72%)	14 (61%)	53 (72%)
	married	1 (4%)	1 (4%)	3 (13%)	5 (7%)
	Ever-married	3 (12%)	6 (24%)	6 (26%)	15 (21%)
	Total	25 (100%)	25 (100%)	23 (100%)	73 (100%)
Female	Single	11 (44%)	9 (36%)	6 (48%)	26 (35%)
	Married	3 (12%)	8 (32%)	5 (20%)	16 (21%)
	Ever-married	11 (44%)	8 (32%)	14 (56%)	33 (44%)
	Total	25 (100%)	25 (100%)	25 (100%)	75 (100%)

Chi-square showed that 4 cells had an expected count less than 5, and more than one cell had an expected frequency less than 1. Therefore, the analysis was repeated with combined ever-married and married groups. The difference in frequencies for marital status across residence areas was non-significant both for male and female groups. However, adding frequencies across residence areas, male patients were more frequently (72%) single, whereas female patients were more frequently (65%) either married or ever married,  $\chi^2_{(2)} N=148 = 21.72, p < .00005$ .

Because economic and educational statuses are ordinal level variables, the nonparametric equivalent to ANOVA (Kruskal-Wallis) was employed with independent variables (sex, residence, and group) in order to test of difference between groups in both economic and educational status.

Differences in Mean rank for economic status are shown in Table 5.4 for all three residence areas combined according to sex, using Kruskal-Wallis.

Sex	N	Mean Rank
Male	73	65.59
Female	75	83.17

There was a statistically significant difference between male and female in the economic status:  $\chi^2(1, N=148) = 7.476, p=.006$ .

Differences in Mean rank for economic status are shown in Table 5.5 for both male and female combined according to residence, using Kruskal-Wallis.

Residence	N	Mean Rank
Riyadh	50	79.27
Jeddah	50	74.73
Eastern Province	48	69.29

There was no significant difference between all three residence areas in the economic status:  $\chi^2(2, N=148) = 1.596, p=.450$ .



Differences in Mean rank for educational status are shown in Table 5.6 for all three residence areas combined according to sex, using Kruskal-Wallis.

Sex	N	Mean Rank
Male	73	78.29
Female	75	70.81

There was no significant difference between male and female in the educational status:  $\chi^2(1, N=148) = 2.102, p=.147$ .

Differences in Mean rank for educational status are shown in Table5.7 for both male and female combined according to residence, using Kruskal-Wallis.

Residence	N	Mean Rank
Riyadh	50	75.04
Jeddah	50	74.43
Eastern Province	48	74.01

There was no significant difference between all three residence areas in the educational status:  $\chi^2(2, N=148) = 0.027, p=.987$ .

Table 5.8: crosstabulation showing the relationship between residence and region of origin with corresponding percentages of the total of each area sample.

Region of origin:	Sex	Residence			Total
		Riyadh	Jeddah	Eastern province	
Southern province	Male	4 (8%)	6 (12%)	5 (10.42%)	15 (10%)
	female	5 (10%)	6 (12%)	1 (2.08%)	12 (8%)
	Total	9 (18%)	12 (24%)	6 (12.5%)	27 (18%)
Western province	Male	0 (0%)	9 (18%)	1 (2.08%)	10 (7%)
	female	2 (4%)	6 (12%)	0 (0%)	8 (5%)
	Total	2 (4%)	15 (30%)	1 (2.08%)	18 (12%)
Middle	Male	18 (36%)	2 (4%)	3 (6.25%)	23 (16%)
	female	16 (32.00%)	0 (0%)	2 (4.17%)	18 (12%)
	Total	34 (68%)	2 (4%)	5 (10.42%)	41 (28%)
Others	Male	3 (6.00%)	8 (16.00%)	14 (29.17%)	25 (17%)
	female	2 (4.00%)	13 (26.00%)	22 (45.83%)	37 (25%)
	Total	5 (10%)	21 (42%)	36 (75%)	62 (42%)
Total N		50 (100%)	50 (100%)	48 (100%)	148 (100%)

The population in the three residence regions differs according to their region of origin. Thus most patients of Riyadh originate from the middle region in both male and female groups, that is, in and around Riyadh itself. By contrast, most patients resident in the Eastern province, and many of those resident in Jeddah do not originate locally, but have moved and immigrated to Eastern Province and Jeddah either from other areas of Saudi Arabia or from other Islamic countries. Therefore, Riyadh showed the most stable local population, and Eastern province is populated by either internal or international

migrants. Jeddah is in between. Chi-square after recoding the variables of region showed that 4 cells had expected count less than 5; and more than one cell had an expected frequency less than 1 therefore, the analysis was repeated with combined male and female groups. The difference in frequencies in region of origin for all residence areas was significant  $\chi^2(6, N=148) = 90.933, p < .0005$ .

#### **b) Variation in SAPS scores a function of sex and residence**

The patients were tested to identify types of delusions in clinical population in Saudi Arabia, and examined for differences in content and severity of delusions between sub-cultural areas.

To identify the most common delusions in schizophrenic patients among three residence areas, the Mean and Standard Deviation SAPS scores were calculated for whole sample.

The mean and standard deviation scores for each single type of delusions are shown in table 5.9.

Table 5.9: Type of delusions

Type	Mean	Standard Deviation
Persecutory delusions	3.973	1.003
Delusions of jealousy	.3108	.961
Delusions of guilt or sin	.507	1.103
Grandiose delusions	2.101	1.764
Religious delusions	1.21	1.61
Somatic delusions	1.63	1.73
Delusions of reference	2.24	1.40
Delusions of being controlled	2.63	1.45
Delusions of mind reading	.264	.751
Thought broadcasting	.177	.61
Thought insertion	.43	1.02
Thought withdrawal	.162	.65

The results showed that the persecutory delusions were the most commonly recorded type in Saudi sample with a mean score of 3.97 and SD as 1.003, followed by delusions of being controlled, delusions of reference, and finally grandiose delusions.

Significance of the effects of residence and sex on SANS and SAPS scores was examined using MANOVA with 12 dependent variables, corresponding to the 12 subtypes of delusions in SAPS: persecutory delusions, delusions of jealousy, delusions of guilt or sin, grandiose delusions, religious delusions, somatic delusions, delusions of reference, delusions of being controlled, delusions of mind reading, thought broadcasting, thought insertion, thought withdrawal. The main independent variables

were residence and sex. The possible effects of demographic variables will be estimated in a second (regression) analysis.

Significant variables were subjected to a separate descriptive statistical analysis using the mean and standard deviation to determine the direction of the effect of residence and sex on each.

The results for the overall MANOVA model revealed that the persecutory delusions showed significant variation, Pillai's  $F(5,142) = 7.267$ ,  $p < 0.0005$ , partial  $\eta^2 = .204$ ; as did delusions of guilt or sin, Pillai's  $F(5,142) = 1.606$ ,  $p < 0.0005$ , partial  $\eta^2 = .143$ ; and delusions of reference Pillai's  $F(5,142) = 4.017$ ,  $p < 0.002$ , partial  $\eta^2 = .124$ . Other categories of delusions showed non-significant effects of the overall model.

For analysis of the scores on the 12 individual delusion sub-scales, only those effects that were significant in the overall model will be interpreted, and a Bonferroni correction for multiple comparisons will be used ( $p_{crit} = 0.0042$ ) to select significant results.

### **b1) Variations in persecutory delusions**

There was a significant effect of residence on the persecutory delusions, Pillai's  $F(2,142) = 7.903$ ,  $p < 0.001$ , partial  $\eta^2 = .100$ . A post-hoc test, (Tukey) showed that the significant difference arises in the comparison between Eastern Province and Riyadh ( $p = .001$ ) and between Eastern Province and Jeddah ( $p = .008$ ). There were no significant differences between Riyadh and Jeddah ( $p = .847$ ).

Means and standard deviations of persecutory delusions are shown in Table 5.10 for all three residence areas.

Table 5.10: Persecutory delusions among areas of study

Residence	Mean	Standard Deviation
Riyadh	4.22	.74
Jeddah	4.12	.77
Eastern Province	3.56	1.30

It appeared that the highest effect of residence on persecutory delusions was in Riyadh in both male and female groups by means for males  $M = 4.20$ , and  $SD = .707$ , and for females  $M = 4.24$ , and  $SD = .77$ .

There was a significant effect of sex only on persecutory delusions, Pillai's  $F(1,142) = 13.978$ ,  $p < 0.0005$ , partial  $\eta^2 = .090$ .

Differences in mean and standard deviation of persecutory delusions between male and female are shown in Table 5.11 for all three residence areas.

Table 5.11: Persecutory delusions according to sex

Sex	Mean	Standard Deviation
Male	3.698	1.063
Female	4.240	.867

Scores for persecutory delusions were higher in female groups than male groups in all three residence areas of study in Saudi Arabia. The female group in Jeddah had the highest mean:  $M = 4.40$ , and  $SD = .645$ .

Table 5.12: Persecutory delusions according to sex and residence

Residence	Sex	Mean	Standard Deviation
Riyadh	Male	4.20	.707
	Female	4.24	.78
Jeddah	Male	3.84	.800
	Female	4.40	.645
Eastern Province	Male	3.00	1.27
	Female	4.08	1.11

### **b2) Variations in delusions of guilt and sin**

Residence also had a significant effect on delusions of guilt or sin, Pillai's  $F(2,142) = 6.889$ ,  $p < 0.001$ , partial  $\eta^2 = .088$ ). Employing the (Tukey) Post-hoc test, showed that the significant differences in delusions of guilt were found only between Jeddah and Riyadh ( $p = .001$ ). There were no significant differences between Riyadh and Eastern Province ( $p = .54$ ) and between Jeddah and Eastern Province ( $p = .386$ ).

Differences in means and standard deviations of scores for delusions of guilt or sin among the three residence areas are shown in Table 5.13.

Table 5.13: Delusions of guilt or sin

Residence	Mean	Standard Deviation
Riyadh	1.382	.920
Jeddah	.584	.160
Eastern Province	1.07	.438

The results showed that delusions of guilt or sin showed the highest scores in Riyadh area in both male and female groups, then the Eastern Province, and Jeddah area showed the lowest scores.

### **b3) Delusions of reference**

There was a significant interaction between sex and residence for delusions of reference,  $F(2,142) = 7.29, p < .002$ . Analysis of the interaction showed that the only significant effect was a lower level of delusions of reference among males in Eastern Province, as compared with females,  $t = -3.5, df = 37.1$  (corrected for unequal variances),  $p < .002$ .

The effect of the sex\*residence interaction on the scores for delusions of reference is shown in the Table 5-14 and Figure 5.1.

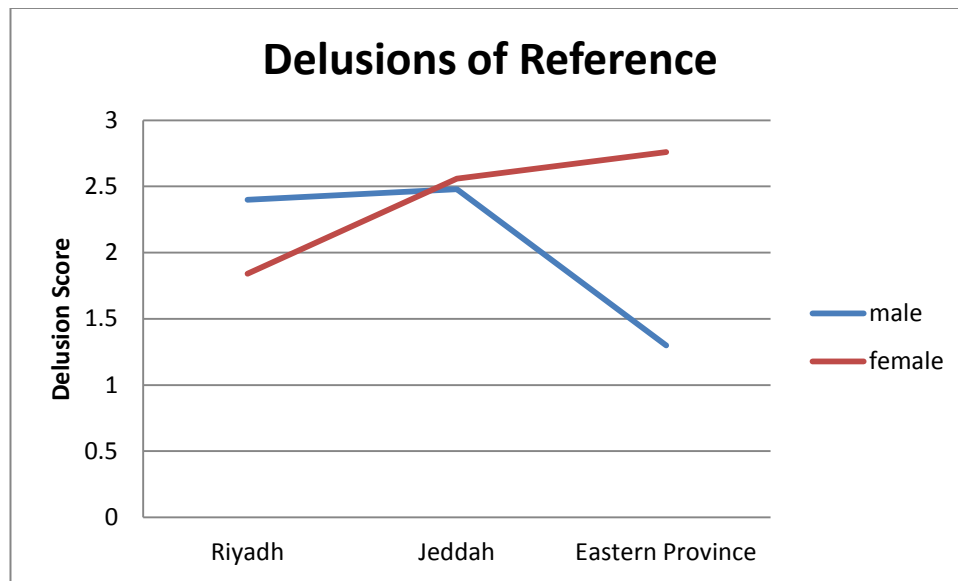
Table 5.14: Delusions of reference according to sex and residence

Residence	Sex	Mean	Standard Deviation
Riyadh	Male	2.40	1.19
	Female	1.84	1.57
Jeddah	Male	2.48	1.32
	Female	2.56	1.00
Eastern Province	Male	1.69	1.30
	Female	2.76	1.09

The descriptive statistics for delusions of reference among male and female groups in all three residence areas showed that the direction of the difference between males and females was opposite for Riyadh and Eastern Province, but in the Jeddah group male and female scores were similar. The main effect of the independent variables (sex and residence) individually was not significant.



Figure 5.1: sex\*residence interaction on the scores for delusions of reference



### c) Effects of sex and residence on global SANS and SAPS scores

The significance of the effect of residence and sex on global SANS and SAPS scores was examined using MANOVA with nine dependent variables, corresponding to the nine SANS and SAPS subscales: global rating of hallucinations, global rating of delusions, global rating of bizarre, global rating of positive formal thought, global rating of affective flattening, global rating of alogia, global rating of avolition-apathy, global rating of anhedonia-asociality, and global rating of attention. The main independent variables, in order to test the hypotheses were residence and sex. In order to control for demographic variables in the sample, those which showed significant differences between the samples, that is economic status (ordinal, three level), and age were entered as covariates.

Results only for those dependent variables that showed significant effect of residence and sex are shown below.

### **c1) Effects of sex and residence on global ratings of affective flattening**

There was only one significant effect of residence on the global rating of affective flattening, Pillai's  $F(2,142) = 11.705$ ,  $p < 0.0005$ , partial  $\eta^2 = .142$ , employing the (Tukey) Post-hoc test, showed that the significant differences were found between Jeddah and Eastern Province ( $p = .0005$ ). There were no significant differences between Riyadh and Jeddah ( $p = .033$ ), and between Riyadh and Eastern Province ( $p = .045$ ).

Differences in mean and standard deviation of global rating of affective flattening among the three residence areas are shown in Table 5.15.

Table 5.15: Global rating of affective flattening according to residence

Residence	Mean	Standard Deviation
Riyadh	.988	.940
Jeddah	.904	.400
Eastern Province	1.458	1.34

The results showed the highest effect of residence on the global rating of affective flattening symptoms was in the Eastern Province groups, followed by the Riyadh area, while Jeddah had the lowest effect on that symptom.

There was also a significant male-female difference in the global ratings of affective flattening, Pillai's  $F(1,142) = 7.948$ ,  $p < 0.006$ , partial  $\eta^2 = .053$ .

Differences in mean and standard deviation of global rating of affective flattening between male and female groups are shown in Table 5.16.

Table 5.16: Global rating of affective flattening according to sex

Sex	Mean	Standard Deviation
Male	.671	1.015
Female	1.173	1.256

A higher global rating of affective flattening was found in the female group relative to the male group in all three residence areas of study.

### **c2) Effect of sex on global ratings of alogia**

There was a significant difference between males and females in global ratings of alogia, Pillai's  $F(1,142) = 10.302, p < 0.002, \text{partial } \eta^2 = .068$ .

Differences in mean and standard deviation of global ratings of alogia between male and female groups are shown in Table 5.17.

Table 5.17: Global rating of alogia according to sex

Sex	Mean	Standard Deviation
Male	1.425	1.268
Female	2.080	1.216

The results showed a higher global rating of alogia in female groups relative to male groups.

### c3) Effect of sex\*residence interaction on global ratings of hallucinations

There was a significant effect of sex\*residence interaction on the global rating of hallucinations, Pillai's  $F(2,142) = 5.492$ ,  $p < 0.005$ , partial  $\eta^2 = .072$ ). The main effects of sex and residence separately were not significant.

Differences in mean and standard deviation of global rating of hallucinations according to sex\*residence interaction are shown in Table 5.18.

Table 5.18: Global rating of hallucinations according to sex and residence

Residence	Sex	Mean	Standard Deviation
Riyadh	Male	2.72	1.06
	Female	3.44	.651
Jeddah	Male	3.40	.707
	Female	2.84	1.463
Eastern Province	Male	3.087	.900
	Female	3.24	.779

The descriptive statistics for global rating of hallucinations showed that males showed higher scores than females in the Jeddah area, but females showed higher scores than males in Riyadh. Eastern province showed similar scores in males and females.

### d) Effects of demographic variables on differences in SAPS and SANS scores: regression analysis

In order to examine the possible effect of a wider range of demographic variables in the sample, regression analysis was carried out to examine the effect of demographic variables (age, sex, marital status, economic status, educational status, region, and residence) on each of those dependent variables (persecutory delusions, delusions of guilt, global ratings of affective flattening, and global rating of alogia) that gave

significant effects of sex and residence in the MANOVA. Because the residence variable is categorical it was recoded as a dummy variable with: dummy 1 (Riyadh): Riyadh =1, Jeddah =0 and the Eastern Province =0. Dummy 2 (Jeddah): Riyadh =0, Jeddah =1 and the Eastern Province =0. And dummy 3 (the Eastern Province): Riyadh =0, Jeddah =0 and the Eastern Province =1. Also, the region variable is categorical, therefore it was recoded as a dummy variable with: dummy 4 (Northern region): northern region =1, southern region =0, eastern province =0, western region =0, middle area =0 and others =0. Dummy 5 (Southern region): northern region =0, southern region =1, eastern province =0, western region =0, middle area =0 and others =0. Dummy 6 (Eastern Province): northern region =0, southern region =0, eastern province =1, western region =0, middle area =0 and others =0. Dummy 7 (Western region) northern region =0, southern region =0, eastern province =0, western region =1, middle area =0 and others =0. Dummy 8 (Middle area): northern region =0, southern region =0, eastern province =0, western region =0, middle area =1 and others =0. Dummy 9 (Others): northern region =0, southern region =0, eastern province =0, western region =0, middle area =0 and others =1. Because there was no *a priori* model concerning how the different demographic variables might be ordered, a single-level stepwise analysis was adopted.

For persecutory delusions, using the stepwise method, a significant model emerged:  $F(3,144) = 10.579, p < .0005$ . The model explains 16.4% of the variance (Adjusted  $R^2 = .164$ ). Table 5.19 shows information of the predictor variables that are included in the model. Age, marital status, economic status, dummy 1, dummy 2, dummy 4, dummy 5, dummy 6, dummy 7, dummy 8, and education variables were excluded.

Table 5.19: the unstandardised and standardised regression coefficients for the variables included in the model of persecutory delusions

Variable	B	SEB	B	Sig
Dummy 3(the Eastern Province)	-.564	.163	-0.264	0.001**
Sex	.491	.154	0.246	0.002*
Dummy 9 (Others)	.421	.208	0.158	0.045*

\*p=.05. \*\*p<.001

Because the betas are negative for Dummy 3 (Eastern Province), this indicates that persecutory delusion scores were significantly lower for those resident in Eastern Province than in the other two areas. Similarly, they were higher in females, and higher for those originating from other Islamic countries.

For delusions of guilt, using the stepwise method, a significant model emerged:  $F(3,144)=7.197$ ,  $p= .0005$ . The model explains 13.0% of the variance (Adjusted  $R^2=.130$ ). Table 5-20 gives information of the predictor variables that are included in the model. Age, marital status, economic status, dummy 2, dummy 3, dummy 4, dummy 5, dummy 7, dummy 8, dummy 9, and education variables were excluded.

Table 5.20: the unstandardised and standardised regression coefficients for the variables included in the model of delusions of guilt

Variable		B	SEB	B	Sig
Dummy (Riyadh)	1	.753	.190	0.324	.001**
Dummy (Eastern Province)	6	.464	.218	0.176	0.033*
Sex		.363	.171	0.156	0.036*

\*p=.05. \*\*p<.001

This indicates that scores for delusions of guilt were higher in Riyadh, in those originating from Eastern Province, and in females.

For the global rating of affective flattening, using the stepwise method, a significant model emerged:  $F(3,144) = 10.988, p < .001$ . The model explains 16.9% of the variance (Adjusted  $R^2 = .169$ ). Table 5.21 shows information of the predictor variables that are included in the model. Marital status, economic status, dummy 1, dummy 3, dummy 4, dummy 5, dummy 7, dummy 8, dummy 9 and education variables were excluded.

Table 5.21: the unstandardised and standardised regression coefficients for the variables included in the model of global rating of affective flattening.

Variable		B	SEB	B	Sig
Dummy (Jeddah)	2	-.618	.197	-0.251	0.002*
Sex		.469	.175	0.201	0.008*
Dummy (Eastern Province)	6	.577	.226	0.204	0.012*

\*p=.05. \*\*p<.001

The negative beta for Dummy 2 (Jeddah) indicates that affective flattening ratings were lower for participants resident in Jeddah. Accordingly they were higher for females and for those originating from Eastern Province.

For the global rating of alogia, using the stepwise method, a significant model emerged:  $F(1,146) = 10.293, p = .002$ . The model explains 5.9% of the variance (Adjusted  $R^2 = .059$ ). Table 5.22 shows information of the predictor variables those are included in the model. Age, marital status, economic status, education, and residence variables were excluded.

Table 5.22: the unstandardised and standardised regression coefficients for the variables included in the model of global rating of alogia.

Variable	B	SEB	B	Sig
Sex	0.66	0.20	0.26	.002*

\* $p < .05$ . \*\* $p < .001$

This indicates that ratings of alogia were higher in females.

## Discussion

The findings revealed that the persecutory delusions were the most common delusions among schizophrenic patients in Saudi Arabia, followed by delusions of being controlled, delusions of reference, and grandiose delusions. These results are however consistent with studies reported in the literature review (Chapter 2) in that persecutory delusions were the most common reported delusions across many different cultures (Lucas, Sainsbury, & Collins, 1962; Kala, & Wig, 1982; Zhar, Varma, & Hakim, 1995;



Stompe et al, 1999; Suhail, & Cochrane, 2002; Yanada et al, 2006; and Skodar, Dernovsek, & Kokmar, 2008).

The results showed that the effect of sex on persecutory delusions was significant, and scores were higher in female groups than male groups, but although a higher overall level of delusions in females has been reported before (Lucas, Sainsbury & Collins, 1962), present results might differ in some respects from other socio-cultural studies which have focused on the differences of gender and ethnicity (Jilek, 2001). Those studies explained that differences between males and females in rate of psychiatric symptoms may be affected by mediating factors like age and marital status (Alissa, 1995). However, in the current study those factors did not affect the current results according to the results of regression analysis. Other studies have emphasised the importance of cultural aspects of sex differences in occurrence of delusions among males and females (Stompe, 1999). Differences between males' and females' frequencies of persecutory delusions may reflect the gender roles and social expectations of people who belong to the same culture (Kala & Wig, 1982). Thus the higher scores in females may reflect the conflict in Saudi society surrounding women's issues, in that women are not equal with men in social life. This inequality does not originate from Islamic law, which protects woman's rights, and confirms the equality between males and females in humanity, although, they are of course different in their nature and obligations (Hasna, 2003). In Saudi society, conflict is generated from the differences between tribal law and Islamic law, in which the tribal law emphasises the predominance of gender, and decrees that important roles and positions in society should be given to males as a result of their physical nature. Therefore, females always become dependent on males (AlRashid, 2002). This may explain the differences between male and female groups in the current study in frequency of persecutory delusions. Moreover, the closed culture in Saudi Arabia might increase the stress on females relative to males (Qureshi et al., 2001), and this is consistent with the stress hypotheses suggested by Gove (1972), and Gove & Tudor (1973) in which females are more subject to stress than males when they have only one important role in their life which is based on the marriage and being a housewife; therefore, marriage may be more stressful for females than males (Alissa, 1985).

The results with regard to the effects of residence on persecutory delusions and delusions of guilt were significant. The results showed that the highest mean score for persecutory delusions was in Riyadh area; these results may reflect religious and cultural conservatisms, in that Riyadh area is more religious and cultural conservative according to their tribal customs and the religious community which has constituted historically from the earlier Mattawan (religious scholars) (AlRashid, 2002).

Concerning the regression analysis of persecutory delusions, the finding showed three predictor variables: sex, residence (the Eastern Province), and region (others who came from other Islamic countries and settled in Saudi Arabia), and this suggests an effect of ethnicity or ethnic background besides sex and residence on the persecutory delusions. The results also highlight the relationship between migration issues and persecutory beliefs. The results predict that both migration and immigration and minority ethnic cultural background are associated with a high risk of developing persecutory beliefs or delusions, and either immigration or ethnic tension might be a stressor that contributes to the development of psychotic symptoms (Bentall, 2004).

Regarding the delusions of guilt, the effect of residence showed a significant difference with the highest mean scores also found in Riyadh. These results may be explained from the religious point of view. Both Riyadh and Jeddah represent the Sunni creed whereas the majority in the Eastern Province belongs to the Shiite (Shiia). However, Riyadh follows Hanbalite Islam, which is the official creed of Saudi Arabia. Furthermore, the Hanbalite creed is very restricted and rigid, and although Jeddah officially follows the Hanbalite as a part of Saudi Arabia, the people of Hejaz in practice follow either Shafeite, or Malikite, or Hanafite creeds as a result of the Turkish and Egyptian influences in this area. Those creeds are more flexible and less restrictive in their religious practices in comparison to Hanbalite Islam (Menoret, 2005). Therefore, often people in Hejaz and the Eastern Province can be described as a less religiously conservative. Deviation from a strict religious creed or code is considered a source of shame or as a stigma in other Saudi areas where the religion is the most important component in their judgments on others, particularly so in the Najd area and especially in Mattawan people (men of religion) (Yamani, 2008). This is one possible source of delusions of guilt especially in the Riyadh area. Moreover, the SPQ results in (chapter 4) showed that the Riyadh area has a high score in the SPQ which may reveal that this

area has a high risk of mental illness. This point needs more investigation to explain whether religious and cultural conservatism can be as a possible effect on mental status.

The significant interaction between sex and residence on delusions of reference is difficult to explain. The main effect driving the interaction is the higher scores for females and lower scores for males in Eastern Province, relative to the other areas. Therefore if there is a cultural factor causing the interaction it must be one that is specific to Eastern Province, relative to the two other areas, and differentially affects males and females. One possibility is that it is related to elements of Shia beliefs concerning women, but this would require further investigation.

The results regarding the global ratings of SANS and SAPS showed that a significant effect of both independent variables sex and residence was found in the global rating of affective flattening. The affective flattening was greater in females than males which may again reveal the greater social stress on females than males in Saudi society. Women in Saudi Arabia often have some shared characters in being more sensitive, and have a greater risk of emotional harm than men (Qurashi et al, 2001).

The regression analysis of the global rating of affective flattening showed three significant predictor variables: sex, region (the Eastern Province), and residence (Jeddah). Therefore, the global rating of affective flattening as a proportion of total schizophrenic symptoms may be affected by sex and residence. Present results predict a major role of sex, and residence on delusions and other schizophrenic symptoms. On the other hand, the results failed quantitatively to reach a significant level in the global rating of delusions which sheds light on the importance of specific type and content of delusions to reveal possible differences between the groups, and to examine the influence of independent variables on that content. As shown earlier in the literature review chapter, a false personal belief may adversely and directly affect a patient's life (Junggier, 1996). Research on the relationship between violence and content of delusions suggests that aggressive behaviour in schizophrenic patients is correlated with the negative emotions which may emerge in delusions, also that persecutory delusions are related with violent behaviour, whilst the grandiose delusions are more common in non-violent groups (Chung et al, 1997). Moreover, persecutory delusions are associated with suicidal behaviour and the combination of persecutory and grandiose delusions may also lead to violence (Junggier, 1996). Persecutory delusions thus have very

negative effects on patient's life, and push patients to act consistently with those negative feelings (Appelbaum, Robbins, & Roth, 1999). Because persecutory delusions are predominant among psychotic symptoms, the relationship between persecutory delusions and violence as a reaction of these delusions should receive more attention (Kala & Wig, 1982).

Because in the present study persecutory delusions were the most common delusions found among schizophrenic patients in Saudi Arabia, and because such delusions might affect the patient's life and lead to violence, an extra study has been done to examine the relationship between delusions and violence in the three residence areas in Saudi Arabia.

## **Chapter 6: Study 3 Clinical group:**

### **Violence and Delusions**

#### **Introduction**

Previous reports have indicated that people with vivid or active delusions were more violent than other chronic psychotic patients (De Paum & Szulecka, 1988). Violence, in the context of this chapter includes both self-directed and violence directed at others. Some studies have revealed that the violence in schizophrenia is often provoked by psychotic symptoms themselves, particularly delusions and hallucinations (Hodgins, 1992). The NATO advanced study emphasized a relationship between violence and mental disorders, especially schizophrenia. Also, pointing out that schizophrenia is the psychotic disorder which is most associated with criminal arrests (Hodgins, 1992). Link and Stueve (1994, cited in Mullen 1997) suggest that patients with morbid emotions and beliefs, particularly delusional beliefs, recorded the highest rates of violence (Mullen, 1997).

The purpose of the third study was to identify and clarify the relationship between violence and content of delusions among schizophrenic patients in Saudi Arabia and assess differences between three areas of residence. As shown in the previous chapters, there are significant differences in the type and content of delusions in clinical samples and corresponding differences in schizotypy between non-clinical samples from the three areas. The present study seeks to determine whether there are also significant differences in the prevalence of violence in the clinical populations from the three areas and whether these are associated with particular types of delusional content.

#### **Method**

##### **Design**

The independent variables are place of *residence* (Riyadh, Jeddah and Eastern Province) and *sex* (male, female) the dependent variables are type of delusions and violence as defined in the MMADS scale. In a second, binary logistic regression analysis, the dependent measure is violence (violent, non-violent) and the predictors are residence,

sex and type of delusion. Other demographic variables (educational level, economic status, marital status, age) are covariates in the design.

### **Participants**

This study followed on from the previous study in Chapter 5 and built on its results; therefore, the sample was the same as in Chapter 5.

### **Materials**

In the current study the MacArthur-Maudsley Delusions Assessment Scale (Appelbaum, et al., 2004) was conducted on a clinical sample. Full details about the MMDAS are shown in methods chapter earlier.

### **Procedure**

Non violent patients and patients who had violent incidents in their medical records were interviewed using the MMDAS, after the SANS and SAPS interviews situations were completed. The pre-information of the MMDAS was obtained from different sources such as nurses' daily reports, objective observations and medical records.

## **Results**

### **a) Demographic characteristics of the sample**

A total of 148 patients were interviewed by using the (MMDAS) among three different areas (Riyadh, Jeddah and the Eastern Province) in Saudi Arabia.

Demographic data was reported in the previous chapter.

### **b) Variation in MMDAS categories**

The patients were examined to identify possible relationships between violence and delusion categories in a clinical population in Saudi Arabia and test for differences in violence and type of delusions between sub-cultural areas. MMDAS classifies delusions into three levels (a) not involving violence, (b) delusions involving other people but which are not violent, (c) delusions that have violent content.

In order to identify which type of delusions were associated with violence; classification analysis was conducted using Two Step Cluster (Table 6.4). The binary logistic regression was conducted after the dependent variable (violence) was re-coded in binary form as violent versus non- violent, and the predictor variables for the regression were residence, sex and type of delusion (Table 6.6).

Differences in frequencies and percentages for type of delusions are shown in Table 6.1 for all categories of violence using a crosstabulation.

Table 6.1: delusions and violence categories with corresponding percentages of the total of each delusion category sample

Delusions	No violence	Violence involving others*	Violent content**	Total
Delusions of jealousy	1 (14%)	0 (0%)	6 (86%)	7 (4.7%)
Persecutory delusions	33 (45%)	7 (10%)	33 (45%)	73 (49.3%)
Grandiose delusions	8 (50%)	5 (31%)	3 (19%)	16 (10.8%)
Delusions of body or mind control	16 (50%)	4 (12.5%)	12 (37.5%)	32 (21.6%)
Thought broadcasting	3 (75%)	0 (0%)	1 (25%)	4 (2.7%)
Somatic delusions	9 (75%)	3 (25%)	0 (0%)	12 (8%)
Religious delusions	2 (50%)	1 (25%)	1 (25%)	4 (2.7%)
Total	72 (48.65%)	20 (13.51%)	56 (37.84%)	148 (100%)

\* “Violence involving others” means that the content of delusions refers to actual other people, as opposed to historical personages or supernatural beings.

\*\* This includes both self- and other-directed violence.

Differences in frequencies and percentages for violence categories are shown in Table 6.2 for all three residence areas, using a crosstabulation Table 6.2: violence and residence with corresponding percentages of the total of each residence area sample

Violence	Riyadh	Jeddah	Eastern Province	Total
No violence	9 (18.00%)	25 (50.00%)	38 (79.20%)	72 (48.6%)
Violence involving others	11 (22.00%)	6 (12.00%)	3 (6.25%)	20 (13.5%)
Violent content	30 (60.00%)	19 (38.00%)	7 (14.58%)	56 (37.8%)
Total	50 (100%)	50 (100%)	48 (100%)	148 (100%)

The variation in frequencies and percentages of violence categories among three residence areas was significant,  $\chi^2(4, N=148) = 36.837, p < .0005$ . The results revealed that the Riyadh area had higher frequencies (60%) of violence, whereas the Eastern Province was the least violent (79.20%) residence group compared with other groups.

Differences in frequencies and percentages for violence categories are shown in Table 6.3 for both male and female groups, using a crosstabulation.

Table 6.3: violence and sex with corresponding percentages of the total male and total female sample

Violence	Male	Female	Total
No violence	32 (43.84%)	40 (53.33%)	72 (48.6%)
Violence involving others	10 (13.70%)	10 (13.33%)	20 (13.5%)
Violent content	31 (42.47%)	25 (33.33%)	56 (37.8%)
Total	73 (100%)	75 (100%)	148 (100%)



The variation in frequencies and percentages of violence categories among male and female groups was not significant,  $\chi^2(2, N=148) = 1.505, p = .471$ .

Differences in frequencies for violence are shown in Table 6.4, using cluster profile

Table 6.4: cluster profile for violence categories

Cluster	No violence	Violence involving others	Violent content
1	0	0	56
2	72	20	0

Differences in frequencies for delusions are shown in Table 6.5 for both violence clusters, using cluster profile

Table 6.5: cluster profile for delusions

Cluster	Delusions of jealousy	Persecutory delusions	Grandiose delusions	Delusions of mind control	Thought broadcasting	Somatic delusion	Religious delusions
1	6	33	3	12	1	0	1
2	1	40	13	20	3	12	3

The Two step Cluster analysis showed that there were two clusters relating to violence. Cluster one was *violent content* and Cluster two combined both *no violence* and *violence involving others*. The Cluster one (violent group) contained, in decreasing percentage order respectively: delusions of jealousy (85.7%), persecutory delusions (45.2%) and delusions of body or mind control (37.5%), whilst, Cluster two (non-violent group) contained, in decreasing percentage order, somatic delusions (100%) and grandiose delusions (81.3%).

A logistic regression analysis was employed with violence as the dependent variable and delusion, sex and residence as predictor variables. Other demographic variables were not significant predictors. A total of 148 cases were analysed and the full model significantly predicted violence status (omnibus Chi-square= 50.876, df= 9, p<.0005). The model accounted for between 29.1% and 39.6% of the variance in violence status, with 76.1% of non-violent patients successfully predicted. Also, 75.0% of predictions for membership of the violent patient groups were accurate. Overall 75.7% of prediction was accurate.

Table 6.6: shows coefficients and the Wald statistic and associated degrees of freedom and probability values for each of the significant predictor variables

Predictor variables	B	S.E	Wald	Df	Sig	Exp(B)
Delusion(1)	4.604	1.741	6.993	1	.008	99.853
Residence(1)	2.754	.631	19.049	1	.000	15.710
Residence(2)	1.943	.628	9.584	1	.000	6.978

The results showed that only delusions of jealousy, and residence in Riyadh and Jeddah areas reliably predicted violence.

## Discussion

The current results revealed that delusions of jealousy rather than persecutory delusions were most strongly related to violence. Many previous studies reported that persecutory delusions were associated with violence among different cultural groups (i.e. Kala & Wig, 1982; Junggier, 1996; Cheung et al, 1997; Appelbaum et al., 1999). On the other hand, the present findings showed that grandiose delusions and somatic delusions were prevalent among non-violent groups; this result was consistent with (Chung et al, 1997) in that the grandiose delusions were found more common in the non-violent group.

Regarding the relationship between delusions of jealousy and violence, Novaco (1994, cited in Mullen 1997) suggested that morbid emotions such as fear, anger and jealousy may be associated with interpersonal violence; moreover, the complex emotions like jealousy might lead to aggression in mental patients who hold similar emotional status (Mullen, 1997). Some reports show that people with delusions of jealousy and infidelity become more dangerous when they have developed delusional beliefs against their spouses (Todd and Dewhurst, 1955). Morbid jealousy is associated with increased risk of violence, and offenders are usually males rather than females. Furthermore, these morbid beliefs, which often are delusional beliefs, can lead to major offences such as killing or serious injury, as a result of emotions of jealousy which thereby become an important and primary motivation to commit violence (Mullen, 1995). Clinical studies have indicated that the level of violence in delusions of jealousy and morbid jealousy is considerably elevated; and that delusions of jealousy usually concentrate on suspicious ideas against the patient's spouse (Mullen, 1995; Mullen, Pathe, and Purcell, 2001). Other studies have revealed that delusions of jealousy are tied to the highest rates of danger and violence among psychotic disorders especially in paranoid psychosis and paranoid schizophrenia. Furthermore, most crimes of homicide and attempted homicide in the general population were committed by people with morbid jealousy or as a result of feelings of jealousy (Muzinic, Goreta, Jukic, Dovedevic, Koic, and Herceg, 2003). Jealous delusions correlate with negative emotions such as guilt, anger and suspicion which may drive patients to violent attacks (Brian, Spitzberg and Cupach, 2009). Some reports about stalking indicated that the erotomanic type of delusion is dominant in stalking disorders; however, persecutory delusions and delusions of jealousy were also existent (Mullen, 1997). Delgado and Bond (2006) reported that there is a positive relationship between jealousy and abuse and crime. Hafner and Boker (1982, cited in Hodgins 1992) indicated that delusions, particularly delusions of jealousy, were more prevalent among violent group in schizophrenia compared with non-violent group (Hodgins, 1992).

El-Hadidy and Shawosh (2011) reported that high levels of sexual and criminal offences among the Saudi community were recorded among those with a mental illness, especially schizophrenia. Moreover, aggressive behaviour and the risk of committing violence in Saudi schizophrenic patients were associated with positive symptoms, particularly delusions of being controlled, thought insertion, persecution and command

hallucinations. Current results are somewhat consistent with El-Hadidy and Shawosh (2011) but the violent behaviour in current study were more strongly associated with delusions of jealousy and this may be considered as a new addition to knowledge in this field, since only delusions of jealousy successfully discriminated between violent and non-violent groups, whereas persecutory delusions were nearly equally represented in violent and non-violent groups. However, as a proportion of psychiatric patients at risk of violence, the greatest numbers were found among those with persecutory delusions, because these were the most common type of delusions.

The logistic regression analysis on the one hand predicts a high risk of violence where there are delusions of jealousy. On the other hand, despite the high reported incidence of violence in persecutory delusions, knowing that a patient has a persecutory delusion does not of itself help to predict whether that patient will be violent or not violent. However, logistic regression also shows a strong influence of residence in its relationship with violence and that high risk appeared in both Riyadh and Jeddah. Therefore, these results may aid in designing prevention programmes for those people who might be at high risk of violence in these areas. Moreover, this result can help clinicians in these areas who deal with schizophrenic patients to take into their consideration the effect of delusions of jealousy on patient's acts which may lead to violence.

# Chapter 7: Study 4 Explanations of Illness in Clinical and Control Groups

## Introduction

Boyer (1983) and Peters et al. (1998) cited in Alqahtani & Salmon (2008) indicated that patients' beliefs regarding the causes of their symptoms can affect their responses to therapy and acceptance of doctor's diagnosis. Also, the complaints about the severity of illness presented by patients are often a result of their beliefs about their symptoms more than the actual diagnosis or real pain. Therefore, these beliefs may influence a patient's disposition towards treatment (Salmon, et al., 1996). Eisenbruch (1990) cited in Alqahtani & Salmon (2008) reported that non-western cultures have different explanations concerning their psychological symptoms and diseases from western cultures.

The purpose of the third study was to compare etiological beliefs about symptoms between General Practice (GP) patients and schizophrenic patients in order to identify whether the patients with physical illness differ from schizophrenic patients in their explanations, and to what extent their explanations may reflect some shared cultural beliefs. Furthermore, this study aims to determine the variations in common causal explanations held among GP's patients in three residence areas in Saudi Arabia which might reflect the local cultural ideation and beliefs about symptoms of illness and life problems. This analysis will lead to a later chapter, in which it will be considered whether the content of schizophrenic delusions is a reflection of the cultural context, including etiological beliefs about the causes of symptoms of illness.

## Method

### Design

The independent variables are place of *residence* (Riyadh, Jeddah, and Eastern Province), *sex* (male, female) and *group* (schizophrenic patients, GP's patients-control) the dependent variables are the seven sub-scales of the Aetiological Beliefs Questionnaire (ABQ): weakness, invasion, emotion, serious disease, digestion,

supernatural power, and social demands or lifestyle. Other demographic variables (educational level, economic status, marital status, age) are co-variables in the design.

### **Participants**

For the analysis of the etiological beliefs, the clinical sample for this study was the same as that used in previous chapters. Patients from General Practice (GP) were recruited, to constitute the control group, from the attached clinics of medical school hospitals in all chosen universities in areas of study in Saudi Arabia. The sample was recruited by making announcements for volunteers who have any sort of symptoms such as allergy, hair loss, psychological problems, and headache, and have the willingness to participate. The announcements were distributed in all waiting areas of both male and female wards. Full information was given about the aims of study and the promises of confidentiality. Their written consents were also obtained before conducting the ABQ.

### **Materials**

In present study the Aetiological Beliefs Questionnaire (ABQ) (Alqhatani & Salmon, 2008) was conducted with both patients groups (clinical and control). Full details about the ABQ are shown in methods chapter earlier.

### **Procedure**

The participants who agreed to participate in current study were asked to give their written consent. Every participant was interviewed individually and asked to complete the ABQ before consultation in private room in waiting room while waiting for their consultations. For patients who were illiterate, the questionnaire was read out by the researcher for both male and female GP patients. The patients were asked to answer the ABQ based on their own beliefs about what caused the main symptoms. Also, further explanations were given to ensure that their answers represented their beliefs about the causes not the doctor's explanation. Regarding the clinical group, the ABQ was given during the interview situations as for other scales. The researcher also read the ABQ for illiterate psychiatric patients and recorded their answers.

## Results

### a) Demographic characteristics of the sample

The total sample tested was 299, and sampling was based on a matching of patients and control groups in terms of gender for the three residence areas. The number of participants by group, sex and areas of residence is shown in the table below.

Table 7.1: Patient and control groups

Residence	Sex	Patient	Control
Riyadh	Male	25	22
	Female	25	25
Jeddah	Male	25	26
	Female	25	28
Eastern province	Male	23	22
	Female	25	28

The variation of other demographic variables was tested across the 12 cells of the sample table.

The descriptive statistics for age across the different sub categories of the sample are shown in Table 7.2.

Table 7.2: Age in years

Residence	Sex	Patient	Control
Riyadh	Male	Mean 35.76, SD 9.47	Mean 24.68, SD 6.10
	Female	Mean 38.96, SD 9.56	Mean 34.40, SD 11.51
Jeddah	Male	Mean 34.60, SD 9.50	Mean 32.04, SD 11.49
	Female	Mean 34.96, SD 8.68	Mean 29.29, SD 11.05
Eastern province	Male	Mean 42.65, SD 9.64	Mean 31.23, SD 9.97
	Female	Mean 37.16, SD 11.46	Mean 28.61, SD 11.93

It was not possible to exactly balance the age of participants in the different sub-samples. Generally, the descriptive statistics for age among groups showed that patient group was older (Mean 37.28 and SD 9.97) than control group (Mean 30.10 and SD 10.75). The significance of differences in age amongst the major categories of the sample was tested using univariate ANOVA with age as the dependent variable. The results showed that none of the differences in age were significant between groups, for all independent variables: sex, residence and group.

However other significant differences between patients and control samples were found. These differences between patients and controls on a number of demographic variables are explored below.

Differences in frequencies for marital status are shown in Table 7.3 for all three residence areas combined, using a crosstabulation.



Table 7.3: Marital status with corresponding percentages of the total patient sample and total control sample

Marital Status	Sex	Patient	Control	Row total
Single	male	53 (35.81%)	45 (29.80%)	98 (32.7%)
	female	26 (17.57%)	41 (27.15%)	67 (22.4%)
	total	79 (53.38%)	86 (56.95%)	165 (55.1%)
married	male	5 (3.38%)	23 (15.23%)	28 (9.36%)
	female	17 (11.49%)	32 (21.19%)	49 (16.38%)
	total	22 (14.87%)	55 (36.42%)	77 (25.74%)
Ever married	Male	15 (10.14%)	2 (1.33%)	17 (5.68%)
	female	32 (21.62%)	8 (5.30%)	40 (13.37%)
	total	47 (31.76%)	10 (6.63%)	57 (19.05%)
Total		148 (100%)	151 (100%)	299 (100%)

Chi-square showed that no cell had an expected count less than 5. The difference in frequencies for marital status for all residence areas combined was significant between the patient and control group and for both males and females  $\chi^2 (5, N= 299) = 44.5, p < .0005$ , the difference in frequencies for marital status was significant in the patient group in both males and females  $\chi^2 (2, N=148) = 21.899, p < .0005$ , whereas the difference in frequencies for marital status was not significant in the control group in both males and females,  $\chi^2 (2, N=151) = 4.481, p = .110$ . The results showed that patient group, both males and females tended to be more frequently (31.76%) “ever married” compared to the control group (6.63%).

Because economic and educational status are ordinal level variables, the non parametric equivalent of the T-test was conducted with independent variables (sex, and group) to examine differences between the two samples, whereas nonparametric ANOVA (Kruskal-Wallis) was employed with independent variable (residence) in order to test

differences between groups in economic and in educational status. Differences in Mean rank for economic status are shown in Table 7.4 for all three residence areas and both groups combined according to sex, using Mann-Whitney.

Sex	N	Mean Rank
Male	143	132.43
Female	156	166.11

There was a statistically significant difference between males and females in economic status ( $U = 8641.00$ ,  $N_1 = 143$ ,  $N_2 = 156$ ,  $p < .0005$ , two tailed).

Differences in Mean rank for economic status are shown in Table 7.5 for all three residence areas and both male and female combined according to group, using Mann-Whitney.

Group	N	Mean Rank
Control	151	172.19
Patient	148	127.36

There was a statistically significant difference between patient and control groups in economic status ( $U = 7823.00$ ,  $N_1 = 151$ ,  $N_2 = 148$ ,  $p < .0005$ , two tailed).

Differences in Mean rank for economic status are shown in Table 7.6 for both male and female and both groups combined according to residence, using Kruskal-Wallis.

Residence	N	Mean Rank
Riyadh	97	152.70
Jeddah	104	164.07
Eastern Province	98	132.40

There was a statistically significant difference between the three residence areas in economic status:  $\chi^2 (2, N=299) = 13.563, p=.016$ . Economic status was highest in the Eastern Province: Post-hoc tests (Mann Whitney) showed that Jeddah was significantly lower in economic status than Eastern Province,  $Z = -2.386, p < .05$ , There were no significant differences between both Riyadh and Jeddah and between Riyadh and Eastern Province.

Differences in Mean rank for educational status are shown in Table 7.7 for all three residence areas and both groups combined according to sex, using Mann-Whitney.

Sex	N	Mean Rank
Male	143	149.96
Female	156	150.04

There was no significant difference between males and females in educational status ( $U = 11148.500, N_1 = 143, N_2 = 156, p= .993$ , two tailed).

Differences in Mean rank for educational status are shown in Table 7.8 for all three residence areas and both male and female combined according to group, using Mann-Whitney.

Group	N	Mean Rank
Control	151	201.20
Patient	148	97.76

There was a statistically significant difference between patient and control groups in educational status ( $U = 3442.500, N_1 = 151, N_2 = 148, p< .0005$ , two tailed).

Differences in mean rank for educational status are shown in Table 7.9 for both male and female and both groups combined according to residence, using Kruskal-Wallis.

Residence	N	Mean Rank
Riyadh	97	155.11
Jeddah	104	150.78
Eastern Province	98	144.11

There was no significant difference between the three residence areas in educational status:  $\chi^2(2, N=299) = 1.009, p=.604$ .

#### **b) Variation in ABQ scores**

The participants have been tested on the ABQ to identify causal explanations about their symptoms in clinical and non-clinical population in Saudi Arabia, and scores were examined for differences in etiological beliefs between geographical areas.

Factor analysis was also conducted to describe the structure of the ABQ and to compare between current results and a previous study using the ABQ among Saudi patients (Alqhatani & Salmon, 2008). Alqhatani and Salmon analysed their data by means of principal components analysis, and seven factors or components of ABQ were identified in a Saudi sample. Therefore, a similar factor analysis was performed in order to see whether the factor structure would replicate on the current Saudi sample. All data requirements for factor analysis were met. There were 7 variables and 299 participants, and principal axis factoring with varimax rotation was specified. The analysis revealed nine factors with eigenvalue > 1 that emerged. With a cut-off of 0.5 no item was loaded on more than one factor. In most respects the results were identical with Alqhatani & Salmon (2008) but in current results one component labelled supernatural power loaded three items (sorcery, devil, and evil-eye), whereas it loaded four items (sorcery, devil, evil-eye, and punishment of Allah) in Alqhatani & Salmon (2008). A new component labelled punishment of Allah was derived as a new factor in present study. In the current study five components (weakness, invasion, serious disease, digestion, plus a new

component that loaded on two items: weak blood and weak stomach) all reflected physical causes. Two components reflected psychological effects and causes labeled as emotion and social demand or lifestyle.

The principal component analysis of the ABQ is shown in table 7.10.

Table 7-10: Principal component analysis of current dataset

Items	1	2	3	4	5	6	7	8	9
Damage to part of my body	.749								
Part of my body is strained	.725								
Worn joints	.659								
Part of my body wearing out	.597								
Something seriously wrong with me	.519								
Germes or infection		.782							
Pollution		.686							
Something I caught from someone else		.577							
Dampness or chill		.550							
Weather or changes in temperature		.532							
Job/housework			.724						
Overwork			.697						
Family/friends			.526						
Mood				.734					
Stress				.691					
Nerves				.642					
Sorcery/magic					.769				
Devil/jinn					.673				
Evil eye					.530				
A weak spot in my body						.705			
Weak constitution or low resistance						.548			
Changing my diet or lifestyle							.661		
The food that I eat							.602		
Poor digestion or weak stomach								.687	
Weak blood								.556	
Test or punishment of Allah									.629

### c) MANOVA

In order to identify the effects of demographic variables in the sample on etiological beliefs, MANOVA was conducted for the following demographic variables (sex, residence, marital status, and group) as independent variables (IV), and with nine factor scores as dependent variables (DV) which were generated from the factor analysis (body malfunction, germ / pollution weather, job overwork / family financial, mood stress / nerves, magic / jinn, bodily weakness or constitution, lifestyle or diet, poor digestion, and test or punishment of Allah). The covariates in the design were economic and educational status (ordinal, three levels).

The MANCOVA showed that there was a significant effect of marital status only on job overwork/family and financial factors, Pillai's  $F(1,292) = 17.973$ ,  $p < 0.0005$ , whereas there was no significant effect of economic or educational status on the dependent variables. On the first pass through the MANCOVA, there were no significant effects of the covariates; therefore they were eliminated from the model. For within-participant effects, a Bonferroni correction was applied such that  $p(\text{crit}) = 0.05 / 9 = .0056$ . There were certain main effects and interactions that reached significance. However, there were no hypotheses concerning interactions between independent variables, so a custom MANOVA was run again with main effects only.

The results for the overall MANOVA model revealed that the bodily malfunction factor showed significant variation, Pillai's  $F(6,292) = 2.572$ ,  $p = 0.021$ ; as did job overwork/family financial, Pillai's  $F(6,292) = 10.233$ ,  $p < 0.0005$ ; mood stress/ nerves, Pillai's  $F(6,292) = 9.194$ ,  $p < 0.0005$ ; magic/jinn, Pillai's  $F(6,292) = 32.032$ ,  $p < 0.0005$ ; bodily weakness or constitution, Pillai's  $F(6,292) = 3.271$ ,  $p = 0.004$ ; life style or diet, Pillai's  $F(6,292) = 4.232$ ,  $p < 0.0005$ ; and test or punishment of Allah, Pillai's  $F(6,292) = 7.358$ ,  $p < 0.0005$ .

There was a significant effect of group on job overwork/family financial, Pillai's  $F(1,292) = 33.202$ ,  $p < 0.0005$ , the descriptive statistics showed that the highest mean score has appeared in control group in both males and females (Mean.887, SD .834); mood stress/nerves, Pillai's  $F(1,292) = 31.206$ ,  $p < 0.0005$ , the descriptive statistics showed that the highest mean score has appeared in control group ( Mean 4.662, SD 3.11); magic/jinn, Pillai's  $F(1,292) = 148.571$ ,  $p < 0.0005$ , the descriptive statistics showed that the highest mean score has appeared in patient group (Mean 5.047, SD

1.970); and lifestyle or diet, Pillai's  $F(1,292) = 12.643, p < 0.0005$ ) the descriptive statistics showed that the highest mean score has appeared in control group in both males and females (Mean .850, SD .77 ). There was a significant effect of residence on job overwork/family financial, Pillai's  $F(2,292) = 5.703, p = 0.004$ ). Employing the (Tukey) post-hoc test, showed that the significant differences in job over-work/family financial were found between Jeddah and Eastern Province ( $p < 0.0005$ ), and between Riyadh and Eastern Province ( $p = 0.010$ ); mood stress/nerves, Pillai's  $F(2,292) = 6.222, p = 0.002$ ). Employing the (Tukey) Post-hoc test, showed that the significant differences in mood stress/nerves found between Jeddah and Eastern Province ( $p < 0.0005$ ), and between Riyadh and Jeddah ( $p = 0.001$ ); and bodily weakness or constitution, Pillai's  $F(2,292) = 6.945, p = 0.001$ ). Employing the (Tukey) Post-hoc test, showed that the significant differences in bodily weakness or constitution found between Jeddah and Eastern Province ( $p = 0.001$ ), and between Riyadh and Jeddah ( $p = 0.011$ ). Finally, there was a significant effect of sex on magic/jinn, Pillai's  $F(1,292) = 10.011, p = 0.002$ ). The descriptive statistics showed that the highest mean score has appeared in female group in the three residence areas (Mean .987, SD .901); and test or punishment of Allah, Pillai's  $F(1,292) = 22.004, p < 0.0005$ ) the descriptive statistics showed that the highest mean score has appeared in male group in the three residence areas (Mean 1.405, SD .850).

#### **d) Regression analysis**

The higher mean scores for supernatural and emotional explanations or beliefs as causes of illness among a Saudi sample were consistent with Alqahtani & Salmon (2008), and furthermore, the current results showed that both emotional and supernatural etiological beliefs were common in both GP patients and clinical (schizophrenic) samples, but showed significant differences between groups defined by the independent variables sex, clinical / non-clinical group, and residence. Therefore, in order to further analyse the effects of demographic variables in the sample on etiological beliefs, a set of regression analyses were conducted with the following demographic variables as independent variables: age, sex, marital status, economic status, educational status, group, and residence; and with the nine dependent variables in turn (body malfunction, germ/pollution weather, job overwork/family financial, mod stress/nerves, magic/jinn,



bodily weakness or constitution, lifestyle or diet, poor digestion, and test or punishment of Allah). Because the residence variable is categorical, it was recoded as a dummy variable as follows: dummy 1 (Riyadh): Riyadh =1, Jeddah =0 and the Eastern Province =0. Dummy 2 (Jeddah): Riyadh =0, Jeddah =1 and the Eastern Province =0. For dummy 3 (the Eastern Province): Riyadh =0, Jeddah =0 and the Eastern Province =1. Also, the region variable is categorical, therefore it was recoded as a dummy variable as follows: dummy 4 (Northern region): northern region =1, southern region =0, eastern province =0, western region =0, middle area =0 and others =0. Dummy 5 (Southern region): northern region =0, southern region =1, eastern province =0, western region =0, middle area =0 and others =0. Dummy 6 (Eastern Province): northern region =0, southern region =0, eastern province =1, western region =0, middle area =0 and others =0. Dummy 7 (Western region) northern region =0, southern region =0, eastern province =0, western region =1, middle area =0 and others =0. Dummy 8 (Middle area): northern region =0, southern region =0, eastern province =0, western region =0, middle area =1 and others =0. Dummy 9 (Others): northern region =0, southern region =0, eastern province =0, western region =0, middle area =0 and others =1. A stepwise method was chosen as it does not depend on a particular *a priori* conceptual model of how the factors might work.

Using the stepwise method, a significant model emerged for the prediction of belief in emotion as a cause of illness  $F(4,294) = 25.684, p < .0005$ . The model explains 24.90% of the variance (Adjusted  $R^2 = .249$ ).

Table 7.11 shows information on the predictor variables that are included in the model: group, age, residence in Jeddah (dummy 2) being a negative predictor and residence in Eastern Province (Dummy 3) being a positive predictor. Marital status, economic status, sex, dummy 1, dummy 4, dummy 5, dummy 6, dummy 7, dummy 8, dummy 9 and education variables were excluded.

Table 7.11: the unstandardised and standardised regression coefficients for the variables included in the model of emotion (mood stress/nerves)

Dependent variable	Predictor Variable	B	SEB	B	Sig
Emotion	Group	-2.848	.329	-.460	.000**
	Dummy 2 (Jeddah)	-1.161	.380	-.178.	.002*
	Age	.034	.015	.119	.026*
	Dummy 3 (the Eastern Province)	.778	.386	.118	.045*

\*p=0.5 \*\*p<.001

Using the stepwise method, a significant model emerged:  $F(2,296) = 61.168$ ,  $p < .0005$  for the prevalence of belief in supernatural as a cause of illness. The model explains 28.9% of the variance (Adjusted  $R^2 = .289$ ).

Table 7.12 shows information of the predictor variables that are included in the model: group and residence (dummy 1). Age, marital status, economic status, sex, dummy 2, dummy 3, dummy 4, dummy 5, dummy 6, dummy 7, dummy 8, dummy 9 and education variables were excluded.

Table 7.12: the unstandardised and standardised regression coefficients for the variables included in the model of supernatural power (magic/jinn)

Dependent variable	Predictor Variable	B	SEB	B	Sig
Supernatural	Group	2.423	.225	.527	.000**
	Dummy 1 (Riyadh)	-.550	.241	.112	.023*

\*p=0.5 \*\*p<.001

Differences in means and standard deviation of emotional explanations of illness according to group are shown in table 7.13.

Table 7.13: emotion causes according to group

Group	Mean	SD
Control	4.662	3.11
Patient	2.074	2.493

The descriptive statistics for emotional explanations showed that the highest mean score has appeared in control group in both males and females with comparison to patient group.

Differences in means and standard deviation of emotion according to residence are shown in Table 7.14.

Table 7.14: emotion causes according to residence variable

Residence	Mean	SD
Riyadh	3.474	2.843
Jeddah	2.375	2.386
Eastern Province	4.357	3.670

The descriptive statistics for emotion explanations showed that the highest mean score was obtained in the Eastern Province in both control and patient groups, then in Riyadh. The Jeddah area showed the lowest emotion scores.

Differences in means and standard deviation of supernatural power explanations according to group are shown in table 7.15.

Table 7.15 supernatural causes according to group variable

Group	Mean	SD
Control	2.609	1.953
Patient	5.047	1.970

The descriptive statistics for supernatural power explanations showed that the highest mean score has appeared generally in the patient group in both males and females.

Differences in means and standard deviation of supernatural according to residence are shown in Table 7.16.

Table 7.16: supernatural causes according to residence variable

Residence	Mean	SD
Riyadh	4.237	2.130
Jeddah	3.721	2.275
Eastern Province	3.50	2.31

The descriptive statistics for supernatural power explanations showed that the highest mean scores were found in the in Riyadh area in both patient and control groups, then in Jeddah area. The Eastern Province was showed the lowest mean scores for the supernatural power component.

## Discussion

The factor analysis revealed a new factor in the current study; it was labelled test or punishment of Allah. The belief in a test or punishment of Allah is a common explanation of symptoms among both groups of Saudi patients (schizophrenic patients and GP's patients) and this is consistent with Alqahtani & Salmon (2008) in that the test or punishment of Allah was the most common cause given in a Saudi sample (Alqahtani

& Salmon, 2008). These results reflect the fact that the religion is an important cultural aspect, and that Saudi society, as a Muslim and religious society, is strongly affected by religion in explanations of illness. Thus, Saudi people believe that their destiny or fate is completely controlled by Allah (God) (Qurashi et al., 2001). These beliefs have constituted Saudi attitudes regarding their own role in controlling or affecting their destinies. They thus believe that the locus of control is external and under the will of Allah (God). This ideology came from Islamic ethics, in that if a person wants to be a good Muslim, he or she should completely submit to will of the God and has to accept their fate or destiny (Alkhani, et al., 1986), and therefore this belief depends on the degree of person's faith. Moreover, the factor analysis also showed that the component of supernatural causes in current results was represented by belief in magic/jinn and that this differed from the component of test or punishment of Allah, whereas, in Alqahtani and Salmon (2008) these components were combined. The separation of these components in the current data reflects a possible separation between core Islamic beliefs and other cultural beliefs. From the results it appeared that the test or punishment of Allah has a huge impact on Saudi sample as a result of predominance of Islamic religion which is confirmed in the belief that illness is either sent by Allah as a test of good people or as a punishment of guilty people (Alqahtani and Salmon 2008).

The MANOVA revealed that marital status had a significant effect on the belief that job overwork or family financial factors can cause illness. Regarding the effect of marital status on the component of job over-work or family financial factors, it may be argued that a focus on the family demands, daily routine and domestic obligations is more relevant in GP patients than schizophrenic patients. This may be because the schizophrenic patients were in-patients, and some of patients were hospitalized for a long time and their removal from the family context may lead to a decrease in the effects of current family stress as a perceived cause of illness. At the same time, hospitalisation can affect economic status which leads to differences between both groups in this variable. Furthermore, schizophrenic patients often tend to divorce or to be single as a result of their illness owing to multiple factors, for instance the poverty of establishing relationships or peers and inability to build close or intimate relationship with the opposite sex (APA, 1994). Some studies of the social class and economic status on people with schizophrenia occurrence have indicated that the majority of schizophrenic patients came from low and poor social and economic classes or else as a

result of their disorder have lost their jobs which led to deterioration in their economic status even if they came from middle or high economic classes (Black & Andreasen, 1994).

The regression analysis indicated that both residence and group were predictor variables in emotional and supernatural explanations. The descriptive statistics also revealed the strong effects of both group and residence in emotion and supernatural causes. The descriptive statistics showed that schizophrenic patients group tended to interpret their symptoms supernaturally more frequently than the GP's patients group whereas the GP's patients were more likely to have referred their symptoms to emotional causes. These results may be partly consistent with Ossman, et al. (1993) cited in Alqahtani & Salmon (2008), who reported that compared with Western societies, Arab patients have a greater tendency to refer their symptoms, especially psychological symptoms, to supernatural powers rather than psychological causes or explanations (Alqahtani & Salmon, 2008). The higher scores for supernatural power explanations among schizophrenic patients may be argued to occur as a result of their psychological symptoms and the nature of these symptoms which they suffered from. However, psychological and emotional causes were given higher ratings among the GP's patients. These results also are consistent with Alqahtani & Salmon (2008) who found that psychological beliefs were relatively common among Saudi primary care patients in the Southern Province in Saudi Arabia. Beliefs in the evil eye as a supernatural power were also common among the Saudi primary care patients (Alqahtani & Salmon, 2008). The present findings indicated that Saudi patients, who represent Arab and Muslim culture, reflected both supernatural and psychological beliefs as causal explanations of their symptoms with an additional religious explanation (test or punishment of Allah). Another possibility is that all patients may differ in their explanations based on whether their symptoms were psychological or physical (Alqahtani & Salmon, 2008) but this was not tested.

Finally, the tendency of schizophrenic patients to explain their symptoms supernaturally suggests that their explanations might be consistent with their delusional ideation. There might also be demographic factors affecting the kinds of delusional explanations they develop for their anomalous mental state and difficulties. This suggests the importance and need for qualitative analysis of content of delusions, which may provide additional insight into the influence of the cultural context on themes of delusions among Saudi sample. Qualitative analysis may also give valuable information about socio-cultural

issues which might appear in content of delusions and the most important differences in social and cultural features between the study areas such as different backgrounds, gender inequity and religious and supernatural influences. Hence, in the next chapter the researcher will use content analysis of patient interview material to try to understand how demographic variables may have an impact on the type and content of delusional material.

# **Chapter 8: Qualitative study**

## **Of the content of delusions**

### **Introduction**

The content of delusions is subject to influences from the wider culture, and we can therefore expect to find differences in the content of delusions between different cultures (Maher & Spitzer, 1993). Maslowski et al. (1998) suggested that qualitative rather than quantitative differences in content of delusions result from variables such as differences in ethnic backgrounds. Kim et al. (1993, 2001, and 2006) reported that differences in content of delusions between cultural groups could be understood as representing differences in the socio-cultural and political situations arising between cultural groups. Thus, in the present study it is proposed that the content of delusions is sensitive to influence by socio-cultural and political stresses which reflects the reality of social and political life in each area. Freeman and Garety (2001) suggested that there were a strong relationship between environment, and content of delusions, mediated by emotion. For example, Ellett, et al. (2008) argued that the stresses of a deprived urban environment increased anxiety and this led to “jumping to conclusions” and hence, intensified persecutory delusions. Therefore, a good understanding of this relationship, through analysing content, can aid in adding deep explanations of the role of emotion in the formulation of delusional ideation and content.

The purpose of the fifth study was to analyse the content of delusions among schizophrenic patients in Saudi Arabia, in the light of demographic and cultural differences between three areas. The study will explore whether the content of delusions can be understood in terms of the effects of socio-cultural and demographic variables on the themes and content of schizophrenic symptoms such as delusions.



## **Method**

### **Materials**

In the current study the content analysis was conducted on interview and transcript material obtained from schizophrenic patients (clinical sample). In order to derive material for content analysis, all patients were interviewed using the Scale for the Assessment of Positive Symptoms (SAPS), and the Scale for the Assessment of Negative Symptoms (SANS) (Andreasen, 1984) with special emphasis on the section on delusions. The World Health Organization (WHO) Life Events Schedule (1978) semi-structured interview was also carried out. Full details about SAPS, SANS, and WHO life events schedule are shown in the methods chapter (Chapter 3). Additionally, the notes of medical personnel and medical records were reviewed to extract delusional materials of patients, with emphasis on records of the patient's own words which were elicited by interview. Then, to provide additional confirmation, the reports of clinical personnel were reviewed, particularly those including quotations which revealed their patients delusions on their records. Transcript information which was obtained from these different sources was then combined by the author to provide an individual case description for each patient to facilitate the process of content analysis and identification of delusional themes among schizophrenic sample. Delusions were reported verbatim from patients' narratives. To illustrate the content analysis process and interview material six case studies are attached in the appendix.

### **Design and procedure**

The researcher used content analysis of patient interview material to identify key delusional themes, sub-themes and sub-categories. These were then tabulated under place of *residence* (Riyadh, Jeddah, and Eastern Province) and *sex* (male, female). A thematic content analysis methodology was used (Howitt, 2010) which is common in qualitative content analysis. Categories and themes of delusions emerged from the data firstly from the first six transcripts, comprising two cases (one male and one female) from each area, and these cases were analysed in detail, line by line, to set initial categories. Then other transcripts were analysed paragraph by paragraph to elicit new categories or to follow the same categories were derived from the first six transcripts.

The next step was to organise the sub-categories or themes into main categories, this step was performed some times in parallel with first step. The classification that emerged differed somewhat from that reported by Andreasen (1983, 1984). The interpretation of the content was based on knowledge and understanding of Saudi culture, as reviewed in Chapter 2.

## **Participants**

For the content analysis of delusional materials, the clinical sample for this study was the same as that used in previous chapters.

## ***Results and Discussion***

### ***Persecutory delusions***

- a) Content reflecting cultural conservatism
- b) Content reflecting gender roles

The current results confirmed that the content of delusions reflected the interaction relationship between patient and his environment and surrounding milieu. Thus, social affairs and cultural context were reflected in the content of delusions (Rhodes, Jakes, and Robinson, 2005). Regarding the effect of the sex variable, it appeared most clearly in the difference in persecutors between male and female patients, in that persecutors generally in females were internal and in males were external to the family: for example, a 20 year-old female patient from the Eastern Province was saying:

"My parents want to poison me so I cannot eat"

Whereas a 34 year-old male patient from Riyadh said:

"Someone always follows me and wants to kill me, Israel and America sent someone to poison me".

This contrast in the content of male and female persecutory delusions reflects the structure of Saudi society as a closed, conservative and religious society, which is considered as one of the most restrictive communities regarding women's affairs.

Therefore, a woman obviously deals in her daily routine with her family and friends and interestingly, a woman in Islamic law should be dependent on male (*Mahram*) members of family either her father or else brother when the father is absent or dead: also her husband if she is married. In Saudi society, that man on whom the woman is dependent or *Mahram* has all authority concerning a woman's affairs such as education, marriage, and he is the decision-maker. For example, a 43 year-old female patient was saying:

"My eldest brother is a thief, he cheats me and told me I will be your *mahram* and protect you, but he stole my legacy after my father died, and he brought me here because he wants my money and does not want me".

This appears to be a "possible delusion" (it could be true) but it was clear from the case notes that her father was alive.

Hasns (2003) has stated however that under Islamic law, this law is meant to be flexible and a woman has a right to choose and decide about her destiny with her dependent. However, the huge discrepancy between Islamic law and its application by men results in stressful situations in Saudi society, particularly in extreme or conservative families, patients with a rural background and illiterate families. Thus persecutors appearing in the female sample tend to be within the family. For example, a 22 year-old female patient from Jeddah was saying:

"My mother is not my real mother – she hates me and loves my other sisters and my father abandons me here".

Furthermore, in a religious conservative culture in which gender inequality ideology gives men social and economic power, the woman usually is considered as a subordinate member in society. Women who belong to religious conservative cultures and families often tend to have earlier marriage and low educational achievements. A culture with religious conservatism always emphasises fatherhood and the father's obligations as a head of family, who has the authority to administer all family affairs. In religious conservative cultures men also believe that gender discrimination and differentiation should be clear in the household responsibilities; therefore, they do not contribute to tasks that are women's or mothers' obligations such as the domestic daily routine; in order to maintain and protect gender inequality and discrimination in roles

and responsibilities (Civettini, & Glass, 2008). For example, a 38 year-old female patient was saying:

"My husband always beats me and says you are careless and not a clean mother and he took my children, he sent a Jinn to beat and harm me".

Because women's activities are confined to the domestic realm, and are subordinate to male authority structures within the family, correspondingly, those with persecutory delusions identify their persecutors as family members, and more specifically, male family members with authority over them, or else female family members who derive their power through association with a male authority figure (e.g. father's second wife, husband's second wife, brother's wife). Similarly, delusions of jealousy are often focused on jealousy on the part of female members of the patient's family. For example, a 35 year-old female patient from the Riyadh area, who lives with her brother was saying:

"My brother's wife hates me and she did magic to harm me and to tell my brother that your sister is crazy".

Also a 25 year-old female patient from the Eastern Provence was saying:

"My father's second wife did not want me at home because I am better than her daughters so she did magic and sent me to hospital".

Additionally, a 52 year-old female patient from Riyadh was saying:

"My sisters, friends, brother's wives, and my husband's second wife are always being jealous of me because I am the most beautiful woman in the world".

Jost, et al. (2003) cited in Crowson (2009) indicated that studies of conservatism showed that authoritarianism and social dominance orientations correlated positively with cultural and economic conservatism. Also Crowson, Thoma, and Hestevold (2005) cited in Crowson (2009) reported that studies on the relationship between personal needs and cultural conservatism showed that people who obtained high scores on scales of cultural conservatism were very prone to be more tough and rigid in their thinking and tended to be more dogmatic in their beliefs. Thus, Crowson (2009) examined the relationship between cultural and economic conservatism and some psychological characteristics such as; dogmatism, the need for cognition, the need for structure, the

need to evaluate, belief in certain knowledge, fear of death, and dogmatic aggression. The results showed that people who came from culturally conservative groups scored higher in these dimensions and they tended to be aggressive with people who hold different beliefs and values from them, whereas they scored lower in need for cognition. In some cases, the delusional content is a reaction, to cultural conservatism, in others, it expresses some of the psychological characteristics of cultural conservatism. For example, a 19 year-old female patient from the Eastern Province was saying:

"All my suffering comes because of my mother and my community both wronged me because I am against them and their bad thoughts. I am a good psychiatrist and I should change bad people".

Also, a 32 year-old male patient was saying "The Saudi Government has to collapse because of wrongdoing and persecuting against women and non-Saudi citizens, and against me as a good man who holds useful thoughts".

For example, a 42 year-old male patient from the Riyadh area with a religious background was saying "The government always rejects religious men and it is against men with long beards (refers to religious men) and always tortures and threatens them because they said the truth and the government does not like the truth".

Also, a 41 year-old male patient from Jeddah with a religious background was saying "I will torture the Saudi government and the Saudi people and I will let them go to hell because they are atheists and against me and all good Muslims".

Also for example, a 31 year-old male patient was saying "I was imprisoned and was tortured in Guantanamo jail because I said the truth against those atheist Americans".

In Arab and Islamic religious conservative culture and families the gender inequality ideology is dominant, which may put women at greater risk of developing mental disorders and other psychological problems, indicating a link between conservatism generally and gender discrimination specifically. Moreover, in Arab traditional culture especially among low educated and nomad people, the gender inequality issue reveals itself in the preference for sons or boys rather than girls or daughters. This appears from the first moment of giving birth to a girl, when the father becomes sad, and in some cases that event may lead to divorce because he wants a boy instead of a girl. However, in the holy Qur'an and in Islamic moral education there is an emphasis on the

importance of justice and equality between both sons and daughters; and kind dealing and treatment particularly with girls or daughters is strongly asserted (Douki et al., 2007). On the other hand, the situation is different with men in Saudi society as it is a male-dominated society. Therefore, due to the special socialization process of males in Saudi society, men have greater rights to act freely than women, and they are the decision-makers (Buchele, 2009). The persecutors in the delusions of males correspondingly appear in their dealings with the external society. For example, a 37 year-old male patient was saying:

"The Islamic nation faces a crisis by America in Iraq, Palestine, and Afghanistan and this affected me and made me afraid and changed me a lot and inserted bad thoughts in my mind, I am not the same after this crisis".

Also a 33 year-old male patient was saying:

"The government and people are responsible for my illness and they are behind and the cause of my all problems".

Hence, for both males and females, the persecutors who appear in the content of persecutory delusions closely reflect the socio-cultural context and milieu of Saudi Arabia.

### ***Persecutory themes: gender differences***

In conclusion, the nature of persecutors in persecutory delusions reflects social and cultural norms and it also reflects family structure and ties. For example in the present results both male and female groups, but especially females, identified their persecutors in the first rank as members of their families. This reflects the structure of Saudi society which considers domestic and familial ties the most important property of tribal tradition and in Islamic literature. Moreover, the range of family persecutors reflects the fact that extended families are the commonest family structure among Saudi society (Al-Shamy, 1981). Gender differences in persecutors among Saudi sample in the current study reflect the different social and cultural roles of males and females, in that females often are fully occupied by family affairs whereas males usually are involved with outside challenges and issues. For example, a 33 year-old male patient was saying:

"People want to kill me and they conspired with my family and government to poison me."

Meanwhile, a 51 year-old female patient who lives with her son was saying:

"My son and his wife do not love me and they try to harm me and kill me to get my money".

Current results were consistent with a Turkish study (Gecici, Kuloglu, Guler, Ozbulut, et al., 2010) which showed that family-related persecutors appeared among traditional large families in Eastern Turkey whilst unknown persecutors appeared within Western Turkey in people with Western backgrounds and characteristics.

### ***Gender differences in grandiose delusions***

For grandiose delusions, they might perform a function in maintaining self-esteem in the context of a closed and controlling environment. Grandiose delusions, like persecutory delusions, tended to have an external or political theme only in males. For example, a 28 year-old male patient was saying:

"I am the king of Saudi Arabia."

Another 34 year-old male patient was saying:

"I am a genius and I created the nuclear theory." Also a 36 year-old male patient was saying, "I am the creator, I created symbols, and electricity, and I resolved the mystery of magnetic power".

Grandiose delusions tended to have a theme of physical beauty only in females. For example, a 43 year-old female patient was saying:

"I am the queen of the world and I am the Miss World and the prettiest lady in this world".

However, religious and supernatural grandiose themes were found in both males and females. For example, a 35 year-old male patient was saying:

"I am Allah and I can create a new life for anyone, I am the Lord of the seven skies and seven earths".

Another 45 year-old male patient was saying:

"I am the Prophet Mohammed." A 58 year-old female patient was saying:

"I am the Virgin Mary".

### ***Supernatural powers***

Magic, jinn, or supernatural power themes were also dominant among all schizophrenic patients regardless of sex and residence, and especially in male patients the content of supernatural power reflected political as well as supernatural themes. For example, a 51 year-old male patient was saying:

"The jinn who lives inside me hates me and always hits and harms me, they are four came from the corrupt Government".

A 20 year-old female patient was saying:

"I think jinn love me so much and they always come in cats shape, they play with me and they told me we will help you to go out from the hill and hospital".

### ***Religious themes***

Also, religious themes were reported as firm beliefs among all patients. This result is consistent with Kent and Wahass study (1996) in that religious and supernatural ideations were noted in Saudi patients in the content of their hallucinations. However, religious themes were sensitive to the residence effect in that both Riyadh and Jeddah reflected their majority Sunni credo of their populations.

For example, 33 year-old male patient from Jeddah was saying:

"I am *Khalid Ibn Alwaleed*" (religious leader in Islam especially in the Sunni credo).

Also, a 48 year-old female patient from Riyadh was saying:

"I am Aisha bint Abu Baker the Prophet's wife".



In the Eastern Province the religious themes were consistent with their predominant Shiite credo and reflected both their credo as Muslims and also their special beliefs which differ from other Saudi areas (Al Rasheed, 2002). For example, a 52 year-old female patient from the Eastern Province was saying:

"My brothers refused *AlMahaddi* (religious leader in Shiite credo) to be my husband".

Another example, a 56 year-old male patient from the Eastern Province was saying:

"I am generous and I have Abu Alfadel's hands" (religious leader in Shiite credo and he was known as generous man).

Thus, religious themes were affected by these factors which reflected that the Eastern Province is distinctive within the sub-cultural and socio-cultural context of Saudi Arabia.

### ***Racism and ethnic and religious differences in persecutory themes***

The effect of residence appeared in persecutory themes in Jeddah where there is greater ethnic diversity, and these themes included many racist issues. The cultural effects distinctly appeared in persecutory delusions, especially with race-related themes; moreover, as in a previous study (Whaley, & Hall, 2009), race-related content correlated more with delusions than with hallucinations. Also, these themes reflected patients' suffering and isolation feelings as foreigners in their own country. For example, a 32 year-old male patient with an Egyptian background from Jeddah was saying:

"They always repeat that go out of our country; you are not Saudi, go to your country. Back to Egypt you are Egyptian, and we hate you, they said we are not the same, you are foreigners against Saudi people, and you are aliens".

Also, a 25 year-old female patient from Jeddah with an Asian background was saying:

"I hate those Bedouins of Jeddah; they always say you are Indonesian and you are a female servant".

Also, a 60 year-old male patient from Jeddah with an African background was saying:

"They always say to me you are a black guy and you should not eat with us – go out, and I heard them said we should dismiss those black people from Jeddah and Mecca to their own country in Nigeria".

Yamani (2008) reported that the discrimination issue explicitly appeared in the Hejaz area when the political authorities were moved from Jeddah to Riyadh, especially with Najdi people and natives who live in Hejaz using offensive nicknames against immigrant people.

For example on racism and different religious background in persecutory themes a 25 year-old male patient from the Eastern Province who belongs to Shiite credo was saying:

"Those Sunni doctors always give me the wrong medicine and tablets to poison me and they are jealous of me because I belong to Al-Albaite (the holy family in Shiite credo)".

Also, a 38 year-old male patient was saying:

"The government mentors and follows me and they brought me here and said you are a despicable crazy Shiite man".

Also, a 22 year-old female patient was saying:

"My friends always swear and curse me with bad words; they said you are a piece of shit and you are Shiite's whore".

Religious delusional themes and content in the Saudi sample were also consistent with the Turkish sample (Gecici et al. 2010); in the Turkish sample with both Islamic and Christian backgrounds each group reflected their own religious beliefs and faith. For instance, in the Christian group "being Son of God, being Jesus" was common among religious themes while in Muslim group "being Prophet Mohammed, being controlled by Jinn" appeared in their religious content.

### ***Delusions of jealousy***

The content of delusions of jealousy are influenced by the sex variable which highlighted the nature of Saudi society and the double standard in dealing with or

judging men and women's issues. At the same time, Saudi society implicitly gives men greater rights in love and sexual relationships, whereas Islamic law is very clear that both male and female are equal in all life affairs and what is forbidden in female is also forbidden in male; for example, a 45 year-old male patient was saying:

"My wife is traitor, she betrayed me with my son",

A 31 year-old male patient was saying:

"I never married because all women are traitors and they are the reason of temptation, I was so jealous on my ex-love."

A 29 year-old female patient was saying:

"They hate me because I am beautiful and they are jealous".

However, due to the male-dominance and male application of Islamic law the double standard appears as a human law and application (Hasna, 2003).

Delusions of pregnancy in the present study were found predominantly in the Eastern Province group. For example, a 22 year-old single female patient from the Eastern Province was saying:

"I cannot eat a lot because I will be pregnant"

Also a 34 year-old ever-married female patient from the Eastern Province was saying:

"I admitted here to deliver my baby and now I am pregnant in the ninth month, please call the doctor I will deliver now."

This may be related to cultural characteristics in the Shia population because the clinical team in Eastern Province confirmed that delusions of pregnancy were an important feature of their caseload. However, previously, delusions of pregnancy were reported by Qureshi, et al. (2001) in a case study based in Al-Qassim, Najd area, which includes Riyadh, and these authors related their findings to religious and cultural conservatism, which may also suggest delusions of pregnancy were underreported in Riyadh in the present study.

Interestingly, content and themes of delusions of jealousy and sexual themes in a Turkish study (Gecici, et al., 2010) showed similar content with the Saudi sample in the

current study especially in the female group despite the fact that Turkey is a more open culture compared with Saudi culture. However, delusional content in the Turkish female sample reflected sexual rigidity and strict rules governing sexual contact: any sexual activities outside the marriage agreement are prohibited or forbidden as a Muslim country. In Saudi the situation is the same which thus reflects the predominance of Islamic law and morality rather than local social or cultural norms. Therefore, delusional females, particularly single women, may resort to generating a secret love and relationship with a spiritual being (Gecici, et al. 2010). For example, a 48 year-old female patient was saying:

"I am possessed by a Jinni who is called Omar and he loves me and sleeps with me and now I am pregnant".

From the perspective of theoretical explanations of delusions, the present analysis of content of delusions shows that emotions, childhood experiences, the surrounding milieu, immigration issues, and other features of the socio-cultural context may all appear in delusional materials. In agreement with studies in other cultures, socio-cultural factors can affect the themes and content of delusions (Sainsbury & Collins, 1962). Tower and Chadwick (1995) cited in Rhodes, Jakes, and Robinson (2005) suggested that differences in content of delusions between patients emerged as a result of interpersonal events within a cultural context. Furthermore, Rhodes and Jakes (2000) cited in Rhodes, Jakes, and Robinson (2005) reported that patients who had suffered from violent persecution situations in their lives, developed delusional content with excessively violent themes toward themselves or others. Hence, the content of delusions can reflect all areas of conflict within a patient's life so that content is very important in both diagnostic and therapeutic processes and in later implications for treatment.

The main identified themes and sub-themes of delusional content are shown in Tables 8-1...3 for the three residence areas and for men and women.

Table 8-1a: identified themes of delusions among female schizophrenic patients in the Riyadh area.		
persecutory	<ul style="list-style-type: none"> <li>-being refused by family</li> <li>-family hate patient</li> <li>-poison or being poisoned</li> <li>-being wronged or suffering from injustice</li> <li>-being spied on</li> <li>-being tortured</li> <li>- being threatened</li> <li>-sarcasm or mockery</li> <li>-conspiracy</li> </ul>	<ul style="list-style-type: none"> <li>*persecutors:</li> <li>-family members (male member such as father, brother, and husband, )</li> <li>-family members ( female member such as mother, father's second wife, brother's wife, and husband's second wife)</li> <li>-medical personnel</li> <li>-housekeeper</li> <li>-others</li> <li>-unspecified</li> </ul>
grandiose	<ul style="list-style-type: none"> <li>-being a member of the royal family</li> <li>-invention, genius, authorship</li> <li>-having a superpower, or miracles</li> <li>-being a famous historical queen</li> <li>-being Miss World or Miss Universe</li> </ul>	
Religious	<ul style="list-style-type: none"> <li>being a famous religious person in Islamic history</li> <li>- being a prophet's wife</li> <li>-being the Virgin Mary</li> <li>-being an exorcist</li> </ul>	
Somatic & sexual	<ul style="list-style-type: none"> <li>-extraction of brain or viscera</li> <li>- being raped</li> <li>-having serious diseases, like cancer</li> <li>-having a replacement organ, such as electric heart</li> </ul>	
Influence & being controlled	<ul style="list-style-type: none"> <li>-envy: it means that an envious person has put the evil eye on the patient - evil-eye</li> <li>-magic or sorcery</li> <li>-being possessed by jinn or supernatural power</li> <li>-being influenced by machines</li> </ul>	
Jealousy	<ul style="list-style-type: none"> <li>- others feeling jealousy of patient such as friends, colleagues, and other females members of patient's family</li> </ul>	

Table 8-1b: shows the identified themes of delusions among male schizophrenic patients in the Riyadh area.

persecutory	<ul style="list-style-type: none"> <li>-being killed</li> <li>-others hate or refuse the patient</li> <li>-being spied on</li> <li>-people against the patient</li> <li>-being harmed or hit</li> <li>-others want to obtain the patient's money</li> <li>-people talk about the patient in a bad way or insincerely</li> <li>-being contemptuous</li> </ul>	<ul style="list-style-type: none"> <li>*persecutors:</li> <li>-people or others</li> <li>-political authorities</li> <li>-secret agent</li> <li>-police</li> <li>-spies, and hostile nation such as America, and Israel</li> <li>-unspecified</li> </ul>
grandiose	<ul style="list-style-type: none"> <li>-being a political authority or army officer</li> <li>-being a member of the royal family</li> <li>-being the King of Saudi Arabia</li> <li>-having a super and special power</li> <li>-being God or the Creation</li> <li>-being a millionaire</li> <li>-being an angel</li> </ul>	
Religious	<ul style="list-style-type: none"> <li>-being a religious leader in Saudi Arabia</li> <li>-being the Prophet Mohammed</li> <li>-being a new prophet and the last prophet</li> </ul>	
Somatic & sexual	<ul style="list-style-type: none"> <li>-being raped by women and men</li> <li>-blood sucking</li> <li>-extraction of brain and genitals</li> <li>-having a serious disease such as Aids</li> </ul>	
Influence & being controlled	<ul style="list-style-type: none"> <li>-envy: -evil-eye</li> <li>-being affected by magic</li> <li>-being possessed by evil spirit or jinn</li> </ul>	
Jealousy	<ul style="list-style-type: none"> <li>-love affairs</li> <li>-infidelity</li> </ul>	

Table 8-2a: shows the identified themes of delusions among female schizophrenic patients in the Jeddah area.

Persecutory	<ul style="list-style-type: none"> <li>-being refused and rejected by family and others</li> <li>-family hate and hit the patient</li> <li>-poison or being poisoned</li> <li>-being wronged or suffering from injustice</li> <li>-being spied on</li> <li>-being tortured</li> <li>- being threatened</li> <li>-sarcasm or mockery</li> <li>-conspiracy</li> <li>-talking about the patient in bad way or saying offensive things</li> <li>-family and others treating the patient maliciously</li> <li>-discrimination or racist ideations (e.g. go back to your original countries, we do not want foreigners in our country, you are not real Saudis)</li> <li>-being attacked by foreign nations such as Yemen and Israel.</li> </ul> <ul style="list-style-type: none"> <li>*persecutors:</li> <li>-family members (male member such as father, brother, and husband, )</li> <li>-family members (female member such as mother, father's second wife, brother's wife, and husband's second wife)</li> <li>-medical personnel</li> <li>-housekeeper</li> <li>-jinn or evil spirit</li> <li>-foreign countries</li> <li>-natives</li> <li>-others</li> <li>-unspecified</li> </ul>
Grandiose	<ul style="list-style-type: none"> <li>-being member of the Royal family or the King's daughter</li> <li>-being a noble or belonging to nobility</li> <li>-invention, genius, authorship</li> <li>-having a superpower, or miracles</li> <li>-being a famous historical queen</li> <li>-being Miss World or Universe or the most beautiful woman in the world</li> <li>-being the best person in the world</li> <li>-being a millionaire</li> </ul>
Religious	<ul style="list-style-type: none"> <li>-being the God's daughter</li> <li>-receiving a special signs of God or Allah</li> <li>- being a messenger</li> <li>-being the Virgin Mary</li> <li>-being an exorcist or religious therapist by Qur'an</li> </ul>
Somatic & sexual	<ul style="list-style-type: none"> <li>-extraction of brain or viscera</li> <li>- being raped</li> <li>-having serious diseases, like cancer</li> <li>-having a replacement organ, such as electric heart</li> <li>-body shape and brain changed</li> <li>-homosexual ideation</li> </ul>
Influence & being controlled	<ul style="list-style-type: none"> <li>-envy: -evil-eye</li> <li>-magic or sorcery</li> <li>-being possessed by jinn or supernatural power</li> <li>-being influenced by machines</li> <li>-being demon</li> </ul>
Jealousy	<ul style="list-style-type: none"> <li>-others feeling jealousy of the patient such as friends, colleagues, and other females members of the patient's family</li> <li>-others are jealous of the patient because of her success or beauty</li> </ul>

Table 8-2b: shows the identified themes of delusions among male schizophrenic patients in the Jeddah area.

Persecutory	<ul style="list-style-type: none"> <li>-suspicious ideations</li> <li>-being killed or poisoned</li> <li>- others said offensive things about the patient (e.g. you are black, crazy)</li> <li>-racist thoughts (others said you are Egyptian, Iraqi; you are not Saudi and you should not be here)</li> <li>-others hate or refuse the patient</li> <li>-being spied on or monitored</li> <li>-people against the patient</li> <li>-being harmed or hit</li> <li>-others want to obtain the patient's money</li> <li>-people talk about the patient in bad or insincerely</li> <li>-being contemptuous</li> <li>-conspiracy ideas</li> <li>-their families are not the real families</li> </ul>	<p><i>*persecutors:</i></p> <ul style="list-style-type: none"> <li>-people or others</li> <li>-political authorities</li> <li>-family (father, brother)</li> <li>-jinn and demons</li> </ul>
Grandiose	<ul style="list-style-type: none"> <li>-being political authorities or an army officer</li> <li>-being a member of the Royal Family</li> <li>-being the King of Saudi Arabia</li> <li>-being King Fahd's son</li> <li>-being the sun's son</li> <li>-being an expert in biological weapons</li> <li>-having a super and special power</li> <li>-being God or the Creation</li> <li>-being a millionaire</li> <li>-being an angel</li> </ul>	
Religious	<ul style="list-style-type: none"> <li>-being a religious leader in Saudi Arabia</li> <li>-being the prophet Mohammed</li> <li>-being the Creation of angels, Qur'an and stars</li> <li>-being the Lord of skies and earth</li> <li>-being Allah, and others should worship the patient</li> <li>-being the God and all messengers like Ibrahim, Noah, Jesus, and Moses are his sons</li> <li>-being the prophet Josef</li> </ul>	
Somatic & sexual	<ul style="list-style-type: none"> <li>-sexual, and homosexual thoughts</li> <li>-being raped by women and men</li> <li>-blood sucking</li> <li>-lost one of body organ</li> <li>-having a serious disease such as cancer, heart attack</li> </ul>	
Influence & being controlled	<ul style="list-style-type: none"> <li>-envy ideations by Saudis or natives</li> <li>-evil-eye</li> <li>-being affected by magic</li> <li>-being possessed by an evil spirit or jinn</li> </ul>	
Jealousy	<ul style="list-style-type: none"> <li>-love affairs</li> <li>-infidelity thoughts (e.g. my wife having sexual relationships with other men)</li> </ul>	



Table 8-3a: identified themes of delusions among female schizophrenic patients in the Eastern Province.	
Persecutory	<ul style="list-style-type: none"> <li>-being refused by family</li> <li>-family hate the patient</li> <li>-poison or being poisoned</li> <li>-being wronged or suffering from injustice</li> <li>-being spied on or monitored</li> <li>-being tortured</li> <li>- being threatened</li> <li>-sarcasm or mockery</li> <li>-conspiracy ideations</li> <li>-being killed</li> <li>-family talk about patient in a bad way</li> <li>-being kidnapped</li> <li>-being abortive</li> <li>-suspicious thoughts</li> <li>-suffering from torture</li> </ul> <p><i>*persecutors:</i></p> <ul style="list-style-type: none"> <li>-family members (male member such as father, brother, and husband, )</li> <li>-family members ( female member such as mother, father's second wife brother's wife, and husband's second wife)</li> <li>-medical personnel</li> <li>-housekeeper</li> <li>-Sunni people, and government</li> <li>-others</li> <li>-unspecified</li> </ul>
Grandiose	<ul style="list-style-type: none"> <li>-being a member of royal family</li> <li>-invention, genius, creator, scientist and authorship</li> <li>-being the Creation of flowers, generations, and light</li> <li>-being the Queen</li> <li>-having holy abilities</li> <li>-being a mermaid</li> <li>-being the Queen of Persia</li> <li>-having a superpower, or miracles</li> <li>-being a famous historical queen</li> <li>-being Miss World or Universe</li> </ul>
Religious	<ul style="list-style-type: none"> <li>-being the wife of Al Imam AlMahde (a religious waiting leader in Islam especially in Shiite credo)</li> <li>-God gives the patient a holy message and being a messenger</li> <li>-being Fatima AlZahra (prophet Mohammed's daughter and Ali's wife and a holy woman in Islam and in the Shiite credo)</li> <li>-being the mother of Al Hussein (Fatima's son)</li> <li>-being a member of Al Albaiet (prophet Mohammed's generation)</li> <li>- being a prophet's wife</li> <li>-being the Virgin Mary</li> <li>-being an exorcist</li> <li>-being the leader of the Shiites</li> <li>-being Abu AlFadel's wife (a holy person of Shiite)</li> </ul>
Somatic & sexual	<ul style="list-style-type: none"> <li>-extraction of brain or viscera, and kidney</li> <li>- being raped</li> <li>-having serious diseases, like cancer</li> <li>-having a replacement organ, such as electric heart</li> <li>-being pregnant</li> <li>-having a sex with jinns</li> </ul>
Influence & being controlled	<ul style="list-style-type: none"> <li>-envy, -evil-eye</li> <li>-magic or sorcery</li> <li>-being possessed by a jinn or supernatural power</li> <li>-being influenced by machines</li> <li>-body and brain being changed by magic and jinns</li> </ul>
Jealousy	<ul style="list-style-type: none"> <li>-other girls being jealous of the patient</li> <li>-others feeling jealous of patient such as friends, colleagues, and other females members of the patient's family</li> <li>-husband being jealous of the patient because he is a loser</li> </ul>

Table 8-3b: shows the identified themes of delusions among male schizophrenic patients in the Eastern Province.

Persecutory	<ul style="list-style-type: none"> <li>-being killed or poisoned and conjured</li> <li>-others hate or refuse the patient</li> <li>-being spied on</li> <li>-people against the patient</li> <li>-being harmed or hit</li> <li>-others want to obtain the patient's money</li> <li>-people talk about the patient in bad way or insincerely</li> <li>-others said offensive things about the patient like crazy, moron, and psycho</li> <li>-being contemptuous</li> <li>-others always break their promises</li> <li>-the Prince of the Eastern Province wronged the patient</li> <li>-being wrongfully dismissed from their job</li> <li>-Americans, Indians, and Israelis want to attack the Eastern Province to steal our petrol and kill Shiites</li> <li>- Al Albait (religious leader in Shiite credo) reject and hate the patient and cause his illness</li> <li>- no one understands or appreciates the patient</li> </ul>	<p><i>*persecutors:</i></p> <ul style="list-style-type: none"> <li>-people or others</li> <li>-political authorities</li> <li>-secret agent, satellite, and neighbours</li> <li>-police</li> <li>-spy, and hostile nation such as America, and Israel</li> <li>-Sunni people</li> <li>-others</li> <li>-government</li> <li>-family (father, brother)</li> <li>-unspecified</li> </ul>
Grandiose	<ul style="list-style-type: none"> <li>-having the power to create people and animals</li> <li>-being an expert in nuclear energy</li> <li>-having a superpower and super abilities</li> <li>-being a chairman or a head of Al Husseinia sessions (special event of Shiite)</li> <li>-being a political authorities or army officer</li> <li>-being a member of the Royal family</li> <li>-being the King of Saudi Arabia</li> <li>-being God or the Creation of snake, scorpions, and hawks</li> <li>-being a millionaire</li> <li>-being an angel</li> </ul>	
Religious	<ul style="list-style-type: none"> <li>-being a prophet or messenger</li> <li>-being Al-Imam AlMahde (religious waiting leader in Islam especially in Shiite credo )</li> <li>- being Al Hussein (greatest religious personality or holy person of Shiite)</li> <li>-being Ali Bin Taleb (the fourth caliph of orthodox caliphs)</li> <li>-being Ali's son</li> <li>-being Al Baqeer (religious leader of Shiite)</li> <li>-being the prophet Mohammed</li> <li>-being a new prophet and the last prophet</li> </ul>	
Somatic & sexual	<ul style="list-style-type: none"> <li>-being raped</li> <li>-brain and body being changed</li> <li>-extraction of brain and liver</li> <li>-having a serious diseases</li> </ul>	
Influence & being controlled	<ul style="list-style-type: none"> <li>-envy</li> <li>-evil-eye</li> <li>-being affected by magic</li> <li>-being possessed by evil spirit or jinn</li> <li>- being a demon or Satan</li> <li>-face being changed and held demon picture</li> <li>-being loved by a jinn</li> </ul>	
Jealousy	<ul style="list-style-type: none"> <li>-love affairs</li> <li>-infidelity ideations like (my wife loves a blond man and has sex with him, my wife has a sexual relationship with my son)</li> </ul>	

## **General Conclusion**

Overall, the current results revealed that most of the content of delusions among schizophrenic patients (current sample) was not bizarre and most of themes were about possible ideas or events, whereas in the literature review (Chapter 1) it was noted that the nature of delusions in schizophrenia often are described as being bizarre and this is often considered to be one of the criteria for diagnosing schizophrenia (Black & Andreasen, 1994). Even those ideas that might appear bizarre to Western observers, such as jinn, demon and evil-eye reflect commonly held beliefs in the non-clinical Saudi population (Chapter 4).

The results also showed overall that the content of delusions in both male and female groups is somewhat similar. However, differences appeared between male and female groups in the identity of persecutors whereas the overall prevalence of persecution themes was similar. Persecutors in female group were generally people with a relationship to the patient; internal persecutors such as family members, especially those of the opposite sex to the patient (father, brother, husband, and uncle) or friends; whilst in males the persecutors were external (e.g. government, police, and secret agents) or unspecified. Also, in delusions of jealousy, predominant themes among males were love affairs and infidelity ideations, even among single patients, whereas jealousy themes among females were about feelings of jealousy directed towards the patient from friends or from other female members of patient's family. The suspicious ideation of infidelity did not appear among the female group. Delusions of pregnancy or pregnancy themes appeared among the female group in the Eastern province, whether patients are single or ever-married. In Jeddah both male and female patients showed a special content or theme which reflected discrimination or racist thoughts, and this corresponds with a greater salience of racial difference, as a result of the fact that people of different ethnic backgrounds are located in this area. The immigration issue appeared as a salient theme of persecution content in both male and female groups. Moreover, only in the Jeddah group did the content of persecutory delusions include a new category of persecutors (natives), which implicitly referred to the patient's belief that he/she is not a real Saudi citizen.

The predominant themes of delusions of influence and being controlled were the supernatural powers (jinn, demon, and evil spirit) and they appeared in both male and female groups and similarly in all three residence areas. However, there were differences in the object or aim of the magic spell or supernatural power between male and female groups. In the female group the aim of the evil actions was to destroy or disrupt their domestic life or to influence their marital status, for example to cause divorce if the patient is married, to obstruct or make her marriage late if she is single, or to blame jinns and magic spells if she is ever-married. Furthermore, these themes reflected that people who were usually behind or responsible for these evil actions, in other words, people who did magic or asked watchers to prepare magic or spells, and asked for an evil spirit like jinn to harm the patient were the self-same persecutors. In the male group, these supernatural powers were usually exercised to destroy a patient's future, particularly in employment or working life, or in love affairs, and the people who were responsible for these actions were the self-same persecutors. Residence clearly influenced religious themes particularly in the Eastern Province where the Shiite credo is predominant among its population. The content of religious delusions reflected the major and important Shiite religious beliefs whereas in both Riyadh and Jeddah which belong to the Sunni credo the religious themes were similar. Moreover, the different credo of populations in the Eastern Province was reflected also in persecutory delusions, with a new category of persecutors (Sunni people).

## Chapter 9: General discussion

Overall, the present results have provided some answers to the research questions and hypotheses. Regarding first question, as Raine (2006) indicated, studies testing schizotypal personality among general population may highlight the both genetic and environmental risk for schizophrenia among the general population.

4. The current study aimed to investigate schizotypy in the general population of the study locations, and to answer following questions:

4.1. Are schizotypy scores high among a Saudi comparison sample (drawn from the general population)?

4.2. Do means of schizotypy scores in Riyadh differ from Jeddah and the Eastern Province according to gender?

The schizotypy scores obtained in the present study were high compared with most previously published studies (Chapter 4). The findings showed that both independent variables (sex and residence) affected schizotypal personality in that females' scores were higher on SPQ than males' scores in all three residence areas in Saudi Arabia. If a higher schizotypy score represents a higher disposition to schizophrenia, then this result is consistent with Douki et al., (2007) which indicated that women in Arab world are at high risk of developing mental illness compared with men. Moreover, it may indicate that the Saudi cultural pattern plays an enormous role in adding further stress and burden on women according to the religious conservative and closed culture in which men predominate (Qureshi et al., 2001). Furthermore, these burdens or loads have recently increased on women as they have become a focus of conflicts in a developing society. In other words Saudi society is facing rapid cultural changes particularly concerning women's rights and issues such as working with men and driving cars (Buchele, 2009). Moreover, the woman is standing in the middle of this storm of change between two different authorities The first authority is the government which tries to establish and constitute a new orientation regarding female issues in Saudi Arabia, in order to give woman her rights, and the other authority are some people of restricted views, particularly men or women's guardians who are against any such changes in female situations (Yamani, 2008). This conflict of views in Saudi society between the government and women's guardians has generated a new stressful and worrying

situation for females in Saudi Arabia, and it is consistent with the stress hypothesis of Gove (1972) and Gove and Toudor (1973) that females have a higher risk of developing mental illness as a result of the stress which is generated from sex roles. The findings of Al-Khani, et al. (1986) showed that married women in the Najd area had higher severity levels and numbers of life-events before their onset of schizophrenia compared with all other groups. On the other hand, there are readily identifiable cultural sources of stress, in that the religious conservatism, social norms and local interpretation of Islamic law have great influences on women's life, health and rights in Saudi Arabia as a result of gender inequity in different life domains. To give one example, in hospital a woman cannot give her consent to any medical procedures without her male guardian's approval even in emergency cases. Even when there are changes, women may still experience these conflicts. Previously, before about ten years ago in Saudi Arabia, and according to some Islamic scholars, women cannot have an ID card with a picture. Now, women can have their ID card or passport or any other ID documents with a picture but firstly they must have their male guardians' permission to authorize an ID card. In this situation, if the male guardian refuses, the woman even today would be unable to travel, work or study because she does not have an ID. Moreover, in financial issues, women in Saudi Arabia cannot deal with or organize their financial issues with banks in official requests without their male guardian's consent; such situations sometimes lead to exploitation of women's financial rights by their male relatives (Mobaraki, & Soderfeldt, 2010). In this culture women always depend on men for cultural and religious reasons which may in some situations be able to affect females' psychological health (Al-Sabaie, 1990).

Qureshi, Al-habeeb, Al-Ghamdy, Abdelgadir & Quinn (2001) reported that religious factors and religious and cultural conservatisms in interlocked cultures such as Saudi society are related to the development of significant distress, mental and somatic symptoms, and these factors put women at a higher risk of developing psychological symptoms than men. Also, the results showed that non-clinical participants in the Riyadh area had higher schizotypal personality scores than in the other two areas, and it is argued that something is different in the Riyadh social environment that produces this difference. Again, it was found that residence, rather than region of origin, was crucial (Chapter 4), suggesting an environmental rather than genetic cause. It was shown earlier (Chapter 2) that Riyadh represents a more religious conservative culture in Saudi Arabia

(Al-Rasheed, 2002) compared with the other two areas (Jeddah and the Eastern Province). The higher schizotypal personality scores in Riyadh may be consistent with research (Batson & Venti, 1982; Batson, Schoenrade & Venti, 1993; Grosuch, 1988; Wulff, 1997; Maltby, et al., 2000) reviewed in Maltby & Day (2002) showing that extrinsic religiosity is positively correlated with poor psychological health whereas intrinsic religiosity is related to better psychological health. Moreover, Maltby et al. (2000) suggested that extrinsic religiosity is correlated with higher levels of schizotypy whilst intrinsic religiosity is related with lower levels of schizotypy. Also, Claridge, (1985) and Beit-Hallahami & Argyle, (1997), cited in Maltby & Day (2002), indicated that there is a similarity between genuine religious experiences and those experiences measured in the schizotypy scale that are assumed to be delusional. Furthermore, research (Wulff, 1997; Jackson, 1997) reviewed in Maltby & Day (2002) suggested that religiosity may behave in a complex fashion, as a protective as well as a predictive factor in schizophrenia. Therefore, these findings support the idea that socio-cultural factors can play a part in generating schizotypal personality, besides genetic factors. On the other hand, it raises an important question: how does conservatism, either religious or social, as a social pattern, relate to schizotypal personality and schizophrenia? This was not specifically addressed in the present thesis and is an area that needs further investigation particularly in Saudi culture.

5. The second question addressed whether cultural variations influence the content of delusions in schizophrenic patients. The researcher conducted a cross sectional study to compare delusions among patients in different regions of Saudi Arabia (in Riyadh, Jeddah, and the Eastern Province where the major psychological services are provided and different ethnics backgrounds). Therefore, the following questions were formulated: This main question was divided into the following questions:

5.1. What are the most common delusions among people with schizophrenia in Saudi Arabia?

5.1.1. What are the most common delusions according to demographic variables (gender, social status, marital status and educational status) among the people with schizophrenia in Saudi Arabia?

5.2. What are the most common delusions among people with schizophrenia in each area?

5.2.1. Are there any differences in the content of delusions according to the demographic variables in each area?

5.3. How are their culture and sub- culture reflected in the content of their delusions?

The Second question (5.2) has been answered; and the results showed that persecutory delusions were the most common type within the Saudi clinical sample in all areas, also that sex and residence as independent variables affected the frequency of persecutory delusions, and the highest scores were seen in females and in the Riyadh area. The results are also consistent with non-clinical SPQ results in that females in the Riyadh area showed higher schizotypy scores. This was also consistent with the stress hypotheses (Maslowski et al., 1998) as there are reasons to believe that the highest burden of socio-cultural stress falls on females and in the Riyadh area (Chapter 2). The possible explanation for the high mean scores of persecutory delusions in Saudi sample in general and in females and in Riyadh area in particular may also be consistent with a multi-factorial explanation of persecutory delusion formation (Gatery et al., 2001). A stressful situation falling on females in the religious conservative situation especially evident in Riyadh, can lead to increased anxiety feelings, and according to the multi-factorial account, anxiety is central to the formation of persecutory delusions.

Furthermore, generally, Saudi culture is a religious and very socially conservative culture with restrictive social rules that must be followed for an individual to be acceptable as one of its members. Moreover, people have to follow these rules whether the person accepts it or not, and this situation can increase anxiety and feelings of social exclusion which contributes, with low self-esteem and depression, to the emerging sense of being a target of persecution (Freeman et al., 2003). Also, the family and societal structure may act as a stressor sphere on the individual, for example in Islamic countries and India, the stress associated with arranged marriage (which means that the parents of both bride and groom decide and arrange their marriage instead of themselves, either when they are children or later) can be a precipitating event for psychotic-like symptoms. Besides the foreignness of situation as a first separation from parental home, the stresses of a new life with a stranger or foreign person can lead to some kinds of mental illness and disorders (Pfeiffer, 1980). Pisztor, (1972) and Sutter,



et al. (1959) cited in Pfeiffer (1980) showed that in North Africa there appeared a nuptial psychosis with a hypochondriacally confused and hysterical character as a result of these stressor circumstances.

Qualitative analysis of content of delusions in the present study showed that both males and females have a similar content in their persecutory delusions; however, they differed in the identities of the perceived persecutors in a way which reflected the predominant socio-cultural pattern in Saudi Arabia. Content of delusions also revealed the influence of different cultural and ethnic backgrounds of patients particularly in persecutory themes such as discrimination. Although there is no systematic data on individual case histories collected for this thesis, it was clear from case histories of patients that childhood trauma, either child sexual abuse or child physical abuse, appeared many times among schizophrenic patients with delusions. According to Janssen, Janssen, Krabbendam, Bak, et al., (2004) cited in Read et al., (2005), people who have a history of sexual abuse tend to develop sexual delusions, and there is a relationship between neglect, harsh treatment and persecutory delusions, which was found among homeless adolescents. Beck & Kolk (1987), Goff, Brotman, Kindlon, Waites, & Amico (1991), and Read & Argyle (1999) cited in Mason, et al. (2009) reported that a high proportion of schizophrenic patients who had a previous history of child abuse, regardless of the kind of abuse, sexual or physical, developed persecutory delusions compared with schizophrenic patients without a history of abuse. Also, people with delusions of possession, reference and evil were more likely to have a previous history of sexual abuse.

During the present qualitative analysis, many of the persecutory themes and influence content showed reflections of patients' recorded history of childhood abuse; and these themes reflected either sexual or physical abuse or both. For example, one of the female patients has sexual delusions that were persistent in asserting that "my daughters are exposed to sexual assault from their father". This patient has in her history sexual abuse by her own father when she was 6 years old and this abuse continued until she was 13 years old when her uncle exposed her father's behaviour against his daughter and that her father was drug addicted. Also, many persecutory themes showed physical or sexual abuse when the patients were children such as being harmed, being hit, being attacked, and being raped and sexual and physical childhood abuse and trauma was found in both males and female groups. This may reflect the huge role of childhood trauma in

delusion formation among the Saudi sample. Moreover, some content reflected low self-esteem such as “I am a loser, I am an idiot, I am foolish, and I am a bad person...” This can show the patient’s view toward her/himself; however, it is not possible to conclude from the present study that delusions are generated as a result of low self-esteem because the current study was not longitudinal and did not use any scale or measure to examine the level of self-esteem. However, it is very important to investigate this area because in the current results patients’ delusional content reflected many times low self-esteem; thus the relationship between low self-esteem and the formation of delusions within Saudi psychotic patients needs more examination. Furthermore, the content of persecutory delusions showed an important theme which reflected theories of conspiracy such as being followed, being conspired against, being monitored, etc. which relates to incorrect inferences about other’s intentions, consistent with impairment in Theory of Mind (ToM) (Frith and Corcoran, 1996). Indeed, in Saudi culture, people sometimes encourage suspicious feelings in order to guard their privacy especially against foreign people, and Saudis prefer usually to spend most of their time within their families and they are very careful and suspicious in dealing with strangers or foreign people (Buchele, 2009). However, Theory of Mind was not examined in the present study so it is not possible at present to explain the relationship between the impairment of ToM and delusion formation within Saudi schizophrenic patients beyond these speculations.

6. Thirdly, as shown in the literature review, some types of delusions are correlated with violence, such as persecutory delusions (e.g. Mullen, 1997; Cheung, Schweitzer, Crowley & Tuckwell, 1997; Appelbaum, Robbins & Roth 1999). Therefore, the current study set out to examine the most common types of delusions and their relationship to violence among schizophrenic patients resident in each area, and answer the following question:

6.1. What are the most common types of delusions which might correlate with violence among schizophrenic patients in each area in Saudi Arabia?

The results concerning the relationship between violence and content of delusions showed that only delusions of jealousy are consistently linked with violent actions and behaviours within Saudi sample. This result provides a valuable addition to violence researches regarding content of delusions because most previous studies (Chung, Schweitzer, Crowley, & Tuckwell, 1997; Appelbaum, Robbins, & Roth, 1999; Miller,

& Chabrier, 1987-1988) proposed that persecutory delusions were providing the primary motives for violence among mental and psychotic patients. However, the next question arising is: why are delusions of jealousy related to violence within the Saudi sample, and is this strong connection specific to Saudi society? This needs further investigation.

7. Regarding the fourth question, according to Alqahtani and Salmon (2008) General Practice patients (GP) in the Southern Province of Saudi Arabia hold psychological, religious and supernatural explanations or beliefs regarding their symptoms. Hence, the present study aimed to test and compare between General Practice patients (GP) as control group and schizophrenic patients as clinical group to compare their etiological beliefs concerning their symptoms and to answer the following questions:

7.1. Do General Practice patients (GP) differ from schizophrenic patients in their etiological beliefs of their symptoms among the Saudi sample according to the areas of study?

7.2. What are the most common explanations or etiological beliefs according to the areas of study?

Factor analysis identified a new factor (punishment or test of Allah) and additionally showed that both psychological and supernatural explanations of illness were common within Saudi samples both in clinical and control groups. The current results emphasised that Saudi patients, as with other Arab samples, can explain their emotional and other symptoms by psychological beliefs or causes as well as by supernatural causes. However supernatural causes, in the current study, were more prevalent among the clinical group compared with control group. Therefore, the present findings on the one hand are consistent with a previous study on a Saudi sample (Alqhatani & Salmon, 2008) and on the other hand conflict somewhat with AL-Krenawi and Graham (2000) and Ossman et al., (1993) cited in Alqhatani & Salmon (2008) who asserted that Arab patients with emotional problems tended to refer their symptoms to supernatural causes. Also, the new factor revealed that Saudi culture as a religious and Muslim society has always a great faith in an external locus of control (Allah) who is responsible for all mental and other illness (Alkhani et al., 2001; Alqhatani & Salmon, 2008).

## **Conclusion**

Finally, the current results support an attempt to produce an overall multifactorial explanation of the development and formation of content of delusions in terms of early childhood trauma either sexual or physical, and current anxiety and stress. The stress hypothesis especially is relevant to an understanding of delusions among females and minority groups with either different ethnic or religious backgrounds in Saudi Arabia. Also, the current study was an endeavour to present some evidence for the role and the influence of socio-cultural factors on the content of delusions and on the development of schizotypal personality in Saudi society. This study also tried to inform the three levels of delusions research: diagnostic, therapeutic levels (the influences of socio-cultural context on content of delusions) and preventive level (first, the relationship between content of delusions and violence, and second, the prevalence of schizotypal personality and its' relationship with sex and residence or demographic variables). The present study has added new knowledge about the importance of socio-cultural effects on the content and type of delusions in schizophrenia research and has contributed to the literature concerning such neglected areas as Arab society in general and Saudi society in particular. This may aid in explain some similarities in the pattern of positive symptoms in schizophrenia. Moreover, it can be considered as the first Arabic and Saudi study of three different geographical and demographic areas within same nation. Thus, it reflected the role and effects of different sub-cultural factors on positive symptoms like the content of delusions in schizophrenia within same overall culture.

## **Suggestions for further research**

This study might become a basis for further deeper studies and research in this area (the relationship between Saudi Arabian culture and content of delusions). Also, it may lead to the opening of new orientations in psychologists' interests. The study emphasises the need for more research into the relationship between conservatism (either religious or social) and the prevalence or development of schizotypal personality in Saudi Arabia and elsewhere.

- 1- The role of both low self-esteem and impairment of theory of mind in delusion formation in Saudi schizophrenic patients also needs further investigation within both psychotic patients and in the general population.
- 2- Delusions of pregnancy were an important type of content among schizophrenic patients in the Eastern Province and at the same time this did not appear or capture the same importance in the other two areas (Riyadh and Jeddah). This contrasts with a previous study (Qureshi et al., 2001) conducted in the Najd area which showed that delusions of pregnancy was one of the most important content types in Saudi females in that area especially in married, ever married, and low educated patients. However, in the present study, that type of content appeared in both single and married patients and even among highly educated patients also. Therefore, this issue needs more research evidence.

### **Strengths and limitations**

One of the strengths of the current study is the size of the clinical and non-clinical samples which can give generalizability to the results and give the opportunity to examine and test differences between groups. Another strength of the current study is the primary nature of the data. The current study did not depend only on case records as information source about patients; it used different primary sources such as interviews, validated scales and objective observations in addition to case records. Perhaps the most important strength of the current study is first-hand knowledge about the different areas of study, in other words the rich and different cultural backgrounds and traditions of the chosen areas.

On the other hand, current study has some limitations: first, the cases analysed were found in psychiatric units in chosen hospitals and comprised those who were diagnosed as schizophrenic, therefore, the current study did not examine the type of delusions which may occur in other diagnostic categories or in different hospitals. Secondly, the current study only examined schizophrenic patients with current delusions or those who had delusions in the time of study; therefore, schizophrenic patients without current delusions were excluded. Thirdly, one weak point of current study is about the non-clinical sample, it was hard to find an appropriate sample which can match perfectly

with clinical group and thereby serve as a control group. Therefore, current study may need replication by other researchers on different populations.

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## **Appendix**

### Case history 1:

G.A. is a 44 year-old, single Saudi female who was diagnosed with disorganized schizophrenia. She lives in Riyadh, and came from the Southern region. She studied until the 6<sup>th</sup> grade, and her economic status is low. She lives with her sisters because her parents were divorced, and her father is dead and her mother lives in an infirmary or old age hospital. The patient has four brothers, and three sisters, all of her brothers are working outside the Kingdom as diplomats. She was re-admitted because of her social status, in that her family refused to take her despite of her previous improvement. Moreover, her elder sister and elder big brother refused to take charge of her. Therefore, she returned to hospital which led to a relapse in her mental health in the last six months. She became irresponsible in her behaviour, hygiene, and appearance, she also became aggressive, with sharp moods, nervous, anxious, agitated, irritated, and with some bizarre behaviour against other patients and the medical team. Also, she has inappropriate affect, and she is blunted. Her attention and concentration are poor, and she is insight. The social workers tried to contact with her family to find a compromise for her sister's situation, but her family refused any solution. The patient always repeats that she missed her family especially her mother a lot.

She has a mixture of delusions, auditory and visual hallucinations, her persecutory delusions focused on her family, they are against the male members of her family, also against her elder sister. Most of her suspicious beliefs are against her brothers; she stated that she hates them because they hate her, and wishes her to die or be killed. She also has persecutory beliefs against her brother's wife, and she did not like her because her brother's wife was jealous. It is true to some extent according to her sister, but the patient developed firmly beliefs against her and other family's members. She believes that her family will kill or eliminate her when she is discharged from hospital. It led to a fear of going outside hospital, and the hospital is a safe place for her. As a result of her fear of killing, she developed auditory hallucinations which corresponded to her

persecutory delusions. She hears voices which always say her brothers will kill her at night, and they will kill her when she leaves hospital. She said that voices threaten and terrify her; the patient has panic attacks when she has a holiday for two days with her family. Finally, she refused that holiday. The patient developed suspicious beliefs against the nurses, and everybody at hospital. She believes that all people at hospital conspire with her family against her. Therefore, she started to refuse the medicine and food because she thought they are poison, or someone put poison in them. She believes that everyone around her hate her, and wants to harm or kill her. The patient also has delusions of being controlled by magic or spells. ‘She feels that her illness is *African* which means black magic, and it came by the devil, and evil-eye.’ She said that her family put the magic to kill her. She feels the Jinni inside her which controlled her behaviours, and she hears him sometimes. She also has somatic delusions; for example, she feels that her shape and face changed as a result of the magic and evil-eye. She said ‘I was beautiful and slim but the evils did not leave me they changed me.’ She also has a bizarre delusions; she said ‘I did not have a voice, my voice has gone.’ She said also ‘the king and demons on the wall, they talk with me all the time, I saw Saddam Hussein on the wall, he talked with me, and drunk cup of tea with me.’ ‘I saw King Abdul-Aziz on the wall and told me that my family hate me because I am better than them, and he loves me.’

#### Case history 2:

H.S. is a 61 year-old, single, unemployed, Saudi male. He was diagnosed with paranoid schizophrenia. He lives in Riyadh, and he comes from the Northern Province. The patient had a primary education until the 6<sup>th</sup> grade. He came from a low economic level, and he lives with his brother. The patient was committed to a mental hospital by police more than one year previously. He was accused of political cases with relationship to terrorist issues by mistake, and the police did not know that he is a mental patient. The patient has a history with police, in that he was a prisoner in Guantanamo jail with charges relating to terrorism, because he was in Afghanistan and he belonged to the Al Jihad movement. The patient is calm, cooperative, with good appearance, poor insight; poor speech, blunted affect, and does not care about the social events around him. The most common symptoms are delusions, and hallucinations. The patient has persecutory delusions and the content of these delusions focuses on political themes. He said ‘the nation faces a crucial crisis with America in Iraq, Palestine, Afghanistan, and in all other Islamic countries.’ ‘This crisis affects us, and affects me especially.’ ‘I am a peacemaker, and a man of peace but nobody believes me; they also try to hit and harm me.’ ‘People are responsible for my illness, and they cause my relapses, and I feel their spite and malice.’ ‘People harmed me, I feel that and someone hates me I do not know who?’ ‘I am subjected to injustice and oppression.’ ‘Even here, they accuse me of attempting to assault other patients; nobody believes me.’ ‘Doctors always observe and monitor me.’ He also has bizarre content such as, ‘the policeman tied me into the bird, and it always carries me and flies around the stars and in the sky every day.’ ‘They create me, from the death, every day I create birds, I just

scratch my abdomen and I create 100,000 birds.” ‘Yesterday, I became a donkey and other donkeys entered inside me, and today they told me you look like a donkey.’” He also has delusion of being controlled with bizarre content for example, ‘my ear is closed by magic from I born, and now it produces magic and spells.’” ‘There is someone tied to me, and did not leave me, and he led me to be sick and crazy.’” ‘People always move me, and they move my brain, and I want to sleep but they did not leave me.’” ‘Someone inside me moves, dance, and talks.’” Also he has mixed between somatic delusions and delusion of being controlled with bizarre content like, ‘red eyes with pain in my eyes, and they opened and talked in them, therefore, I cannot open my eyes, they are adhesives.’” ‘The Jinni comes to me every day and takes me to light and it terrifies me a lot, then I released great things in the world which led me to be a target of my enemy and family attacks.’” ‘There is a nail in my head, and they want to take my head toward the north.’”

### Case history 3:

B.K. is a 31 year-old, divorced, and unemployed Saudi male. He was diagnosed with chronic schizophrenia, he lives in the Eastern Province with mixed background (Iraqi, and Saudi origins). He has worked in the Saudi Military, but he was fired because of his absences. The patient has a son and daughter who live with their mother. He finished the secondary school, and came from a medium economic level. His problem started in 2007 with odd behaviour, aggression, excitement, yelling, hyperactivity, anxiety, irritation, and irritability. He became talkative, nervous, careless of his appearance and hygiene, complains about his father with suspicious thoughts, and persecutory beliefs against his family, particularly his father. He has thought pressure, poor or absent insight, poor attention and concentration, poor social interactions and relationship, and his emotion is blunted. The patient is always angry and has persecutory ideas against his father, and mixed delusions of being controlled, references, and thought broadcasting. The content of delusions is focus on his father, and Saudi political agencies for instance, detectives, intelligence, and secret agencies. The main theme which his delusions cluster around is his father; he believes that his is not his real father; for example ‘I demanded the Government to arrest my father and my dirty family, because they did not have fear of Allah.’” ‘My father follows me, and always complains about me to the police and the Government then he denied me, and I heard him said that B not my son.’” ‘I demand the Government to do the DNA analysis for my and for that man who called himself my father.’” ‘My father is Iraqi, he is not Saudi, and he works with secret agents to destroy and bring down the Saudi regime. He is an Iraqi spy.’” ‘The intelligence agency follows and monitors me everywhere, and sent me secret documents, codes by internet.’” ‘I know that detectives behind me and follow me.’” One day the patient wore strange clothes in the colours of the Saudi flag (green and white), and wore the Saudi flag as a medal and some military badges, and he repeated, ‘I am Saudi, I am Saudi 100%, I am real Saudi, I am not Iraqi.’” ‘The secret agency observes me to check if I am Saudi or not.’” ‘Please tell King Abdullah that he should constitute an urgent committee to investigate my real father and real family, and

to check up on those who spy on me everywhere.” ‘I am awake, I am not asleep, and I saw those patients who were sent by my father to spy on me, and when I asked them why you spy on me? They denied because they knew I will tell the truth for people, and they are not real Saudis.’ ‘It is injustice, I am Saudi not Iraqi, why do they always send people to kid of me in public places.’”

#### Case history 4:

A.M. is a 52 year-old, divorced, and highly educated Saudi female. She lives in the Eastern Province. She came from mixed background (Syrian and Iraqi origins), with medium economic level. She obtained a Master’s degree in sociology, and she has worked in the social works department in the Military Hospital in Damam. She achieved a good position in her work as a director of the female section. She belongs to the Shiites. She suffered from paranoid schizophrenia for a long time, and she has therapeutic attempts in different hospitals, she also has a positive history of mental illness in her family, in that her sister and mother are schizophrenic patients. She also suffered from blood pressure and diabetes. At the time of admission, she came in an agitated status, with verbal and physical aggression,. She broke everything, yelling and screaming, she spent her day and night outside her house without her family’s permission, was nervous, and she also talks loudly. She prefers to spend whole time sitting in front of the T.V; she does not like to move or make any effort, she is always in a sharp mood, poor insight, and thought disorder. She is not committed to religion, and she is not conservative in relation to it. She has mixed delusions, persecutory delusions against her family, grandiose delusions, and religious delusions. The content of delusions showed a variety of themes which may reflect her religious creed, and her high position in her previous work. ‘My mother is not my real mother, she is my father’s wife.’ ‘The doctor oppressed me, and you are my persecutor who prohibits me from food and eating.’ She is diabetic, so the doctors put her on a diet regime She has grandiose content such as, ‘I am a genius, creative, famous writer, and I created many generations generation after generation.’ ‘My family conspired on me, and they have stolen my passport and my identity then they pretended to be me because I am a famous scientist in the world.’ ‘I have composed a very important theory of sociology.’ ‘I am a professor and scientist in psychology, and why do you give me the medicine, you are jealous of me and persecute me.’ ‘You try to steal my things, ideas, identity, and my strong beliefs.’ She also has visual hallucinations: ‘I saw my family in lunch time, and I saw the Jinni around me, he tried to protect me from the evil people.’ ‘I saw my brother with me in my bedroom, and he tried to rape me.’ She also has some religious ideas and religious persons such as ‘I saw Imam AlMahddi twice this week and he cleaned my garden (great religious person in the Shiite doctrine, he is as a miracle and he does not appear until now, and they are waiting for him). ‘I am scientist who treated a thousand of people every day, and I have special ability from God.’ ‘I am a queen and my brothers did not want me to marry because they want me and my throne.’ ‘My brothers refused AlMahaddi to be my husband.’ Allah gave me the secret, that secret is to teach people how they can deal with others and children.’ ‘This pills will kill me

because I am a very important person.” ‘I saw the angels, and they told me you should be patient because you are the queen of this world and you should sacrifice yourself for sinful people.’ ‘Every one talked about me, they said bad things because I am pregnant from AlMahddi, they also said I am a bad girl.’ She talks a lot about religion and religious miracles which she has, such as: ‘I can re-create people after death.’ ‘T.V talks about me because I am great and important person in this kingdom.’ ‘My mother and my sister were entered by different people in my brain by using computer.’

#### Case history 5:

E.T. is a 32-year-old, single and unemployed Saudi male, who lives in Jeddah with an Egyptian background. His economic status is low, and he completed his secondary school. Upon admission he was aggressive, nervous, and was shouting. Before two months of admission, he refused medicine, and was very nervous; he also attacked on his family and broke the T.V. He did not sleep, he has verbal and physical aggression, he has violent behavior by trying to kill his family by gas. He went outside his housenaked, and has sexual behaviour. He has a history of molesting crimes or issues; he talks to himself or the T.V. all time. The patient previously has worked at one of the popular newspapers in Jeddah and the Kingdom, in the political department. This may affect the themes of his delusions with his ethnic background. He has persecutory and grandiose delusions, and delusion of references and thought insertion. The content of delusions focuses on the others, the government and his family. For example, ‘I talk with the T.V. because they said E became minister of industry.’ ‘They said bad things about me, and they said that I molest girls.’ ‘The Government put those bad ideas in my brain and then it broadcast it on T.V.’ ‘The Government asked the intelligence agency to observe me because I am mister, and they spy on me.’ ‘The Kingdom of Saudi Arabia should collapse because of wrong of women, injustice, oppression, and they oppressed me.’ ‘The Prince S is responsible for my illness, because he took my rights and discriminated between Saudi citizens.’ ‘The King Abdullah chose me to be minster and they became jealous of me, therefore they put me in this hospital to eliminate me, then they broadcast that E is crazy.’ ‘I wrote about the scandals of the Kingdom, and Al- Saud (the royal family) in the newspaper, so they arrested and observes me, then they told to people E is crazy.’ ‘They made me crazy because I exposed and betrayed them for the public, they are traitors (he means the royal family members).’ ‘They brought the Jews to hit me in the street, I saw them, they used their mobiles to contact presidents of other countries.’ ‘The Government put a small system in my eye.’ ‘I am the son of the Prince Mohammed Bin Fahd, I belong to the royal family.’ ‘They always repeat that I should go out of our country, you are not Saudi, go to your country. Back to Egypt you are Egyptian, and we hate you, they said we are not the same, you are a foreigner against Saudi people, you are an alien.’

#### Case history 6:

W.M. is a 45 year-old, single and unemployed Saudi female, who lives in Jeddah. She has an Asian background. She finished her education at the first year of college, and

her economic status is medium. Her father died 18 years previously, and then she moved to live with her uncle. After her uncle died three years ago, she turned to live with her brother. Upon admission, she talked to herself, threw food, broke dishes and the T.V, showed verbal and physical aggression, poor insight and attention, and blunted emotion. She did not care about her appearance, grooming, hygiene, she was nervous, irritated and hyperactive. She did not obey her family, and refused medicine. She was sick for more than three years, she has auditory and visual hallucinations, but her speech is coherent and understandable. Her suspicious beliefs increased after her uncle died, and her case relapsed when she turned to live with her brother. She also has bizarre delusions, persecutory delusions, delusion of references, and of being controlled. The theme of her delusions focuses on the magic and supernatural forces and spirits such as, 'take off them, this Jinn hit and harmed me.' 'People wish to harm me, they are malicious, and they did not wish a good things for me.' 'The Jinn always hit me and walk on every part of my body, I felt that.' ' They always told us go outside our country, you are Indonesian who live on magic and spells, you always made spells and magic for Saudi people, you are a housemaid in Saudi houses.' ' They said we are not like you, and we did not marry you because your origin is not like real Saudi, you came from a low and poor country, Saudis do not want you in their country, you bring shame on us.' 'Someone made a spell for me to stop me from marriage, I know who, they are the Saudis conceited.' 'The Jinni who is inside me tells me that the Bedouins of Jeddah (natives) made magic for me, because we are different from them.' She said 'they are dogs all of them, we are better than them, why do they refuse as because they are jealous.' 'My mother is a wizard, witch, and devil, she causes everything that has happened to me, she did not like me.' 'My family did not love me, and my brother is not my real brother.' 'I have evil-eye, and spell, they told me I am lesbian, and I love girls and women.' She has a history of lesbian relationship with her school mate in high school, but she denied that. 'My uncle's wife did some magic for me to stop my marriage plan.' She wears a necklace with blue bead all the time, and she believes inthat necklace to protect her from the evil-eye and spell.



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