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A SINGLE CASE EXPERIMENT FOR A NEW COGNITIVE-BEHAVIORAL TREATMENT OF AUDITORY HALLUCINATIONS IN SCHIZOPHRENIA

THESIS
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RÉSUMÉ

Cette étude à cas unique a été conçue pour évaluer l'impact d'un traitement cognitif-comportemental sur le profil hallucinatoire, la qualité de vie, dépression, anxiété et insight d'une patiente souffrant de schizophrénie. La cliente faisant l'objet de cette étude a été référée au clinicien chercheur suivant plusieurs traitements pharmacologiques utilisant des antipsychotiques de première et seconde génération sans obtenir de réduction significative sur son profil hallucinatoire et délirant. Le traitement cognitif-comportemental utilisé dans cette étude est directement inspiré par les travaux de Chadwick, Birchwood et Trower (1994, 1995, 1996, 2004). Leur perception de la schizophrénie opère un changement impératif du modèle traditionnel axé sur les symptômes vers un modèle axé sur la personne. Le modèle axé sur les symptômes introduit dans sa version initiale par Kraepelin (1907) et Bleuler (1911) est encore utilisé aujourd'hui sous plusieurs formes plus sophistiquées comme modèle dominant dans la classification des troubles de nature psychotique. Ce modèle est critiqué par certain auteurs pour son manque de définition, de fondement et surtout pour son manque de cadre conceptuel précis (Bentall, 1996). L'introduction d'un modèle centré sur la personne est présenté dans cette étude comme étant une alternative intéressante puisque les symptômes de la cliente atteint de schizophrénie sont perçus à travers un continuum axé sur sa vulnérabilité psychologique. L'approche cognitive-comportementale utilisée dans cette recherche semble efficace pour réduire l'anxiété (C=0.78, P=.006), la dépression (C=0.82, P=.004) augmenter la qualité de vie (c=0.83, P=.004) et le niveau d'insight (C=0.81), P=.004) en plus d'augmenter la capacité de la cliente à faire face au stress suivant les manifestations hallucinatoires et délirantes. Les gains obtenus durant la thérapie ont été maintenus aux mesures de suivi à 3, 6 et 12 mois. Les résultats de cette recherche pointent vers l'insight de la cliente en ce qui concerne ses croyances reliées aux hallucinations et idées délirantes comme étant le point d'entrée permettant le progrès thérapeutique. Les recherches futures dans le domaine devraient se concentrer sur ces croyances, le lien et les interactions entre les symptômes psychotiques positifs et négatifs, ainsi que les aspects environnementaux et sociaux de la vie des individus souffrant de schizophrénie.

Mots-clés : thérapie, cognitif, comportemental, schizophrénie, hallucination, qualité, vie, anxiété, dépression, insight.

ABSTRACT

This single case experiment was designed to study the impact of a cognitive-behavioral hallucination focused treatment on quality of life, depression, anxiety and insight for a patient suffering from schizophrenia. The patient was referred by her psychiatrist after many trials of first and new generation neuroleptic medications yielded mild to no effect on her presenting spectrum of delusions and auditory hallucinations. The cognitive-behavioral treatment devised for this particular case was directly inspired by the work of Chadwick, Birchwood and Trower (1994, 1995, 1996, 2004). Their view of schizophrenia operates a shift from a symptom model to a person model. The symptom model introduced in its earliest versions by Kraepelin (1907) and Bleuler (1911) is still found today in more sophisticated forms as a predominant way of classifying psychotic disorders. This model is criticized by certain authors as lacking in definition, as being groundless and for not having a clear conceptual frame (Bentall, 1996). The introduction of a person model is presented as an interesting alternative because patient's symptoms are viewed through an enduring psychological vulnerability. The cognitive-behavioral approach used in this research was effective in reducing anxiety (C=0.78, P=.006), depressive mood (C=0.82, P=.004), increasing the patient's general quality of life (C=0.83, P=.004) and level of insight (C=0.81, P=.004) while enhancing her coping mechanisms to deal with distress occurring consequently to delusions and hallucinations. The gains made during therapy were maintained at the 3, 6, and 12 months follow up measurements. According to these research results, future investigations applied to psychosis and relating treatments should concentrate on the insight of people with schizophrenia regarding their beliefs about the origin of hallucinations and delusions, the link and interaction between psychotic negative and positive symptoms and the environmental and social aspects of the life of people with schizophrenia.

Keywords: Therapy, cognitive, behavioral, schizophrenia, hallucination, delusion, quality, life, anxiety, depression, insight.

INTRODUCTION

Over the past decade, there has been a multitude of studies of cognitive and behavioral approaches to emotional disorders and many cognitive-behavioral therapies and strategies have been applied successfully in clinical trials for affective, anxious, eating disorders and even extending to borderline personality disorder like Linehan's dialectical behavioral therapy (1993). An interesting and innovative work in the cognitive psychology field was achieved in the development and elaboration of cognitive therapy approaches to the treatment of schizophrenia, mainly by researchers of the United Kingdom like Birchwood, Chadwick and Trower (1996); Turkington, Kingdon and Turner (2002); Turkington, Kingdon and Chadwick (2003); Byrne, Birchwood, Trower and Meaden (2006). Most psychologists and psychiatrists have been pessimistic about the possibility of helping psychotic patients other than by drug treatment in the past, but the last few years have seen important developments in the cognitive and psychosocial treatment of delusions, hallucinations and other symptoms previously assumed to be exclusively consequential to brain dysfunctions (Morrison et al., 2004). These cognitive- behavioral treatments are now opening the field to cognitive clinical psychology so it can be applied to a new population like people with schizophrenia and other disorders with psychotic features. They have been developed partly by experimentation, partly by educated guesswork about the psychological processes that influence symptoms and the adaptation of therapeutic methods known to be effective for non psychotic conditions like anxiety and depression (Morrison et al., 2004). The notion that cognitive therapy can possibly ameliorate the core symptoms of psychosis rather than merely enable the patients to cope better with their illness is a recent one. The idea that schizophrenia is a variety of brain disease that has no significant psychological components was still of influence just 15 years ago (Bellack, 1992). Skepticism still remains today in the United States, even though individual psychological treatments for psychotic disorders are now often seen as an indispensable part of the therapeutic arsenal in Great Britain and most

of Europe (Byrne et al., 2006). Many forces are at work to tackle the circulation of these new treatments so they can eventually be readily available to patients on this side of the Atlantic (Green, 2003). Some of the reasons for this general reluctance in the adoption of these new treatment methods are best resumed by Michael Foster Green (2003) when he talks about ignorance being the weapon by which misconceptions perpetuate themselves and how we need to think outside the box when it comes to schizophrenia. These misconceptions origin can be traced even further into the semantics of the disorder's name. The term schizophrenia is from a Greek origin meaning *schizo* (split) and *phrene* (mind), referring to a fragmentation of certain mental functions. Even tough the findings of the past decade have provided better understanding of schizophrenia and how the "fragmentation of these mental functions" is happening, there is still a need to further change the focus of research and provide a new way to envision this disorder. The main reason why schizophrenia mechanisms remain misunderstood lies in the fundamental disconnection between the underlying components of the brain disorder and the psychotic symptoms. We need to make sure that we get the facts right but also make sure we do not get the focus wrong (Green, 2003). Even tough it is widely recognized that some regions of the brain of individuals with schizophrenia are abnormal in size or activity level, the symptoms of the illness still have no established obvious link to these brain irregularities since schizophrenia is a disorder of risks or predisposition, depending on many non genetic factors (developmental, social and psychological). What one inherits biologically is the risk for schizophrenia, not the certainty of it (Green 2003). This is the key observation that leads Chadwick, Birchwood and Trower (1996) to a radical change of focus in the approach to schizophrenia from the recognized symptom model to a person model. This shift of focus, according to Chadwick, Birchwood and Trower (1996) and Bentall (1996), was justified and necessary to the elaboration of a viable conceptual construct of schizophrenia following close examination of the epidemiology and symptomatology of this disorder and the new research developments when it comes to its genetic and neurophysiological characteristics. The principal question that needs further clarification is: What are this person model of schizophrenia strengths and justifications compared to the traditional symptom model? The answer to this will be further discussed subsequently; however, we first need to come to a basic understanding of what is

schizophrenia and how it manifests itself, to finally explain why we need to reintegrate and see the symptoms of schizophrenia as inclusive of the person generating these symptoms.

Schizophrenia epidemiology

According to the National Institute of Mental Health (NIMH) (2005), rates of schizophrenia have been fairly stable over time. This disorder has also been found in the literature for centuries (under different nominations). Outcomes may vary mildly according to mental health services accessibility and outlook regarding the illness but schizophrenia is found throughout the world in comparable prevalence (Torrey, 2001). Around 1% of the world's population has schizophrenia and it affects men and women about equally (Torrey 2001). In other words, at any one time more than 51 million people worldwide suffer from schizophrenia (NIMH, 2005). Men have a tendency to develop the illness earlier in life with an onset in late adolescence to early twenties. Women typically have onsets in mid to late twenties but later onsets are not uncommon (Torrey, 2001). Higher rates of schizophrenia are generally associated with lower socioeconomic status and this is usually explained by social causation and social selection (Torrey 2001). Social causation is referring to the possibility that higher level of stress relating to life in a disfavored socioeconomic setting could generate more difficulties for individuals with a predisposition for psychotic disorders and increase one's risk to develop schizophrenia. Social selection is referring to the likelihood that schizophrenia is engendering poor functioning and subsequently lower social and economic success (Torrey, 2001). Furthermore, recent studies suggest that the low socioeconomic level often engendered by this disorder is correlated to depression and substance abuse (Dohrewend et al., 1992).

Schizophrenia is not only a devastating disorder for the individual but is also in the top five causes of disability in young adults regardless of gender (NIMH, 2005). When we look at the incidence, the number of people who will be diagnosed as having schizophrenia in a year is about one in 4000. This means that about 1.5 million people worldwide will be diagnosed with schizophrenia this year alone, with about 100000 of those in the United States (NIMH, 2005). In developed industrial regions, it is more disabling than heart disease, arthritis, drug

use and the human immunodeficiency virus (Murray and Lopez, 1996). The total direct and indirect costs of schizophrenia is difficult to assess precisely but estimates according to family care giving, lost wages, suicides, direct treatment and support and other related costs consumes a total of about $65 billion a year in the U.S. only (NIMH, 2005).

Regarding schizophrenia's course, we know that early intervention and early use of new medications lead to better outcomes for the individual (Torrey, 2001). The earlier someone with schizophrenia is diagnosed and stabilized on treatment, the better the long-term prognosis for their illness. Teen suicide is a growing problem, and teens with schizophrenia have approximately a 50% risk of attempted suicide. In rare instances, children as young as five can develop schizophrenia with a more specific and differentiated set of symptoms from those found in adult's schizophrenia (Torrey, 2001). Following a meta-analysis of 25 studies with people diagnosed with schizophrenia and schizophreniform disorders, after 10 years: 25% completely recover, 25% are much improved and are relatively independent, 25% are improved but require an extensive support network, 15% are hospitalized and unimproved and 10% are dead, mostly due to suicide (Torrey, 2001). Schizophrenia is a disorder punctuated by relapses often needing hospitalization and/or continuous care (Torrey, 2001). Early identification relies on detection of symptoms and seems to have taken a primary role in treatment efficacy and client long term prognosis and outcome. Since positive symptoms of schizophrenia are the most evident and devastating manifestations of the disorder by which early identification is often possible, it is primordial that we discuss what they are and what role they are playing in the previously proposed person model. Furthermore, these psychotic symptoms are often found in other psychotic disorders (brief psychotic episode, major depression or post traumatic stress disorder with psychotic features, etc.) and are sometimes insufficient by themselves to correctly assess a schizophrenia diagnosis.

Schizophrenia Symptomatology

The symptoms of schizophrenia fall into three broad categories: **Positive symptoms** are unusual thoughts or perceptions that include hallucinations, delusions and thought disorder. **Negative symptoms** represent a loss or a decrease in the ability to initiate plans, speak, express emotion, or find pleasure in everyday life. **Cognitive and emotional dysfunctions** (or cognitive deficits) are problems with attention, certain types of memory, and the executive functions that allow us to plan and organize (NIMH, 2005).

The symptomatology of the disorder is seen through the literature as a subject of primary focus and used as the main defining factor guiding clinical interventions. Though it is important to identify these positive, negative and cognitive symptoms to help in the diagnosis of the disorder, it could be argued that merely describing symptoms is by no mean a way of providing an explanation or an articulated conceptualization of schizophrenia. A change of focus toward a more comprehensible and sensible vision is preferable if we want to provide the complete conceptual frame that is presently missing when it comes to schizophrenia. We need to elaborate an integrative psychological model that will give sense to these positive and negative symptoms, explain them in light of the individual afflicted and give them structure in function of the role they play for the person experiencing them. This being said, the identification of these symptoms remains of great importance in the elaboration of a differential clinical portrait of each individual suffering from schizophrenia in a person oriented model (Chadwick et al., 1996).

Positive symptoms usually involve a lost of contact with reality and vary in intensity from severe to hardly noticeable. The most recognized and predominant manifestations of positive symptoms come in the form of hallucinations. They are mainly auditory in nature but visual, olfactive, gustative or tactile hallucinations can also be present.

Delusions are false personal beliefs that are not part of the person's culture and are resistant to change even when other people present proof that the beliefs are not true or logical. They are often bizarre and can usually be categorized as grandiose or paranoid in nature (NIMH,

2005). The paranoid delusions are of particular interest since it has been recently found that they can be further subdivided into the persecution or punishment type (Chadwick, Trower, Butler, Maguire, 2005). This subdivision is of importance in a "person model" framework and will be discussed in more details subsequently.

The last positive symptom in schizophrenia is the presence of unusual and disturbed thought processes. One dramatic form is disorganized thinking where the person may have difficulty organizing his thoughts or connecting them logically (NIMH, 2005).

Finally, it is important to note that people with schizophrenia often experience alterations in their sense of self associated with alterations in bodily sensation (Torrey 2001). This concept of self will be discussed further as a key notion to the "person model" used in the cognitive-behavioral treatment of schizophrenia (Chadwick et al., 1996; Trower et al., 2004).

According to the National Institute of Mental Health (2005), negative symptoms refer to reductions in normal emotional and behavioral states. Flat affect, immobile facial expression, monotone voice, lack of pleasure in everyday activities, incapacity to sustain planned activities and speaking infrequently even when forced to interact are all deficits in behavioral, cognitive and emotional abilities that are usually quite apparent. Cognitive symptoms are often more subtle and detected only when psychological or neurological tests are performed. They usually include poor executive functioning or poor ability to absorb and interpret information and make decisions based on that information, an inability to sustain attention and problems with working memory.

From a biological to a cognitive perspective

Family, twin, and adoption studies support the role of genetic influences in schizophrenia (Kendler and Diehl, 1993; McGuffin et al., 1995; Portin and Alanen, 1997). According to demographic researches regarding schizophrenia, after a person has been diagnosed, the chance for a sibling to also be diagnosed is 7 to 9 percent. If a parent has schizophrenia, the

chance for a child to have the disorder is 10 to 15 percent compared to the general population incidence of 1%. Risks increase with multiple affected family members (Gottesman, 1991). These results effectively indicate some genetic influences but do not necessarily imply a genetic etiology of schizophrenia since not all studies that have used control groups and blind diagnoses based on structured interviews have found significant differences due only to genetic factors (Pope, Jonas, Cohen and Lipinski, 1982). Behavioral, sociological and cognitive factors seem to have as strong of a correlation and instructive value as genetic ones (Bentall, 1996). Therefore it would be a mistake to implicate solely a genetic transmission merely because mental illness runs in families. In fact, in more than 40 percent of identical twins in which one is diagnosed with schizophrenia, the other never meets the diagnostic criteria. Recent studies in molecular genetics (Burmeister, 1999; Hyman, 1999) are refocusing our biological and genetic etiological perspectives on schizophrenia since a schizophrenia relevant gene may have many alleles, but only one or two of these alleles might increase the risk for schizophrenia. For this reason, it is technically incorrect to say that we are looking for a "schizophrenia gene"; we are looking for a particular version of an allele that contributes to the risk for the disorder (Green, 2003). Indeed, researchers in Finland (Tienari, 1991) in one of the most interesting adoption study of the last decade were able to reinforce further this contributing risk factor notion. They looked at the relationship of children's risk for schizophrenia to their rearing environment. Two groups were studied, one group had biological mothers with schizophrenia and the comparison group of adoptees had biological mothers without psychosis. They conducted lengthy interviews with the adopting families and classified them as healthy or disturbed based on patterns of interactions among family members. Families rated as "disturbed" did not necessarily have members with psychosis but they did classify has having problematic patterns of communication, behavior, unresolved conflicts and inappropriate family roles. The main expectation was that the offspring of a schizophrenic parent may be very sensitive to the influence of his or her environment; a healthy family being potentially protective for the child and a disturbed family being potentially noxious. Researchers did effectively find that adoptees that had biological mothers with schizophrenia had significantly higher rates of psychosis and other forms of mental disorder than the comparison group, but only when reared in families that were considered disturbed. In the families rated as healthy, there were no differences.

Green's (2003) conclusion in light of Tienari's results is that the predisposition for schizophrenia may be of genetic basis but whether or not this predisposition develops into schizophrenia is depending on many other factors that are not of genetic origin. A more eclectic view of the disorder in general is suggested by these findings and this relates as much to schizophrenia's treatment approaches than its clinical conceptualization.

Following this argumentation, it would be reasonable to suggest that psychotic symptoms might have a cognitive origin and the cognitive therapeutic approach could be retained as a valid treatment for such symptoms in schizophrenia and other psychotic disorders. To justify the need for a change to a person model as a base to the cognitive-behavioral treatment suggested in the present study, two main arguments are described as misleading by Bentall (1996): The first one is the assumption that psychotic symptoms, because they reflect anatomical and physiological abnormalities in the brain, are not meaningful. The second one is the assumption that psychotic disorders can be divided into a small number of discreet syndromes or symptoms clusters.

The first misguided assumption that many researchers have made in the past is to categorize schizophrenia as being a homogenous disorder even tough it presents itself with diverse symptoms that resist classification and manifest themselves in many other psychotic and non psychotic disorders. The assumption that similar symptoms in schizophrenia can form clusters that reflect a unifying underlying disease process has been found lacking many times by modern psychology (Bentall, 1996). Many psychologists and psychiatrists took their lead from Bleuler who presumed that symptoms relating to schizophrenia are all connected to a core disorder of thinking (Bleuler, 1950). It might be so for schizophrenia's cognitive deficits but it's a different assumption when it comes to its cognitive biases (Bentall, 1996). Cognitive deficits have been measured in a plethora of instances with neutral task administered to clients suffering from psychological disorders and relates to their ability or incapacity to perform it. Cognitive biases on the other hand are not subject to the same laws and are typically abnormal tendencies to process some kinds of information to the detriment of others (Bentall, 1996). This is typically seen in clients with paranoid inclinations when they focus on negative aspects of other individuals and over-amplify them. This is an important distinction since cognitive biases are seen as the main factor of focus in the "person

model" based treatment of schizophrenia that is proposed by Chadwick et al., (1996). As so, there is a lot of psychological research concerning cognitive deficits in schizophrenia but fewer aiming at cognitive biases (Bentall, 1996). This is the result of an old assumption introduced by Jaspers (1962) that psychotic symptoms are denuded of meaning, unintelligible and do not reflect client's past experiences. Delusions are seen as meaningless, bare of sense and informational content, not relating to the client emotionality, self vision or views on the world; delusions are not the symbolic expression of anything (Berrios, 1991). This assumption that psychotic symptoms have no meaning because they are relating to physiological abnormalities in the brain has no substantiating facts (Bentall, 1996). Recent researches in cognitive-behavioral psychology tend to demonstrate that symptoms of psychosis not only have meaning but that most of the hallucinations and classical delusions held by people with a diagnostic of schizophrenia can be changed during therapy (Chadwick et al., 1996; Sensky et al., 2000; Beck and Rector, 2003; Pilling et al., 2002; Turkington et al., 2002; Turkington et al., 2003; Jones, Cormac, Silveira, Campbell, 2004; Wiersma, Jenner, Nienhuis, Willige, 2004; Trower et al., 2004; Byrne et al., 2006). These researches are clearly pointing at cognitive biases as the preponderant target of importance in the treatment and understanding of psychotic positive symptomatology.

The validity of the schizophrenia diagnosis

The validity of a diagnosis usually refers to its meaningfulness and its capacity to be determined by a series of tests (Bentall, 1996); therefore, the actual diagnosis of schizophrenia should refer to clusters of symptoms that have a certain commonality and similarity in occurrence. Even though a statistical match to clusters of symptoms is not the only validating requirement for a diagnostic to be retained, researches with multivariate statistical techniques have failed to uncover such clusters of symptoms when it comes to schizophrenia (Helmes and Landmark 2003). It follows that expected traditional diagnostic subtypes were not identified empirically (Bentall, 1996).

Some authors are arguing that there could be as much as three independent syndromes for each category of positive symptoms, negative symptoms and cognitive disorganization

(Minas et al., 1992, Klimidis et al., 1993). One of the fundamental problems with these classification attempts is that similar symptoms clusters have also been identified in studies of schyzotypal traits in normal participants (Sellen, Oaksford and Gray, 2005). These findings suggests that the schizophrenia symptoms not only fail to cluster in the way that Kraepelin predicted but more importantly that those symptoms are inscribing themselves on a continuum with normal functioning where psychotic manifestations would be at one end. These results suggest that psychotic symptoms resist classification because they could be as much a manifestation of cognitive processing and functionality compared to the early beliefs that they were exclusively a manifestation of organic dysfunction denuded of sense. This could be why a comprehensive classification of these symptoms has eluded us so far since cognitive, social and environmental aspects were not taken into consideration. Subsequently, a clinical "person model" of treatment aiming at these psychotic symptoms should take into account the individual producing and modulating these symptoms.

The other way to asses the validity of a diagnostic is to evaluate its predictive value on important variables like the onset of the disorder or treatment effect. The symptom model seems to fall short when it comes to its predictive value of psychotic disorders onset since non-specific affective symptomatology (general anxiety and depressive levels) and social factors (social adaptation, socio-economical and cultural conditions, etc.) appear to be better predictors than symptom variables (Ciompi, 1997; Owens et al., 2005). Finally it has been found in trials where different kinds of neuroleptic medications have been randomly assigned to people with different diagnosis (schizophrenia and others) that no clear diagnostic-specific pattern of neuroleptic drug response has been identified when it comes to schizophrenia (Kendell, 1989). If schizophrenia is a disorder that seems to have an inconsistent pattern of symptoms, a changing course and which responds unpredictably to pharmacological treatment, it is unlikely that one kind of core cognitive deficit can account for its many manifestations. It is more likely that different symptoms are reflecting different cognitive abnormalities, and cognitive-behavioral treatment plans will have to take this complication into account (Bentall, 1988).

Even Kraepelin as early as 1920 recognized the meaningfulness of the delusions of psychotic clients as being a crucial focus of interest since they usually reflect the general wishes and expectations of people. He concluded that clinicians will have to look into the characteristics of each delusional individual to understand their differential clinical picture since people's expectations and past experiences play a decisive role in providing meaning to their delusional symptoms. It is particularly obvious with positive psychotic symptoms that their meaningfulness is of prime importance. They always gravitate around certain themes that are often persecutory or grandiose in nature and they invariably reflect the client's concern about his or her position in the social universe (Sims, 1997). The same could be said of hallucinations that could also be classified according to their content as referring directly to the client's preoccupations, vision of self, vision of others, or the perception that the client has of what others think of him (Bentall, 1990). The general implication is that researchers, in addition to expecting a different pattern of cognitive abnormalities corresponding to each type of symptom, will also have to expect that some of the most important abnormalities take the form of cognitive biases rather than deficits (Bentall, 1996). There is now evidence that many delusions relating to people with schizophrenia are not fixed and non modifiable like previously believed and can in fact effectively be changed during therapy (Chadwick et al., 1996; Sensky et al., 2000; Beck and Rector, 2003; Pilling et al., 2002; Turkington et al., 2002; Turkington et al., 2003; Jones et al., 2004; Wiersma et al., 2004; Trower et al., 2004; Byrne et al., 2006). Further evidence is now showing an increasing degree of continuity between "normal" and "abnormal" beliefs and experiences (Chadwick et al., 1996; Bentall et al., 1996; Trower et al., 2004). For example, evidence shows that paranoid tendencies are exaggerations of ordinary defenses like the "self serving bias" where attribution for success is attributed to self (internally) and failure to others (externally) (Claridge et al., (1996). Many researchers formulate a clear link between reasoning errors and delusions by suggesting that inaccurate judgments based on insufficient information contribute to delusion formation and maintenance (Garety and Hemsley 1994; Garety and Freeman 1999). Schizotypy is now seen as one of two things: a continuous dimensional variation in proneness to psychosis occurring naturally in the general population, or a discontinuous genetic variation of proneness to disease. This clinical view has been described as "quasi-dimensional", since it construes dimensionality as degrees of expression along a disease continuum (Bentall, 1996). In

contrast, Claridge and Beech (1995) argue that a "fully dimensional" approach to schizotypy is more appropriate. This view is often known as the individual differences approach. This model encompasses the disease continuum but takes as its starting point normality (or health); hence, schizotypy is viewed as continuous with normality (Claridge 1997; Chapman et al. 1995; Claridge et al. 1996). They propose that schizotypy might be a dimension of personality, suggesting that there is a "tendency for characteristics of the psychotic states to be found, in mild degree, among healthy people". In fact, psychotic features are appearing in many other diagnostic groups than psychotic disorders and the tendency to have hallucinations and delusions appears to extend to the population at large without evidence of clear deficits (Claridge, 1990). The clinical cognitive approaches derived from these new findings are shifting the focus from a symptom to a person model and are now concerned mainly with issues of personal meaning and biased processing of threatening stimuli (Chadwick et al., 1996; Byrne et al., 2006). This is not only applying to psychological disorders in general but now effectively extends to psychotic disorders and schizophrenia. In fact, such alternative approaches now co-exist with approaches originating from the conventional psychiatric views about schizophrenia. Recent researches in clinical cognitive psychology have clearly demonstrated that biological, social and psychological factors are present even in the most severe mental disorders (Chadwick et al., 1996; Bentall et al., 1996, Trower et al., 2004). Surprisingly, this way of envisioning and treating delusions and hallucinations was already offered by the fathers of clinical cognitive psychology in the 1950's but was not efficiently followed upon during this era (Beck, 1952; Shapiro and Ravenette, 1959).

Schizophrenia treatment

As we have seen previously, the apparent lack of validity of the schizophrenia diagnosis based on the traditional cluster of symptoms model seems to justify not only a shift to a person model but also a revision of the conventional therapeutic approach to schizophrenia. Interventions for schizophrenia are usually linked to its clinical phases: acute phase, stabilizing phase, stable phase, and recovery phase. Optimal treatment across all

phases are usually linked to neuroleptic treatment, often combined with a variety of psychosocial interventions, supportive psychotherapy, family psycho educational interventions, vocational rehabilitation, and more recently, cognitive-behavioral interventions. In the past decade some researchers have been promoting the development and use of cognitive-behavioral treatment for psychotic disorders like schizophrenia and these interventions have taken the form of direct therapies for precise symptoms like delusions and hallucinations (e.g. Bentall et al., 1994; Chadwick and Birchwood, 1994; Chadwick et al., 1996; Trower et al., 2004; Byrne et al., 2006); as a way of enhancing social and psychological coping skills (e.g. Tarrier et al., 1993); or as part of a global strategy to enhance acceptance of what would otherwise be disrupting and disturbing experiences (e.g. Kingdon and Turkington, 1994; Turkington et al., 2002). These authors have strongly advocated for the development of cognitive-behavioral therapies specifically oriented on the needs of psychotic clients that were not addressed by the traditional psychiatric approach and that research into such therapies should be pursued as a matter of priority. In fact, it is now widely recognized by psychiatrists as well as psychologists that pharmacological treatment alone is in most cases insufficient to address the entirety of symptoms and related sociological and psychological functional losses pertaining to psychotic disorders. Recent advances in the understanding of the psychological mechanisms involved in the development and upholding of psychotic disorders are at the forefront of a new conceptual model proposed by Paul Chadwick et al., (1996), Trower et al. (2004) and Byrne et al., (2006). Many other researches using CBT as their foundation in the treatment of psychotic disorders are worth mentioning. They are mainly coming from Scandinavian countries (Beck and Rector, 2003; Wiersma et al., 2004) and Great Britain (Turkington et al., 2002; Jones et al., 2004). The most recent manuscript from Byrne et al., (2006) on a cognitive therapy for hallucinations (taking the form of voices giving commands) in schizophrenia conducted in 2004 is showing significant positive effects in the reduction of compliance behaviors to hallucinatory voice commands, degree of conviction in the power and superiority of the voices (omnipotence) and in levels of distress and depression, with maintaining effects at the twelve months follow-up.

The basic concepts underlying these cognitive therapeutic approaches for psychotic disorders were mainly derived from the cognitive theory introduced by Ellis and Beck. These approaches are conventionally used in therapy with clients suffering from a plethora of disorders and are mainly the same in the cognitive treatment of anxious or depressive disorders, at the exception that they are tailored and aimed at psychotic features.

The rational emotive conceptual model

The psychological treatment administered to the client in this case study is directly derived from the modified cognitive ABC model of Ellis (1994) and Beck's cognitive therapy (1979). The integration of these two models and their adaptation for psychotic disorder treatment was originally introduced by Trower, Casey and Dryden (1988) and further developed by Chadwick et al., (1996), Trower et al., (2004), and Byrne et al., (2006). In this integrative cognitive- behavioral model, A stands for Activating event, B stands for Belief about the Activating event (all cognitions are included under B) and C stands for the emotional or behavioral consequence that follows from B, given A. Beliefs are seen in this model as dynamic modulators affecting consequences that are emotional or behavioral in nature; as such, the As, Bs and Cs, are seen as a unified experience where Bs do not imply direct causality of Cs but rather modulate or transform them. As mentioned by Chadwick et al., (1996), four types of cognitions are included in the Bs of this modified model: *Images, inferences, negative evaluations and dysfunctional assumptions*. **Images** are basically visual representations of an individual in an imagined situation. Ex. a client is visualizing himself being rejected by someone in a social situation. These mental images are often overlooked and can be useful with clients who have problems verbalizing their thoughts. **Inferences** are hypotheses that can be true or false, are often sudden and can take the form of automatic thoughts. They are predictions or assumptions that are going beyond the factual evidence. One popular form of inference that is often employed is attribution; they can be internal or external, unstable or stable, specific or global (Chadwick et al., 1996). For example, it has been theorized that depression was caused by a tendency to attribute bad outcomes to personal, global and stable faults of character (Abramson, Seligman and Teasdale, 1978).

Beck (1976) demonstrated how inferences tend to be distorted by the influence of mood. He identified six groups of common inferential mistakes: *Arbitrary inference* is where an erroneous conclusion is drawn arbitrarily. *Selective abstraction* is an inference where the focus is made on a detail taken out of context and the whole experience is based on this fragment. *Overgeneralization* is referring to a pattern of drawing general rules or conclusions on the basis of one or few isolated incidents. *Magnification and minimization* is consisting in gross errors in evaluating the significance or magnitude of an event. *Personalization* is an inferential tendency to see external events in a negative self blaming way. *Absolutistic, dichotomous or black-and-white thinking* is also an inference consisting in a tendency to place everything into one of two opposite categories in an extremist way.

David Burns (1999) has developed a similar inferences classification based on what he calls the ten forms of twisted thinking. He adds four more specific inferential mistakes to the previously mentioned: *Discounting the positive*, where the positive aspects of an event are systematically rejected as not counting; *emotional reasoning*, where it is assumed that negative emotions necessarily reflect the way things really are; *should statements*, where things are forced to be the way you hoped or expected them to be; and *labeling*, where a stigmatizing negative label is attached to a person arbitrarily. He also introduced two subdivisions of selective abstraction (or *jumping to conclusions* as it is called by Burns, 1999), an inferential process described as *mind reading*, where an arbitrary conclusion is reached that someone is reacting negatively to you; and *fortune telling*, where an arbitrary prediction is made that things will take a negative turn.

Negative evaluations on the other hand can be defined has a judgment call as opposed to an inference. Ellis (1994) argues that extreme and disabling emotions are functionally associated with these negative evaluations. They can take the form of personal evaluations which are global, stable and are a condemnation of oneself or another in three ways: self to self, self to other and other to self. The main factor here is that it is not a specific behavior that is being judged as good or bad but a person in its entity (ex. He is/I am a complete failure).

Dysfunctional assumptions are fundamental rules or principles guiding behavior. They are thoughts that usually originate in childhood, are implicit, but can also be deduced from interpersonal behavior (Beck et al., 1979). An example of a classical dysfunctional assumption would be to think that in order to be happy you must be loved by everyone. Consequent to that first dysfunctional assumption that could have its origin in infancy, another dysfunctional assumption would be that you should never upset or confront anybody for fear that they will reject you. This second assumption could have been deduced from the first one and/or interpersonal behavioral experiences. One main distinction between these classes of thinking errors is the client's level of awareness about them. Clients are usually aware of their inferences, less aware of their negative evaluations and rarely aware of their dysfunctional assumptions (Chadwick et al., 1996).

The modified ABC model (Ellis, 1994) is based on five primary postulates that are at the core of the psychological theory and therapeutic approach used in this research (Chadwick et al., 1996). The first postulate stipulates that all clinical psychological problems are Cs (emotional and behavioral consequences). The second, that problems arise from Bs (beliefs), not As (activating events). The third, that there are predictable connections between Bs and Cs. The fourth, that Core Bs arise from early experiences. The last postulate entails that weakening beliefs weakens associated distress and disturbance.

The first postulate implies that psychological interventions should be aimed at easing emotional distress and disturbed behavior (Cs). This important distinction always resides in a difference of intensity, degree, rate of occurrence and a difference in (realistic/or non realistic) cognitive interpretative content and (adapted/or non-adapted) reactions. The major emotional continuums found in clinical psychology are reflecting this variation in intensity and content: irritation to rage, sadness to depression and concern to anxiety. In this cognitive model, an event (A) would be considered a problem only if it is associated with significant unrealistic emotional distress and behavioral dysfunctionality (C). The necessity of identifying and modifying the dysfunctional belief (B) is not an end in itself but only serves as a mediator in resolving the problem identified at point C. Beliefs are just the chosen

therapeutical point of entry (the door) through which the emotional and behavioral problems can be resolved.

The second postulate stipulates that problems arise from beliefs (Bs), not activating events (As). This principle is the unifying attribute of all the modern cognitive approaches and was best conveyed by the Greek philosopher Epictetus: "Men are disturbed not by things but by the views which they take of them..." (Long, 2002). The activating event, belief and consequence are not discrete entities but parts of a complete phenomenon. This implies that the mere belief of failure, for example, cannot by itself trigger anxiety or entail direct causality between this belief and anxiety; but rather that having such thoughts, emotions and behavioral responses is what it is to experience anxiety (Chadwick et al., 1996).

The third postulate implies that inferences and evaluations are connected to emotions and affects in a predictable manner. The same can be said about the link between emotions and cognitions (including inferences and evaluations). There is always a predictable relationship connecting the content of beliefs (cognition) and the type of emotion experienced. According to Chadwick et al., (1996), Trower et al., (2004), there is three main cognition-emotion links relating to anxiety, depression and anger. The beliefs (inferences and evaluations) about threat or danger are usually future oriented and relating to anxiety, avoidance and escape behavior. The intensity of the anxiety is proportional to the beliefs about intensity, probability and assessment of coping responses. The beliefs about loss (status, freedom or others) are usually past oriented and relate to depression and withdrawal. Their intensity is proportional to the level of perceived helplessness and/or hopelessness. The beliefs about violation of rights and negative self-other evaluations can be past, present or future oriented and relate to anger. The intensity of anger is proportional to the beliefs about relative status, threat to status and revenge seeking. The links between specific beliefs to specific emotions is visibly illustrated by the previously mentioned types of emotions that are predictable consequences (Cs) of the cognitive content and nature of an individual's beliefs (Bs) inferences and evaluations.

The fourth postulate implies that past experiences influence the formation of core beliefs. It is believed by most cognitive researchers that the most fundamental core beliefs like dysfunctional assumptions and person-evaluations are structured in early life and reflect the child's positioning on an attachment (closeness) versus autonomy (self definition) continuum (Waldinger et al., 2003). Like mentioned before in the review of biological and genetic studies, it is likely that every newborn has genetic vulnerabilities; nonetheless, these predispositions are maintained, increased or diminished by following life experiences (Gilbert, 1992). Consequently, personality formation involves two dynamically related motivations (Blatt and Zuroff, 1992). The first one is *relatedness* and refers to the capacity to establish increasingly mature and mutually satisfying interpersonal relationships. The second is self-definition and refers to the development of a consolidated, realistic, essentially positive, differentiated and integrated self-identity.

People will confer more importance to one or the other, resulting in two main personality configurations where individuals become more sensitive or vulnerable to certain events (As) that will trigger existing negative beliefs (Bs) with their previously mentioned associated affect and behaviors (Cs). Individuals will then develop interpersonal styles to guard from these vulnerabilities and future re-experiencing of the shame, loneliness, despair, anger and anxiety, to name a few.

The fifth and last postulate ascertain that weakening inferences and evaluations (Bs) is an effective mean to reduce associated emotional distress and dysfunctional behaviors (Cs) (Beck et al. 1979). In other words, any positive modification in beliefs intensity or content should have a corresponding impact on the individual's emotional and behavioral state.

The ABC model applied to delusions in schizophrenia

The modified ABC cognitive model (Ellis, 1994) applied to delusions in schizophrenia is now recognized as a potent conceptualization model of psychotic manifestations. This model already provided interventions that can efficiently reduce erroneous beliefs and cognitive biases in psychotic patients (Bentall 1996; Chadwick et al.,

1996; Byrne et al., 2006). Further gains were also noted with clients with schizophrenia regarding their quality of life, self esteem, general functionality, anxiety and depression (Wiersma et al., 2004). Delusions in an ABC model are delusional interpretations or beliefs (Bs) of an activating event (A) and may be associated with consequential (C) distress and disturbance; thus, a delusion implies that a distorted cognition of one of the four types mentioned previously (usually inferential) has been made. At this point, the ABC approach on delusional experiences help designate and clarify the event implicated (A), it indicates that the delusion is an inference or belief (B) subject to different interpretations of the event and shows if the delusion is a problem (C) causing distress or disturbance to the client. Any delusion in view of the ABC model contains at least an inferential thought that is normally explicit and an evaluative one that is more implicit. These hidden core evaluations often need to be uncovered by a thought chaining process so the emotional and behavioral consequences are fully exposed and intelligible. Therefore, the two main therapeutic goals of any intervention based on this model are to weaken the delusional beliefs and consequently weaken associated negative evaluative thinking. This approach recalibrates the focus toward the debate on the role of reasoning in the formation and maintenance of delusional thinking. It has been argued before that delusions are the result of ordinary reasoning processes in the context of abnormal perceptual experiences (Maher, 1974). We have seen previously that researchers have also argued that delusions result from reasoning deficits or biases. The deficit explanation has already been found lacking since there is few corroborating evidence to support it (Bentall, 1996). Numerous studies have demonstrated that delusions are more likely the result of reasoning biases in automatic and controlled processing (Garety, 1991; Garety et al., 2001). There are three complications attached to this reasoning bias construct (Bentall, 1996). First, reasoning biases could be the result of delusional thinking as much as delusional thinking could emerge from reasoning biases. This is not helping much in clarifying the formation process of delusions. Second, the non delusional thinking processes in people with delusions offers divergent conclusions on the type of bias expected to produce or maintain delusional thinking. Some individuals are excessively guided by their beliefs to the point of almost disregarding the stimuli (Huq, Garety and Hemsley, 1988); others are unusually quick to discard their inferential hypothesis in regard of factual incentive (Garety et al., 1991). Third, many researches have shown that people with delusions are processing

threatening stimuli in a different way. The same was found with people suffering from depression, anxious disorders or eating disorders (Chadwick et al., 1996). This is not providing any evidence toward a general bias in reasoning; on the contrary, it indicates a tendency toward specific bias for material of personal significance relating to each individual. The ABC model integrates all these considerations and clarifies the role of reasoning in the maintenance of delusions. It is acknowledging that cognitive biases are specific to each individual and modulated by their own past experiences and reasoning patterns. The presence of emotional distress or disturbances catalyzes the activation of the delusional thinking process. The standard cognitive distortions found by Beck (1979) would then only be expected in patient with schizophrenia when this delusional process is active. It explains why people with schizophrenia can appear perfectly normal in their reasoning patterns at one time and sink in profound delusional thinking when submitted to stimuli causing them distress. It also explains why delusional interpretations of events do not result exclusively from actual inferential thinking but are influenced by antecedents, previous experiences, internal stimuli, evaluations and dysfunctional assumptions. It is clear that certain delusions are more influenced by activating events like perceptual abnormalities and others by evaluative beliefs. Recognition is growing that some delusions are more the result of perceptual abnormalities and others more reflecting the individuals' personal psychological motivations (Garety, 1991). Experiences of passivity, ideas of reference, thought insertion or thought broadcasting seems to relate to perceptual abnormalities while occurrences of grandiose or paranoid delusions are more revealing of psychological motivations possibly relating to an exaggerated protection need of the individual sense of self (Zigler and Glick, 1988). Both visions, one based on perceptual abnormalities and the other one based on psychological motivation, can be integrated in a person oriented ABC cognitive model.

The ABC model applied to hallucinations in schizophrenia

Hallucinations are reported by 73% of people during an acute episode of schizophrenia with 90% of those being auditory and 40% visual in nature (there is some overlap as some sufferers are having both auditory and visual hallucinations) (World Health Organization,

1973) . Nonetheless, hallucinations are frequently reported by individuals who are suffering from sexual abuse, post-traumatic stress disorder, bipolar disorder, affective disorder, etc. (Slade and Bentall, 1988); the proneness of people in general (not restricted to clinical groups) to hallucinate under stressful laboratory conditions (e.g. reporting hearing sounds that are not there) has been studied and researchers now believe that it may be a predisposition found across the general population that can emerge under specific stressful circumstances (Slade and Bentall, 1988); and that the evaluation of hallucinations as a central symptom in differential diagnosis of schizophrenia is therefore of limited value (Asaad and Shapiro, 1986). Hallucinations were already envisioned by Strauss in 1969 as experiences inscribing themselves on a continuum with normality and current opinions in psychology are now veering toward accepting the possibility that hallucinations are manifestations not exclusively found in psychosis that can occur to anybody under certain circumstances (Chadwick et al., 1996). This further emphasizes the importance of shifting the conceptualization of schizophrenia from a symptoms oriented model to a "person model". There is strong evidence that the nature and strength of an individual's response to auditory hallucinations is directly related to psychological processes and interpretations since voices often evoke different reactions for the same content or do not evoke a reaction at all, even when the content is extreme (Romme and Escher, 1989; Tarrier, 1992). In other words, it could be hypothesized from these results that it is not the activating event (hallucination) itself that generates the behavioral disturbance or emotional distress but the interpretations, inferences and evaluative beliefs made by the patient. There is strong evidence toward this conclusion regarding voices in the work of Chadwick and Birchwood (1994; 1995; 1996) resting on two essential predictions that have received strong empirical validation: The first one is that emotions and coping behaviors are connected to beliefs about voices. The second is that beliefs are not direct interpretations of voice content. Their following adapted version of cognitive therapy is based on these two postulates and their clinical results have shown that beliefs about voices do predict coping behaviors and distress better than voice content. They identified four main types of hallucination related beliefs of particular importance: Beliefs about the voice identity, purpose, power and compliance.

Around 80% of voices heard by individuals with schizophrenia are believed to be extraordinarily powerful (Chadwick, Birchwood and Trower, (1996) and this assumption relies mainly on collateral symptoms. They attribute causality of events to their voices (they assume that the voices (As) are responsible for what is happening (Cs)) and then use those events as proof of the voices omnipotence (e.g. the voice made me do it; I was unable to resist it, the fact that I did it proves that the voice was right). They use their incapacity to influence the onset or offset of their voices to validate their perceived voice's power. The voices always convey the impression of knowing everything about the client's history, the future, his thoughts, emotions and behaviors and the individual with schizophrenia will often attribute more power and knowledge to the voices than their content actually suggest. This is understandable since they are the ones generating these voices according to their motivational beliefs and their own life experiences. This will usually leave the client with feelings of vulnerability, a sense of being exposed and captive and a sense of powerlessness and helplessness (Gilbert 1992). The notion of retaking control and empowering the client is one of the main objectives of cognitive therapy for psychotic symptoms.

Beliefs concerning a voice identity and purpose are usually linked to the belief about the voice's malevolence or benevolence. In turn, the belief about the voices malevolence engenders the belief that the voice is a deserved punishment or an underserved persecution. This punishment-persecution distinction (also seen in paranoia) was exposed by Trower and Chadwick, (1995) and is of significant psychological importance. Behavioral and emotional response to voices can be categorized in three distinct groups:

1) Engagement: Consists of co-operative behavior (compliance, seeking contact, conversing) and positive affect (reassurance, enjoyment), 2) Resistance: consists of resistant and combative behavior (arguing, shouting back, swearing, reluctance or non-compliance, avoidance and distraction) and negative affect (fear, anxiety, anger, depression) and 3) Indifference: consists in not engaging the voices in any way (rarely seen).

As would be expected, it was found that benevolent voices are engaged and malevolent voices are resisted (Chadwick and Birchwood, 1994; 1995). In people with hallucinations, paranoid secondary delusions do not defend against depression (Zigler and Glick, 1988). Finally, voices perceived as being omnipotent or very powerful are associated with more

depressive symptomatology as were individual's feelings of powerlessness and entrapment (Gilbert, 1992). Associated feelings and behaviors are often not understandable by voice content alone and content is not as such a reliable predictor. In fact, Strauss (1991), Chadwick et al. (1996) have found that the meaning individuals attach to their voices renders their coping behavior and affect understandable; when beliefs are not taken into account many responses seem perplexing or incongruous.

Applications of the cognitive-behavioral approach regarding delusions and auditory hallucinations have already yielded fascinating results when it comes to lessen the distress and disturbances relating to schizophrenia's positive symptomatology (Bentall et al., 1996; Chadwick and Birchwood 1994, 1995; Chadwick et al., 1996; Turkington et al., 2002; Trower et al., 2004). Many other direct and indirect benefits were also reported like: enhancement of the client's quality of life (Wiersma et al., 2004), improvement in general anxiety and depression levels, improved self esteem, improved sense of control and empowerment, reduction in behavioral dysfunctions etc. (Pilling et al., 2002; Beck and Rector 2003).

Many dimensions have been found to be affected significantly in past experimental clinical studies of cognitive-behavioral treatment relating to schizophrenia. The most recent study was conducted by Byrne et al., (2006) on a cognitive-behavioral treatment for command hallucinations in schizophrenia. This randomized clinical trial was based on a sample of 38 patients. All patients reported two or more commands from the dominant voice with at least one that was a "severe" command. The most severe commands were to kill self (25), kill others (13), harm self (12) and harm others (14). Participants were considered at risk of compliance to the voice orders since 30 (79%) had complied before, 14(37%) had appeasing behaviors and 29 (76%) had expressed the fear that the voices would retaliate if they did not comply. The treatment group completed a median of 16 sessions. Results show that from a 100% voice compliance base level at the beginning of the study, the control group receiving the conventional treatment as usual dropped voice compliance levels to 53%. The experimental group receiving the CBT therapy registered a drop in voice compliance to 14% with associated reduction in patient's beliefs in voice power (omnipotence) and omniscience

compared to the control group that showed no change. The effect of the treatment was maintained at 12 month follow-up. Furthermore, when the effect of the belief in the voice power reduction was statistically removed, the treatment effect disappeared. This reinforces the idea that the patients' gains regarding their insight about voices origin and beliefs changes were responsible for the reduction in voice compliance. Patients receiving CBT also showed significant improvements in perceived control over voices compared to the TAU (treatment as usual). Regarding the effect of CBT on anxiety, distress and depression, it was found that the CBT group had significant anxiety and distress reductions at 6 and 12 months compared to the control group with TAU. Although no hypotheses were made about changes in psychotic symptoms, the researchers found that there was a significant drop in positive symptoms occurrences in the CBT group and a consistent reduction in negative symptoms. No correlation between neuroleptic medication fluctuation and positive symptoms were noted at any point during treatment.

Another influential research involving CBT treatment of schizophrenia was conducted by Wiersma et al., 2004. Their main objectives was to study the effectiveness of a CBT hallucination focused treatment and coping training among schizophrenia patients at enhancing quality of life and social functioning. Their clinical research was conducted with a randomized control trial of 31 patients in the integrated treatment condition and 32 patients in the routine care condition. Quality of life was assessed with the self report questionnaire of the (WHOQOL) brief edition and social functioning with an interviewer based schedule, at entry, 9 month (post treatment) and 18 months later (follow-up). They found that satisfaction with general quality of life with patients in the experimental condition constantly improved during therapy and was significantly better than the control group at the 9 months follow up even if significance was lost at the 18 month follow up. Significant improvements were noted regarding satisfaction with health with a constant trend of improvement and maintaining effects at 18 months follow up. They also found that patients in the experimental group improved steadily on all four quality of life domains with significant results at final follow up compared to the control group who did not show significant improvements. Results suggested a significant improvement in general quality of life and social role functioning (effect size 0.64) in favor of the integrated CBT treatment.

In general, researches regarding CBT therapy applied to schizophrenia like those mentioned before are showing similar results and recent reviews of CBT efficacy have been positive with effect sizes in residual positive and negative symptoms being large at the end of therapy (Rector and Beck, 2001; Pilling et al. 2002) and sometimes with even more gains at follow-up (Gould, Mueser, Bolton, et al., 2001). The positive results in research settings are cost effective (Healy et al. 1998) and translate to clinical practice. Benefits have been demonstrated for schizophrenia residual symptoms in adult patients receiving an average of 30 sessions over 9 months, with follow-up 3 to 12 months later (Turkington et al. 2002). In fact, it seems that when it comes to CBT treatment for schizophrenia similar positive results can be achieved not only by trained psychologist but also by other health care professionals. Turkington et al. (2002) demonstrated that psychiatric nurses with limited training in CBT can achieve similar results like those reported by expert cognitive-behavioral therapist with patients with schizophrenia. This randomized clinical trial with 422 patients and health practitioners compared a brief CBT intervention against treatment as usual for differences in their outcome as shown by analysis of covariance and chi-squared tests. Randomized groups were not statistically different previous to treatment in their previous admissions, medication dosage and use of atypical neuroleptics. The ANCOVA results showed that significant improvements were seen in the CBT intervention group compared to the treatment as usual group in overall symptomatology, insight and depression. Most patients were satisfied with the program and 57% rated the overall intervention as "it has helped me more than anything tried before to understand my illness". Significantly more drop-outs occurred in the treatment as usual group (22.4%) than the CBT intervention group (12.5%) with only one suicide occurring in the treatment as usual group. This study shows that a brief CBT intervention with psychoeducational material can improve schizophrenia patient's symptomatology, insight and depression with significant results.

All these previously mentioned clinical researches showed promising results and found significant improvements following the use of CBT in schizophrenia regarding different aspects of this disorder like symptomatology, insight, anxiety, depression, coping skills, and quality of life. Subsequently to these research findings, the present single case research will

try to assess the clinical impact of a new CBT treatment for schizophrenia on a patient's quality of life, anxiety, depression level and insight (origin of the voices).

CHAPTER I

HYPOTHESIS AND RESEARCH QUESTIONS

The present single case study is based on the ABC cognitive model introduced by Ellis and modified by Chadwick, Birchwood and Tower (1996) to allow its application to schizophrenia. The main research question was therefore oriented toward the determination of the efficacy of the cognitive-behavioral treatment used with the client on quality of life, anxiety, depression and insight into the origin of her auditory hallucinations. Was the treatment effective at dealing with these delusions and auditory hallucinations coping difficulties relating to schizophrenia? Was there a reduction in distress, anxiety and depression? Was there an impact on the client's quality of life and insight into the origin of the auditory hallucinations and if there was, was it long-lasting?

1.1 Methodology

A single case study design was used in this research. The essence of a single-case design is the appraisal of a condition with continued assessment of the condition through the treatment period. For the purpose of this research, a classic single-case research design was used: A-B-A or **reversal** design. Each variable investigated that were identified previously was:

A- Assessed and quantified with two measurements of each variable in a baseline period of two weeks before treatment is introduced.

B- Treatment was then introduced with continuing measurements of variable at two specified intervals during treatment and once at the end of treatment.

A- Treatment ended but the measurements were continued at three, six and twelve months

follow up with the expectation that the treatment effect would be maintained (with a complete treatment total of eight measurements conducted from the start of the baseline period to the end of the follow up period).

The logic of the A-B-A design is that if the treatment (independent variable) is effective, there should be a positive change in the condition being measured (dependent variable) after treatment is introduced, and either an expected return to the baseline level when the treatment is withdrawn or a maintained therapeutic effect. The A-B-A single case experimental design was best suited to this research study and seemed sufficiently powerful to provide effective measurement of the chosen dependant variables. All other external variables (ex. Medication...) were monitored at specific intervals and maintained stable as much as possible considering that this treatment is dispensed in a natural environment.

1.2 Description of the participant

The participant is a 37 year old single woman who was diagnosed with schizophrenia at the age of 24. The diagnosis was established by a licensed psychiatrist and corroborated by the evaluation conducted by the actual researcher according to the DSM-IV spectrum. She is presently living with her parents in the State of Vermont; United States of America. The following considerations were used as inclusion criteria for the present case study research: She has been suffering from auditory hallucinations and delusional thinking for a sustained period of more than 10 years concurrent with pharmacological treatment consisting of many antipsychotic medications of first and second generation. These medications have been tried with the absence of significant effects on positive symptoms. She was and remained under a psychiatrist's monitored pharmacological treatment with the following medications during the whole cognitive-behavioral treatment including the follow up period: Topamax (100mg am, 150mg pm), Geodon (120mg twice per day), Lexapro (20mg per day), Clozaril (500mg at bedtime). No other use of psychoactive drugs or alcohol has been noted in the client history. She did not receive any previous psychological therapy or cognitive-behavioral treatment. A two hours meeting explaining the content and goals of the research was dispensed to the client and all her questions regarding the study and therapy involved were

answered. Written informed consent was obtained from the client and added to her clinical file at Northeast Kingdom Human Services, Newport, Vermont, U.S.A. (see consent form in appendix A).

1.3 Case formulation

The client's diagnostic presentation was typical of schizophrenia with paranoid features. The first episode of hallucinatory manifestation and delusional thinking appeared following her divorce at the age of 24. She was clearly suffering from delusional thinking and auditory hallucinations resistant to medication before treatment was started. Hallucination occurrence was around 5-10 identifiable differentiated manifestations per day at the start of therapy. Those hallucinations were mostly of auditory origin, taking the form of voices commenting on the client's physical perceived inadequacy, persecuting her and giving voice commands or warnings. The main theme underlying the voices content was always relating to the client's perceived social and general inadequacy, low self- esteem, physical shortcomings and general hopelessness. The main voice in this particular case was identified has the voice of Bill Clinton, former U.S. president and many of the voices identified were those of influential political figures. This relates to the perceived power of the voices (omnipotence) and their all knowing presentation (omniscience). The client was always commenting on the fact that the voices always knew everything about her and she often felt like resistance was futile (helplessness and hopelessness) in face of their perceived power and possible consequences of a non compliant behavior. Cognitive therapy was particularly effective at tackling these erroneous beliefs by progressive reduction of the perceived omnipotence of the voices. Some notable progress was made with the use of cognitive restructuration in regards to "Bill Clinton's" voice persecutory content where the client was finally able to recognize that it was improbable that a guy appearing to be so nice on TV could say such horrible things about her (that she was ugly, fat, not worth anything...). All these erroneous beliefs were tackled during therapy and gains were subsequently generalized to other voice content. Another turning point in the therapy evolution occurred with the use of the tape recorder technique where the realization that the voices were not

recorded on tape subsequently permitted some crucial gains into the insight regarding voices origin. These gains in insight with the recording technique were seen as a catalyst of further gains subsequently made with cognitive restructuration. Some visual hallucinations were noted but their occurrence was negligible. One such occurrence was reported when the client had a visual hallucination of razor blades on strings blocking her way to the bathroom following a voice command that she should not enter the bathroom or face dire consequences. These particular hallucinations appeared well into the therapeutic process and the client was able to use what she had learned to this point in therapy to tackle them. In this particular case, she imagined herself cutting the strings holding the razor blades and was able to rationalize the situation and tackle the relating erroneous beliefs. The client was then able to calm herself and enter the bathroom. Some delusional thinking had to be taken into consideration for the whole treatment duration. They mainly took the form of grandiose thinking and narcissistic idea of reference. One example of this was particularly interesting when the client came with the notion that she had invented a cure for cancer based on orange juice as a main ingredient. She was also cultivating the idea that the FBI was interested in her as an informant and was monitoring her. She often had the belief that some important political figures were directly addressing her while she was watching the news on TV (ideas of reference).

The majority of these delusional beliefs and hallucinations were dealt with during therapy and their occurrence although not totally eradicated, was seen as diminished to 2-3 identifiable occurrences per day during a period of many weeks with some fluctuations from week to week according to the amount of stress the client was subjected to. Her father was hospitalized at one point during therapy and a subsequent rise in hallucinatory activity was noted. This is in accordance with the Stress-vulnerability model that predicts more hallucinatory occurrences when the client is subjected to more stressors in a given period of time. Gains made during therapy were not only of a cognitive nature and many behavioral changes were noted. The client was ultimately able to return to the gym, stop smoking, go out in restaurants and dance in bars, work a few remunerated hours per week. She reported by the end of the therapy that she was generally feeling better, more empowered to face her disorder, having a better opinion of herself and her physical appearance, less depressive and

anxious, more aware of voices origin (insight) and more capable of enjoying life in general. At the 12 months follow up, the client was still reporting minimal hallucinatory activity with some delusional thinking. Therapeutic gains made during therapy seem to have maintained themselves has indicated by follow up measures (see psychometric results, table 2, figures 1-4).

1.4 Description of the cognitive-behavioral treatment used:

The procedures concerning this particular cognitive-behavioral treatment applied to delusions and hallucinations in schizophrenia was largely inspired by Chadwick et al., (1996) cognitive approach to psychotic disorder and the Hallucination focused integrative treatment introduced recently by Wiersma et al., (2004). The cognitive-behavioral approach and philosophy of Dr. David D. Burns (1999) also had a large influence in the elaboration and dispensing of the treatment.

Classic prerequisites usually applied in cognitive-behavioral therapy were followed: Establishment of a good therapeutic alliance, development of a collaborative empiricism (Beck et al. 1979), understanding of the client's unique situation, perspective and feelings (person oriented differential approach) and helping the client through the therapeutic work and change process. The ABC cognitive model was used as a background framework throughout treatment with the general principles of cognitive formulation and intervention previously mentioned (See Egan, 1990 for a complete description).
The treatment was specifically tailored for the client and was structured according to Chadwick et al. (1996) basic eight steps.

Therapy session numbers are provided only as a guideline and are not fixed. If one particular part of the therapy needed clarifying or an unexpected event occurred, it was the therapist prerogative to decide to prolong or shorten certain parts of the therapy according to his client's needs. All psychotropic medications received by the client during treatment were systematically monitored and weekly recorded to help normalize this variable and highlight

any possible modifications that could have had an impact on the client's behavior and/or therapy outcome. Inclusion of relatives in the treatment procedure was desirable and psycho education for the client and her family was introduced at the start of the therapy and integrated as required during sessions. Different coping techniques (Recording technique, self monitoring, incompatible behavior, sensory deception, counter stimulation, thought stopping) were used as necessary during therapy to help the client maintain control over potential arising of overwhelming positive symptoms and prevent possible psychotic breakdown or relapse. These techniques were also used from time to time as homework to complete and reinforce therapeutic content. Behavioral testing homework were specifically tailored and structured by the client in collaboration with the therapist to augment insight and diminish the beliefs relating to the power and omnipotence of the voices. It helped the client gain disconfirming evidence against distorted beliefs and developed alternative beliefs in the client's own power and status. All these techniques are designed to undermine the perceived voices power and status (feeling of omnipotence) and enable the individual to break free from the need to comply to the voices or appease them, thereby reducing distress (Byrne et al., 2006). An evaluation of treatment level attained table (see appendix B) was used to verify and confirm that treatment objectives were accomplished according to protocol (Trower et al., 2004). A resume table of therapy sessions and content can be found in appendix C, followed by the complete treatment manual in appendix D.

1.5 Psychometric instruments description

- World Health Organization Quality of Life schedule. The 26 items self-report version for the United States (WHOQOL-BREF, Bonomi, Patrick, 1997, updated 2003) was used as a pre (2 times before treatment), during (2 times), post (1 time at the end of treatment) and follow-up (after the end of treatment at 3, 6 and 12 months) measures. Two questions refer to quality of life and satisfaction with general health while the remaining 24 items are grouped into four domains (physical, psychological, social relationships and environment), each domain being measured an evaluated individually. The client has to rate her satisfaction (with life, support, etc.) or experience (of enjoying life, safety, etc.) on a five point scale over

the last 2 weeks. Total raw score is the sum of the 26 items for a maximum of 130. (See table 1 in appendix)

This quality of life psychometric test has been validated simultaneously in multiple world health organization international centers providing a wide range of differences in industrialization, available health services and other markers relevant to the measurements of quality of life; therefore it is assumed that the core domains and facets of quality of life included in the WHOQOL instrument are universal. The full and 26 items versions have been normalized and validated in the U.S in function of their stability (test-retest validity=Intraclass correlation coefficient>0.80 on all domains) reliability (internal consistency=alpha coefficient>0.80 on all domains), convergent validity and discriminant validity were established by ANOVA analysis with controls for extraneous factors (age and gender). Finally, factor analyses were conducted to demonstrate correlations within related domains.

- The Burns Depression Checklist (BDC) (Burns, 1984, from the feeling good handbook, 1996) was administered as a pre-, during, post- and follow-up measure. This psychometric instrument consists of 15 items scored on a Likert scale of 0-3 relating to the intensity of common depressive symptoms during the past two weeks. Total score is the sum of the 15 items for a maximum of 45. Five main degree of depression are identified from minimal or no depression (0-4) to severe depression (31-45). This instrument is largely used in clinical settings and was validated in an unpublished pilot study of 50 outpatients receiving treatment for mood disorders. Correlation between the BDC and the Beck Depression Inventory is high and the normalization was based on the corresponding scores of the subjects on the BDI.

- The Burns Anxiety Inventory (BAI) (Burns, 1984, from the feeling good handbook, 1996), was administered as a pre, during, post and follow-up measure. This psychometric instrument consists of 33 items scored on a Likert scale from 0-3 relating to the intensity of common anxiety symptoms during the past two weeks. Total score is the sum of the 33 items for a maximum of 99. Six main degree of anxiety are identified from minimal or no anxiety (0-4) to extreme anxiety or panic (51-99). This instrument is largely used in clinical settings

and was validated and normalized with 498 outpatients receiving treatment for mood disorders. The test has excellent reliability and internal consistency (Cronbach's coefficient alpha of 0.94) and test-retest correlation was established at 0.53 (P<.0001) in a group of 211 outpatients studied over a 12 week period.

- A direct measure of the client's insight into the origin of the auditory hallucinations (voices) was used to identify the voices perceived origin on a scale from 0-100 where 0 is a complete certitude that the voices are from an external origin (coming from an external source in reality) and 100 representing a complete certitude that the voices are internal to the client (originating and created by the client herself) and relating to schizophrenia symptomatology.

1.6 Statistical analysis

Quantitative statistical analysis was made on the WHOQOL four main domains individually and the two general quality of life question results using single case time series scoring algorithms (C statistic) to analyze the data and determine statistical significance of any therapy effect on quality of life. Single case time series was also used for quantitative analysis of the burns depression checklist, anxiety inventory and insight measure results to determine any therapy effect on these dimensions. The C statistic used in this application of time series calculations is done according to Paul Jones (2003) method to identify whether significant statistical change occurred following the introduction of clinical treatment. In any clinical research, three types of significance can be considered: practical, theoretical and statistical (Bloom, Fischer and Orme, 2003). Practical significance relates to whether there was sufficient change to make an effective difference in a person's life. Theoretical significance relates to whether the change is consistent with a particular theory. Statistical significance addresses the question of whether the observed change would be likely to have occurred by chance alone. All these types of significance are of importance to a clinical practitioner, but statistical significance remains the most elusive when it comes to single case studies with a sample base on a sole subject (n=1) Time series analysis allows the determination of evident statistical significant change. Nonetheless, the changes observed can only be attributed to the treatment itself when the research internal validity is assured by

a thorough and meticulous study design where external and extraneous variables are controlled and maintained constant as much as possible during the treatment period. The time series C statistic is the most convenient form of statistical analysis for single case research, since it makes few assumptions about the form of the data and its standard error is only a function of the number of available observations. The corresponding z score (ratio of C and standard error) can then be use to test for statistical significance and null hypothesis acceptance or rejection. Fundamentally, this type of time series using the C statistic identifies if there is evidence of a departure from random variations in a specific set of data as determined by serial dependency examination (Tryon, 1982). For example, there is no indication of significant departure from randomness in the following sequence: 5,5,5,5,4,5,4,5 and the C statistic would not be statistically significant. The following sequence: 1-2-3-4-5-6-7-8 is clearly departing from random fluctuation, and the C statistic would be statistically significant.

The basic formula for the C statistic calculation is (with the X array as each data point and [M.sub.x] as the mean of the X values):
C = 1 – [summation over (n-1/i =1)] [([X.sub.i] – [X.sub.i+1]).sup.2]/2 [summation over (n/i = 1)] [([X.sub.i] – [M.sub.x]).sup.2]

In this equation, the numerator is calculated by subtracting the data point that immediately follows it (X.sub.i+1) from each obtained data point (X.sub.i), squaring that difference (sup.2), and summing for the total of the n-1 calculations (summation over (n-1/i=1). For the denominator, after calculating the mean of the observations (M.sub.x), the difference between each observation (X.sub.i) and the mean (M.sub.x) is squared (sup.2). The squared differences are then summed (summation over (n/i=1)) and that total multiplied by 2.

This equation illustrates the basic characteristics of the C statistic where an evident departure from randomness would result in the sum of squared deviations from the mean to increase more rapidly than the sum of squared consecutive differences. The element to be subtracted from I in the formula becomes smaller and the resulting C statistic becomes larger. When the

sum of the squared deviations from the mean is equal to one half of the squared consecutive differences, the C statistic is zero (Tryon, 1982).

The standard error of the C statistic is calculated with the following formula:
[se.sub.c] = [square root of (n-2/(n-1)(n+1))]

The null hypothesis expected value of C is zero and the z statistic is typically evaluated with a one-tailed test of statistical significance where the null hypothesis acceptance represents a stable pattern (no significant change) and rejection of the null hypothesis suggesting there is a significant trend (significant change). Subsequently, if the number of observations (n) is equal or greater than 8, the critical z value for the one-tailed .05 level of significance is 1.64, obeying to the conventional standard normal distribution (Gaussian distribution).

Some Cautions and limitations of this form of statistical analysis are worth mentioning (Gorman and Allisson, 1997): the C statistic is not differentially sensitive to all types of deviations between baseline and treatment phases since the power of the C statistic is directly proportional to the number of observations. Nonetheless, this consideration is not exclusive to this form of statistical analysis but is a caveat in all types of statistical analysis at large. Statistical significance is sometimes not identified if baseline and treatment data have comparable slope but different intercepts and the C statistic is erroneously evaluated as statistically significant if data points from baseline through intervention are increasing as an exponential function. Tryon (1984) pointed out that exponentially increasing data would in fact represent a significant departure from randomness and that a significant value of C is expected when there is a change in slope alone or in both slope and intercept between baseline and intervention phases. The C statistic analysis should therefore be used only when there is no particular identifiable trend in the baseline period data (stable baseline data results). These limitations were considered in function of the acquired data characteristics of this single case research so data was properly screened to make sure these particular drawbacks were excluded. In resume, this single case research data points from baseline to intervention and follow up were not increasing as an exponential function and had a different slope. The baseline data results were non-fluctuating before treatment and considered stable.

Graphical presentations were made on all the psychometric data collected for each test with bar and line graphs since they are best suited to show the relation between two quantitative variables. All the psychometric tests used in this research were measuring quantifiable concepts that were expressed as ratio scaled dependant variables (WHOQOL, BAI, BDC and insight measure).

These statistical analysis and graphical representations were selected and preferred to other statistical methods because of their validity, fidelity and affinity with this specific research design and the nature of the data collected.

CHAPTER II

STATISTICAL RESULTS

After completion of the therapeutic phase and psychometric data collection for eight different moments including: two pretests, two during, one posttest and three follow up; the following results were obtained: (See table 2 in appendix). Note that for all the measures retained in this study, these eight moments of measurements were used as a constant and will not be noted in the X axis of subsequent figures. The critical level of significance and acceptance of the alternative hypothesis for all variables was established at P=.015 and constitutes a very thorough and stringent level of rejection or acceptance of the null hypothesis regarding each pertinent variables included in this study. The nature of this research (single case study) pressed the use of a more rigorous cutting point criterion to assure that the research had a stronger internal validity. The following identifiable external variables were maintained constant during the treatment period: Neuroleptic and other prescribed medications (Topamax, Geodon, Lexapro,Clozaril), other forms of psychological, social or environmental interventions other than the present research treatment, parental influence and support, client's social and everyday normal activities (were maintained fixed during the therapy). The data screening revealed no missing data, and the client completed the therapy successfully. The data distribution obeys a Gaussian (normal) curve for all the dependent variables measured.

Further analysis of the results using the previously described time series approach provided the following outcome for each of the measured dependant variable retained to verify the different hypothesis enunciated in the method section of this study:

2.1 Quality of life

The first two individual items from the WHOQOL-BREF concerning general quality of life and the four domains (see table 1 in appendix) were retained as the most relevant measures in the present study. Generally, the results obtained were encouraging and quality of life was seen as improving consistently during the therapy. Specific results concerning the global general quality of life as expressed in question one and two of the WHOQOL-BREF ("How would you rate your quality of life") showed a significant improvement (Mean=3.38, SD=0.92, C=0.83, z=2.69 and P=.004) and two ("how satisfied are you with your health") also significant (Mean= 3.75, SD=0.46, C=0.67, z=2.16 and P=.015). The most interesting results were obtained with the four domains of the WHOQOL-BREF and are illustrated in figure 2 following the four domains statistical analysis. Domain one, regarding physical capacity (see table 1 in appendix), was already in the acceptable range during the baseline period of measurements (71-75) since previous studies of healthy individuals present similar results (Mean=77). Nonetheless, significant improvements were observed during therapy and maintained during follow up evaluations (96, 96 and 100). It appears that the quality of life improvements in the physical domain are important (Mean=87.38, SD=11.88, C=0.80, z=2.59 and P=.005) and that the treatment had a statistically significant positive effect on this aspect of the client's quality of life (see figure 1).

Results regarding psychological quality of life are seen as encouraging. Previous research studies scores for healthy individuals at baseline assessment have a mean of 75 and are dropping to a mean of 61 for chronically ill patients. The subject of this study started at 42 during baseline assessment and went all the way up to 67 at post therapy assessment with maintaining effect observed at follow up (58, 63, 63). These scores are approaching what is seen in healthy individuals and the statistical significance of the gains obtained during therapy was noteworthy (Mean=55.88, SD=8.94, C=.75, z=2.42 and P=.008). The null hypothesis is thus rejected and we have to conclude that the therapy seems to have a statistically significant impact on the psychological quality of life of this particular research subject (see figure 1).

The client score for social quality of life during the baseline evaluation period (58) is comparable to what is usually seen in chronically ill patient (mean=57) and never fluctuated over this mark during or after therapy (follow up 42,50,58). Results regarding domain 3 pertaining to social quality of life were statistically non significant (Mean=53, SD=5.95, C=.03, z=.1 and P=.54). It seems that the treatment had no impact on the social quality of life of the client and that the results could not bring about the rejection of the null hypothesis for this domain (see figure 1).

Results regarding environmental quality of life present similar conclusions to those of social quality of life. One main difference is that the client's scores during the baseline evaluation period (78) were already over the expected score in healthy individuals (mean=71.7) compared to chronically ill patients (63.3). Results showed that the treatment had no statistically significant effect on the client's quality of life relating to her environment (Mean=86.38, SD=9.83, C=0.28, z=0.90 and P=.19). Nonetheless, the client's scores were already over what is expected for a healthy individual (78) before the therapy started and stayed over this mark for the duration of the therapy (see figure 1).

2.2 Anxiety

Anxiety levels for the client as measured during the baseline period (pretests 1 and 2) were found to be in the severe anxiety range (31-50). The anxiety levels during the therapeutic process were found to be decreasing gradually and consistently all the way up to the post test period where they were found to be in the minimal anxiety range (0-4). Gains regarding anxiety reduction were maintained during the follow up period at six, nine and twelve months. Time series with C statistic calculations (Mean=15.13, SD=15.01, C=0.78 and z=2.54) shows that the probability of obtaining similar results by chance is negligible (P=.006). The null hypothesis where results similar to these could be obtained randomly and are not representative of a significant therapeutic change must be rejected. The alternative hypothesis implying a significant impact of the therapy on the dependant variable must be retained. Hypothetically, if all external variables have been successfully controlled and

maintained stable during therapy, this statistically significant change observed in the anxiety levels has a high probability of being attributable to the therapy impact. A constant decrease in anxiety levels pre, during and post therapy was observed (see figure 2).

2.3 Depression

Depression levels for the client as measured by the BDC during the baseline period were found to be in the moderate depression range (21-30). Depression symptoms were observed especially in the early stage of therapy in the form of physical manifestations like reported chronic lack of energy but also a general lack of motivation.

The depression levels during the therapeutic process were found to be decreasing gradually and consistently and this decrease was observed even after the end of therapy during the follow up period where they were found to be in the minimal depression range (0-4) at the twelve months follow up. This suggests that the gains that were achieved during therapy were not only maintained at follow up but that some additional gains were achieved past the therapy duration. Time series analysis reveals a strong level of significance (Mean=10.50, SD=8.00, C=0.82 and z=2.65) with a subsequent critical probability that permits the rejection of the null hypothesis (P=.004). The alternative hypothesis must be retained and the treatment effect seems to be statistically significant when it comes to the therapeutic impact on the client's depression levels. A constant decrease in depression level from the baseline measurements, during therapy and all the way up to the twelve month follow up was observed (see figure 3).

2.4 Insight

The level of insight of the client regarding the origin of the auditory hallucinations and voices as an internally generated activating event (insight=100) or an activating event generated externally (insight=0) in reality, was one of the most interesting measure observed. Results obtained during the baseline period showed that the client was practically unaware

(insight=10) that she was the one generating the auditory hallucinations and voices that she was earring. Even though some significant improvements were observed during the therapy progression all the way up to the post test period (insight=70), the beliefs relating to the voices origin were seen as the most resistant aspect to tackle during therapy. Even though significant gains were made and sustained all the way up to the follow up period (insight=60-70), it appears that the client was unable to completely affirmed the internality of the auditory hallucinations and voices origin. Time series analysis reveals statistically significant results (Mean=46.25, SD=24.46, C=0.81, z=2.62 and P=.004) that enables the rejection of the null hypothesis. The alternative hypothesis must once again be accepted and it seems that this therapeutic approach had a statistically significant impact on the insight of this client regarding the origin of the voices. A significant evolution of the client's insight about the origin of the voices pre, during and post therapy was observed (see figure 4).

In resume, the therapy developed in this research appears to have had a statistically significant impact (as measured by time series analysis of the psychometric instruments results) on the following dependant variables: General quality of life (P=.004), General quality of life relating to health (P=.015), Physical quality of life (P=.005), Psychological quality of life (P=.008), Anxiety (P=.006), Depression (P=.004) and insight (P=.004). The following dependant variables results (as shown by time series analysis) were not statistically significant: Social quality of life (P=.54) and Environmental quality of life (P=.19).

CHAPTER III

DISCUSSION

3.1 Summary, integration and explanation of results

The main question regarding the present study was to determine the efficacy of the particular cognitive behavioral treatment used. Subsequent research questions were aimed at determining the effectiveness of this treatment when it comes to dealing with delusions and auditory hallucinations coping difficulties relating to schizophrenia. Did the subsequent reduction in distress and dysfunctional behaviors have an impact on the client's quality of life? Did this cognitive behavioral treatment have a positive impact on anxiety, depression and insight with a maintaining effect after the end of treatment?

The present results show that the cognitive behavioral treatment devised and administered to the subject was effective at increasing general quality of life. Quality of life in the psychological and physical domains were especially improved during therapy, with gains furthered or maintained six to twelve months after the therapy ended. The environmental quality of life levels of the subject were not significantly impacted by the therapy but are nonetheless noteworthy since they were elevated compared to the WHOQOL normalizations group results before the therapy started. This naturally elevated environmental quality of life for this particular subject could be seen as a potential facilitator or catalyst of the therapy effects. Social and environmental quality of life did not fluctuate significantly during the therapy course and no significant therapeutic impact was registered on these domains. These

results were expected since the client's social network was already very limited before treatment as is usually seen in individuals with schizophrenia. Furthermore, the devised treatment was structured to focus on the behavioral and psychological aspects of the client's quality of life more than the social and environmental facets. This is seen as a limitation of the therapeutic design that should be addressed in future researches and will be discussed subsequently. Results obtained regarding the quality of life of this subject are similar to those found in the literature with other researches using CBT with schizophrenia and are thus corroborating results found by Wiersma et al. (2004). The results are showing a therapeutic impact of this particular CBT treatment on the quality of life of this individual with schizophrenia. Even though this was a single case study, similar research results with experimental groups found similar effects of CBT therapies on people with schizophrenia (Bentall et al., 1996; Chadwick and Birchwood 1994, 1995; Chadwick et al., 1996; Turkington et al., 2002; Trower et al., 2004; Byrne et al., 2006).

The CBT treatment used also had a significant impact on the subject anxiety levels and seems to be effective at diminishing anxious symptoms. These results were corroborated by clinical observations of the client's behavior and the reported symptoms during the evaluation period. A significant level of anguish and distress was reported to the researcher before the start of the therapy relating to everyday life activities and especially in social settings where the client could potentially submit herself to her peers negative evaluations or critiques. The reported and measured post therapy anxiety levels were in the minimal to no anxiety range thus demonstrating a significant effect of the treatment on the subject. These results are to be linked to the measured social quality of life levels that remained low but stable during the whole therapy. The subject was in fact reluctant to engage in social activities and exchange with other people for fear of being judged or mocked previous to treatment dispensing. This lack of confidence and low self esteem were partially dealt with during therapy and should probably be the object of a secondary CBT therapy specifically aimed at those issues relating to social settings. With anxiety levels maintained under control, this complementary therapy could in turn enable more significant changes and gains in the client's social quality of life domain.

The therapy also had a significant impact on the subject depression symptoms and they were seen as diminishing steadily during treatment with maintaining effects after the six, nine and twelve months follow up. This diminution of depression level is seen as a potential catalyst of other therapeutic gains that were made during the therapy evolution. In fact, gains in one domain or improvements in a particular group of symptoms is seen as interrelated to one another and probably has an explicative value for the gains made with another domain or group. It is highly probable for example that the gains made regarding depression level had a synergetic effect with gains in other modalities and could enable the subject to be more conscientious, present and energetic during subsequent therapy sessions, furthering the therapeutic process or amplifying subsequent therapeutic gains. Even if there is an inter-correlation between the studied variables, gains made in each category or domains was significant taken on its own and properly illustrates the effectiveness of the treatment utilized in this research.

Lastly, the therapy was seen as having a significant and enduring impact on the client's insight relating to her hallucinations and delusions origin. Gains were first observed after a few sessions and important improvements were seen passed the midterm of the therapeutic process with maintaining effects during follow-ups. These insight improvements were seen as crucial to the advancement of the cognitive aspects of the therapy since a majority of the therapeutic concepts and foundational precepts were based on the acknowledgement that hallucinations and delusions were a product of the subject herself and not coming from an external stimulus in reality. These gains regarding the subject insight in the first part of therapy provided the necessary platform for subsequent cognitive restructuration and permitted a more effective challenging of structural cognitions and core beliefs. The present research results designate the subject insight into the origin of hallucinations and delusions has a key element of therapeutic progress has it was also reported by other researchers (Turkington et al., 2002; Trower et al., 2004; Byrne et al., 2006). Core beliefs relating to hallucinations and delusions with this schizophrenia subject were found to be the most challenging and resistant cognition to tackle during therapy. A warning should be issued regarding the future use of this type of therapy to be careful to early reactions of client's with schizophrenia to the challenging of these beliefs. Not only are they quite resistant but

cognitive restructuration must be undertaken with the outmost care so it does not engender excessive emotional distress that could break down or inhibit the therapeutic process.

This single case study statistical time series results clearly shows that the dependant variables fluctuations observed during treatment were not attributable to randomness and are mostly attributable to the therapeutic effect of the treatment. The assertion of an unambiguous causality between the treatment and the dependant variables is a limit of this type of single case study but at least a very strong correlation must be acknowledged in this particular case. This being said, there was no doubt that many practical gains were made and documented during the therapy progression as predicted and in concordance with this particular research theoretical approach.

3.2 Implications of findings

The present single case study results have multiple implications. The first and foremost implication is the practical significance of such a cognitive behavioral treatment for clients struggling to cope with schizophrenia symptoms. The present study subject was able to go from strongly inhibitive levels of anxiety and depression at pre treatment to almost normal levels at post treatment and follow up. The same can be said regarding her level of insight into the origin of the hallucinations and delusions that were virtually restraining her from doing many activities that are taken for granted by people in general. These gains had numerous implications in the client's life since they were enabling her to start to take action where it was almost impossible to do so previous to treatment. Examples of this can be found in the client capacity to eventually go back to the gym, go dancing during the weekends and get out with a friend in a public place like a restaurant without having to evade the situation because of her positive symptoms. This acquired resistance to hallucinations, delusions and especially voice commands following treatment enabled the client to take part in many activities that were systematically sabotaged and practically inaccessible to her in the past. All these everyday life activities were impacted at different levels by the gains she made during the therapy advancement.

Some hypotheses could emanate from the findings that were made during the administration of the clinical treatment and following the obtained results. The first one relates to one of the core implications of clinical cognitive approaches to treatment in schizophrenia. It seems, following observations of treatment evolution with this particular client that her gains concerning cognitive aspects relating to her level of insight into the origin of hallucinations and delusions were adamant to further therapeutic progress in all other aspects. It appears after review of the order in which progress was registered during clinical observations that gains regarding the client's insight into the origin of the auditory hallucinations could be precursors to the recorded reductions in depression, anxiety levels, enhanced psychological and general quality of life. These findings suggest that cognitive modifications of the interpretations that the client is making in regards to hallucinations and delusions seem to have a direct impact on her subsequent decisions and behavioral reactions. Similar results were found by Byrne et al., (2006) in accordance to Bentall (1996) affirmation that psychotic symptoms are as much a manifestation of cognitive origin as any other etiological source. Ultimately we are brought back to Green's (2003) conclusion that the predisposition for schizophrenia may be of genetic basis but whether or not this predisposition develops into schizophrenia is depending on many other factors that are not of genetic origin. Cognitive factors seemed of primordial importance in the modulation of the client's psychotic and behavioral patterns as much as it is a primordial factor in many other clinical conditions like depression or anxious disorders. This brings new light on the main erroneous arguments that were previously denounced by Bentall (1996) about the assumption that psychotic symptoms, because they reflect anatomical and physiological abnormalities in the brain, are not meaningful and the assumption that psychotic disorders can be divided into a small number of discreet syndromes or symptoms clusters. This emphasizes the need to adopt a more eclectic view of schizophrenia's treatment as much as it's clinical conceptualization and illustrates more clearly the importance to shift from the conventionally accepted symptoms model of schizophrenia to the person's model that inspired the creation of the treatment that was used in the present research.

The research implications of this single case study are mainly relating to the clinical aspects of schizophrenia and the development of further effective cognitive behavioral treatment for

schizophrenia and other psychotic disorders. It is now well accepted by the scientific community that schizophrenia treatment is not the exclusive panacea of pharmacological approaches and that other clinical approaches like cognitive behavioral therapy are also justified and indicated. This clinical single case study main objective was to incorporate and synthesize previous researches findings and clinical approaches (Chadwick et al., 1996; Wiersma et al., 2004; Byrne et al., 2006) pertaining to effective cognitive behavioral treatment of schizophrenia to design a new clinical approach that could maximize treatment effect and enhance as most as possible the client's symptoms coping capabilities. The incorporation of these different cognitive and behavioral clinical models mainly of Scandinavian (Wiersma et al., 2004) and British (Chadwick et al., 1996; Byrne et al., 2006) origin into a comprehensible unified approach enabled the tackling of this particular subject difficulties in a more effective and constructive way. This new clinical synthesized approach utilized the behavioral aspects of the Scandinavian way of providing therapy for psychosis to enhance and promote the gains obtained using the British traditional cognitive models for schizophrenia treatment that constituted the main stratum on which this new treatment was developed. Further testing with a bigger sample of subject could corroborate the present findings and further justify the implantation of such multi-angled treatment as an effective way of complementing actual modalities of treatment already dispensed in our community.

The present study treatment objectives were aimed mainly at the positive symptoms of schizophrenia as it is mostly the case in the literature and previous researches in this particular field. Nonetheless, it seems that research aimed at the impact of cognitive behavioral treatment on the negative symptoms of schizophrenia could also be justified, produce interesting results and open new avenues for cognitive clinical psychology. In fact, negative symptoms representing a loss or a decrease in the ability to initiate plans, express emotion, or find pleasure in everyday life activities were reported by the client at multiple occasions to be improving as positive symptoms gains were made during therapy. This could suggest a closer link between positive and negative schizophrenia symptomatology than was previously presumed and imply the possibility that cognitive approaches could also have an impact on some of the negative symptoms relating to schizophrenia. These speculations are based only on clinical observations that were made during the therapy evolution and negative

symptoms variables would have to be systematically measured or monitored in a future research to come to any significant conclusions. The possible link between these two groups of symptoms still viewed as separated by some theoretical models should be investigated.

3.3 Limitations

Since this research was based on a single case study, some limitations have to be taken into account. The first one regards the generalization of the findings to a larger population. Since this research was on a single subject, extrapolation of the results to the people with schizophrenia at large is usually seen as not warranted or desirable. Other researches results mentioned previously are often seen as more suited when it comes to external validity for the generalization of findings to a larger population. These group researches can nonetheless provide a frame of comparison for the present single case study so more general affirmations can be formulated through comparison with their findings. On the other hand, this single case study provides a more deepen and profound look into the clinical aspects of schizophrenia with more emphasis on the individual compared to bigger studies that have a tendency to even out important individual differences or make them disappear altogether. Since the essence of external validity is found in replication both in single case and traditional group designs, it could be argued that multiple single case studies could contain more scientific value than one conducted with multiple subjects. More information for inferential decisions about possible causative influences could be obtained with a series of 15 baseline plus intervention single case studies in which random variations has been ruled out with time series analysis than with a typical pretest-posttest control group design with $n = 15$ (Jones, 2003). The time series analysis for single case studies used in this research has for primary purpose to establish statistical significance and thus exclude to a certain preset degree the possibility that observed changes were the results of random variations. This by itself does not implicate direct causation of the treatment effect on the dependent variables fluctuations measured by the psychometric instruments if extraneous and external variables are not closely monitored, excluded and/or maintained stable during the whole treatment phase, including the follow up period. It is exactly the same scenario with group studies and

in fact all scientific studies must abide with this inconvenience. Thus, the use of a single case study design is not more or less affected by this than any other scientific design. Besides the fact that a n=1 single case design has obviously less power than a design with a more numerous sample, it is difficult to imagine why researchers are still according less credibility to single case research procedures since the same external variables control measures to assure external validity in group studies are implemented.

The internal validity of this single case research was established according to the usual rules applying to the scientific research field in general. All other treatments including the pharmacological treatment dispensed to the client were closely monitored and maintained stable during the whole therapeutic intervention and follow up period. Since this research was conducted in a natural environment (not in a laboratory setting), some added difficulties in maintaining all extraneous variables were to be considered. Nonetheless, usually found external variables were either excluded or maintained stable as much as possible considering the natural setting of the experiment. Strict directives were provided for all care providers and family members so their impact on this single case CBT treatment results could be considered negligible to inexistent. The choice of the psychometric measures used in this study was made after many considerations that could in some instances be considered as limitations but also had some significant advantages. The use of the WHOQOL brief version instead of the original version had some limitations especially when it comes to its resistance to minor variations in response patterns. In the social quality of life section for example, even though registered variations were not significant, a fewer number of item responses change could make the score fluctuate more easily than in the original full version. That could account for the observed score change from the first follow up measure to the third one for example. The use of the original version would have alleviated this problem but would have also put an undesirable burden on the client when it comes to the amount of time required to fill the whole battery of psychometric instruments that had to be administered eight times during therapy. The same argument justifies the use of the direct insight measure, the BDC and the BAI since they were quickly and easily administered and still had excellent internal and external validity. Even the most sophisticated group research designs cannot rule out all possible extraneous influences and the present research cannot have the pretention

that it has eliminated all of them. Nonetheless, all possible precautions were taken to tackle the majority of the more significant external variables. As such, limitations usually attributable to this kind of single case design were avoided or circumvented by a scientific and rigorously implemented design where time series statistical analysis was used to provide objectivity.

3.4 Future directions

Research regarding clinical treatment for psychosis is a field in ebullition with great promises and challenges. Some of the more important questions are still waiting to be answered and many research avenues need to be explored before we can attain a complete comprehension of the clinical aspects of schizophrenia and all its intricate mechanisms and components interactions. One of the major questions still with few answers is in regard to the link between psychotic negative and positive symptoms, their interrelation and the potential clinical interventions that could provide some additional relief for people suffering from schizophrenia and potentially other disorders of psychotic origin or disorders presenting associated similar positive symptoms. Environmental and social aspects of the life of people with schizophrenia is also a primordial question of interest for research since there is still a lot of questions unanswered and a lot of possibilities for the development of clinical approaches aimed specifically at those characteristics. It would be interesting to use some general cognitive and behavioral approaches like social skills, assertiveness, communication and self esteem oriented therapy, group therapy and family interventions as an adjuvant to the approach developed in this research and see if social and environmental quality of life would further improve. More research is also warranted into the insight of people with schizophrenia regarding the beliefs about the origin of hallucinations and delusions since this concept appears to be of prime importance in making clinical progress with schizophrenia clients. A new way of approaching therapy for people with psychosis should center its focus on this notion of insight and beliefs regarding voices and hallucinations. Some interesting results were already produced by a few researchers (Trower et al., 2004; Byrne et al., 2006) regarding insight and the beliefs of people with schizophrenia but a lot remains to be done.

Cognitive behavioral therapies should always have for main objective the relief of distress and troublesome behavior and the return of the client to functionality. This is exactly what the clinical approach devised in this research seems to have achieved for this particular subject suffering from schizophrenia. The key to further research in this domain appears to be residing in the beliefs the client has about voices, hallucinations and delusions origins; to identify the factors and trajectories that govern these beliefs development; to enable further enhancements of existing clinical approaches and permit the development of new innovative therapies.

REFERENCES

- Abramson, L.Y., Seligman, M.E.P. and Teasdale, J.D. (1978). Learned helplessness in humans: Critique and reformulation. *Journal of Abnormal Psychology*, 27, 49-74.

- Akbarian, S., Kim, J.J., Potkin, S.G., Hetrick, W.P., Bunney, W.E., and Jones, E.G. (1996). Maldistribution of interstitial neurons in prefrontal white matter of the brains of schizophrenic patients. *Archives of General Psychiatry*, 53, 425-436.

- Asaad, G. and Shapiro, M.D. (1986). Hallucinations: theoretical and clinical overview. *American Journal of Psychiatry*, 143, 1088-1097.

- Beck, A.T. (1952). Successful outpatient psychotherapy of a chronic schizophrenic with a delusion based on borrowed guilt. *Psychiatry*, 15, 305-312.

- Beck, A.T. (1976). Cognitive therapy and the emotional disorder. New York: International Universities Press.

- Beck, A.T., Rush, A.J., Shaw, B.F. and Emery, G. (1979). Cognitive therapy of depression. New York: Guilford.

- Beck, A.T., Rector, N.A. (2003). A Cognitive Model of Hallucinations. *Cognitive therapy and research*, 27, 19-52.

- Bellack, A. (1992). Cognitive rehabilitation for schizophrenia: Is it possible? Is it necessary? *Schizophrenia Bulletin*, 107, 82-95.

- Bentall, R.P. (1990). The illusion of reality: A review and integration of psychological research on hallucinations. *Psychological Bulletin*, 107: 82-95.

- Bentall, R.P. (1994). Cogntitive biases and abnormal beliefs: Towards a model of persecutory delusions. In: A.S. David and J. Cutting (eds), The neuropsychology of schizophrenia. London: Lawrence Erlbaum Associates.

- Bentall, R.P. (1996). From cognitive studies of psychosis to cognitive-behaviour therapy for psychotic symptoms. In: G. Haddock and P.D. Slade (eds), Cognitive-behavioral interventions with psychotic disorders. New York: Routledge.

- Bentall, R.P., Claridge, G. and Slade, P.D. (1989). The multidimensional nature of schizotypal traits: A factor analytic study with normal subjects. *British Journal of Clinical Psychology*, 28, 363-375.

- Bentall, R.P., Jackson, H.F. and Pilgrim, D. (1988). Abandonning the concept of schizophrenia: Some implications of validity arguments for psychological research into psychotic phenomena. *British Journal of Clinical Psychology*, 27, 303-324.

- Bentall, R.P., Kinderman, P. and Kaney, S. (1994). Cognitive processes and delusional beliefs: Attributions and the self. *Behaviour Research and Therapy*, 32, 331-341.

- Berrios, G. (1991). Delusions as wrong beliefs: A conceptual history. *British Journal of Psychiatry*, 159, 6-13.

-Blatt, J., S. and Zuroff, C., D. (1992). Interpersonal relatedness and self definition: Two prototypes for depression. *Clinical psychology review*, vol.12, 5, 527-562.

- Bleuler, E. (1911/1950). Dementia praecox or the group of schizophrenias. New York: International Universities Press.

- Bloom, M., Fischer, J., and Orme, J. G. (2003). Evaluating practice: guidelines for the accountable professional (4th ed.). New York: Allyn and Bacon, Pearson Education.

- Bonomi A.E., Patrick, D.L. (1997). User's manual and interpretation guide for the united States version of the World Health Organization Quality of Life (WHOQOL) instrument. Seattle, WA: U.S. WHOQOL Center.

- Breggin, P. (1991). Toxic psychiatry. London: Fontana.

- Brenner, H.D., Hodel, B., Genner, R., Roder, V., and Corrigan, P.W. (1992). Biological and cognitive vulnerability factors in schizophrenia: Implications for treatment. *British Journal of Psychiatry*, 161, 154-163.

- Brown, W.A. and Herz, L.R. (1989). Response to neuroleptic drugs as a device for classifying schizophrenia. *Schizophrenia Bulletin*, 15, 123-128.

- Burmeister , M. (1999). Basic concepts in the study of diseases with complex genetics. *Biological Psychiatry*, 45, 522-532.

- Burns, D.D. (1999). The feeling good handbook (Rev. ed.). New York, Plume.

- Burns D.D. (1996). The Burns Depression Checklist (BDC) and the Burns Anxiety Inventory (BAI). From: The feeling good handbook. Copyright© 1996 by David D. Burns.

- Byrne, S., Birchwood, M., Trower, P., Meaden, A. (2006). A Casebook of Cognitive Behaviour Therapy for Command Hallucinations: A Social Rank Theory Approach. New York, Routledge.

- Chadwick, P. and Birchwood, M. (1994). The omnipotence of voices. A cognitive approach to auditory hallucinations. *The British Journal of Psychiatry* 164, 190-201.

- Chadwick, P. and Birchwood, M. (1995). The omnipotence of voices II: The beliefs about voices questionnaire. *British Journal of Psychiatry,* 166, 11-19.

- Chadwick, P.; Birchwood, M. and Trower, P. (1996). Cognitive therapy for delusions, voices and paranoia. Chichester: Wiley.

- Chapman, JP, Chapman, LJ, Kwapil, TR. (1995). Scales for the measurement of schizotypy. In Raine, A, Lencz, T, Mednick, SA (Eds.). Schizotypal Personality New York, NY Cambridge University Press, 79–106.

- Ciompi L. (1997). The concept of affect logic: An integrative psycho-socio-biological approach to understanding and treatment of psychiatry. *Psychiatry* 60, 158-170.

- Claridge, G. (1990). Can a disease model of schizophrenia survive? In R.P. Bentall (Ed.), Reconstructing schizophrenia. London: Routledge.

- Claridge, G. (1997). Schizotypy. Implications for Illness and Health. New York, NY Oxford University Press.

-Claridge, G. and Beech, T. (1995). Fully and quasi-dimensional constructions of schizotypy. In Raine, A, Lencz, T, Mednick, SA (Eds.). Schizotypal Personality New York, NY Cambridge University Press.

- Claridge, G, McCreery, C, Mason, O, Bentall, R, Boyle, G, Slade, P, Popplewell, D. (1996). The factor structure of 'schizotypal' traits: A large replication study. *British Journal of Clinical Psychology* 35, 103–115.

- Csernansky, J.G., and Grace, A.A. (1998). New models of the pathophysiology of schizophrenia: Editors' introduction. *Schizophrenia Bulletin,* 24, 185–187.

- Dohrewend, B.P., Levav, I., Shrout, P.E., Schwartz, S., Naveh, G., Link, B.G., et al. (1992). Socioeconomic status and psychiatric disorders: The causation-selection issue. *Science,* 255, 946-951.

- Egan, G. (1990). The skilled helper: A systematic approach to effective helping. Monterey, CA: Brooks/Cole.

- Ellis, A. (1994). Reason and emotion in psychotherapy. New York: Lyle Stuart.

- Finn, S.E., Bailey, J.M., Schultz, R.T. and Faber, R. (1990). Subjective utility ratings of neuroleptics in treating schizophrenia. *Psychological Medicine 20,* 843–848.

- Garety, P.A. (1991). Reasoning and delusions. *British Journal of Psychiatry*, 159, 14-18.

-Garety, PA and Freeman, D. (1999). Cognitive approaches to delusions: A critical review of theories and evidence. *British Journal of Clinical Psychology,* 38, 113–154.

- Garety, PA and Hemsley, DR. (1994). Delusions: Investigations into the Psychology of Delusional Reasoning. Hove, U.K Psychology Press.

- Garety, P.A., Kuipers, E., Fowler, D., Freeman, D. and Bebbington, P.E. (2001). A cognitive model of the positive symptoms of psychosis. *Psychological Medecine*, 31, 189-195.

- Gilbert, P. (1992). Depression: The evolution of powerlessness. Hove: Lawrence Erlbaum.

- Gorman, B. S. and Allison, D.B. (1997). Statistical alternative for single-case design. In R.D. Franklin, D.B. Allison and B.S. Gorman (Eds.), design and analysis of single case research, 159-214. Hillsdale, NJ: Erlbaum.

- Gould, R.A., Mueser, K.T., Bolton, E. et al. (2001). Cognitive therapy for psychosis in schizophrenia: an effect size analysis. *Schizophrenia Research*, 48, 335-342.

- Grace, A.A. (1992). The depolarization block hypothesis of neuroleptic action: Implications for the etiology and treatment of schizophrenia. *Journal of Neural Transmission.* 36, 91–131.

-Green, M.F. (2003). Schizophrenia Revealed: From Neurons to Social Interactions. New York, W.W. Norton and Company.

- Guze, S.B. (1989). Biological psychiatry: is there any other kind? *Psychological Medicine,* 19, 315-323

- Hathaway, S.R. and McKinley, J.C. (1997). Minnesota Multiphasic Personality Inventory-2. Copyright© The regents of the University of Minnesota.

- Helmes, E. and Landmark, J. (2003). Subtypes of Schizophrenia: A Cluster Analytic Approach. *Canadian Journal of Psychiatry*, 48, 702-708.

- Huq, S.F., Garety, P.A., Hemsley, D.R. (1988). Probabilistic judgements in deluded and non-deluded subjects. Journal of Experimental Psychology, 40, 801-812.

- Hyman, S. E. (1999). Introduction to the complex genetics of mental disorders. *Biological Psychiatry*, 45, 518-521.

- Jaspers, K. (1962). General Psychopathology. Chicago: University of Chicago Press.

- Jones C, Cormac I, Silveira da Mota Neto JI, Campbell C. (2004). Cognitive behaviour therapy for schizophrenia. *The Cochrane Database of Systematic Reviews*, 4. Art. No.: CD000524

- Jones, W. P. (2003). Single-case time series with Bayesian analysis: A practitioner's guide. *Measurement and evaluation in counseling and development*, 36, 28-39.

- Kendler, K.S., and Diehl, S.R. (1993). The genetics of schizophrenia: A current, genetic-epidemiologic perspective. *Schizophrenia Bulletin*, 19(2), 261-285.

- Kendell, R.E. (1989). Clinical Validity: The Validity of Psychiatric Diagnosis. New York: NY Raven Press.

- Kingdon, D.G. and Turkington, D. (1994). Cognitive-behavioral therapy of schizophrenia. Hove: Lawrence Erlbaum.

- Klimidis S., Stuart G.W., Minas I.H., Copolov D.L. and B.S. Singh. (1993). Positive and negative symptoms in the psychoses: Re-analysis of Published SAPS and SANS Global Ratings. *Schizophrenia Research*, 9, 11-18.

- Kraepelin, E. (1971). Dementia Praecox and paraphrenia. Huntington, New York: Robert E. Krieger.

-Linehan, M. M. (1993). *Cognitive-Behavioral Treatment of Borderline Personality Disorder*. New York: Guilford Press.

- Lipska B.K., Weinberger D.R. (2000). To model a psychiatric disorder in animals: Schizophrenia as a reality test. *Neuropsychopharmacology* 23, 223-239.

- Long, A. (2002). Epictetus: A Stoic and Socratic Guide to Life. Oxford: University Press.

- Maher, B.A. (1974). Delusional thinking and perceptual disorder. *Journal of Individual Psychology*, 30, 98-113.

- McGuffin, P., Owen, M. J., and Farmer, A. E. (1995). Genetic basis of schizophrenia. *Lancet,* 346, 678–682.

- Minas I.H., Stuart G.W., Klimidis S., Jackson H.J. , B.S. Singh and Copolov D.L. (1992) Positive and negative symptoms in the psychoses: Multidimensional scaling of SAPS AND SANS items. *Schizophrenia Research.*, 8, 143-156.

- Morrison A. P., Renton J.C., Williams, S., Dunn, H., Knight, A., Kreutz, M., Et al. (2004). Delivering cognitive therapy to people with psychosis in a community mental health setting: an effectiveness study. *Acta Psychiatrica Scandinavica*, 110, 36.

- Mueser, K.T. and Noordsy, D.L. (2005). Cognitive Behavior Therapy for Psychosis: A Call to Action. *Clinical Psychology: Science and Practice*, 12, 68-71.

- Murray, C.J.L. and Lopez, A.D. (Eds). (1996). The global burden of disease. Boston: Harvard School of Public Health.

- National Institute of Mental Health (NIMH), (2005). Schizophrenia.

- Olie, J. P., and Bayle, F. J. (1997). New chemotherapy approaches to psychoses. *Encephale,* 23, 2–9.

- Owens, D.G.C., Miller, P., Lawrie, S.M. and Johnstone, E.C. (2005). Pathogenesis of schizophrenia: a psychopathological perspective
British Journal of Psychiatry, 186, 386-393.

- Pilling, S., Bebbington, P., Kuipers, E., *et al* (2002). Psychological treatments in schizophrenia. I: Meta-analysis of family intervention and CBT. *Psychological Medicine*, 32, 763–782.

- Pope H.G., Jonas J., Cohen B., Lipinski J.F. (1982): Failure to find evidence of schizophrenia in first degree relatives of schizophrenic probands. *American Journal of Psychiatry*, 139, 826-828.

- Portin, P., and Alanen, Y.O. (1997). A critical review of genetic studies of schizophrenia. II. Molecular genetic studies. *Acta Psychiatrica Scandinavica, 95*, 73–80.

- Rector, N. and Beck, A.T. (2001). Cognitive-behavioral therapy for schizophrenia: an empirical review. *Journal of Nervous and Mental Disease*, 189, 278-287.

- Rice, D.P. (1999). The economic impact of schizophrenia. *Journal of Clinical Psychiatry*, 60, 4-6.

- Romme, M.A., Escher, S. (1989). Hearing voices. *Schizophrenia bulletin*, 15, 209-216.

- Russo, J., Vitaliano, P.P., Brewer, D.D., Katon, W., and Becker, J. (1995). Psychiatric disorders in spouse caregivers of care recipients with Alzheimer's disease and matched controls: A diathesis-stress model of psychopathology. *Journal of Abnormal Psychology,* 104, 197–204.

- Saraceno, B., and Barbui, C. (1997). Poverty and mental illness. *Canadian Journal of Psychiatry,* 42, 285–290.

- Sarbin, T.R., and Mancuso, J.C. (1980). Schizophrenia: Medical diagnosis or moral verdict? New York: Praeger.

- Sellen, J.L., Oaksford, M. and Gray, N.S. (2005). Schizotypy and Conditional Reasoning. *Schizophrenia Bulletin,* 31, 105-116.

- Shapiro, M.B. and Ravenette, A.T. (1959). A preliminary experiment on paranoid delusions. *Journal of Mental Science*, 105, 296-312.

- Sims, A. (1997). Commentary on "Spiritual Experience and Psychopathology". *Philosophy, Psychiatry and Psychology*, 4, 79-81.

- Sensky, T., Turkington, D., Kingdon, D., et al. (2000). A randomized controlled trial of cognitive–behavioral therapy for persistent symptoms in schizophrenia resistant to medication. *Archives of General Psychiatry*, 57, 165 –172

- Slade, P.D. and Bentall, R.P. (1988). Sensory Deception: A Scientific Analysis of Hallucination. Chichester: Wiley.

- Spaulding, W. D. (1997). Cognitive models in a fuller understanding of schizophrenia. *Psychiatry,* 60, 341–346.

- Strauss, J.S. (1991). The person with delusions. *British Journal of Psychiatry*, 159, 57-62.

- Suslow, T., Schonauer, K. and Arolt, V. (2001). Attention training in the cognitive rehabilitation of schizophrenic patients: a review of efficacy studies. Acta Psychiatrica Scandinavica, 103, 15.

- Tarrier, N. (1992). Management and modification of residual positive psychotic symptoms. In M. Birchwood and N.Tarrier (Eds). Innovations in the psychological management of schizophrenia. Chichester: Wiley.

- Tarrier, N., Beckett, R., Harwood, S. et al. (1993). A trial of two cognitive-behavioral methods of treating drug resistant residual psychotic symptoms in schizophrenia patients. *British Journal of Psychiatry*, 162, 524-532.

- Torrey, E.F. (2001). Surviving schizophrenia. New York, Quill.

- Trower, P., Birchwood, M., Meaden, A., Byrne, S., Nelson, A., Ross, K. (2004). Cognitive therapy for command hallucinations: Randomised controlled trial. *British Journal of Psychiatry*, 184, 312-320.

- Trower, P. and Chadwick, P. (1995). Two pathways to defense of the self: a cognitive theory of paranoia. *Clinical Psychology: Research and Practice*, 2, 263-278

- Tryon, W. W. (1982). A simplified time series analysis for evaluating treatment interventions. *Journal of Applied Behavior Analysis*, 15, 423-429.

- Tryon, W. W. (1984). A simplified time series analysis for evaluating treatment interventions: A rejoinder to Blumberg. *Journal of Applied Behavior Analysis*, 17, 543-544.

- Turkington, D., Kingdon, D. and Chadwick, P. (2003). Cognitive-behavioral therapy for schizophrenia: filling the therapeutic vacuum. *The British Journal of Psychiatry,* 183, 98-99.

- Turkington, D., Kingdon, D. and Turner, T. (2002). Effectiveness of a brief cognitive-behavioral therapy intervention in the treatment of schizophrenia. *British Journal of Psychiatry*, 180, 523-527.

- Van Os, J., and Marcelis, M. (1998). The ecogenetics of schizophrenia: A review. *Schizophrenia Research,* 32, 127–135.

- Waldinger, R.J. et al., (2003). Attachment and core relationship themes: Wishes for autonomy and closeness in the narratives of securely and insecurely attached adults. *Psychotherapy Research* 13, 77–98.

- Warner, R. (1985). Recovery from schizophrenia: Psychiatry and Political Economy. London, England: Routledge and Kegan Paul.

- Wessler, R.A., Wessler, R.L. (1980). The Principles and Practice of Rational Emotive Therapy. San Francisco: Jossey Bass.

- Wiersma, D., Jenner, J.A., Nienhuis, F.J., Willige G. (2004). Hallucination focused integrative treatment improves quality of life in schizophrenia patients. Acta Psychiatrica Scandinavica, 109, 194-201.

- Zigler, E., and Glick, M. (1988). Is paranoid schizophrenia really camouflaged depression? *American Psychology*, 43, 284-290.

APPENDIX A

CONSENT FORM

Informed Consent to Participate in a Case Study on:
A single case experiment for cognitive-behavioral treatment of auditory hallucinations in schizophrenia.

Researcher Name: Eric Quintin
Psychology Doctoral Student at the University of Quebec in Montreal.

PURPOSE AND BACKGROUND

You are invited to participate in this study because you have recently completed a cognitive-behavioral hallucination focused treatment with Eric Quintin during his clinical internship at Northeast Kingdom Human Services (NKHS), Newport, Vermont, USA. There are two main purposes for this research. Firstly, Mr Quintin and his research supervisors are interested to assess the application of the therapy for consumers who, like yourself, received this through a community mental health agency rather than through a university or hospital research setting. Your feedback could be very useful in contributing to the knowledge on what therapies are or are not effective for other consumers who have schizophrenia. The second purpose of this research is so Mr Quintin, like other psychology clinicians before him, can complete his doctoral training in psychology. Your contribution toward his training is much appreciated.

Mr Quintin, in undertaking this research, will be supervised by Dr. Claude Belanger, Ph.D (Professor of Psychology at the University of Quebec in Montreal, Canada) and Dr. Bernard F. Norman, Ph.D (Director of Community Rehabilitation and Treatment Services, NKHS, Newport, Vermont, USA).

PROCEDURES

You received the therapy at the request of your NKHS clinical team to meet your particular needs. However, you are by no means obliged to participate in this follow-up research and you are most welcome to ask questions before doing so.

The procedures are quite straight forward in that Mr Quitin will ask for your consent (by signing this form) to use the information gathered during your therapy and recorded in your NKHS file. No identifying names or other identifying personal information will be used. You will also be asked to complete a short questionnaire regarding the outcome and your degree of satisfaction with the results of the therapy and another Quality of Life Questionnaire.

So, to summarize, if you agree to participate in this research the following will happen:

-You will be asked to sign a release of information consent form.
-You will be asked to complete a short questionnaire regarding your degree of satisfaction regarding the treatment impact and outcome.
-You will be asked to complete the World health Organization Quality of Life Questionnaire (As a post test measure) if not already completed.

RISKS

No names, identities or identifiable information will be used in any published reports of the research. The research data will be kept in a secure location and only the researcher and your treatment team members will have access to the data. At the conclusion of the study, all identifying information will be removed and the data will be kept in a locked cabinet or office. There is a risk of mild discomfort or anxiety due to the nature of the questions asked; however, the participant can answer only those questions he/she chooses to answer, and can stop participation in the research at any time. The data acquired through this research may be used in the future only for treatment or research purposes consistent with the original purpose of the research stated in this consent document.

DIRECT BENEFITS

There will be no direct benefits to you for participating in this research besides the psychological benefits obtained through the therapy sessions already dispensed. By participating in this research you are contributing to the advancement of the knowledge bank and treatment development for people with schizophrenia that are suffering from auditory hallucinations and are not responding to conventional biochemical therapy.

COSTS

There will be no cost to you for participating in this research. Only a few hours of your time will be required to complete post treatment data collection.

COMPENSATION

There will be no monetary or other compensation for participating in the research. Some transportation expenses could be reimbursed by the researcher if they are incurred for specific post therapy data collection.

ALTERNATIVES

You have the alternative not to participate in the research if you feel uncomfortable or do not agree with any of the protocol information included in this document. You are free to revoke previously given authorizations and/or stop your participation in this research at any time.

QUESTIONS

You have spoken with Eric Quintin about this study and have had your questions answered. If you have any further questions about the study, you may contact the researcher by email at ericquintin@adelphia.net, or you may contact the researcher or Dr. Bernard F. Norman at (802) 334-6744.

Questions about your rights as a study participant, or comments or complaints about the study, may also be addressed to the Office for the Protection of Human Subjects at (415) 338-1093 or protocol@sfsu.edu.

CONSENT

You have been given a copy of this consent form to keep.

PARTICIPATION IN THIS RESEARCH IS VOLUNTARY. You are free to decline to participate in this research study, or to withdraw your participation at any point, without penalty. Your decision whether or not to participate in this research study will have no influence on your present or future status at Northeast Kingdom Human Services.

Signature _____ Date: _____
Research Participant

Signature _____ Date: _____
Researcher

APPENDIX B

EVALUATION OF LEVEL OF TREATMENT ATTAINED

(Adapted from Trower et al., 2004)

Tick each of the following treatment elements if they were completed during the course of therapy.

Engagement phase

Establish rapport

- ❒ Successfully established rapport and trust: used empathic listening; explored beliefs and psychotic experiences in a non-judgmental way; helped the client feel understood?

Normalised

- ❒ Helped the client to recognize that their psychotic experiences were similar to the experiences of many people who have not been diagnosed with a mental illness?

Addressed engagement beliefs

- ❒ Explored and addressed any beliefs that threatened the engagement process: inability to change; resistance by voices; inability of the therapist to understand experiences?

Establishing the basis for intervention

Relocated the problem at B

- ❒ Helped the client to view the problem as a belief instead of hearing a voice per se and/or the emotional /behavioral distress associated with it?

Agreed on the beliefs to be targeted

- ❒ Developed a collaborative description of the beliefs concerning power and compliance and agreed which beliefs and which order they would be tackled?

Clarified the evidence for beliefs

- ❒ Assessed the evidence that the client used to support beliefs about power and compliance?

Intervention phase: Power, control and compliance beliefs

Reviewed and enhanced coping strategies

- ❒ Systematically reviewed the effectiveness of the client's coping strategies for addressing power imbalances reduced voices compliance and improved control (reviewing when they were used; how consistently they were applied and how effective they were). Improved coping strategies and introduced further strategies where appropriate?

Disputed general beliefs about voices

- ❒ Challenged beliefs through discussion: offered challenges in a sensitive and tentative manner. Highlighted logical inconsistencies in the belief system and encouraged the client to consider alternative explanations?

Behavioral experiments/reality testing

- ❒ Encouraged the client to seek disconfirmatory evidence and experiences. Devised a behavioral experiment as a true test of the client's beliefs?

Advanced intervention: Beliefs about identity, meaning/purpose

Agreed about the beliefs to be targeted

- ❒ Developed a collaborative description of the beliefs concerning identity, meaning/purpose and agreed which beliefs would be tackled and in which order?

Clarified the evidence for beliefs

- ❒ Assessed the evidence that the client used to support beliefs about identity, meaning and purpose?

Disputed beliefs about identity, meaning/purpose

- ❒ Challenged beliefs through discussion: offered challenges in a sensitive and tentative manner. Highlighted logical inconsistencies in the belief system and encouraged the client to consider alternative explanations?

Behavioral experiment/reality testing

- ❒ Encouraged the client to seek disconfirmatory evidence and experiences. Devised a behavioral experiment as a true test of the client's beliefs?

Identified core beliefs

- ❒ Explored and identified core beliefs: negative self-evaluations and dysfunctional assumptions. Explored developmental and vulnerability factors that led to the development of core beliefs?

Connected beliefs about identity, meaning/purpose to core beliefs

- ❒ Helped the client to develop a personal model of her psychotic experiences based on a shared understanding of the role of developmental and vulnerability factors in giving rise to and shaping core beliefs; the role of psychotic experiences as a protective layer/defence?

Disputed core beliefs

- ❒ Assessed and disputed the evidence for the client's core beliefs; disputed evidence, pointed out logical inconsistencies in the core belief system; looked for alternative explanations. Used specific philosophical disputation techniques: evaluating behaviour versus whole-person evaluations; changing nature of self?

Therapy closure and feedback

- ❒ Provided closure and feedback on the therapy process to the client, asked the client if she had any remaining questions or issues of concern?

Therapist: .....

Date: .....

Client: .....

No. of sessions: .....

APPENDIX C

THERAPEUTIC TABLE OF SESSION CONTENT

Session #	Summary of content
(1-2)	Establish rapport, elaborate on current problems, past history, client's situation.
(3-4)	Introduction to the ABC model and it's relevance, collaboratively determine goals and problems to work on with at least an activating event (A) and a consequence (C) component with possible relating belief (B). Identify an emerging theme through specific distorted cognitive manifestations.
(5-6)	Assessment of activating events and/or consequences, evaluation of the importance of the problems with intensity and type.
(7-8)	Assessment of remaining activating events (As) or consequences (Cs). Clarify and identify specific triggers. Help the client discriminate between subjective judgment and objectives facts to facilitate future challenging of distorted representations.
(9-10)	Connect the activating events (As) to consequences (Cs) and verify that it is effectively what the client is most worried about. Communicate the therapist understanding of the dynamic to his client.
(11-12)	Assessment of beliefs (Bs) using thought chaining without directly challenging them. Bring the client to recognize that activating events (As) do not account for the emotional reactions or behaviors (Cs). Bring the client from an A-C perspective to a A-B-C perspective.
(13-14)	Formulate the connection between beliefs (Bs) about voices and the consequences (Cs) by offering a cognitive developmental perspective. Identify specific vulnerabilities.
(15-16)	Re-assert or modify client's goals and consider options. Compare client's previous A-C formulation and operate the effective transfer to the new A-B-C perspective. Present the main question: In your opinion, what would have to change to resolve your problems?
(17-19)	Challenge beliefs more directly with a graduation from peripheral beliefs moving toward more central ones. Use cognitive restructuration, empirical testing, Socratic questioning, belief replacement and evidence review to modulate or modify beliefs. Dispute and test inferences and evaluations about voices and auditory hallucinations.
20	Feedback, assessment of goal attainment, client's questions and remaining issues.

APPENDIX D

TREATMENT MANUAL

(Session 1-2) These sessions will be conducted in a non directive manner to establish rapport, encourage the client to tell her story, elaborate on current problems, past history and sharing of events that could have contributed to the development of characteristic vulnerabilities. When the therapist feels he has a good understanding of the client's situation, the more specific work relating to cognitive therapy can begin.

(Session 3-4) The client will first receive a quick introduction regarding the ABC model and how it is articulated. A general view of the cognitive model is presented and its relevance explained to the client. The rest of the sessions will consist in collaboratively determine a main goal and secondary goals that the client wants to work on. This operates a change from the explorative phase to the therapeutic phase where the focus will be on specific problems. The problems described by the client should contain elements of at least the activating event (A) (usually an auditory hallucination or voice) and a consequence (C) (Voice conforming or non/conforming behavior) with a possible belief (B, usually beliefs about the voices omnipotence or power) or interpretation. At this phase, the therapist task is to unpack the specific problems, clarify them into an ABC structure. The main objective at this point is to try to identify an emerging theme through specific distorted cognitive manifestations and formulate ideas about the general underlying dysfunctional beliefs about the voices.

(Session 5-6) Assess the activating events (As) (generally voices or auditory hallucinations) or the consequences (Cs, voice conforming behavior) (Whichever the client is more comfortable or capable of identifying) relating to the predetermined goals. This stage of the therapy is to further clarify the dynamics of the problems into an ABC perspective and evaluate the importance of the problems to see if treatment of the auditory hallucinations is justified. It is imperative that the consequences (Cs) (auditory hallucination or voice compliant or non compliant behavior) experienced by the client be at least moderately serious and incites significant negative emotional and/or behavioral reactions. Emotional consequences will be categorized in regard to their intensity and type like mentioned previously in the ABC model conceptualization (Type: anxiety, anger, depression, or variants of these; Intensity: a scale of 0 to 10). The type of Behavioral consequence takes the form of a specific action or impulse to act usually according to the relating type of emotion: anxiety with avoidance and/or defensive behaviour; depression with inactivity and/or withdrawal; anger with direct or muted aggressiveness. These types of behaviors are essentially coping mechanisms that usually provide short term benefits for the client (stress reduction, etc.) but are contributing to the maintenance or worsening of the problem in the long run.

(Session 7-8) Assess any remaining activating events (As) or consequences (Cs) not assessed at the previous step. This stage is to clarify and identify specific triggering activating event(s) (As, voices) relating to the previously identified consequences

(Cs, voice conforming behaviours). In some cases consequences (Cs) or beliefs (Bs) can be construed or perceived as activating events (As) by the client. The central requirement at this stage is that the therapist helps the client discriminate between subjective judgments and objective facts so he can construct a detailed and factual description of all aspects of the hallucination in order to facilitate future challenging of the client's distorted representations of delusions or hallucinations.

(Session 9-10) Connect the activating events (As, voices) to consequences (Cs, voice conforming behaviors) and verify that it is effectively what the client is most worried about. The therapist communicates to the client his understanding of the activating events (As) and its perceived connection to the consequences (Cs). Caution is to be exercised not to devaluate or overly challenge the client's perspective on the link he establishes between A and C. Very powerful emotions and a perceived loss of control are usually attached to these interpretations about voices power and omnipotence. Extra care will be taken to physical and cognitive signs of confusion or dismay from the client so the therapist can react to them by pulling back and redirecting the client toward non confrontational thoughts. This should prevent or lessen the client's possible over defensive reactions, potential psychosis retreat or delirium increase.

(Session 11-12) Assess beliefs (images, inferences, evaluations about voices) using thought chaining without challenging them directly. This stage targets the assessment

of beliefs (Bs) that can often take the form of images, inferences, evaluations and dysfunctional assumptions. The therapist explains the importance of understanding the meanings (Bs) that activating events (As, Auditory hallucinations and voices) have for the client and that this is essential to the understanding of the problems (Cs, voice complying behaviors) and the process of change. The main step is to bring the client to recognize that the previous activating event (A) to consequence (C) link is lacking in that the event alone (A, hearing voices) does not account for the client's emotional reaction or behavior (C, voice conforming behaviours). The client has to realize that he might have reacted differently and that the personal meaning the event had for the client modulated his response. In other terms, the therapist has to bring the client from an A-C perspective to an A-B-C one; that her distress (C) is not originating from the activating event (A) in itself but by his interpretation of it. Various situations can be imagined to give example of how different interpretations (Bs) of a same event (A) can generate different consequences (Cs). Than by a process of thought chaining, the client's own beliefs and inferences about voices are examined in function of previously recorded voice compliant behaviours and consequences. Inferences discovered in this way can be chained and analyzed to the point of revealing the underlying implicit evaluations regarding individuals or circumstances. These evaluations that are associated with the experienced distress are mainly negative in origin and usually concern personal or interpersonal global and stable judgments of circumstances, self or another person's total worth. When the emotion is anger: a self to other person evaluation is probably present. When the

emotion is relating to anxiety or depression: an inferred other to self negative evaluation is probably present and usually develop into a self to self one.

(Session 13-14) Formulate the connection between the beliefs (Bs) about the auditory hallucinations and voices and the consequences (Cs, voice compliant behaviours) by offering a cognitive-behavioral formulation. This stage implies a cognitive formulation integrating the ABC model analysis of the psychotic delusions, auditory hallucinations and voices previously done in light of the historical developmental assessment of the client. The therapist connected the client's feelings and behaviors (Cs) in a given situation (A, for example: voices) to the personal meaning (B, for example: these voices are from my dead husband commanding me to do…) the event (Auditory hallucinations, voices) has for her. The developmental formulation consists in identifying specific vulnerabilities from the negative referential beliefs previously identified to consider why the client has these particular vulnerabilities (for example: my husband was abusive in the past and commanding me to do things I didn't want to do). The main postulate is that client's vulnerabilities and associated distressful experiences (sometimes coming from childhood) explain why the client evolved an interpersonal and cognitive style aiming at the protection of the self so re–experiencing of negative self-evaluation and distress do not reoccur (Chadwick, Birchwood and Trower, 1996). Delusions, auditory hallucinations and voices are seen in this conceptual framework as defensive reactions aiming at the protection of the self that are consequently forming into distressing activating events (As) with the

associated beliefs (Bs) and subsequent reactions (Cs). This can be connected to the two main threats to self previously mentioned: lack of attachment and lack of autonomy, and should be explored further as the developmental formulation of the case evolves following the emergence and addition of new information during therapy.

(Session 15-16) Re-assert or modify the client's goals and consider options. Systematic comparisons of the new A-B-Cs formulations of the problems and the original A-Cs statements are done. Then the therapist can reassess the goals fixed at the beginning of the therapy by operating a crucial shift. The main question presented to the client at this point is: In your opinion, what would have to change to resolve your problem(s)?

If the client perceives the need to change his beliefs (Bs), the cognitive therapeutical process can then continue and be facilitated. If the client still sees the events (As) or even consequences (Cs) as the object that needs the change then the therapist has to either come back to the ABC model principles or advise the client that there is only four ways in which anyone can respond to problematic situations: they can avoid or escape them; they can do nothing and accept them; they can try to change them. After reviewing the responses and explaining to the client that the fact that he is in therapy suggests that all these responses have failed to solve the issues in the past, the therapist can offer the fourth option: they can reduce emotional and behavioral disturbances by modifying their core beliefs (Chadwick, Birchwood and Trower,

1996). If the client agrees to work on his core beliefs then the therapist can begin the next stage.

(Session 17-19) Challenge beliefs more directly with a graduation from peripheral beliefs moving toward more central ones. Cognitive restructuration, empirical testing, Socratic questioning, belief replacement and evidence review are a few of the cognitive techniques that can be effectively used to modulate or modify beliefs relating to psychotic positive symptoms viewed as activating events (As). Disputing and testing inferences for example consists of establishing hypothesis that are supported or disconfirmed through evidence review and eventually working toward the accomplishment of a feared task. Disputing and testing evaluations and inferences relating to schizophrenia positive symptoms manifestations that are negative personal evaluations provoking distress for the client are primarily targeted. These steps are seen as a dynamic process in which previous steps can be recycled depending on the progression concerning a specific problem and the undertaking of a new one.

(Session 20) The last session is used to give feedback to the client and assess goal attainment.

TABLE 1

WHOQOL-BREF DOMAINS

TABLE 1. WHOQOL-BREF Domains

Domain	Facets incorporated within Domains
1. Physical capacity	Activities of daily living Dependence on medicinal substances and medical aids Energy and fatigue Mobility Pain and discomfort Sleep and rest Work Capacity
2. Psychological	Bodily image and appearance Negative feelings Positive feelings Self-esteem Spirituality / Religion / Personal beliefs Thinking, learning, memory and concentration
3. Social relationships	Personal relationships Social support Sexual activity
4. Environment	Financial resources Freedom, physical safety and security Health and social care: accessibility and quality Home environment Opportunities for acquiring new information and skills Participation in and opportunities for recreation / leisure activities Physical environment (pollution / noise / traffic / climate) Transport

TABLE 2

PSYCHOMETRIC TESTS RESULTS FOR EIGHT INSTANCES

Psychometric test	Pre1 (1)	Pre2 (2)	Dur1 (3)	Dur2 (4)	Post (5)	Fol1 (6)	Fol2 (7)	Fol3 (8)
Burns Anxiety Inventory (0-99)	41	37	12	8	4	4	6	9
Burns Depression Checklist (0-45)	23	23	11	7	6	5	5	4
Insight (0-100)	10	10	40	50	70	60	60	70
WHOQOL-BREF Q1 General quality (1-5)	2	2	3	4	4	4	4	4
WHOQOL-BREF Q2 General health (1-5)	3	3	4	4	4	4	4	4
WHOQOL-BREF D1 Physical (0-100)	71	75	79	82	100	96	96	100
WHOQOL-BREF D2 Psychological (0-100)	42	46	50	58	67	58	63	63
WHOQOL-BREF D3 Social (0-100)	58	58	50	50	58	42	50	58
WHOQOL-BREF D4 Environment (0-100)	78	78	78	88	100	78	91	100

FIGURE 1

WHOQOL-BREF DOMAINS RESULTS

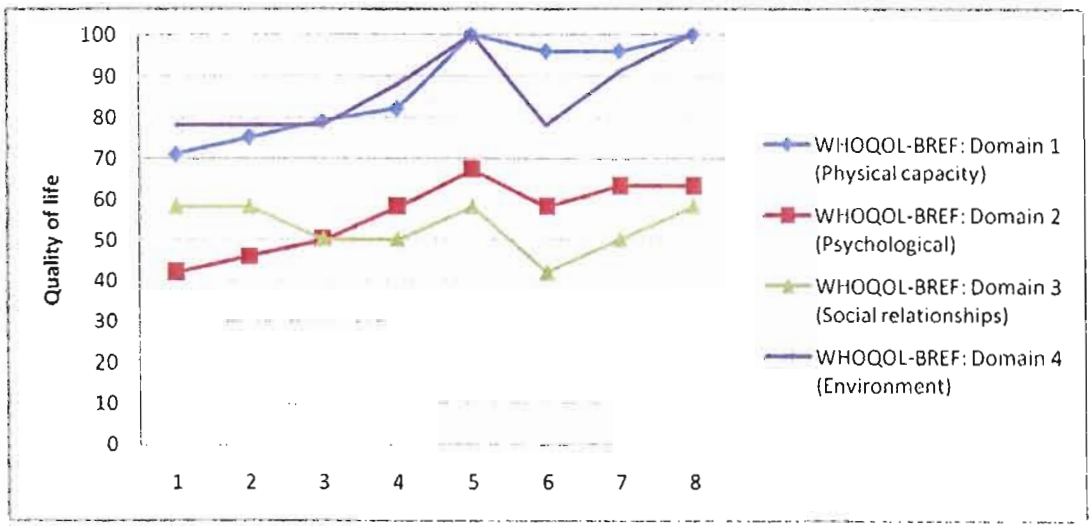


FIGURE 2

BAI RESULTS

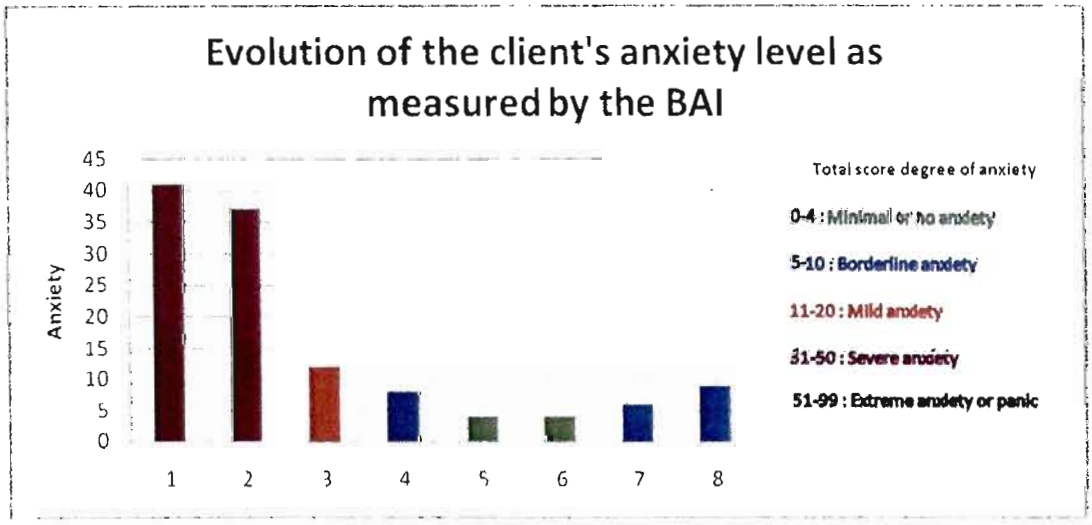


FIGURE 3

BDC RESULTS

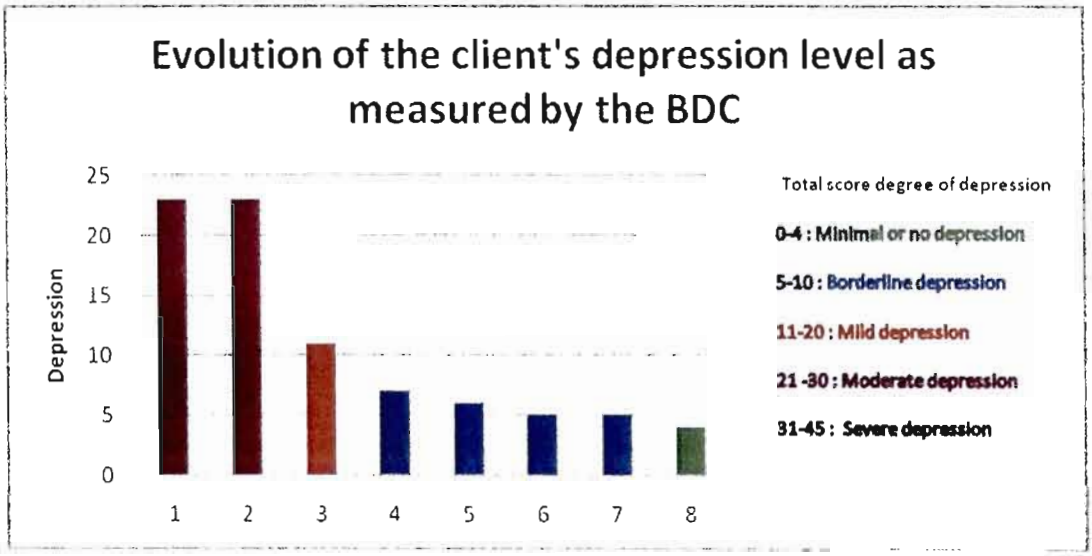
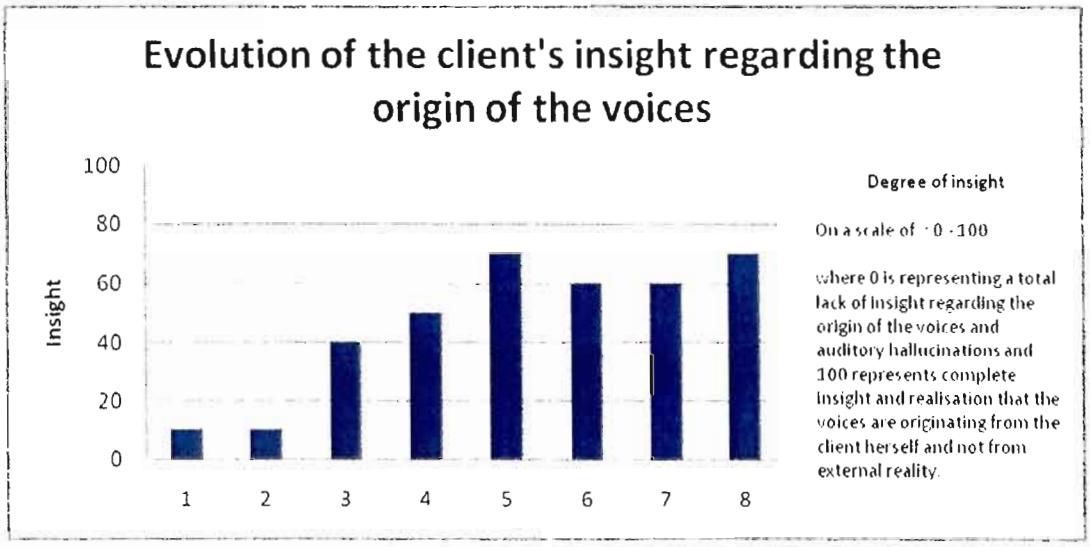


FIGURE 4

INSIGHT RESULTS



COPIES OF THE PSYCHOMETRIC TESTS ADMINISTERED

Burns Depression Checklist *

Instructions: Place a check (√) in the box to the right of each of the 15 symptoms to indicate how much this type of feeling has been bothering you in the past several days.

	0—NOT AT ALL	1—SOMEWHAT	2—MODERATELY	3—A LOT
1. **Sadness:** Have you been feeling sad or down in the dumps?				
2. **Discouragement:** Does the future look bleak or hopeless?				
3. **Low self-esteem:** Do you feel worthless or think of yourself as a loser?				
4. **Inferiority:** Do you feel inadequate or inferior to others?				
5. **Guilt:** Do you get self-critical and blame yourself?				
6. **Indecisiveness:** Is it hard to make decisions?				
7. **Irritability and frustration:** Have you been feeling angry or resentful?				
8. **Loss of interest in life:** Have you lost interest in your career, hobbies, family, or friends?				
9. **Loss of motivation:** Do you feel overwhelmed and have to push yourself hard to do things?				
10. **Poor self-image:** Do you think you're looking old or unattractive?				
11. **Appetite changes:** Have you lost your appetite? Or, do you overeat compulsively?				
12. **Sleep changes:** Is it hard to get a good night's sleep? Are you tired and sleeping too much?				
13. **Loss of libido:** Have you lost your interest in sex?				
14. **Hypochondriasis:** Do you worry a lot about your health?				
15. **Suicidal impulses:** Do you think life is not worth living or think you'd be better off dead?**				
Total Score on items #1 - #15 ➔				

** Anyone with suicidal urges should seek immediate help from a mental health professional.

Burns Depression Checklist *

Instructions: Place a check (√) in the box to the right of each of the 15 symptoms to indicate how much this type of feeling has been bothering you in the past several days.

	0—NOT AT ALL	1—SOMEWHAT	2—MODERATELY	3—A LOT
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Total Score on items #1 - #15 →				

** Anyone with suicidal urges should seek immediate help from a mental health professional.

Burns Anxiety Inventory *

Instructions: Place a check (√) in the box to the right of each of the 33 symptoms to indicate how much this type of feeling has been bothering you in the past several days.

CATEGORY I: ANXIOUS FEELINGS	0—NOT AT ALL	1—SOMEWHAT	2—MODERATELY	3—A LOT
1. Anxiety, nervousness, worry or fear				
2. Feeling things around you are strange or foggy				
3. Feeling detached from all or part of your body				
4. Sudden unexpected panic spells				
5. Apprehension or a sense of impending doom				
6. Feeling tense, stress, "uptight" or on edge				
CATEGORY II: ANXIOUS THOUGHTS				
7. Difficulty concentrating				
8. Racing thoughts				
9. Frightening fantasies or daydreams				
10. Feeling on the verge of losing control				
11 Fears of cracking up or going crazy				
12. Fears of fainting or passing out				
13. Fears of illnesses, heart attacks or dying				
14. Fears of looking foolish in front of others				
15. Fears of being alone, isolated or abandoned				
16. Fears of criticism or disapproval				
17. Fears that something terrible will happen				

(continue on next page)

Burns Anxiety Inventory *

Instructions: Place a check (√) in the box to the right of each of the 33 symptoms to indicate how much this type of feeling has been bothering you in the past several days.

CATEGORY III: PHYSICAL SYMPTOMS	0—NOT AT ALL	1—SOMEWHAT	2—MODERATELY	3—A LOT
18. Skipping, racing or pounding of the heart				
19. Pain, pressure or tightness in the chest				
20. Tingling or numbness in the toes or fingers				
21. Butterflies or discomfort in the stomach				
22. Constipation or diarrhea				
23. Restlessness or jumpiness				
24. Tight, tense muscles				
25. Sweating not brought on by heat				
26. A lump in the throat				
27. Trembling or shaking				
28. Rubbery or "jelly" legs				
29. Feeling dizzy, lightheaded or off balance				
30. Choking or smothering sensations				
31. Headaches or pains in the neck or back				
32. Hot flashes or cold chills				
33. Feeling tired, weak or easily exhausted				
Total Score on Items #1 - #33 →				

WHOQOL-BREF

About You

Before you begin we would like to ask you to answer a few general questions about yourself by circling the correct answer or by filling in the space provided.

1. What is your gender — Male — Female

2. What is your date of birth? _____ / _____ / _____ (Day / Month / Year)

3. What is the highest education you received?
   - None at all
   - Elementary School
   - High School
   - College

4. What is your marital status?
   - Single
   - Married
   - Living as Married
   - Separated
   - Divorced
   - Widowed

5. Are you currently ill? — Yes — No

6. If something is wrong with your health, what do you think it is? _____ illness/problem

Instructions

This questionnaire asks how you feel about your quality of life, health, or other areas of your life. Please answer all the questions. If you are unsure about which response to give to a question, please choose the one that appears most appropriate. This can often be your first response.

Please keep in mind your standards, hopes, pleasures and concerns. We ask that you think about your life in the last two weeks. For example, thinking about the last two weeks, a question might ask:

For office use		*(Please circle the number)*				
		Not at all	A little	Moderately	Mostly	Completely
	Do you get the kind of support from others that you need?	1	2	3	4	5

You should circle the number that best fits how much support you got from others over the last two weeks. So you would circle the number 4 if you got a great deal of support from others. o

For office use.		*(Please circle the number)*				
		Not at all	A little	Moderately	Mostly	Completely
	Do you get the kind of support from others that you need?	1	2	3	④	5

You would circle number 1 if you did not get any of the support that you needed from others in the last two weeks. o

For office use		*(Please circle the number)*				
		Not at all	A little	Moderately	Mostly	Completely
	Do you get the kind of support from others that you need?	①	2	3	4	5

Please read each question, assess your feelings, and circle the number on the scale that gives the best answer for you for each question.

For office use			(Please circle the number)				
			Very poor	Poor	Neither poor nor good	Good	Very Good
G1 / G1.1	1.	How would you rate your quality of life?	1	2	3	4	5

For office use			(Please circle the number)				
			Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
G4 / G2.3	1.	How satisfied are you with your health?	1	2	3	4	5

The following questions ask about **how much** you have experienced certain things in the last two weeks.

For office use			(Please circle the number)				
			Not at all	A little	A moderate amount	Very much	An extreme amount
F1.4 / F1.2.5	3.	To what extent do you feel that physical pain prevents you from doing what you need to do?	1	2	3	4	5
F11.3 / F13.1.4	4.	How much do you need any medical treatment to function in your daily life?	1	2	3	4	5
F4.1 / F6.1.2	5.	How much do you enjoy life?	1	2	3	4	5
F24.2 / F29.1.3	6.	To what extent do you feel your life to	1	2	3	4	5

For office use			(Please circle the number)				
			Not at all	A little	A moderate amount	Very much	An extreme amount
		be meaningful?					

For office use			(Please circle the number)				
			Not at all	Slightly	A Moderate amount	Very much	Extremely
F5.2 / F7.1.6	7.	How well are you able to concentrate?	1	2	3	4	5
F16.1 / F20.1.2	8.	How safe do you feel in your daily life?	1	2	3	4	5
F22.1 / F27.1.2	9.	How healthy is your physical environment?	1	2	3	4	5

The following questions ask about **how completely** you experience or were able to do certain things in the last two weeks.

For office use			(Please circle the number)				
			Not at all	A little	Moderately	Mostly	Completely
F2.1 / F2.1.1	10.	Do you have enough energy for everyday life?	1	2	3	4	5
F7.1 / F9.1.2	11.	Are you able to accept your bodily appearance?	1	2	3	4	5
F18.1 / F23.1.1	12.	Have you enough money to meet your needs?	1	2	3	4	5
F20.1 / F25.1.1	13.	How available to you is the information that	1	2	3	4	5

For office use			(Please circle the number) Not at all	A little	Moderately	Mostly	Completely
		you need in your day-to-day life?					
F21.1 / F26.1.2	14.	To what extent do you have the opportunity for leisure activities?	1	2	3	4	5

For office use			(Please circle the number) Very poor	Poor	Neither poor nor well	Well	Very well
F9.1 / F11.1.1	15.	How well are you able to get around?	1	2	3	4	5

The following questions ask you to say how **good** or **satisfied** you have felt about various aspects of your life over the last two weeks.

For office use			(Please circle the number) Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
F3.3 / F4.2.2	16.	How satisfied are you with your sleep?	1	2	3	4	5
F10.3 / F12.2.3	17.	How satisfied are you with your ability to perform your daily living activities?	1	2	3	4	5
F12.4 / F16.2.1	18.	How satisfied are you with your capacity for work?	1	2	3	4	5
F6.4 / F8.2.2	19.	How satisfied are you with your abilities?	1	2	3	4	5

For office use		(Please circle the number)				
		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
F13.3 / F17.2.3	20. How satisfied are you with your personal relationships?	1	2	3	4	5
F15.3 / F3.2.1	21. How satisfied are you with your sex life?	1	2	3	4	5
F14.4 / F18.2.5	22. How satisfied are you with the support you get from your friends?	1	2	3	4	5
F17.3 / F21.2.2	23. How satisfied are you with the conditions of your living place?	1	2	3	4	5
F19.3 / F24.2.1	24. How satisfied are you with your access to health services?	1	2	3	4	5
F.23.3 / F28.2.2	25. How satisfied are you with your mode of transportation?	1	2	3	4	5

The follow question refers to **how often** you have felt or experienced certain things in the last two weeks.

For office use		*(Please circle the number)*				
		Never	Seldom	Quite often	Very often	Always
F8.1 / F10.1.2	26. How often do you have negative feelings, such as blue mood, despair, anxiety, depression?	1	2	3	4	5

Did someone help you to fill out this form? *(Please circle Yes or No)* Yes No

How long did it take to fill out this form? _____

THANK YOU FOR YOUR HELP